



# **Microsoft Surface Pro 11th Edition and Pro 10 for Business 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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## Introduction

This Service 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 needed 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.

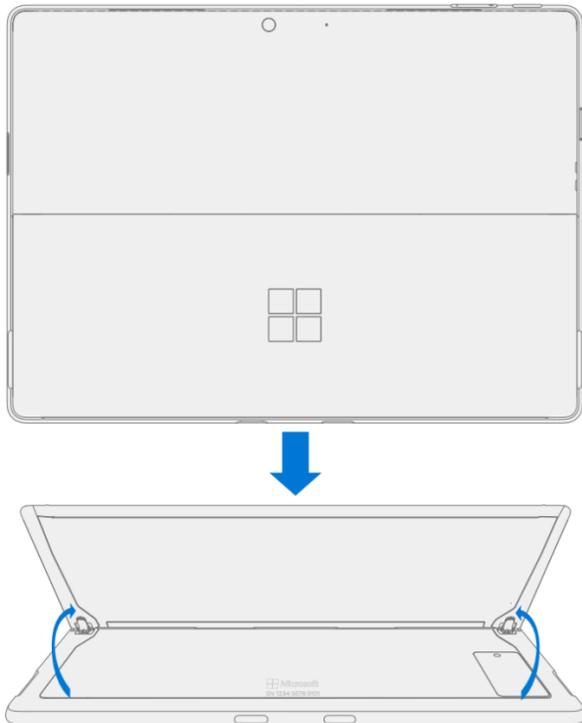
## Device Identity Information

Supported Models –

- Surface Pro 10 for Business
- Surface Pro 11<sup>th</sup> Edition

Support Link – [Link](#)

The model and serial number for Surface tablet devices are located under the kickstand.



## General Information, Precautions, and Warnings

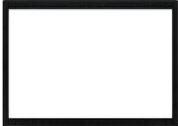
### Tools

This section documents the tools recommended or required by Microsoft to successfully complete a repair on a Surface device. Microsoft Service Tools (recommended and required) are sold by iFixit in partnership with Microsoft. Items under Electronic Repair Hardware and Tools can be commonly purchased from electronic repair retailers. Lastly, items under standard tools and misc. items on this list can be commonly purchased from consumer retailers.

#### Recommended Microsoft Service Tools

<a href="#">ESD-safe Surface Battery Cover - iFixit</a>	
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#### Required Microsoft Service Tools

<a href="#">Surface Display Debonding Tool (M1214770-001) - iFixit</a>	
<a href="#">Surface Display Bonding Frame (M1260233-001) - iFixit</a>	

#### Required Electronic Repair Hardware or Tools

Anti-static Wrist Strap (1 MOhm resistance)	
ESD-safe mat or benchtop	
Nylon Spudger/Probing Tool	

Plastic Opening Pick	
Plastic Opening Tool	
ESD-safe Tweezers	

### Required Standard Tools and Misc Items

- 3IP Torx-Plus Driver
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Display Bonding Weights
  - Weight Requirement: minimum 32 kg (70 lbs.) / maximum 35 kg (77 lbs.)
  - Minimum Dimensions: 280 mm x 200 mm (11 in x 8 in)
  - Geometry must be symmetrical, to allow for even weight distribution.
  - Weight used must be a flat plate, with consistent flatness and not protrude from contact plane with the Bonding Frame.
  - Shot bag filled with steel shot, not sand, to ensure proper weight displacement.
  - Weight must contact the full perimeter of the frame when placed above it.
  - Recommended Weights: Ruck Plates of 9 kg + 9 kg + 14 kg (20 lbs. + 20 lbs. + 30 lbs.)
  - Alternate weights: Steel Shot Bags of 9 kg + 9 kg + 14 kg (20 lbs. + 20 lbs. + 30 lbs.)
- Foam Pad
  - Foam Pad included with the Surface Display Bonding Frame.
  - Material: EVA Foam
  - Thickness: 9.5 mm (3/8 inch)
  - Density: 0.03 g/cm<sup>3</sup> (2 lbs./cu Ft)
  - Dimensions: Minimum 229 mm x 305 mm (9 in x 12 in)
- Loctite 7649 Retaining Compound
- Loctite 243 Threadlocker
- USB 3.0 Thumb drive – 16 GB minimum storage
- Isopropyl alcohol dispenser bottle (use 70% IPA)
- Cleaning swabs

- Microfiber Cloth
- Lint free cleaning cloth
- 1 Gallon Enclosure
- 0.5 Gallons Sand, Clean
- Surface Dock
- 65W Microsoft Surface Power Supply
- Two 2-in spring clamps

## 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, rings, 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 the [Actions to take in case of a Thermal Event](#) section or contact Microsoft directly for proper device disposition.

For additional product safety information relevant to Microsoft Surface devices, see [aka.ms/surface-safety](https://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.

## 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.

## 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.
- Review the General Safety Precautions and Battery Safety Sections of this Guide before beginning work.

**⚠ 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 the rSSD (removable Solid-State Drive) whenever the Keyboard is removed from the device. rSSD removal disconnects the battery from all device logical components for safety purposes. Refer to Procedure-Removal (rSSD) section for details.

**IMPORTANT:** Whenever the rSSD has been removed, powering on the device requires that the rSSD and Keyboard are installed.

**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 on a sticker or label and apply the sticker or label to an easily accessible area on the device exterior. For serial number location please see the [Device Identity Information](#) section. 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 available on [Microsoft.com](https://www.microsoft.com) and other online part retailers such as iFixit. 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 the display is removed for internal repairs. Ensure corners of cover are always aligned with the corners of the device while battery is exposed. If the 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.
  - Do not 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 the 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 Level

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



**Battery is replaceable by trained personnel; replacement must follow Microsoft procedure**  
**See <http://aka.ms/surface-safety> for important information.**

- Risk of fire or burning – contact Microsoft for assistance
- Do not modify battery, its wiring, or connectors
- Do not short circuit, bend, dent, crush, or puncture battery
- Do not dispose of battery in fire or expose to high temperatures (+140°F/60°C)



## 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 Graphite coating layer on the battery.
  - Loose or damaged wires.
  - Known misuse or abuse.

Any battery exhibiting the signs listed above must be replaced. Consult the [Battery Replacement 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 the 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 case of a 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.

## 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:

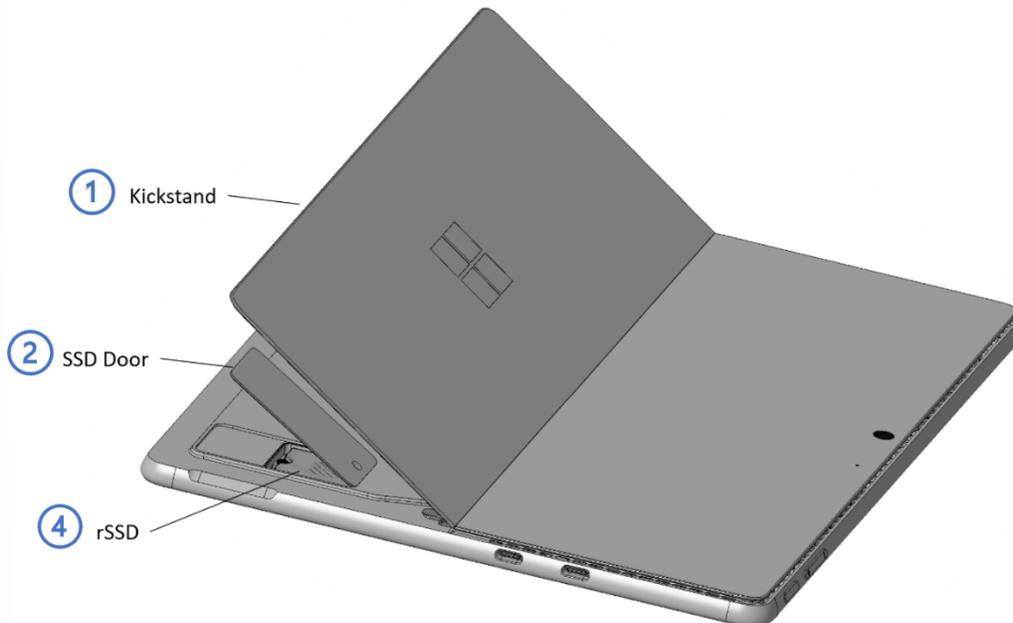
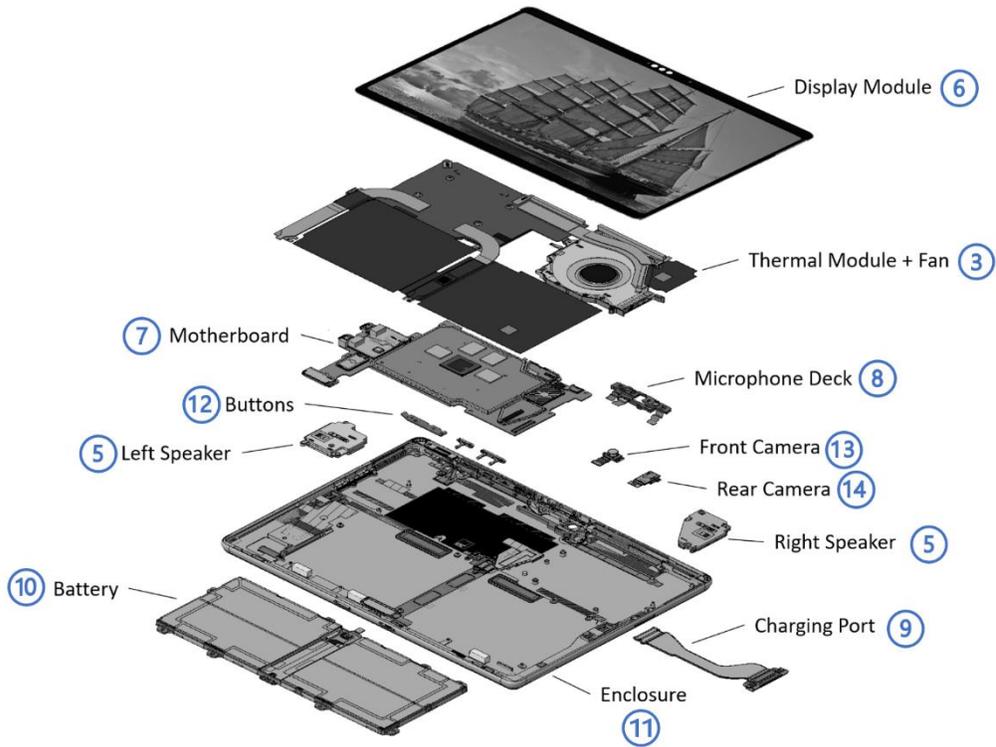
- Smoke, soot, sparks, or flame emitted by the battery or from a device containing a battery.
- The battery pouch suddenly expands in size.
- A popping or hissing noise from the battery or a device containing a battery.

### 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.

## Illustrated Service Parts List



**IMPORTANT:** Repair workflows may require multiple parts to be ordered to complete the repair successfully. Please check the primary and additional components section in each repair workflow to ensure you have all required parts before beginning your repair.

## Surface Pro 10 for Business Part List

Item	Component	SKU Part No.
<b>1</b>	<b>Kickstand</b>	
	Platinum	40V-00001
	Graphite	40V-00002
<b>2</b>	<b>Solid State Drive Door</b>	
	Platinum	40G-00001
	Graphite	40G-00002
<b>3</b>	<b>Thermal Module + Fan</b>	
	Thermal Module	50K-00001
<b>4</b>	<b>Removable Solid-State Drive</b>	
	256GB	30K-00001
	512GB	30L-00001
	1TB	30M-00001
<b>5</b>	<b>Speakers</b>	
	Speakers	30S-00001
<b>6</b>	<b>Display Module</b>	
	Display Module	40U-00002
<b>7</b>	<b>Motherboard (includes main processor and main memory)</b>	
	Intel i5/8GB/Nuvoton	50D-00001
	Intel i5/16GB/Nuvoton	50F-00001
	Intel i5/32GB/Nuvoton	50G-00001
	Intel i7/16GB/Nuvoton	50H-00001
	Intel i7/32GB/Nuvoton	50I-00001
	Intel i7/64GB/Nuvoton	50J-00001
<b>8</b>	<b>Microphone Module</b>	
	Microphone Deck	40Z-00001
<b>9</b>	<b>Surface Connect</b>	
	Surface Connect Port	50B-00001
<b>10</b>	<b>Battery</b>	
	Battery	50C-00001
<b>11</b>	<b>Enclosure</b>	
	Platinum	50A-00001
	Graphite	50A-00002
<b>12</b>	<b>Buttons – Power and Volume</b>	
	Platinum	F2O-00001
	Graphite	F2O-00002
<b>13</b>	<b>Front Camera</b>	
	Front Camera	40X-00001
<b>14</b>	<b>Rear Camera</b>	
	Rear Camera	40Y-00001
<b>15</b>	<b>Device Entry Kit</b>	
	Device Entry Kit	GOH-00001

## Surface Pro 11<sup>th</sup> Edition Part List

Item	Component	SKU Part No.
<b>1</b>	<b>Kickstand</b>	
	Platinum - NFC	30J-00001
	Graphite – NFC	30J-00002
	Platinum – non-NFC	30J-00003
	Graphite – non-NFC	30J-00004
	Dune – non-NFC	30J-00005
	Sapphire – non-NFC	30J-00006
<b>2</b>	<b>Solid State Drive Door</b>	
	Platinum	40G-00001
	Graphite	40G-00002
	Dune	40G-00003
	Sapphire	40G-00004
<b>3</b>	<b>Thermal Module + Fan</b>	
	Thermal Module - LCD	402-00001
	Thermal Module – OLED	402-00002
<b>4</b>	<b>Removable Solid-State Drive</b>	
	256GB	30K-00001
	512GB	30L-00001
	1TB	30M-00001
<b>5</b>	<b>Speakers</b>	
	Speakers	30S-00001
<b>6</b>	<b>Display Module</b>	
	Display Module – LCD	30I-00001
	Display Module – OLED	30H-00001
<b>7</b>	<b>Motherboard (includes main processor and main memory)</b>	
	Plus with NFC – LCD – 16GB	EWO-00001
	Plus – LCD – 16GB	30X-00001
	Elite – OLED – 16GB	30Y-00001
	Elite with NFC – OLED – 16GB	EXO-00001
	Elite – OLED – 32GB	30Z-00001
	Elite with NFC – OLED – 32GB	EYO-00001
<b>8</b>	<b>Microphone Module</b>	
	Microphone Deck – LCD	30R-00001
	Microphone Deck – OLED	30R-00002
<b>9</b>	<b>Surface Connect</b>	
	Surface Connect Port - LCD	50B-00001
	Surface Connect Port – OLED	30U-00001
<b>10</b>	<b>Battery</b>	
	Battery – LCD	30W-00001
	Battery – OLED	30V-00001
<b>11</b>	<b>Enclosure</b>	
	Platinum - LCD	30T-00001
	Platinum with NFC – LCD	EP2-08187
	Graphite – LCD	30T-00002
	Graphite with NFC – LCD	EP2-08186
	Dune – LCD	30T-00005
	Sapphire – LCD	30T-00006
	Platinum – OLED	30T-00003

	Platinum with NFC - OLED	50A-00003
	Graphite – OLED	30T-00004
	Graphite with NFC – OLED	50A-00004
	Dune – OLED	30T-00007
	Sapphire – OLED	30T-00008
<b>12</b>	<b>Buttons – Power and Volume</b>	
	Platinum - LCD	F2O-00001
	Graphite - LCD	F2O-00002
	Dune – LCD	F2O-00003
	Sapphire – LCD	F2O-00004
	Platinum – OLED	EZO-00001
	Graphite – OLED	EZO-00002
	Dune – OLED	EZO-00003
	Sapphire – OLED	EZO-00004
<b>13</b>	<b>Front Camera</b>	
	Front Camera – LCD	30P-00001
	Front Camera – OLED	30P-00002
<b>14</b>	<b>Rear Camera</b>	
	Rear Camera – LCD	30Q-00001
	Rear Camera – OLED	30Q-00002
<b>15</b>	<b>Device Entry Kit</b>	
	Device Entry Kit - LCD	GOH-00002
	Device Entry Kit – OLED	GOH-00003

## Software Tools – Diagnostic, Calibration, and Troubleshooting

This section covers the software tools needed to support a Surface device through problem discovery and resolution.

### Genuine Microsoft Replacement Parts

- Genuine Microsoft replacement parts can be obtained directly from Microsoft on [Microsoft.com](https://www.microsoft.com).
- Genuine Microsoft replacement parts are also available on the partner sites below:
  - [iFixit](https://www.ifixit.com)

### General Support

- For general Surface support, visit [www.support.microsoft.com](https://www.support.microsoft.com)
- To troubleshoot device feature/function problems or learn more about Surface Laptops visit <https://support.microsoft.com/surface> .
- If you would like to learn more about Windows, visit <https://support.microsoft.com/windows>
- To learn more about the accessibility features of the Surface Laptop, go to the online user guide at [aka.ms/Windows-Accessibility](https://aka.ms/Windows-Accessibility)

### Software Tools

- How To: [Update Surface device firmware and OS](#)
- How To: [Surface Tools Video](#)
- How To: [Surface Diagnostic Toolkit User Guide](#)
- Download: [Surface drivers and firmware](#)

- Download: [Surface Diagnostic Toolkit \(SDT\)](#)
- Download: [Surface Data Eraser](#)
- Download: [Surface Imaging Tools](#)

## Calibration and Authentication

Specific components require additional software calibration or authentication after completing the installation of the component before the part will function to full capability. The specific steps will be called out in the pertinent repair workflows.

### Impacted Parts

- **Display Module (TDM) –**
  - Pre-installation – requires a pre-installation repair workflow, completed in SDT, to put the device into repair mode.
  - Post-installation – requires a post-installation workflow, completed in SDT, to calibrate the display to the correct settings.
- **Battery –**
  - Pre-installation - requires a pre-installation repair workflow, completed in SDT, to put the device into repair mode.
  - Post-installation – requires a post-installation authentication workflow, completed in SDT, to authenticate the new battery as a valid Microsoft part.
- **Motherboard (PCBA) –**
  - Post-installation - requires a post-installation workflow for Display and an authentication for Battery, completed in SDT, to calibrate the display to the correct settings with the new board and ensure the battery is detected as an authentic part.

## Hardware Troubleshooting Approach

Microsoft recommends the following approach for troubleshooting Surface devices:

1. Update the device to the latest Operating System and Driver/Firmware versions using Windows Update.

**Important:** Ensuring your device is fully up to date is important for ensuring the issue you are experiencing is not fixed by a software update prior to conducting a hardware repair.

2. Utilize the Surface Diagnostic Toolkit (SDT) after confirming the device is fully updated to confirm the hardware fault is still present prior to repair.
3. After the repair is completed, run the Surface Diagnostic Toolkit (SDT) to validate the original hardware fault is resolved.
  - a. If the issue is still being experienced, it is recommended to reimage the device using a Surface Recovery Image (BMR) to return the device to a known OS/FW state. Additional repairs should only be conducted if the issue persists after re-imaging the device.

# Component Removal and Replacement Procedures

## Prerequisite Steps

Steps outlined in this section should be conducted prior to starting any repair on a Surface device.

- **Power off device** – Ensure the device is powered off completely and the battery has been fully discharged. Refer to the [Repair-Specific Precautions and Warnings section](#) for details. Once discharged, the device should be disconnected from all power sources.
- **ESD Prevention** – Ensure ESD prevention steps and general guidelines are followed prior to opening the device. Refer to the [ESD Prevention section](#) for details.
- **Position Device** – To prevent damage to the device, ensure the device is placed on a clean surface free of debris.

## Kickstand Replacement Process

### Preliminary Requirements

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

### Required Tools

- 3IP (Torx-plus) driver
- Loctite 7649
- Loctite 243
- Microfiber Cloth

### Primary Components

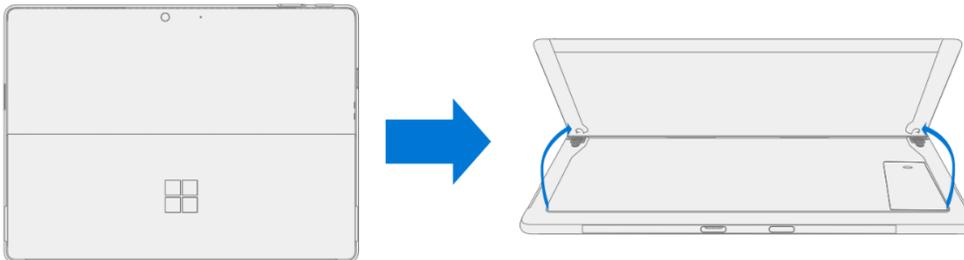
- Kickstand (Refer to the [Illustrated Service Parts List](#))
  - 2 x Kickstand Screw (M1.6xL2.05/3IP)
    - 13NL-5JN1901 for Platinum
    - 13NL-5JN1B01 for Graphite

### Additional Components (Ordered Separately)

- N/A

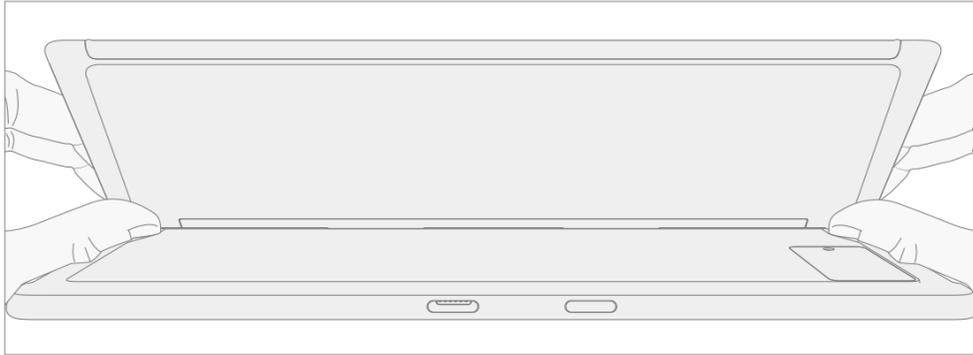
### Procedure – Removal (Kickstand)

1. **Extend the kickstand to approximately 90-degrees.**

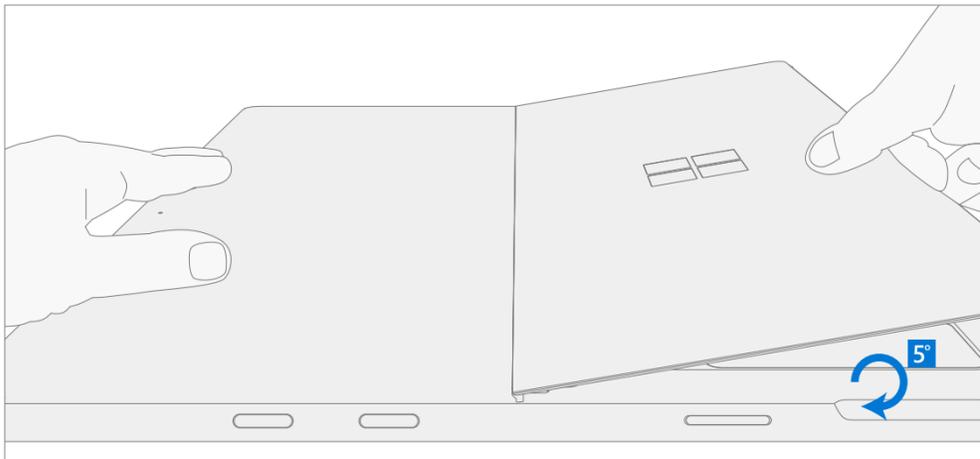


2. **Remove the hinge screws** – Using your finger, hold the back of the kickstand behind the hinge. Using a 3IP (Torx-plus) driver, remove one screw from each hinge. Ensure the screws do not fall into the hinge opening.

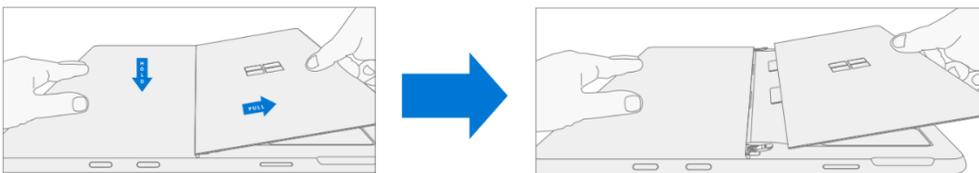
3. **Angle the Kickstand down** – Firmly grip the hinges and the kickstand between your thumb and index fingers. Rotate the kickstand from 90 degrees to approximately 45 degrees.



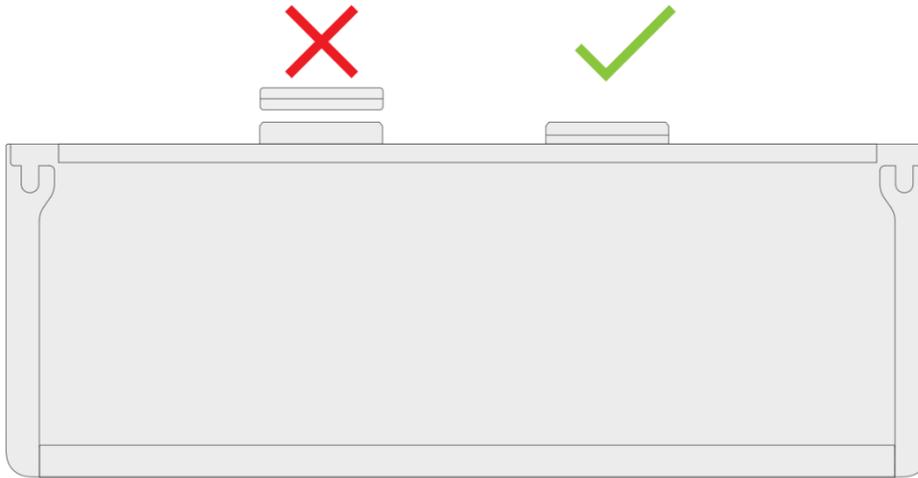
4. **Release the Kickstand threaded bosses** – Place your fingers on the underside of the kickstand, and your thumb on the topside. Slightly rotate the kickstand on its axis as shown below. The kickstand should rotate approximately 5 degrees to free the two threaded bosses of the kickstand from the recesses of the hinge.



5. **Remove the Kickstand** – Using the palm of your hand, firmly hold the device from the center of the chassis. Simultaneously, grip the kickstand off-center between your thumb and index finger and firmly pull. Pull with a moderate amount of force until the foam inserts slide out of the device. If the kickstand is stuck, ensure the threaded bosses have not slipped back into the recesses on the hinge.



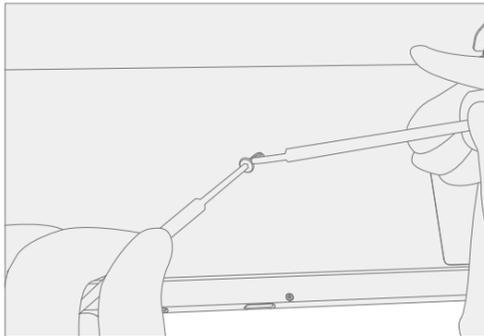
**WARNING:** Inspect the Kickstand foam tabs – damaged foam or tabs cannot be safely removed. Attempting to do so can result in damage to internal components. Do not insert anything other than the tabs into the slots. Ensure both tabs are complete and show no signs of tearing. If tabs show signs of tearing, part of the foam may still be inside the device. Do not attempt to remove it from the interior of the device, instead proceed to the Procedure- Removal (Enclosure) to replace the old enclosure.



### Procedure – Installation (Kickstand)

**Important:** Use caution when handling the new kickstand to avoid cosmetic damage to the kickstand and the device.

1. **Apply thread locker to screws** – Brush each of the new screws with Loctite 7649 Activator. Let each screw sit for 2 minutes after the applicator is applied before assembling the device.



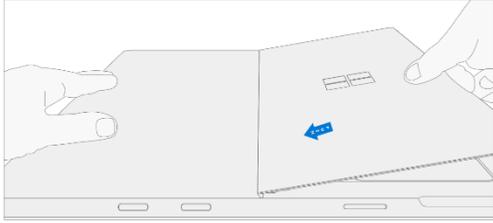
2. **Insert Foam Tabs** – With the hinges still at approximately 45-degrees, start to slide the new kickstand’s foam tabs into the slots on the back of the device. Foam should slide in with minimal force – do not crumple the foam by using excess force. Do not slide the foam completely into the device – insert the foam tabs until approximately 3/4<sup>th</sup> of the foam tabs are inside the device.

**CAUTION:** Do not use any tool or sharp object to assist in inserting the tabs into the slots. Doing so may result in damage to internal components.

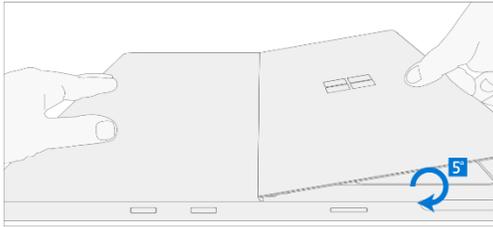


3. **Slot outer lip of each hinge into the Kickstand** – Using fingers on the underside of the kickstand and thumb on the topside, slightly rotate the kickstand on its axis as shown below. The kickstand should

rotate approximately 5-degrees to catch the outer lip of the hunger. Push the kickstand toward the device.



4. **Slip the Kickstand threaded bosses into the hinge recesses** – While maintaining pressure on the kickstand to prevent it from backing out, rotate the kickstand down into place (image below). The threaded bosses of the kickstand should slip into the recesses of the hinges.



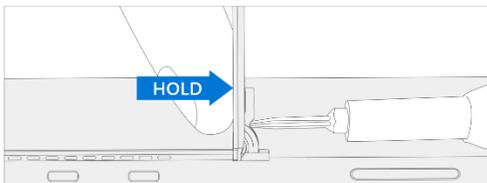
5. **Rotate the Kickstand up** – Firmly grip the kickstand near the hinges between your thumb and index fingers as shown below. Rotate the kickstand from 45-degrees to approximately 90-degrees.



6. **Apply thread locker to screw bosses** – Apply one drop of Loctite 243 thread locker to each screw boss.



7. **Install hinge screws** – Use your finger to hold the back of the kickstand (shown below) while installing the screws (3IP Torx-Plus Driver) until they are fully seated in each hinge. Ensure the kickstand is properly aligned and seated in the hinges, then tighten each screw an additional ~quarter turn (~90 degrees). Be careful to only tighten the screws until snug to avoid stripping the kickstand threads. Ensure the screws do not fall into the hinge opening.



8. **Perform a final inspection of the Kickstand** – Fold the Kickstand down and peel off the protective plastic from the kickstand logo (if present). Verify that the side edges of the kickstand are aligned with the midframe walls, and that there are no obvious steps/gaps between the kickstand and the enclosure.
9. **Clean the device** – Wipe the device thoroughly (including under the kickstand) with a microfiber cloth to remove any fingerprints.

## Solid State Door Replacement Process

### Preliminary Requirements

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

### Required Tools

- N/A

### Primary Components

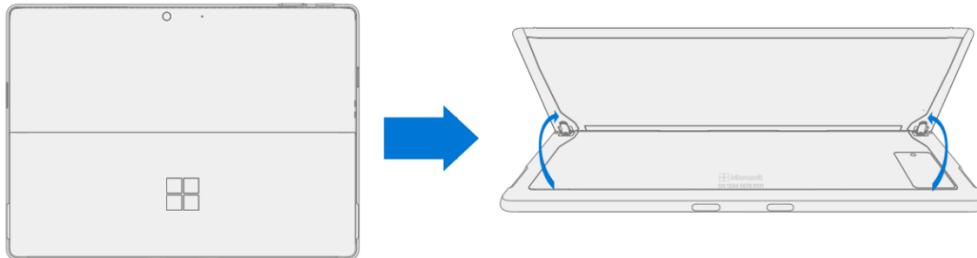
- Solid State Drive Door (Refer to the [Illustrated Service Parts List](#))

### Additional Components (Ordered Separately)

- N/A

### Procedure – Removal (Solid State Drive Door)

1. **Position Device** – Place the device screen-down on a clean surface.
2. **Extend the kickstand to approximately 90-degrees.**

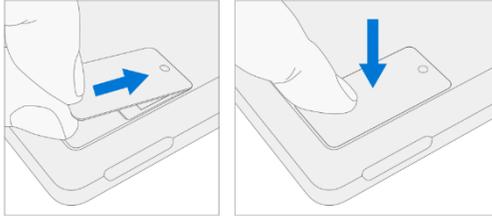


3. **Remove the SSD Door** – Press down on the divot on top of the SSD door until it pops open. Lift it up and out of the device.



### Procedure – Installation (Solid State Drive Door)

1. **Install the SSD Door** – With the kickstand open to approximately 90 degrees, slot the replacement SSD Door into the SSD slot, and press down to install. Ensure the side with the divot is inserted as shown.



## Removable Solid-State Drive (rSSD) Replacement Process

### Preliminary Requirements

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

### Required Tools

- 3IP (Torx-plus) driver
- Nylon Spudger
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- USB drive with Surface Diagnostic Toolkit
- USB drive with Surface Recovery Image

### Primary Components

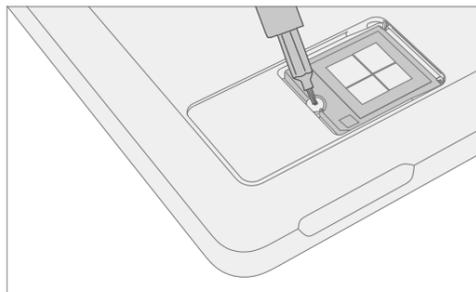
- Removable Solid-State Drive (Refer to the [Illustrated Service Parts List](#))
  - 1 x Removable Solid-State Drive Screw; bag labelled with **3IP**
    - Part Number 13NL-5JN0V01/02, M1.2\*L1.5 3IP

### Additional Components (Ordered Separately)

- N/A

### Procedure – Removal (Removable Solid-State Drive)

1. **Position Device** – Place the device screen-down on a clean surface.
2. **Remove Solid State Drive Door** – See [Procedure – Removal \(Solid State Drive Door\)](#) for instructions.
3. **Remove Removable Solid State Drive screw** – Use a 3IP (Torx-plus) driver to remove the screw securing the Removal Solid State Drive (rSSD).

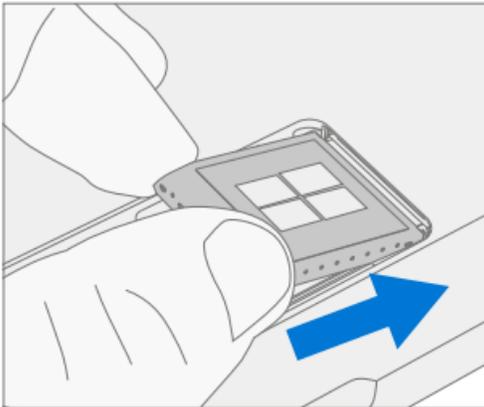


4. **Remove the Removable Solid-State Drive** – The rSSD should lift upwards to approximately 15-degrees after the screw is removed. Carefully grab the sides of the rSSD case and pull it out of the Motherboard socket at the same approximately 15-degree angle. A Nylon Spudger can be used to lift the rSSD up.

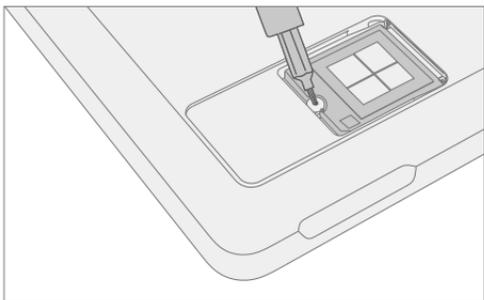
#### Procedure – Installation (Removable Solid-State Drive)

**Important:** Only a Removable Solid-State Drive of the same capacity should be replaced in the device. This ensures proper physical and thermal performance.

1. **Insert Removable Solid-State Drive** - Insert the connector end of the rSSD into the rSSD connector on the mainboard at a 15-degree angle.



2. **Install Removable Solid-State Drive screw** - Use a 3IP (Torx-plus) driver to install the rSSD screw, labelled with **3IP** on the bag, until the screw is just snug and seated. Turn the screw another 45 degrees (1/8<sup>th</sup> turn) to fully fasten.



3. **Install Solid-State Drive Door** – See [Procedure – Installation \(Solid-State Drive Door\)](#) for instructions.

**Important:** If you are swapping Removable Solid-State Drives between devices, you will need the user's [BitLocker Recovery Key](#) to unlock the drive and allow it to boot into the Windows Operating System. The user must also remember any login passwords and/or pins to access the device post-repair.

4. **Imaging** – All replacement Removable Solid-State Drives ship without a Windows Image. To restore the factory image for your Surface device, please refer to the Surface Imaging Tools link in the [Software Tools](#) section of this document.
5. **Run the Surface Diagnostic Tool** – After the device has completed the imaging step, power on the device and allow it to boot to the Windows desktop. Insert a USB drive with the Surface Diagnostic Tool loaded (see [Software Tools](#) for links). Run all the available Surface Diagnostic Tool diagnostic tests to ensure the device functions as expected post-repair.

# Display Module Replacement Process

## Preliminary Requirements

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

## Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)

## Primary Components

- Display Module (Refer to [Illustrated Service Parts List](#))
  - 1 x Removable Solid-State Drive Screw; bag labelled with **3IP**
    - Part Number 13NL-5JN0V01/02, M1.2\*L1.5 3IP
  - 1 x TDM Shield lid – 13NL-5LN0H01
  - 1 x TDM PSA Top – 13NL-5LUA41/43
  - 1 x TDM PSA Right – 13NL-5LU0441/43
  - 1 x TDM PSA Left – 13NL-5LU0741/43
  - 1 x TDM PSA Bottom – 13NL-5LU0961/63
  - 1 x Left Speaker Mesh – 13NL-5LU0532/33
  - 1 x Right Speaker Mesh – 13NL-5LU0842/43
  - 1 x Shielding tape – 13NL-5JU1501/02
  - 2 x NFC foam – 13NL-5MU1A01

## Additional Components (Ordered Separately)

- N/A

## Procedure – Preparation (Display)

**Important:** This section is only for instances where you are replacing the display. If the display is being re-used, then this section is not required. If the display is unusable due to damage or fault, connect an external monitor to the device to perform these steps.

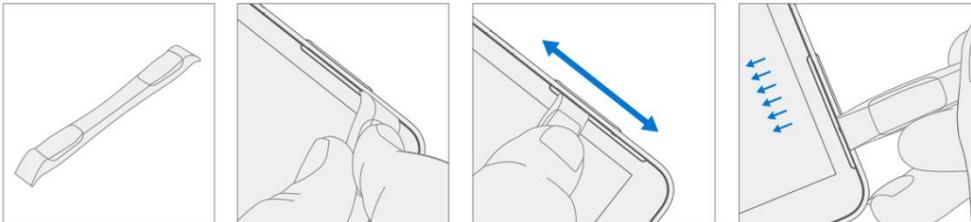
**Important:** Ensure the light levels of your work remain consistent during the software calibration process.

**WARNING: DO NOT** use a heat gun or hair dryer to de-bond the display.

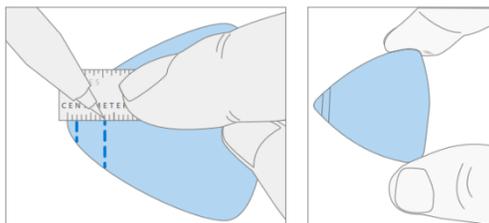
1. **Connect USB** – Connect USB with the Surface Diagnostic Toolkit (SDT) loaded to an available USB port on the device under repair.
2. **Power on device** – Connect a power supply to the device. Press the power button on the device to power the device on. Allow it to boot to the Windows Desktop before continuing.
3. **Launch SDT** – From the Windows Desktop, use Windows Explorer to navigate to the USB drive. Select the SDT executable (.exe) to launch the Surface Diagnostic Toolkit.
4. **Run Touch Display Setup** – From the SDT launch screen, select **Repair** from the drop-down menu. Next, select **Repair Setup and Validation** to enter the selection screen. Run the **Touch Display (Setup)** tool to prepare your device for display replacement. Follow all on-screen instructions and allow the device to shut down when prompted. Disconnect the Power Supply and remove the USB drive before proceeding forward.

## Procedure – Removal (Display Module)

1. **Position Device** – Place the device screen-down on a clean surface.
2. **Remove the Removable Solid-State Drive Door** – Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
3. **Remove the Removable Solid-State Drive** – Remove 1 screw and remove the rSSD. See the Procedure – Removal ([Removable Solid-State Drive](#)) section for detailed instructions.
4. **Remove the speaker meshes** – Close the kickstand and place the device face up on a clean surface. Using the opening pick, or plastic opening tool, widen the gap as shown by pushing the flat edge into the gap and moving it side to side along the device edge at the opening. The speaker mesh may crumple or fold into the device – both results are okay as it will be removed entirely and replaced during installation. Repeat this process for the other speaker’s mesh.

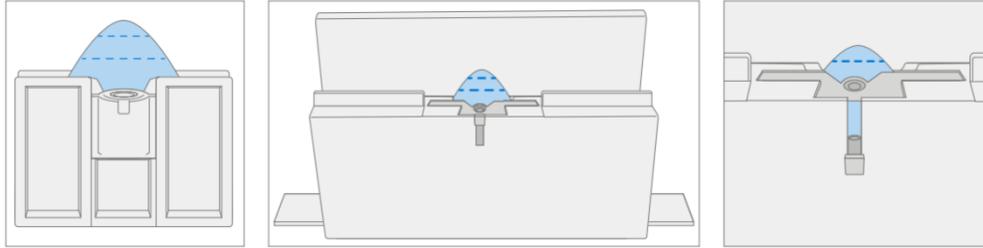


5. **Mark pick depth markers onto opening pick** – Using a metric ruler, draw a mark on the plastic pick at 2mm and 8mm as shown in the image below.

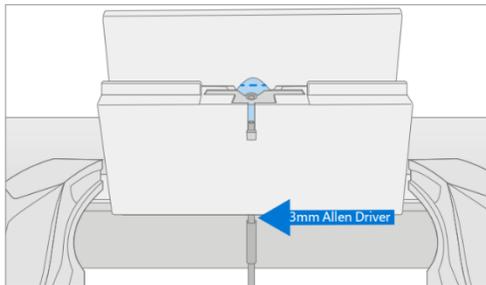


## 6. Prepare the Surface Display Debonding Tool –

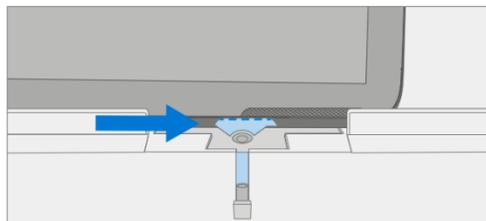
- a. Install the marked pick in the holder with the marks visible. Use a 3mm Allen Driver to adjust the pick height to the 2mm mark.



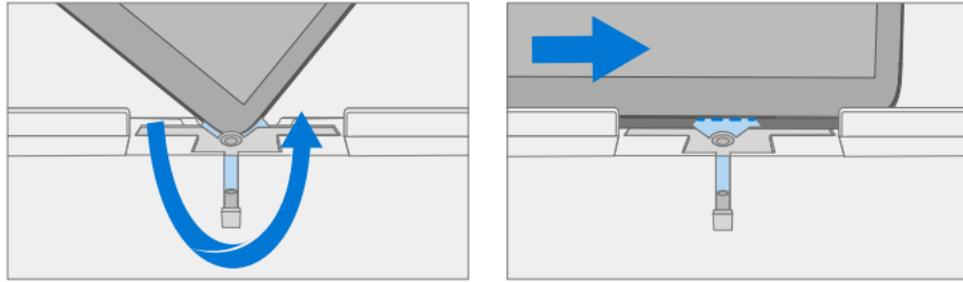
- b. Clamp the debonding tool to the edge of your workbench using a Hand Clamp on each side as shown in the image below. Ensure the cut depth adjust can be accessed while the tool is clamped down. If it cannot be accessed, the clamps will have to be removed to access the bottom of the tool and then re-clamped after adjusting the height.



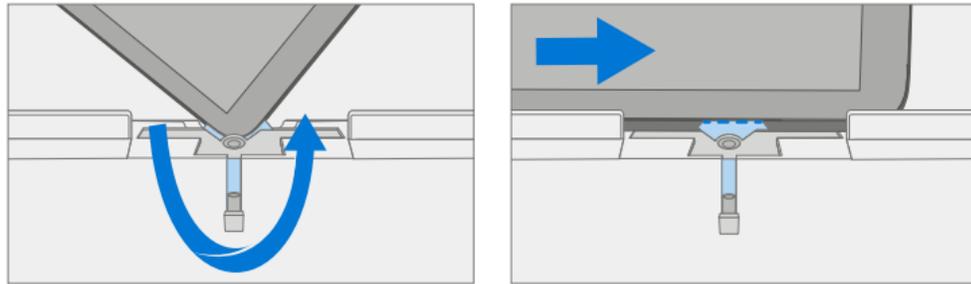
- c. Ensure the pick height is at 2mm before starting. Place the right-side speaker edge of the device in the Surface Debonding Tool just above the marked pick. Ensure the pick enters the gap between the display and the enclosure edge.
- d. While holding the device with both of your hands, push the device to the right through the Surface Debonding Tool track to cut through the right edge of the device. The device may be pushed side-to-side over the pick on this edge to ensure separation between the screen and the device.



- e. When you have reached the **bottom right corner**, rotate the device along the Surface Debonding Tool track. Continue to push the device to the right through the Surface Debonding Tool track to cut through the bottom edge. The device may be pushed side-to-side along this edge to ensure separation between the screen and the device.



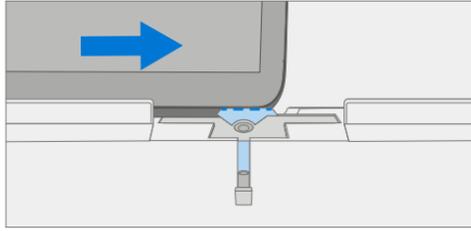
- f. When you have reached the **bottom left corner**, rotate the device again in the Surface Debonding Tool track. Continue to push the device to the right through the Surface Debonding Tool track to cut through the left edge. Continue through the left speaker mesh area. The device may be pushed side-to-side along this edge to ensure separation between the screen and the device.



When you have reached the **top left corner**, rotate the device in the Surface Debonding Tool track. Push the device to the right through the Surface Debonding Tool track to cut through the top edge. It is normal to feel more resistance on the top edge compared to the other edges due to the cameras. Continue to carefully add force and push the device over the pick.



- g. Once you have reached the top right corner, keep the top **left edge** of the device in the Surface Debonding Tool track. Using the 3mm Allen Driver, adjust the pick height to the 8mm mark. Ensure the pick edge stays engaged between the display and the enclosure edge. Push the device back and forth along this edge to ensure separation between the screen and the device. If the Surface Debonding Tool needs to be disassembled to access the pick height adjuster, carefully place the device aside while the pick height is changed to 8mm with the 3mm Allen Driver. Re-clamp the debonding tool and place the device into the debonding tool at the left speaker edge. Push the device towards the top left corner and rotate it to cut through the top edge.

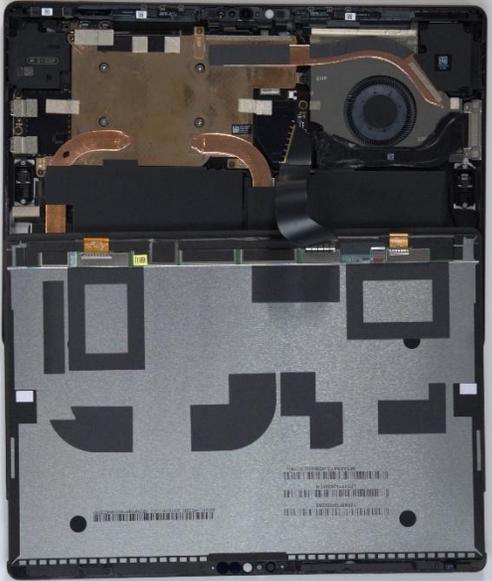


**CAUTION:** Do not insert the pick more than 2mm along the left, right, or bottom edges of the display. The pick depth should not exceed 8mm along the top edge of the display.



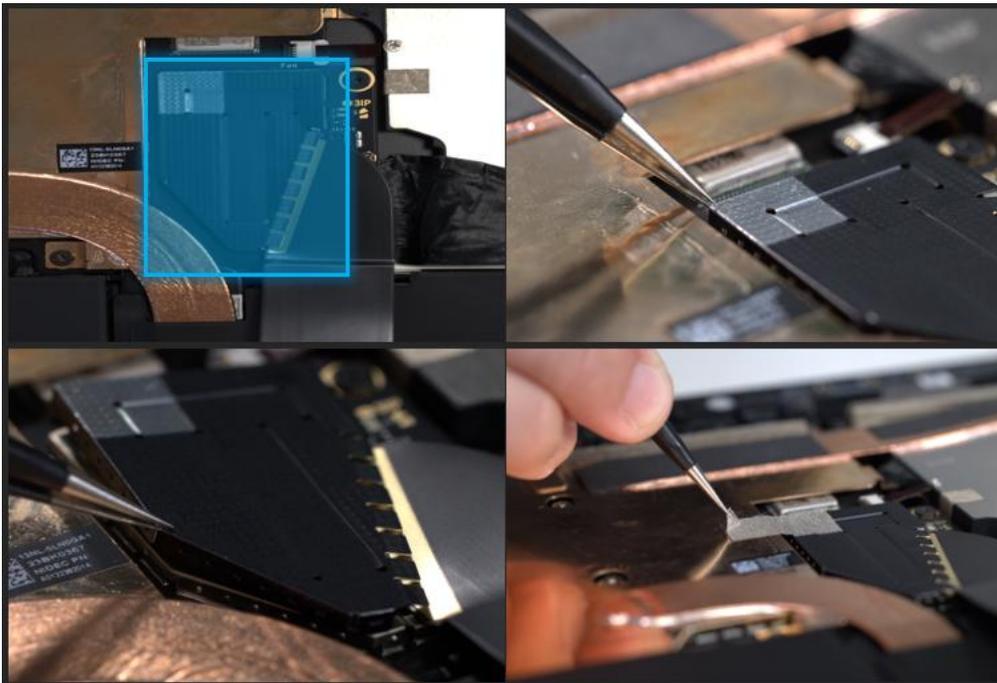
- 7. Separate the Display Module from the enclosure** – Gently pull up vertically on the top edge of the glass with one hand while pushing down on the enclosure to separate the glass. The screen will slowly peel off the device. Be careful when lifting the edges of the display as it is still connected to the device by an FPC connected to the Motherboard. Flip the display so that the glass screen rests on the bottom edge of the device.

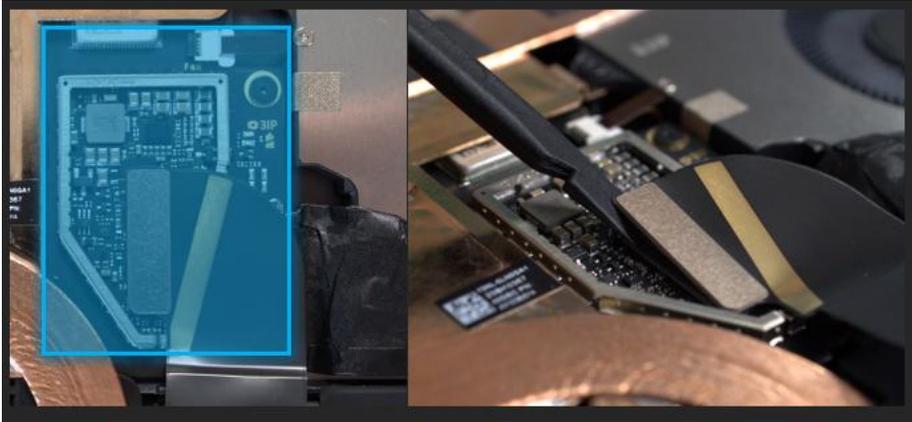
**WARNING:** It is recommended an ESD-safe Surface Battery Cover is placed across the device to protect the battery from any accidental damage during repair. Ensure the corners of the cover are always aligned with the corners of the device during repair. If the battery cover is misaligned during repair in any way, pause and re-align the cover before continuing.



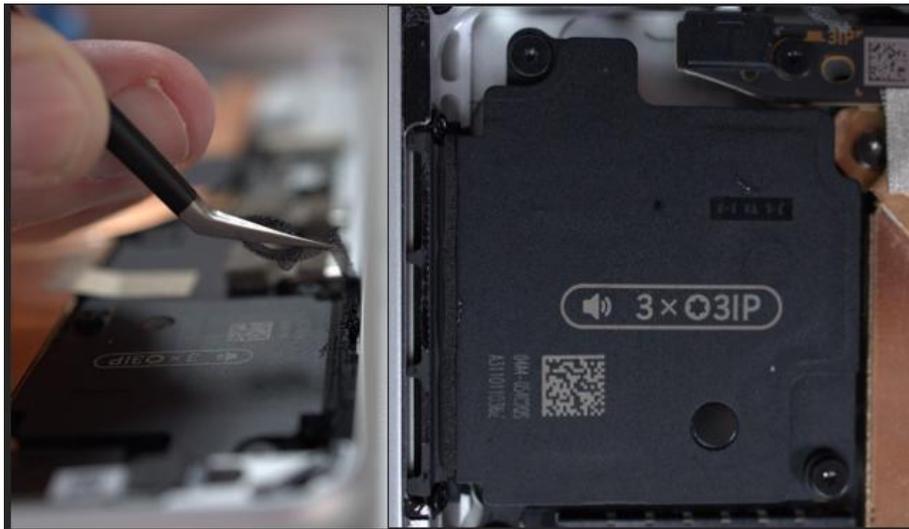
- 8. Disconnect the display connector** - Remove the metallic tape from the shield lid using a pair of ESD-safe tweezers. Next, remove the shield lid on the display connector using the ESD-safe tweezers. Lift at the corners shown below and carefully free the shield lid. Disconnect the display connector by inserting the pointed edge of a Nylon Spudger under the left edge of the connector and peeling the connector off.

**Important:** Do not pull on the Display FPC to disconnect the display.





9. **Remove the speaker mesh and residual adhesive from the enclosure and display** – Inspect the edges of the device and display and remove any adhesive with the Nylon spudger. Remove any remaining speaker mesh from the enclosure. Use the flat end of a nylon spudger to remove it by inserting the spudger between the speaker mesh and the enclosure. Confirm a successful removal of the speaker mesh and its adhesive by verifying the three cutouts of the enclosure are exposed, as shown below.



10. **Remove foams from the NFC** – Locate the NFC in the top-left corner of the device. Using the Nylon spudger, carefully remove 2 foams from the NFC. These will be replaced.



11. **Clean enclosure** - Using IPA and cleaning swabs, clean any residual adhesive from the enclosure edge. Ensure the area around the cameras (top edge) is clean and free of any dust or other contamination. Wipe the area around the camera with a lint-free cloth.

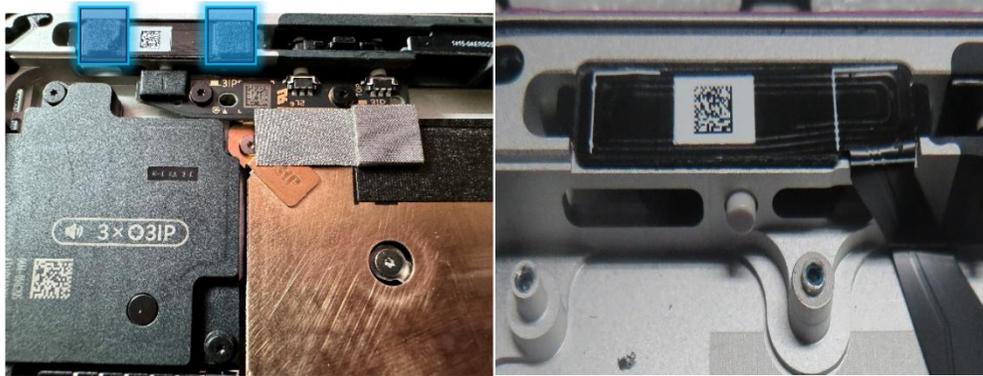
## Procedure – Installation (Display Module)

**Important:** Verify the battery's condition prior to beginning the installation of the display. Devices exhibiting battery issues as outlined in the [Lithium-Ion Battery Inspection](#) section of this guide require whole device replacement.

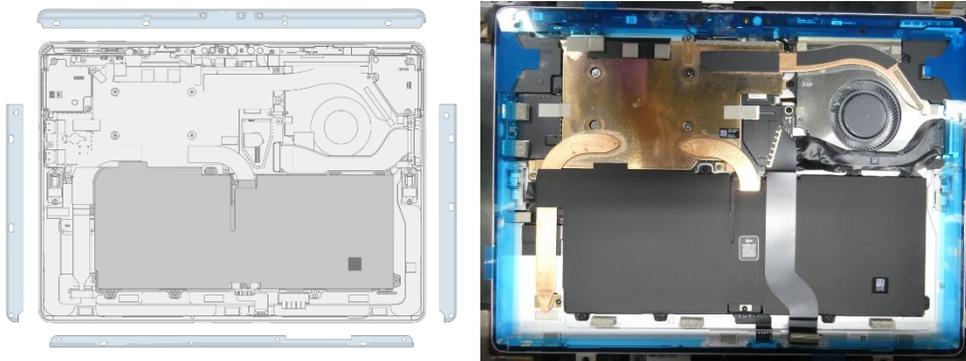
**Important:** Leave the protective cling on the new display during all installation steps to prevent damage to the display panel.

**Important:** Carefully inspect all internal areas of the enclosure for any foreign objects prior to installing the display.

1. **Replace the NFC Foam (if present)** – Locate the NFC in the top-left corner of the enclosure near the power button. Apply 2 new NFC foams as shown in the image below. Align the edges of the foam with the white lines on the module.



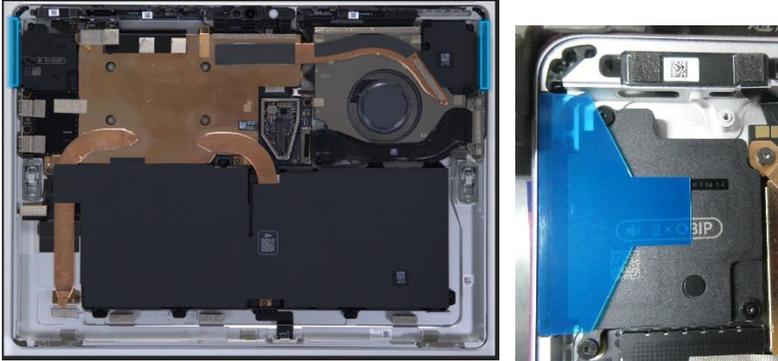
2. **Apply new Display Module adhesive** – After cleaning the enclosure with IPA along the PSA bonding surfaces, wait at least 30 seconds before applying the new PSA strips to allow for the surface to dry completely. Carefully apply the 4 strips of PSA to the enclosure as shown in the image below. Ensure the orientation of the PSA matches the enclosure outline before removing any liners. Align the PSA following the outline on the enclosure. Leave the blue liner on the PSA, as it will be removed at a later step.



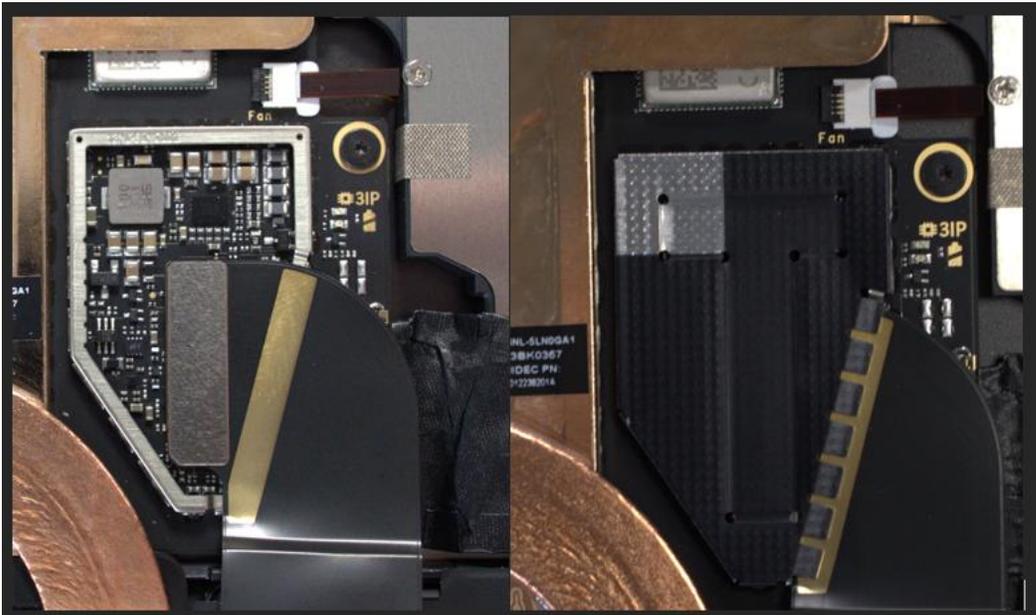
3. **Install new Speaker Mesh** – Perform the following:
  - a. Place the display face-down on a clean ESD safe surface.
  - b. Wipe down the outer edges of the display with a lint-free cloth.
  - c. When re-installing the original display, ensure the outer edges are clean of any PSA residue.
  - d. Remove the protective liner from the Left Speaker Mesh.
  - e. Using the clear handle, align the mesh into the display speaker opening on the right side of the device.
  - f. Press on the mesh for 10 seconds to activate the adhesive.
  - g. Carefully remove the clear handle.

- h. Repeat the process for the Right Speaker Mesh on the other side of the display.

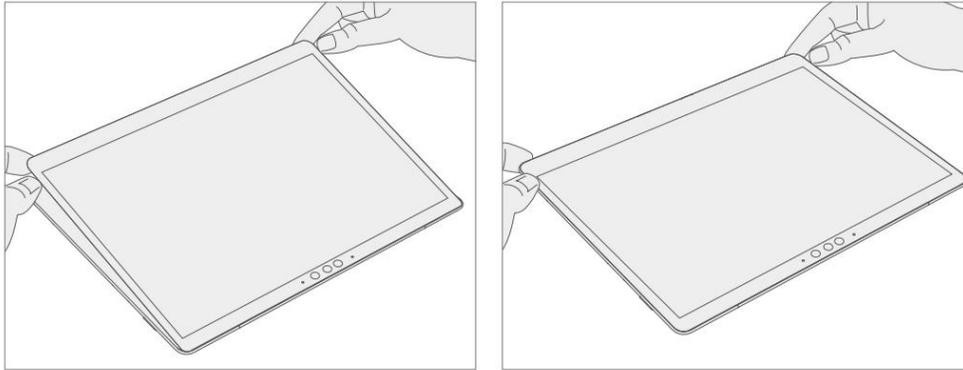
**Important:** As the Display is facing down, the orientation of the Display is flipped vs what it will be when it is applied to the Device. The Left Speaker Mesh is applied to the Right side of the Display, in this orientation, and the Right Speaker Mesh is applied to the left side of the Display. Each Speaker Mesh is designed specifically to fit its specified side.



- 4. **Connect the Display Module connector** – Lay the display on the bottom edge as was done with the display was separated from the enclosure. Reconnect the Display FPC (Flexible Printed Circuit) into the mating connector on the motherboard. Press on the connector to ensure it is fully seated. Install a new shield over the Display FPC. Ensure all edges of the shield are snapped into place by pressing all around the shield edges with your finger. Add a new tape strip to the shield and thermal module by aligning it on the silver part on the shield.

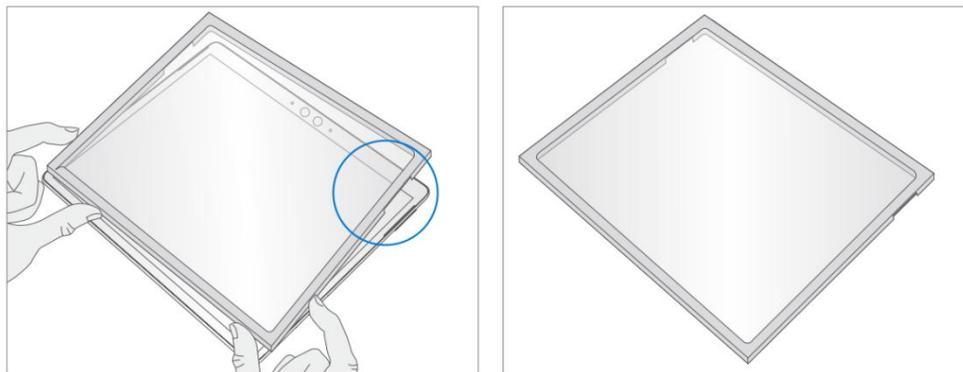


- 5. **Install the Display Module onto the Enclosure** - While holding the display (with the screen facing up), remove the PSA liners from the Enclosure to expose the adhesive on all 4 edges. Align the display along the **bottom** edge first (Toe-in) and lower the rest of the display after alignment is found. Ensure that the glass sits flush in the Enclosure and does not rest anywhere on top of the Enclosure lip.



6. **Bond the adhesive** – Place the Surface Display Bonding Frame on the device, ensuring that the cutouts on the sides line up with the buttons. Place a foam pad over the bonding frame. Place 32 kg of weight on top of the foam pad and bonding frame. Leave weight in place for 2 minutes to ensure PSA activation.

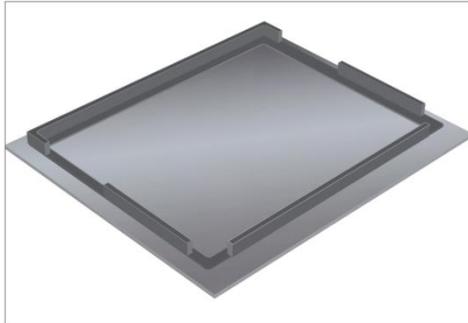
**Important:** Weight requirements can be found in the [Tool](#) section of this document. It is critical that the exact requirements are met (both weight, layout, and material) to ensure proper Display adhesion to the Enclosure.



**a. Ruck Weight Configuration –**



**b. Steel Shot Bag Configuration –**



Foam pad with bonding fram face down



Place device display side down into bonding frame



Place 9 kg steel shot bag onto device



Place 14 kg steel shot bag onto device  
Bond for 1 minute



Place second 9 kg steel shot bag onto 14kg bag  
Bond for 5 minutes



Shift second 9 kg steel shot bag to top edge of the device  
Bond for 3 minutes

7. **After bonding inspection** - Remove the weighted items from the device. Lift the device carefully out of the frame to avoid damage. Inspect the display for scratches, cracks, large gaps, and ensure it is flush to the enclosure.
8. **Install Removable Solid-State Drive** – Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled **3IP** .Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.
9. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.
10. **Power on device to the Windows Desktop** – Connect the device to power and press the power button. Allow the device to boot to the Windows Desktop before moving to the Procedure – Finalize (Display Module) section.

## Procedure – Finalize (Display Module)

**Important:** This section is only for instances where you are replacing the display. If the display is being re-used, then this section is not required. If display is unusable due to damage or fault, connect an external monitor to the device to perform these steps.

1. **Connect USB** – Connect USB with the Surface Diagnostic Toolkit (SDT) loaded to an available USB port on the device under repair.
2. **Launch SDT** – From the Windows Desktop, use Windows Explorer to navigate to the USB drive. Select the SDT executable (.exe) to launch the Surface Diagnostic Toolkit.
3. **Run Touch Display Calibration** – From the SDT launch screen, select **Repair** from the drop-down menu. Next, select **Repair Setup and Validation** to enter the selection screen. Run the **Touch Display (Calibration)** tool to calibrate your new display. Follow all on-screen instructions and allow the device to restart when prompted.

**Important:** If the calibration fails, reboot the device, and attempt again. If the failure continues, then the display may be faulty and require replacement.

4. **Launch SDT** – Once the device has rebooted and is at the Windows Desktop, use Windows Explorer to navigate to the USB drive. Select the SDT executable (.exe) to launch the Surface Diagnostic Toolkit.
5. **Run the Surface Diagnostic Toolkit (SDT)** – Run all diagnostics to ensure the device is functioning as expected before moving forward.
6. **Final inspection** - Remove the protective cling from the display. Verify the side edges of the display are still flush, and that there are no obvious steps/gaps between the Display and the Enclosure. Wipe the device thoroughly (including under the kickstand) with a microfiber cloth to remove any fingerprints.

# Surface Connect Replacement Process

## Preliminary Requirements

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

## Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)
- [ESD-safe Surface Battery Cover - iFixit](#)

## Primary Components

- Surface Connect (Refer to [Illustrated Service Parts List](#))
  - 1 x Surface Connect Port Cable
  - 2 x (M1.4 X .3 x 1.7) (Surface Connect Screws), **3IP**
    - Part Number – 13NL-5JN1M01/02
  - 1 x M 1.2 \* L1.5 3IP (SSD Screw), **3IP**
    - Part Number – 13NL-5JN0V01/02
  - 1 x TDM Shield lid – 13NL-5LN0H01
  - 1 x TDM PSA Top – 13NL-5LUA41/43
  - 1 x TDM PSA Right – 13NL-5LU0441/43
  - 1 x TDM PSA Left – 13NL-5LU0741/43
  - 1 x TDM PSA Bottom – 13NL-5LU0961/63
  - 1 x Left Speaker Mesh – 13NL-5LU0532/33
  - 1 x Right Speaker Mesh – 13NL-5LU0842/43
  - 1 x Shielding tape – 13NL-5JU1501/02
  - 2 x NFC foam – 13NL-5MU1A01

## Additional Components (Ordered Separately)

- N/A

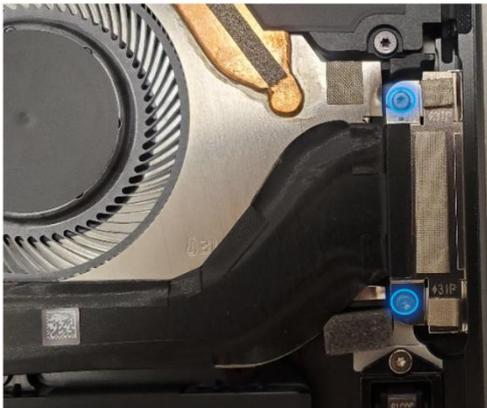
### Procedure – Removal (Surface Connect)

1. **Remove the Removable Solid-State Drive Door** – Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
2. **Remove the Removable Solid-State Drive** – Remove 1 screw and the rSSD. Refer to the [Procedure – Removal \(Removable Solid-State Drive\)](#) section for detailed instructions.
3. **Remove the Display Module** – Using the Surface Debonding Tool, de-bond the display. Remove 1 shielding tape, 2 NFC foams and 1 shield lid and disconnect the FPC. Refer to the [Procedure – Removal \(Display Module\)](#) section for detailed instructions.
4. **Disconnect the Surface Connect Port connector from the Motherboard** - Use the plastic opening tool to release the locking bar and disconnect the Surface Connect Port connector from the Motherboard.

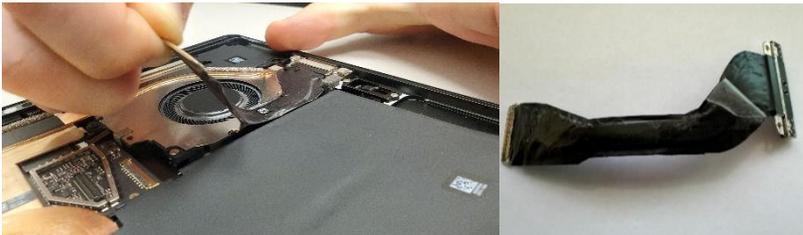


5. **Remove the Surface Connect Port screws** – Use a 3IP (Torx-plus) driver to remove both Surface Connect Port screws labelled with **43IP**.

**Important:** The Surface Connect Port is magnetized, be careful not to let the screws stick to it during removal.



6. **Remove the Surface Connect Port cable** – Gently peel the Surface Connect Port up from the chassis from left to right. Clean any residual adhesive left behind on the thermal module with IPA and a cleaning swab. When reusing the Surface Connect, peel off the residual adhesive from the Surface Connect.

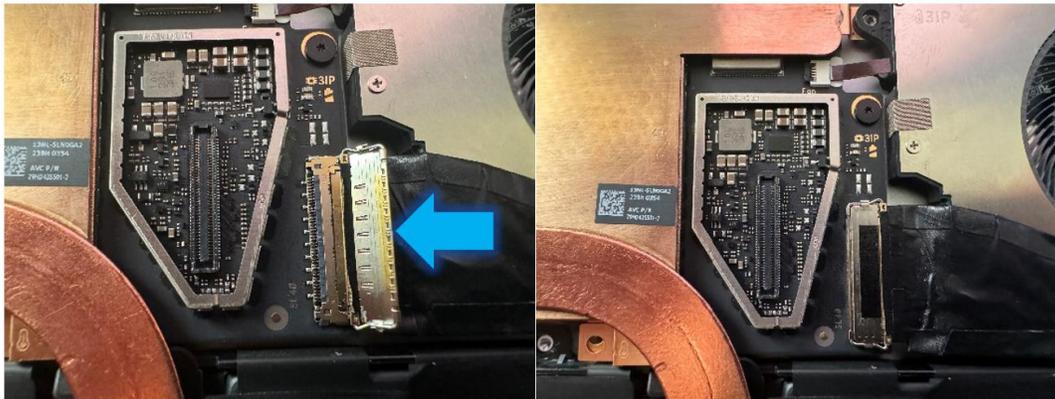


## Procedure – Installation (Surface Connect Port)

1. **Apply Surface Connect Adhesive (Re-use only)** - If reusing the Surface Connect Port, apply the sheet of adhesive (Part Number 13NL-5JU2Z01) to the back of the cable. Align the curved edge as shown to the cable. Do not remove the bottom liner yet.

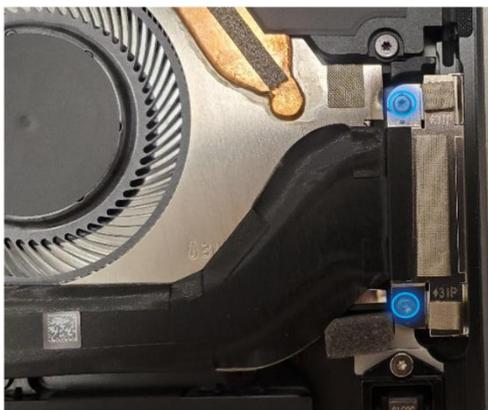


2. **Connect Surface Connect Port cable to the Motherboard** - Connect the Surface Connect Port cable to the motherboard by inserting the connector from the right. Press down on the locking buckle to secure the connection.



3. **Install Surface Connect Port screws** – Insert the port into the enclosure on the right with a toe-in. Use a 3IP (Torx-plus) driver to install 2 screws labelled **3IP** until they are just snug and seated. Turn each screw another 45 degrees (1/8 turn) until fully fastened.

**Important:** The Surface Connect Port is magnetized, be careful not to let the screws stick to it during removal.



4. **Remove Surface Connect Port cable liner and install** - Remove the Surface Connect Port cable liner to expose the adhesive. Press down on the cable from left to right to glue the cable in place. Keep pressing along the cable to get rid of any bumps.



5. **Install the Display Module** – Install 2 new NFC foams. Reconnect the display FPC and install a new shield and shield tape on top. Align new PSA strips and install new speaker meshes on the display. Align the display on the bottom edge and press onto device. Use bonding frame tool to apply weight. Refer to the [Procedure – Installation \(Display Module\)](#) section for detailed instructions.
6. **Install the Removable Solid-State Drive** – Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled **3IP** .Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.
7. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.
8. **Power on device** – Carefully place device screen side up. Connect the device to a power supply, open display, and power on to the Windows desktop screen.
9. **Run the Surface Diagnostic Toolkit (SDT)** - Run SDT’s full diagnostic test to ensure device functions as expected.
10. **Power down device** – Power down device using the OS start menu.

# Speakers Replacement Process

## Preliminary Requirements

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

## Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)
- [ESD-safe Surface Battery Cover - iFixit](#)

## Primary Components

- Speakers (Refer to [Illustrated Service Parts List](#))
  - 1 x Left Speaker
    - Part Number - 04A4-054C2QS
  - 1 x Right Speaker
    - Part Number - 04A4-054B2QS
  - 6 x M1.4\*L1.9 3IP (L&R Speaker Screws),  **3IP**
    - Part Number – 13NL-5LN0B01/03
  - 1 x M 1.2 \* L1.5 3IP (SSD Screw),  **3IP**
    - Part Number – 13NL-5JN0V01/02
  - 1 x TDM Shield lid – 13NL-5LN0H01
  - 1 x TDM PSA Top – 13NL-5LUA41/43
  - 1 x TDM PSA Right – 13NL-5LU0441/43
  - 1 x TDM PSA Left – 13NL-5LU0741/43
  - 1 x TDM PSA Bottom – 13NL-5LU0961/63
  - 1 x Left Speaker Mesh – 13NL-5LU0532/33
  - 1 x Right Speaker Mesh – 13NL-5LU0842/43
  - 1 x Shielding tape – 13NL-5JU1501/02
  - 2 x NFC foam – 13NL-5MU1A01

## Additional Components (Ordered Separately)

- N/A

### Procedure – Removal (Speakers)

1. **Remove the Removable Solid-State Drive Door** – Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
2. **Remove the Removable Solid-State Drive** - Remove 1 screw and remove the rSSD. Refer to the [Procedure – Removal \(Removable Solid-State Drive\)](#) section for detailed instructions.
3. **Remove the Display Module** – Using the Surface Debonding Tool, de-bond the display. Remove 1 shielding tape, 2 NFC foams and 1 shield lid and disconnect the FPC. Refer to the [Procedure – Removal \(Display Module\)](#) section for detailed instructions.
4. **Remove screws from left speaker** – Using a 3IP (Torx-plus) drive, remove the three marked screws from the left speaker and lift out of the enclosure.



5. **Remove screws from right speaker** – Using a 3IP (Torx-plus) drive, remove the three marked screws from the right speaker and lift out of the enclosure. **DO NOT** remove the Graphite sheet – bend it as needed to access the speaker.



### Procedure – Installation (Speakers)

1. **Insert the Left Speaker** – Place the left speaker into the enclosure making sure to align the screw holes on the speaker with the holes in the enclosure. Using a 3IP (Torx-plus) driver, install 3 screws from the bag labelled with **3IP** , turning each screw until finger tight then tighten each by an additional 1/8<sup>th</sup> turn (45-degrees).



2. **Install the Right Speaker** – Place the right speaker into the enclosure making sure to align the screw holes on the speaker with the holes in the enclosure. Using a 3IP (Torx-plus) driver, install 3 screws from the bag labelled with **3IP** , turning each screw until finger tight then tighten each by an additional 1/8<sup>th</sup> turn (45-degrees). **DO NOT** remove the Graphite sheet – bend it as needed to access the speaker.



3. **Install the Display Module** - Install 2 new NFC foams. Reconnect the display FPC and install a new shield and shield tape on top. Align new PSA strips and install new speaker meshes on the display. Align the display on the bottom edge and press onto device. Use bonding frame tool to apply weight. Refer to the [Procedure – Installation \(Display Module\)](#) section for detailed instructions.
4. **Install the Removable Solid-State Drive** – Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled **3IP** .Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.
5. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.
6. **Power on device** – Carefully place device screen side up. Connect the device to a power supply, open display, and power on to the Windows desktop screen.
7. **Run the Surface Diagnostic Toolkit (SDT)** - Run SDT's full diagnostic test to ensure device functions as expected.
8. **Power down device** – Power down device using the OS start menu.

# Buttons Replacement Process

## Preliminary Requirements

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

## Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)
- [ESD-safe Surface Battery Cover - iFixit](#)

## Primary Components

- Buttons (Refer to [Illustrated Service Parts List](#))
  - 1 x Buttons PCBA
    - Part Number - 69NL5LD10A01
  - 1 x Power button
    - Platinum Part Number - 13NL-5LQ0701
    - Graphite Part Number - 13NL-5LQ0A01
  - 1 x Volume button
    - Platinum Part Number - 13NL-5LQ0B01
    - Graphite Part Number - 13NL-5LQ0E01
  - 1 x Power and Volume Retaining Clip
    - Part Number - 13NL-5LQ0F01
  - 2 x M1.4\*L1,9 3IP (Button PCBA Screws), **3IP**
    - Part Number - 13NL-5LN0B01/03
  - 1 x M 1.2 \* L1.5 3IP SSD Screw, **3IP**
    - Part Number – 13NL-5JN0V01/02
  - 1 x VC gasket - 13NL-5LU0D11
  - 1 x VC gasket (OLED) – 13NL-5MU0L21
  - 1 x NFC PSA - 13NL-5MU1B01
  - 1 x TDM Shield lid – 13NL-5LN0H01
  - 1 x TDM PSA Top – 13NL-5LUA41/43
  - 1 x TDM PSA Right – 13NL-5LU0441/43

- 1 x TDM PSA Left – 13NL-5LU0741/43
- 1 x TDM PSA Bottom – 13NL-5LU0961/63
- 1 x Left Speaker Mesh – 13NL-5LU0532/33
- 1 x Right Speaker Mesh – 13NL-5LU0842/43
- 1 x Shielding tape – 13NL-5JU1501/02
- 2 x NFC foam – 13NL-5MU1A01

**Additional Components (Ordered Separately)**

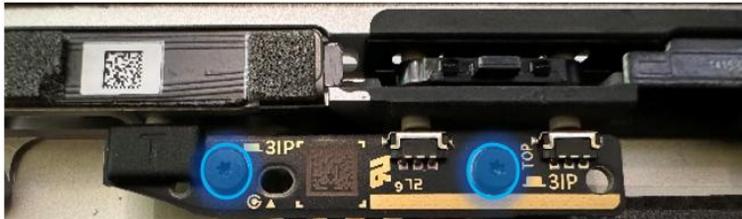
- N/A

**Procedure – Removal (Buttons)**

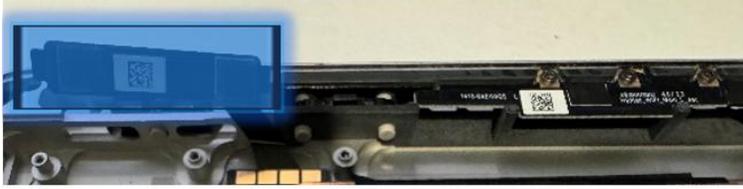
1. **Remove the Removable Solid-State Drive Door** – Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
2. **Remove the Removable Solid-State Drive** - Remove 1 screw and remove the rSSD. Refer to the [Procedure – Removal \(Removable Solid-State Drive\)](#) section for detailed instructions.
3. **Remove the Display Module** – Using the Surface Debonding Tool, de-bond the display. Remove 1 shielding tape, 2 NFC foams and 1 shield lid and disconnect the FPC. Refer to the [Procedure – Removal \(Display Module\)](#) section for detailed instructions.
4. **Remove the tape and foam** – Locate and remove the tape and foam that stretches between the button PCB and Thermal Module. Clean any residual tape from the thermal module with IPA and cleaning swabs.



5. **Remove Buttons PCBA Screws** – Using a 3IP (Torx-Plus) driver, remove the 2 screws as shown in the image below (yellow circles) that are labelled with **3IP**. Once removed, lift the button board out of the device. If the button board is being reused, clean any residual tape from the board with IPA and cleaning swabs.



6. **Peel back the NFC module** – Using a Nylon Spudger, carefully peel back the NFC module to expose the buttons. **DO NOT** remove the NFC module. Carefully clean the PSA off the bottom of the NFC with IPA and cleaning swabs.



7. **Remove the Button clips** – Using a Nylon Spudger or a pair of ESD-Safe Tweezers, get under the edge of the button clip and leverage them up until the clip pops out. Remove both clips.

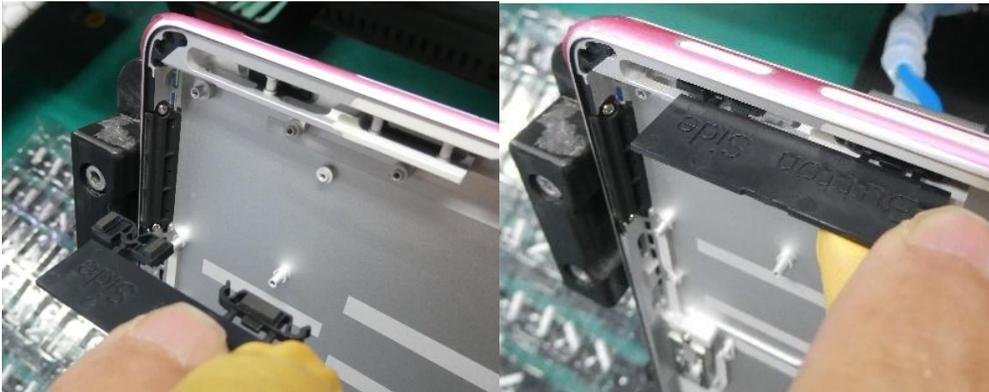


8. **Remove the Buttons** - Using a Nylon Spudger or a pair of tweezers, push on the button posts to remove the buttons from the enclosure.



#### Procedure – Installation (Buttons)

1. **Insert the new buttons** – Using your fingers, insert the button posts into enclosure from the outside. Ensure the button posts align with the holes in the enclosure.
2. **Install the button retention clip** – Align the clip on top of the button posts and press down until it clicks in place. Ensure the “Button Side” faces the top edge of the device as shown below. You will hear an audible click once the buttons are captured in the enclosure.



3. **Remove the plastic tab** – Bend the plastic tab front to back repeatedly until it breaks off from the clips.



4. **Reinstall the NFC Module and Foams (if present)** – Install the PSA liner (13NL-5MU1B01) to the backside of the NFC module and press the NFC module back into the Enclosure. The PSA should sit behind the tab at the end and line up with the width of the module as shown below.



5. **Install the button PCB** – Insert the button PCB into the device, aligning the 2 screw holes with the screw bosses. Using a 3IP (Torx-plus) driver, install the two screws marked below with **3IP**, turning each screw until finger tight, then tighten each by an additional 1/8<sup>th</sup> turn (45-degrees).



6. **Install tapes and foams** – Remove the liner from the new VC gasket (13NL-5LU0D11) and install it on the button PCB and thermal module. The top edge of the tape should align and cover the gold line on the PCB as shown.



7. **Install the Display Module** - Install 2 new NFC foams. Reconnect the display FPC and install a new shield and shield tape on top. Align new PSA strips and install new speaker meshes on the display. Align the display on the bottom edge and press onto device. Use bonding frame tool to apply weight. Refer to the [Procedure – Installation \(Display Module\)](#) section for detailed instructions.
8. **Install the Removable Solid-State Drive** – Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled **3IP**. Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.
9. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.

10. **Power on device** – Carefully place device screen side up. Connect the device to a power supply, open display, and power on to the Windows desktop screen.
11. **Run the Surface Diagnostic Toolkit (SDT)** - Run SDT's full diagnostic test to ensure device functions as expected.
12. **Power down device** – Power down device using the OS start menu.

## Thermal Module + Fan Replacement Process

### Preliminary Requirements

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

### Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)
- [ESD-safe Surface Battery Cover - iFixit](#)

### Primary Components

- Thermal Module (Refer to [Illustrated Service Parts List](#))
  - 8 x M1.4\*L1.9 3IP (Thermal Module screws), **⓪3IP-1**
    - Part Number – 13NL-5JN0Z01/02
  - 1 x M1.4\*L2 3IP (Fan Screw), **⓪3IP-2**
    - Part Number – 13NL-5JN1111/12
  - 1 x M1.6\*L2.9 3IP (Battery side screw), **⓪3IP-3**
    - Part Number – 13NL-5LN1001/03
  - 4 x M1.2\*1.8L 3IP (CPU Bracket screws), **⓪3IP-4**
    - Part Number – 13NL-5EU1K01/02
  - 2 x M1.4\*L1,9 3IP (Button PCBA Screws), **■3IP**
    - Part Number - 13NL-5LN0B01/03
  - 2 x (M1.4 X .3 x 1.7) (Surface Connect Screws), **⚡3IP**
    - Part Number – 13NL-5JN1M01/02
  - 1 x M 1.2 \* L1.5 3IP (SSD Screw), **■3IP**
    - Part Number – 13NL-5JN0V01/02
  - 1 x VC tape – 13NL-5LU0E11

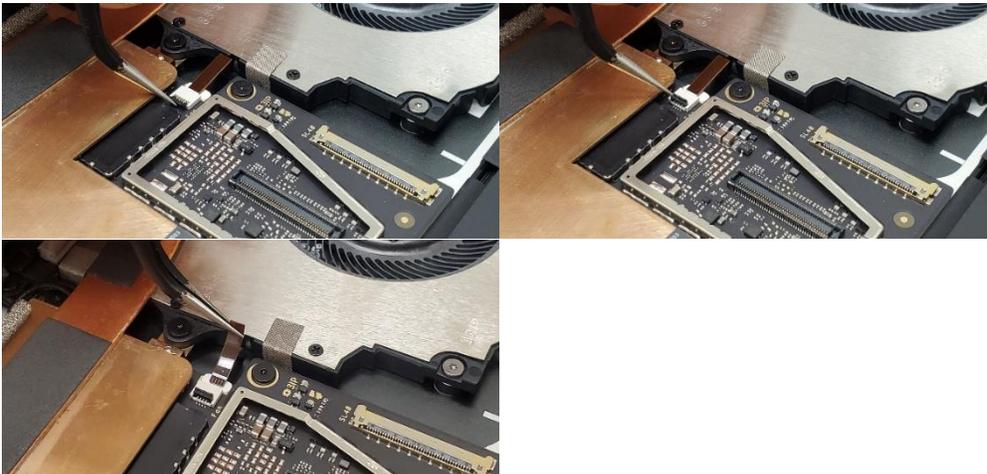
- 1 x VC tape (OLED) – 13NL-5MU0K21
- 1 x Surface Connect PSA – 13NL-5JU2Z01
- 1 x VC gasket – 13NL-5LU0D11
- 1 x VC gasket (OLED) – 13NL-5MU0L21
- 1 x VC tape – 13NL-5LU0E11
- 1 x TDM Shield lid – 13NL-5LN0H01
- 1 x TDM PSA Top – 13NL-5LUA41/43
- 1 x TDM PSA Right – 13NL-5LU0441/43
- 1 x TDM PSA Left – 13NL-5LU0741/43
- 1 x TDM PSA Bottom – 13NL-5LU0961/63
- 1 x Left Speaker Mesh – 13NL-5LU0532/33
- 1 x Right Speaker Mesh – 13NL-5LU0842/43
- 2 x Shielding tape – 13NL-5JU1501/02
- 2 x NFC foam – 13NL-5MU1A01

#### Additional Components (Ordered Separately)

- N/A

#### Procedure – Removal (Thermal Module + Fan)

1. **Remove the Removable Solid-State Drive Door** – Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
2. **Remove the Removable Solid-State Drive** - Remove 1 screw and remove the rSSD. Refer to the [Procedure – Removal \(Removable Solid-State Drive\)](#) section for detailed instructions.
3. **Remove the Display Module** – Using the Surface Debonding Tool, de-bond the display. Remove 1 shielding tape, 2 NFC foams and 1 shield lid and disconnect the FPC. Refer to the [Procedure – Removal \(Display Module\)](#) section for detailed instructions.
4. **Remove the Surface Connect Port Cable** – Remove 2 screws ( **⚡3IP** ) and peel the Surface Connect off the thermal module. Refer to the [Procedure – Removal \(Surface Connect Port\)](#) section for detailed instructions.
5. **Remove the button PCB and gasket** – Remove 2 screws ( **■3IP** ) and the tape and foam spreading across the button board and thermal module. Remove the button board from the device but leave the buttons in place. Refer to the [Procedure – Removal \(Buttons\)](#) section for detailed instructions.
6. **Disconnect the fan from the Motherboard** – Using tweezers, lift the tab and pull the FPC out from the connector on the motherboard.



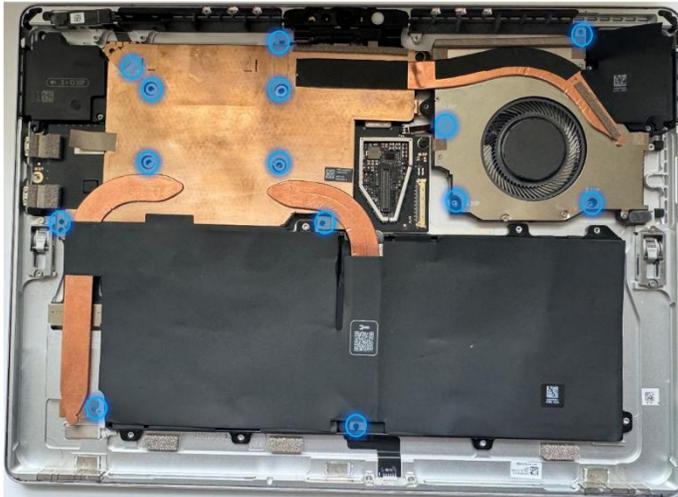
7. **Remove Shielding Tape** – Using a set of ESD-Safe Tweezers, remove the shielding tape beneath the left speaker as shown. Be careful not to remove the shield from underneath using a Nylon spudger to hold it down.



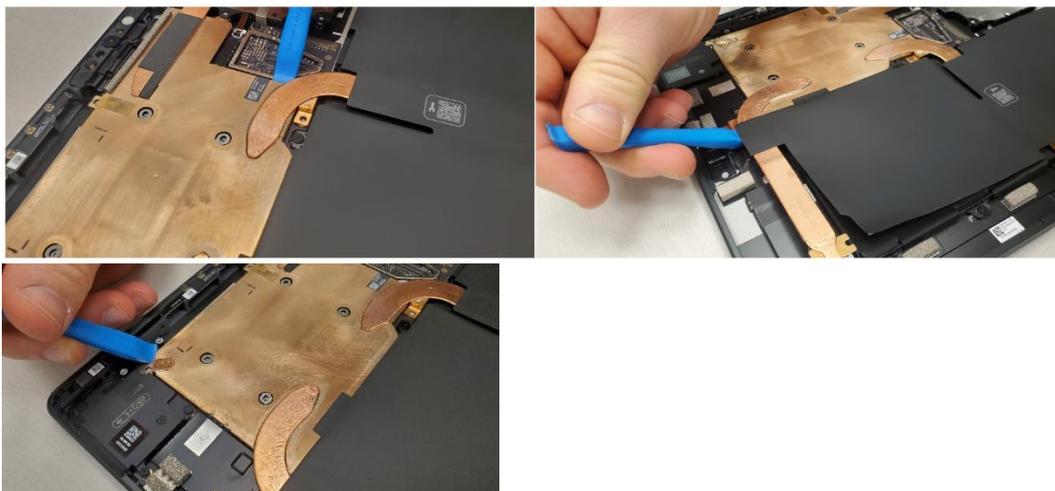
8. **Remove tapes and foams from the top edge** - Using a set of ESD-Safe Tweezers, remove the VC tape.



9. **Remove Thermal Module screws** – Use a 3IP (Torx-Plus) driver to remove the 14 screws securing the thermal module to the motherboard, designated with **3IP** and **3** in the device next to the screws. Use caution to not lose any screws in the enclosure during removal as they are not captive.



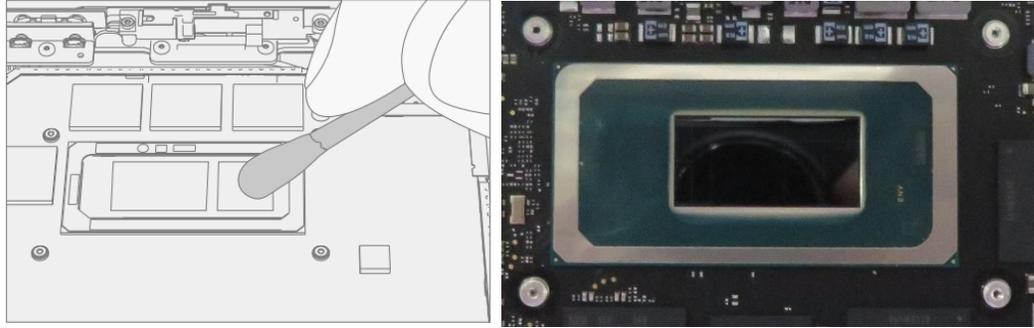
10. **Release the Thermal Module from the Motherboard** – Using the plastic opening tool, apply light pressure under each edge to slowly free the main plate from the thermal material underneath.



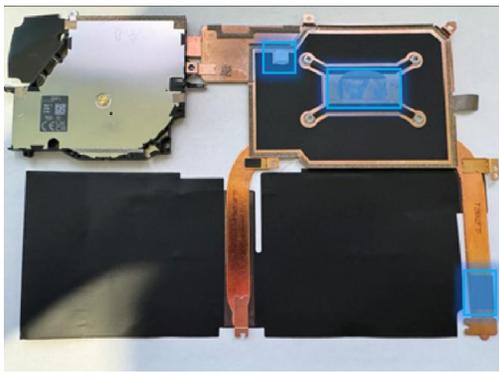
- 11. Lift and remove Thermal Module from Enclosure** – While gripping the Thermal Module at the specific points shown below, slowly lift and twist clockwise to free it from the enclosure. Do not damage or wrinkle the Graphite sheets.



- 12. Clean any Thermal Interface Material from the Motherboard** – Using a Nylon Spudger, scrap any remaining Thermal Interface Material from the Motherboard. Use IPA and Cleaning Swabs to clean any residual Thermal Interface Material.

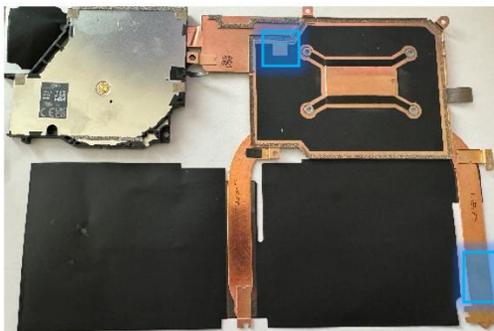


13. **Clean any Thermal Interface Material from the thermal module (Re-use only)** – If the thermal module is being reused, using a Nylon Spudger, scrap any remaining Thermal Interface Material from the locations circled below. Use IPA and Cleaning Swabs to clean any residual Thermal Interface Material.



**Procedure – Installation (Thermal Module + Fan)**

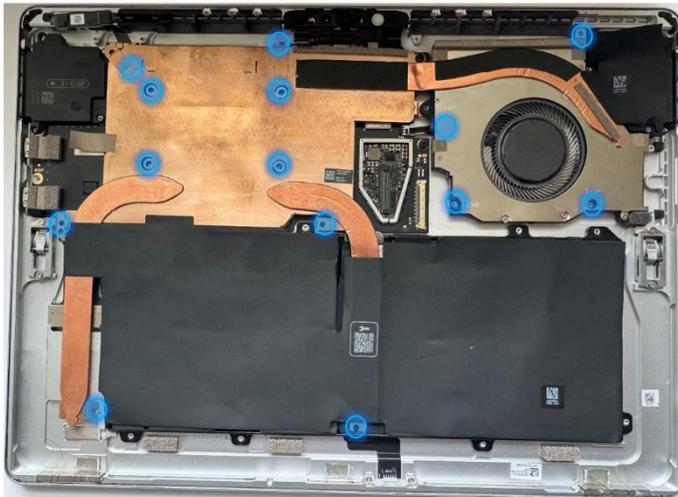
1. **Apply new Thermal Pads (Re-use only)** – This step is only required if you are re-using the original Thermal Module. If you are installing a new Thermal Module, skip this step and begin with Step 2.
  - a. Apply the VC pad (13NL-5MU1001) and the HP pad (13NL-5MU0Y01) to the back of the thermal module as shown in the image below. Follow the indentations and grooves to ensure pads are installed in the correct places.



- b. Apply the CPU pad (13NL-5LU0Q01) to the center of the main chip on the motherboard as shown below. Remove the plastic liner from all pads when ready to install the thermal module.



2. **Install the Thermal Module** – Align the thermal module and fan to the screw holes on the motherboard. Gently lower the Thermal Module into place. Fasten the screws in the order of the dash numbers, starting with the  $\varnothing$ 3IP-1 screws and working your way to end with the  $\varnothing$ 3IP-4 screws. The order for each screw is shown below. Note: The  $\varnothing$ 3IP-4 screws around the main chip on the motherboard are installed in an “x” pattern.



**Important:** The Thermal Module is very fragile. Take extra care not to bend or twist the Thermal Module + Fan assembly. If any part of the Thermal Module or its heat pipes are bent, then the whole module must be replaced.

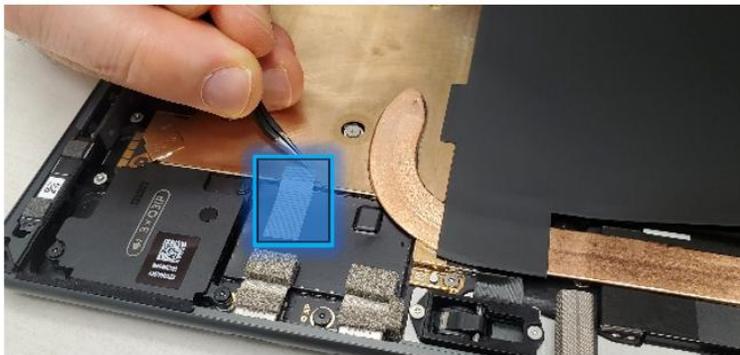
3. **Install the Tape and Foams near button board** – Install the tape with two foams (VC tape – 13NL-5LU0E11), following the markings on the Thermal Module as shown. Begin by lining up the tape on the thermal module side with the Graphite lines, and then wrap the tape around the edge and stick the rest on the bucket. The bucket has etching to show where the tape will end up.



4. **Connect the Fan to the Motherboard** – Ensure the fan connector locking tab is up. Slide the Fan cable into the connector on the Motherboard. Press down on the locking tab to secure it. The FPC should slide in until the white lines are covered.



5. **Install Shielding Tape** – Using a set of ESD-Safe Tweezers, install the shielding tape beneath the left speaker as shown. Use the silver cutout on the shield as your starting point for the tape.



6. **Install the button PCB and gasket** – Install the button PCB and secure with 2 screws ( **3IP** ). Assemble the tape and foam (VC gasket - 13NL-5LU0D11) spreading across the button board and thermal module. Refer to the [Procedure – Installation \(Buttons\)](#) section for detailed instructions.
7. **Install the Surface Connect Port** – Apply the new Surface Connect PSA on the cable. Insert the cable into the enclosure and connect it to the motherboard. Secure with 2 screws ( **43IP** ). Refer to the [Procedure – Installation \(Surface Connect Port\)](#) section for detailed instructions.
8. **Install the Display Module** - Install 2 new NFC foams. Reconnect the display FPC and install a new shield and shield tape on top. Align new PSA strips and install new speaker meshes on the display. Align the display on the bottom edge and press onto device. Use bonding frame tool to apply weight. Refer to the [Procedure – Installation \(Display Module\)](#) section for detailed instructions.
9. **Install the Removable Solid-State Drive** – Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled **3IP** . Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.
10. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.

11. **Power on device** – Carefully place device screen side up. Connect the device to a power supply, open display, and power on to the Windows desktop screen.
12. **Run the Surface Diagnostic Toolkit (SDT)** - Run SDT's full diagnostic test to ensure device functions as expected.
13. **Power down device** – Power down device using the OS start menu.

## Microphone Module Replacement Process

### Preliminary Requirements

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

### Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)
- [ESD-safe Surface Battery Cover - iFixit](#)

### Primary Components

- Microphone Module (Refer to [Illustrated Service Parts List](#))
  - 4 x M1.2\*L2.7 3IP (Mic deck screws), **⚡3IP**
    - Part Number - 13NL-5LN0E01/03
  - 8 x M1.4\*L1.9 3IP (Thermal Module screws), **@3IP-1**
    - Part Number – 13NL-5JN0Z01/02
  - 1 x M1.4\*L2 3IP (Fan Screw), **@3IP-2**
    - Part Number – 13NL-5JN1111/12
  - 1 x M1.6\*L2.9 3IP (Battery side screw), **@3IP-3**
    - Part Number – 13NL-5LN1001/03
  - 4 x M1.2\*1.8L 3IP (CPU Bracket screws), **@3IP-4**
    - Part Number – 13NL-5EU1K01/02
  - 2 x M1.4\*L1,9 3IP (Button PCBA Screws), **■3IP**
    - Part Number - 13NL-5LN0B01/03
  - 2 x (M1.4 X .3 x 1.7) (Surface Connect Screws), **⚡3IP**
    - Part Number – 13NL-5JN1M01/02
  - 1 x M 1.2 \* L1.5 3IP (SSD Screw), **■3IP**

- Part Number – 13NL-5JN0V01/02
- 1 x Camera Shield Lid – 13NL-5LN0721
- 1 x Camera Shield Lid – 13NL-5LN0K01
- 1 x T-putty Syringe - 1330-00360QS
- 1 x Surface Connect PSA – 13NL-5JU2Z01
- 1 x VC gasket – 13NL-5LU0D11
- 1 x VC gasket (OLED) – 13NL-5MU0L21
- 1 x VC tape – 13NL-5LU0E11
- 1 x VC tape (OLED) – 13NL-5MU0K21
- 1 x TDM Shield lid – 13NL-5LN0H01
- 1 x TDM PSA Top – 13NL-5LUA41/43
- 1 x TDM PSA Right – 13NL-5LU0441/43
- 1 x TDM PSA Left – 13NL-5LU0741/43
- 1 x TDM PSA Bottom – 13NL-5LU0961/63
- 1 x Left Speaker Mesh – 13NL-5LU0532/33
- 1 x Right Speaker Mesh – 13NL-5LU0842/43
- 2 x Shielding tape – 13NL-5JU1501/02
- 2 x NFC foam – 13NL-5MU1A01
- 1 x CPU Pad – 13NL-5MU0Z01

#### **Additional Components (Ordered Separately)**

- N/A

#### **Procedure – Removal (Microphone Module)**

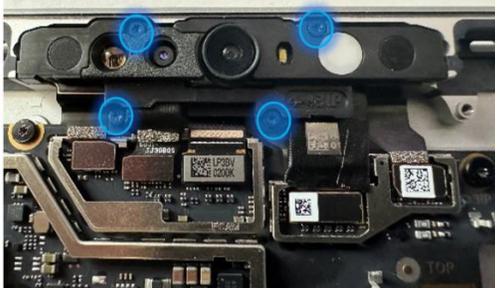
1. **Remove the Removable Solid-State Drive Door** – Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
2. **Remove the Removable Solid-State Drive** - Remove 1 screw and remove the rSSD. Refer to the [Procedure – Removal \(Removable Solid-State Drive\)](#) section for detailed instructions.
3. **Remove the Display Module** – Using the Surface Debonding Tool, de-bond the display. Remove 1 shielding tape, 2 NFC foams and 1 shield lid and disconnect the FPC Refer to the [Procedure – Removal \(Display Module\)](#) section for detailed instructions.
4. **Remove the Surface Connect Port Cable** – Remove 2 screws (  3IP ) and peel the Surface Connect off the thermal module. Refer to the [Procedure – Removal \(Surface Connect Port\)](#) section for detailed instructions.
5. **Remove the Button PCB** – Remove 2 screws (  3IP ) and the tape and foam spreading across the button board and thermal module. Remove the button board from the device but leave the buttons in place. Refer to the [Procedure – Removal \(Buttons\)](#) section for detailed instructions.
6. **Remove the Thermal Module + Fan** – Disconnect FPC, remove 14 screws and carefully lift the thermal module out of the device. Refer to the [Procedure – Removal \(Thermal Module + Fan\)](#) section for detailed instructions.
7. **Remove Shields** – Using ESD-Safe Tweezers, remove the two shields covering the camera FPCs by lifting from the corners shown below.



8. **Disconnect Camera FPCs** - Using the flat end of the Nylon spudger, gently disconnect 3 of the FPCs from the Motherboard.



9. **Remove Microphone Module Screws** – Using a 3IP (Torx-plus) Driver, remove the 4 screws (  ) on the Microphone Module. Once removed, carefully lift the Microphone Module out of the device Enclosure. Do not touch the front camera lens.



10. **Thermal Putty Cleanup** – Clean the light blue/green putty as shown with IPA and cleaning swabs until the area is free of any residual T-Putty.

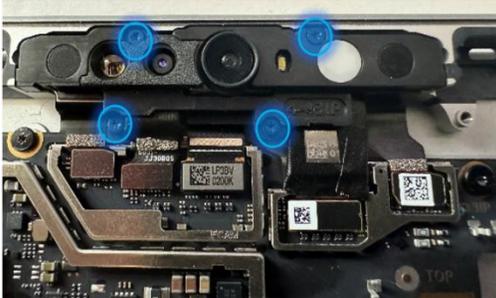


### Procedure – Installation (Microphone Module)

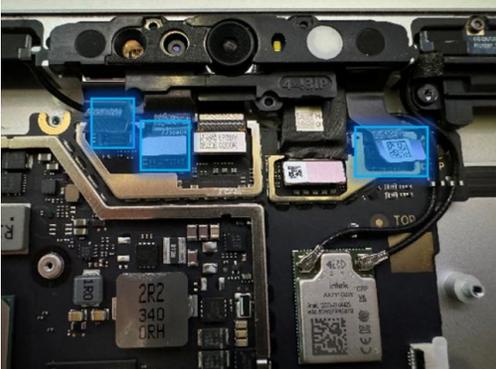
1. **Apply Thermal Putty** – Using the syringe of Thermal Putty, squeeze out approximately half of a tic mark of putty from the syringe.



2. **Install the Microphone Module** – Place the new Microphone Module into the corresponding Enclosure gap ensuring the holes in the Microphone Module are in alignment with the Enclosure. Using a 3IP (Torx-plus) Driver, install the 4 screws from the bag labelled **3IP** until finger tight, then adjust each of them with an additional 1/8<sup>th</sup> turn (45-degrees) until secure. Fasten them in the order shown below.



3. **Reconnect the Camera FPCs** – Using your fingers, or the flat end of a Nylon Spudger, reconnect the 3FPCs to the corresponding connectors on the Motherboard.



4. **Apply new Shields** – Using your fingers, assisted with the flat end of a Nylon Spudger, gently apply two new shields to cover the Camera FPCs. Using a finger, press on the edges to ensure a solid connection is made.



5. **Install the Thermal Module + Fan** – Apply new thermal pads to the thermal module or motherboard and place thermal module on top. Fasten 14 screws labelled with **03IP-1**, **03IP-2**, **03IP-3**, **03IP-4** on the bags and reconnect the FPC to the motherboard. Apply a new VC tape to the thermal module. Refer to the [Procedure – Installation \(Thermal Module + Fan\)](#) section for detailed instructions.
6. **Install the Button PCB** – Install the button PCB and secure with 2 screws ( **3IP** ). Assemble the tape and foam (VC gasket - 13NL-5LU0D11) spreading across the button board and thermal module. Refer to the [Procedure – Installation \(Buttons\)](#) section for detailed instructions.
7. **Install the Surface Connect Port** – Apply the new Surface Connect PSA on the cable. Insert the cable into the enclosure and connect it to the motherboard. Secure with 2 screws ( **43IP** ). Refer to the [Procedure – Installation \(Surface Connect Port\)](#) section for detailed instructions.
8. **Install the Display Module** - Install 2 new NFC foams. Reconnect the display FPC and install a new shield and shield tape on top. Align new PSA strips and install new speaker meshes on the display. Align the display on the bottom edge and press onto device. Use bonding frame tool to apply weight. Refer to the [Procedure – Installation \(Display Module\)](#) section for detailed instructions.
9. **Install the Removable Solid-State Drive** – Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled **3IP** . Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.
10. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.
11. **Power on device** – Carefully place device screen side up. Connect the device to a power supply, open display, and power on to the Windows desktop screen.
12. **Run the Surface Diagnostic Toolkit (SDT)** - Run SDT's full diagnostic test to ensure device functions as expected.
13. **Power down device** – Power down device using the OS start menu.

# Rear Camera Replacement Process

## Preliminary Requirements

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

## Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)
- [ESD-safe Surface Battery Cover - iFixit](#)

## Primary Components

- Rear Camera (Refer to [Illustrated Service Parts List](#))
  - 2 x M1.2\*L1.3 3IP (Rear Camera screws), **Ⓢ3IP**
    - Part Number - 13NL-5LN0901/03
  - 4 x M1.2\*L2.7 3IP (Mic deck screws), **Ⓢ3IP**
    - Part Number - 13NL-5LN0E01/03
  - 8 x M1.4\*L1.9 3IP (Thermal Module screws), **Ⓢ3IP-1**
    - Part Number – 13NL-5JN0Z01/02
  - 1 x M1.4\*L2 3IP (Fan Screw), **Ⓢ3IP-2**
    - Part Number – 13NL-5JN1111/12
  - 1 x M1.6\*L2.9 3IP (Battery side screw), **Ⓢ3IP-3**
    - Part Number – 13NL-5LN1001/03
  - 4 x M1.2\*1.8L 3IP (CPU Bracket screws), **Ⓢ3IP-4**
    - Part Number – 13NL-5EU1K01/02
  - 2 x M1.4\*L1,9 3IP (Button PCBA Screws), **Ⓢ3IP**
    - Part Number - 13NL-5LN0B01/03
  - 2 x (M1.4 X .3 x 1.7) (Surface Connect Screws), **Ⓢ3IP**
    - Part Number – 13NL-5JN1M01/02
  - 1 x M 1.2 \* L1.5 3IP (SSD Screw), **Ⓢ3IP**
    - Part Number – 13NL-5JN0V01/02
  - 1 x Camera Shield Lid – 13NL-5LN0721
  - 1 x Camera Shield Lid – 13NL-5LN0K01

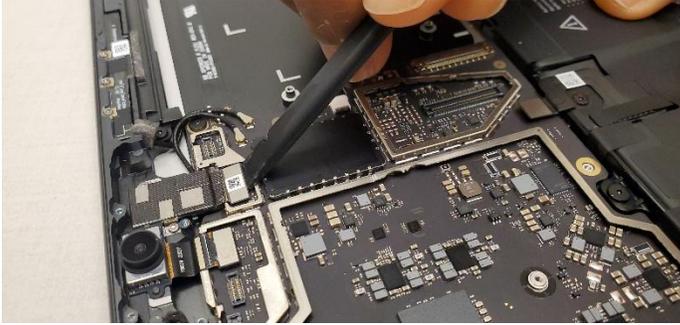
- 1 x T-putty Syringe - 1330-00360QS
- 1 x Surface Connect PSA – 13NL-5JU2Z01
- 1 x VC gasket – 13NL-5LU0D11
- 1 x VC gasket (OLED) – 13NL-5MU0L21
- 1 x VC tape – 13NL-5LU0E11
- 1 x VC tape (OLED) – 13NL-5MU0K21
- 1 x TDM Shield lid – 13NL-5LN0H01
- 1 x TDM PSA Top – 13NL-5LUA41/43
- 1 x TDM PSA Right – 13NL-5LU0441/43
- 1 x TDM PSA Left – 13NL-5LU0741/43
- 1 x TDM PSA Bottom – 13NL-5LU0961/63
- 1 x Left Speaker Mesh – 13NL-5LU0532/33
- 1 x Right Speaker Mesh – 13NL-5LU0842/43
- 2 x Shielding tape – 13NL-5JU1501/02
- 2 x NFC foam – 13NL-5MU1A011 x T-putty Syringe - 1330-00360QS
- 1 x Right Speaker Mesh – 13NL-5LU0843
- 2 x Shielding tape – 13NL-5JU1502
- 2 x NFC foam – 13NL-5MU1A01
- 1 x CPU Pad – 13NL-5MU0Z01

#### Additional Components (Ordered Separately)

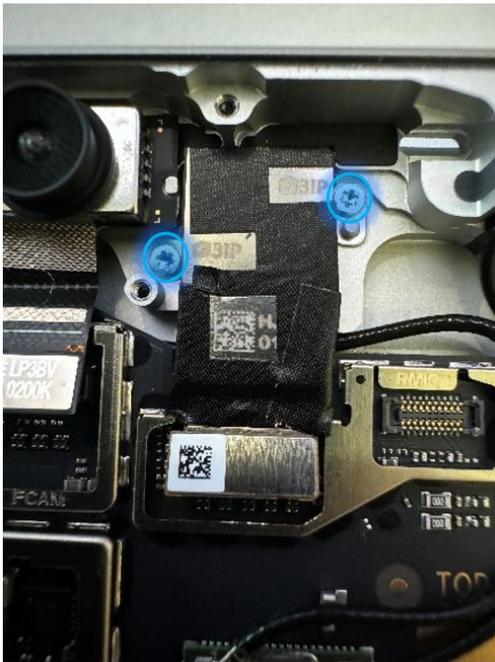
- N/A

#### Procedure – Removal (Rear Camera)

1. **Remove the Removable Solid-State Drive Door** – Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
2. **Remove the Removable Solid-State Drive** - Remove 1 screw and remove the rSSD. Refer to the [Procedure – Removal \(Removable Solid-State Drive\)](#) section for detailed instructions.
3. **Remove the Display Module** – Using the Surface Debonding Tool, de-bond the display. Remove 1 shielding tape, 2 NFC foams and 1 shield lid and disconnect the FPC. Refer to the [Procedure – Removal \(Display Module\)](#) section for detailed instructions.
4. **Remove the Surface Connect Port Cable** – Remove 2 screws (  3IP ) and peel the Surface Connect off the thermal module. Refer to the [Procedure – Removal \(Surface Connect Port\)](#) section for detailed instructions.
5. **Remove the Button PCB** – Remove 2 screws (  3IP ) and the tape and foam spreading across the button board and thermal module. Remove the button board from the device but leave the buttons in place. Refer to the [Procedure – Removal \(Buttons\)](#) section for detailed instructions.
6. **Remove the Thermal Module + Fan** – Disconnect FPC, remove 14 screws (  3IP and  ) and carefully lift the thermal module out of the device. Refer to the [Procedure – Removal \(Thermal Module + Fan\)](#) section for detailed instructions.
7. **Remove the Microphone Module** – Disconnect 3 FPCs and remove 4 screws (  3IP ). Refer to the [Procedure – Removal \(Microphone Module\)](#) section for detailed instructions.
8. **Disconnect the rear camera FPC** – Using the flat end of the Nylon spudger, gently disconnect the FPC from the Motherboard

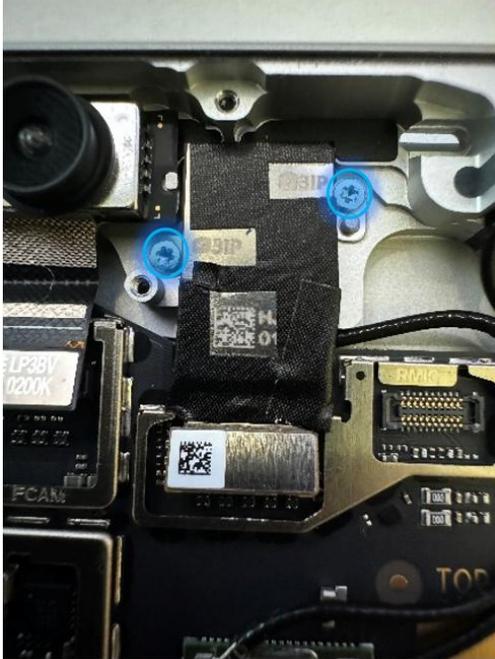


9. **Remove Rear Camera Screws** – Using a 3IP (Torx-plus) Driver, remove the 2 screws (  ) outlined in the photo below. Once removed, lift the Rear Camera out of the enclosure.



#### **Procedure – Installation (Rear Camera)**

1. **Install the Rear Camera** – Install the new rear camera into the enclosure ensuring all holes are aligned. Once installed, use a 3IP (Torx-plus) Driver to install 2 screws from the bag labelled  until finger tight, then adjust each an additional 1/8<sup>th</sup> turn (45-degrees) until snug.



2. **Connect the Camera FPC** – Using your fingers, or the flat end of a Nylon Spudger, connect the Camera FPC to the connector on the Motherboard.
3. **Install the Microphone Module** – Install 4 screws ( **3IP** ) and connect 3 FPCs. Refer to the [Procedure – Installation \(Microphone Module\)](#) section for detailed instructions.
4. **Install the Thermal Module + Fan** – Apply new thermal pads to the thermal module or motherboard and place thermal module on top. Fasten 14 screws labelled with **03IP-1**, **03IP-2**, **03IP-3**, **03IP-4** on the bags and reconnect the FPC to the motherboard. Apply a new VC tape to the thermal module. Refer to the [Procedure – Installation \(Thermal Module + Fan\)](#) section for detailed instructions.
5. **Install the Button PCB** – Install the button PCB and secure with 2 screws ( **3IP** ). Assemble the tape and foam (VC gasket - 13NL-5LU0D11) spreading across the button board and thermal module. Refer to the [Procedure – Installation \(Buttons\)](#) section for detailed instructions.
6. **Install the Surface Connect Port** – Apply the new Surface Connect PSA on the cable. Insert the cable into the enclosure and connect it to the motherboard. Secure with 2 screws ( **3IP** ). Refer to the [Procedure – Installation \(Surface Connect Port\)](#) section for detailed instructions.
7. **Install the Display Module** - Install 2 new NFC foams. Reconnect the display FPC and install a new shield and shield tape on top. Align new PSA strips and install new speaker meshes on the display. Align the display on the bottom edge and press onto device. Use bonding frame tool to apply weight. Refer to the [Procedure – Installation \(Display Module\)](#) section for detailed instructions.
8. **Install the Removable Solid-State Drive** – Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled **3IP** . Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.
9. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.
10. **Power on device** – Carefully place device screen side up. Connect the device to a power supply, open display, and power on to the Windows desktop screen.
11. **Run the Surface Diagnostic Toolkit (SDT)** - Run SDT's full diagnostic test to ensure device functions as expected.
12. **Power down device** – Power down device using the OS start menu

# Front Camera Replacement Process

## Preliminary Requirements

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

## Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)
- [ESD-safe Surface Battery Cover - iFixit](#)

## Primary Components

- Front Camera (Refer to [Illustrated Service Parts List](#))
  - 1 x Camera PSA – 13NL-5MU1211
  - 4 x M1.2\*L2.7 3IP (Mic deck screws), **⚡3IP**
    - Part Number - 13NL-5LN0E01/03
  - 8 x M1.4\*L1.9 3IP (Thermal Module screws), **@3IP-1**
    - Part Number – 13NL-5JN0Z01/02
  - 1 x M1.4\*L2 3IP (Fan Screw), **@3IP-2**
    - Part Number – 13NL-5JN1111/12
  - 1 x M1.6\*L2.9 3IP (Battery side screw), **@3IP-3**
    - Part Number – 13NL-5LN1001/03
  - 4 x M1.2\*1.8L 3IP (CPU Bracket screws), **@3IP-4**
    - Part Number – 13NL-5EU1K01/02
  - 2 x M1.4\*L1,9 3IP (Button PCBA Screws), **■3IP**
    - Part Number - 13NL-5LN0B01/03
  - 2 x (M1.4 X .3 x 1.7) (Surface Connect Screws), **⚡3IP**
    - Part Number – 13NL-5JN1M01/02
  - 1 x M 1.2 \* L1.5 3IP (SSD Screw), **■3IP**
    - Part Number – 13NL-5JN0V01/02
  - 1 x Camera Shield Lid – 13NL-5LN0721
  - 1 x Camera Shield Lid – 13NL-5LN0K01
  - 1 x T-putty Syringe - 1330-00360QS

- 1 x Surface Connect PSA – 13NL-5JU2Z01
- 1 x VC gasket – 13NL-5LU0D11
- 1 x VC gasket (OLED) – 13NL-5MU0L21
- 1 x VC tape – 13NL-5LU0E11
- 1 x VC tape (OLED) – 13NL-5MU0K21
- 1 x TDM Shield lid – 13NL-5LN0H01
- 1 x TDM PSA Top – 13NL-5LUA41/43
- 1 x TDM PSA Right – 13NL-5LU0441/43
- 1 x TDM PSA Left – 13NL-5LU0741/43
- 1 x TDM PSA Bottom – 13NL-5LU0961/63
- 1 x Left Speaker Mesh – 13NL-5LU0532/33
- 1 x Right Speaker Mesh – 13NL-5LU0842/43
- 2 x Shielding tape – 13NL-5JU1501/02
- 2 x NFC foam – 13NL-5MU1A01
- 1 x CPU Pad – 13NL-5MU0Z01

#### Additional Components (Ordered Separately)

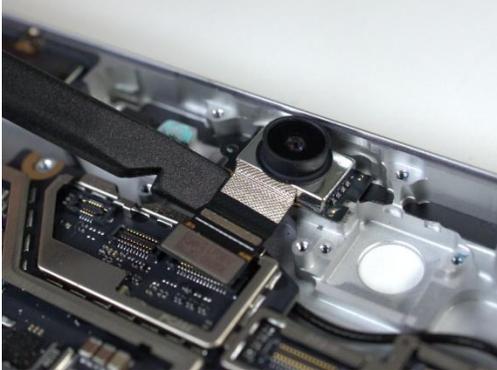
- N/A

#### Procedure – Removal (Front Camera)

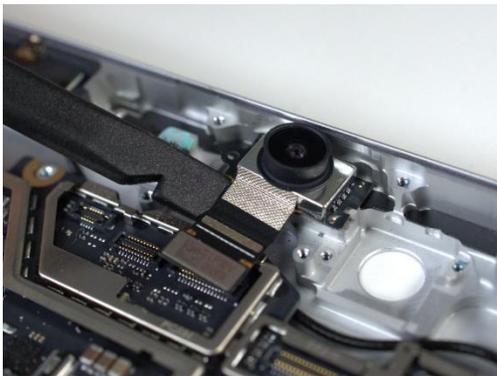
1. **Remove the Removable Solid-State Drive Door** – Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
2. **Remove the Removable Solid-State Drive** - Remove 1 screw and remove the rSSD. Refer to the [Procedure – Removal \(Removable Solid-State Drive\)](#) section for detailed instructions.
3. **Remove the Display Module** – Using the Surface Debonding Tool, de-bond the display. Remove 1 shielding tape, 2 NFC foams and 1 shield lid and disconnect the FPC. Refer to the [Procedure – Removal \(Display Module\)](#) section for detailed instructions.
4. **Remove the Surface Connect Port Cable** – Remove 2 screws ( **⚡3IP** ) and peel the Surface Connect off the thermal module. Refer to the [Procedure – Removal \(Surface Connect Port\)](#) section for detailed instructions.
5. **Remove the Button PCB** – Remove 2 screws ( **■3IP** ) and the tape and foam spreading across the button board and thermal module. Remove the button board from the device but leave the buttons in place. Refer to the [Procedure – Removal \(Buttons\)](#) section for detailed instructions.
6. **Remove the Thermal Module + Fan** – Disconnect FPC, remove 14 screws ( **⊙3IP** and **⊙** ) and carefully lift the thermal module out of the device. Refer to the [Procedure – Removal \(Thermal Module + Fan\)](#) section for detailed instructions.
7. **Remove the Microphone Module** – Disconnect 3 FPCs and remove 4 screws ( **⚡3IP** ). Refer to the [Procedure- Removal \(Microphone Module\)](#) section for detailed instructions.
8. **Disconnect the Front Camera FPC** – Using a Nylon spudger, disconnect the front camera from the motherboard.



9. **Remove the Front Facing Camera (Re-use only)** – Install the camera cover (13NL-5LU1301) on the lens. Using the flat end of the plastic opening tool, position the tool under the right side of the FPC, and carefully lift to peel the camera off the enclosure.



10. **Remove the Front Facing Camera** – Using the flat end of the plastic opening tool, position the tool under the FPC and lift to peel the camera off the enclosure.



11. **Clean PSA** – Using tweezers or the Nylon spudger, remove the old PSA from the bucket and/or the camera. Clean the bucket area with IPA and cleaning swabs.

#### **Procedure – Installation (Front Camera)**

1. **Install the Front Facing Camera PSA** – Remove the bottom liner from the camera and stick the PSA onto the enclosure. The holes on the PSA liner will align with the pins on the enclosure. Do not remove the top liner yet and press on the PSA with your finger. Hold the PSA down firmly for 10 seconds.



2. **Install the Front Facing Camera** – Remove the top liner from the PSA on the enclosure and camera. Using tweezers to handle the camera, install the camera by lining up the pin holes. Hold the camera down firmly for 10 seconds. Remove the camera cover when finished.
3. **Connect the Front Facing Camera FPC** – Using your fingers, or the flat end of a Nylon Spudger, press the Front Facing Camera FPC into the connector on the Motherboard.



4. **Clean the camera** – Using a microfiber cloth, clean the lens before installing microphone module.
5. **Install the Microphone Module** – Install 4 screws (  **3IP** ) and connect 3 FPCs. Refer to the [Procedure – Installation \(Microphone Module\)](#) section for detailed instructions.
6. **Install the Thermal Module + Fan** – Apply new thermal pads to the thermal module or motherboard and place thermal module on top. Fasten 14 screws labelled with **@3IP-1**, **@3IP-2**, **@3IP-3**, **@3IP-4** on the bags and reconnect the FPC to the motherboard. Apply a new VC tape to the thermal module. Refer to the [Procedure – Installation \(Thermal Module + Fan\)](#) section for detailed instructions.
7. **Install the Button PCB** – Install the button PCB and secure with 2 screws (  **3IP** ). Assemble the tape and foam (VC gasket - 13NL-5LU0D11) spreading across the button board and thermal module. Refer to the [Procedure – Installation \(Buttons\)](#) section for detailed instructions.
8. **Install the Surface Connect Port** – Apply the new Surface Connect PSA on the cable. Insert the cable into the enclosure and connect it to the motherboard. Secure with 2 screws (  **3IP** ). Refer to the [Procedure – Installation \(Surface Connect Port\)](#) section for detailed instructions.
9. **Install the Display Module** - Install 2 new NFC foams. Reconnect the display FPC and install a new shield and shield tape on top. Align new PSA strips and install new speaker meshes on the display. Align

the display on the bottom edge and press onto device. Use bonding frame tool to apply weight. Refer to the [Procedure – Installation \(Display Module\)](#) section for detailed instructions.

10. **Install the Removable Solid-State Drive** – Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled **M3IP** . Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.
11. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.
12. **Power on device** – Carefully place device screen side up. Connect the device to a power supply, open display, and power on to the Windows desktop screen.
13. **Run the Surface Diagnostic Toolkit (SDT)** - Run SDT's full diagnostic test to ensure device functions as expected.
14. **Power down device** – Power down device using the OS start menu.

# Battery Replacement Process

## Preliminary Requirements

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

## Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)
- [ESD-safe Surface Battery Cover - iFixit](#)

## Primary Components

- Battery (Refer to [Illustrated Service Parts List](#))
  - 8 x M1.6\*L1.8 4IP (Battery Frame), **3IP-1**
    - Part Number – 13NL-5LN0A01/03
  - 1 x M1.6\*L2.9 3IP (Battery FPC screw), **3IP-2**
    - Part Number – 13NL-5LN0V01/03
  - 8 x M1.4\*L1.9 3IP (Thermal Module screws), **3IP-1**
    - Part Number – 13NL-5JN0Z01/02
  - 1 x M1.4\*L2 3IP (Fan Screw), **3IP-2**
    - Part Number – 13NL-5JN1111/12
  - 1 x M1.6\*L2.9 3IP (Battery side screw), **3IP-3**
    - Part Number – 13NL-5LN1001/03
  - 4 x M1.2\*1.8L 3IP (CPU Bracket screws), **3IP-4**
    - Part Number – 13NL-5EU1K01/02
  - 2 x M1.4\*L1,9 3IP (Button PCBA Screws), **3IP**
    - Part Number - 13NL-5LN0B01/03
  - 2 x (M1.4 X .3 x 1.7) (Surface Connect Screws), **3IP**
    - Part Number – 13NL-5JN1M01/02
  - 1 x M 1.2 \* L1.5 3IP (SSD Screw), **3IP**
    - Part Number – 13NL-5JN0V01/02
  - 1 x Surface Connect PSA – 13NL-5JU2Z01
  - 1 x VC gasket – 13NL-5LU0D11

- 1 x VC gasket (OLED) – 13NL-5MU0L21
- 1 x VC tape – 13NL-5LU0E11
- 1 x VC tape (OLED) – 13NL-5MU0K21
- 1 x TDM Shield lid – 13NL-5LN0H01
- 1 x TDM PSA Top – 13NL-5LUA41/43
- 1 x TDM PSA Right – 13NL-5LU0441/43
- 1 x TDM PSA Left – 13NL-5LU0741/43
- 1 x TDM PSA Bottom – 13NL-5LU0961/63
- 1 x Left Speaker Mesh – 13NL-5LU0532/33
- 1 x Right Speaker Mesh – 13NL-5LU0842/43
- 2 x Shielding tape – 13NL-5JU1501/02
- 1 x CPU Pad – 13NL-5MU0Z01
- 2 x NFC foam – 13NL-5MU1A01

#### Additional Components (Ordered Separately)

- N/A

#### Procedure – Preparation (Battery)

**Important:** This section is only for instances where you are replacing the battery. If the battery is being re-used, then this section is not required.

1. **Connect USB** – Connect USB with the Surface Diagnostic Toolkit (SDT) loaded to an available USB port on the device under repair.
2. **Power on device** – Connect a power supply to the device. Press the power button on the device to power the device on. Allow it to boot to the Windows Desktop before continuing.
3. **Launch SDT** – From the Windows Desktop, use Windows Explorer to navigate to the USB drive. Select the SDT executable (.exe) to launch the Surface Diagnostic Toolkit.
4. **Run Battery Repair (Setup)** – From the SDT launch screen, select **Repair** from the drop-down menu. Next, select **Repair Setup and Validation** to enter the selection screen. Run the **Battery Repair (Setup)** to put your device into repair mode. Follow all on-screen instructions and allow the device to shut down when prompted. Disconnect the Power Supply and remove the USB drive before proceeding forward.

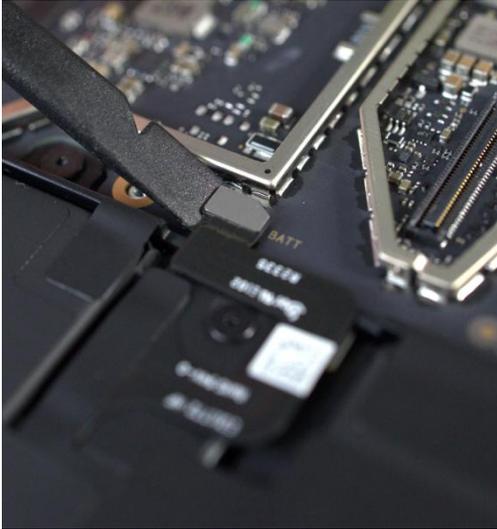
#### Procedure – Removal (Battery)

1. **Remove the Removable Solid-State Drive Door** – Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
2. **Remove the Removable Solid-State Drive** - Remove 1 screw and remove the rSSD. Refer to the [Procedure – Removal \(Removable Solid-State Drive\)](#) section for detailed instructions.
3. **Remove the Display Module** – Using the Surface Debonding Tool, de-bond the display. Remove 1 shielding tape, 2 NFC foams and 1 shield lid and disconnect the FPC. Refer to the [Procedure – Removal \(Display Module\)](#) section for detailed instructions.

**Important:** Verify the battery’s condition. Devices exhibiting battery issues as outlined in the [Lithium-Ion Battery Inspection](#) section require replacement of the entire device.

4. **Remove the Surface Connect Port Cable** – Remove 2 screws ( **⚡3IP** ) and peel the Surface Connect off the thermal module. Refer to the [Procedure – Removal \(Surface Connect Port\)](#) section for detailed instructions.

5. **Remove the Button PCB** – Remove 2 screws (  ) and the tape and foam spreading across the button board and thermal module. Remove the button board from the device but leave the buttons in place. Refer to the [Procedure – Removal \(Buttons\)](#) section for detailed instructions.
6. **Remove the Thermal Module + Fan** – Disconnect FPC, remove 14 screws (  and  ) and carefully lift the thermal module out of the device. Refer to the [Procedure – Removal \(Thermal Module + Fan\)](#) section for detailed instructions.
7. **Disconnect battery connector** – Using a Nylon Spudger, disconnect the battery connector from the Motherboard.



8. **Remove the Battery Screws** – Remove the 9 screws from the Battery frame using a 3IP (Torx-plus) driver.



9. **Lift out the Battery** – Using two gloved hands, grab the battery by the frame at the points identified in the photo below and gently lift the battery out of the enclosure. Set battery on a clean, ESD-safe, flat surface. If reusing the original battery in the case of an enclosure replacement, lift and install the battery directly into the new enclosure after inspecting the device for any foreign objects and screws.

**WARNING:** Only handle the battery by the plastic frame. Bending, twisting, or impacting the 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 battery.

**Important:** Place the battery somewhere where the battery cannot accidentally be contacted or damaged. **DO NOT** place anything on top of the battery.

**Important:** When disposing of the battery, ensure you are recycling according to local laws.

**Important:** The Motherboard and Battery are very sensitive to ESD and can be easily damaged. It is critical that you ensure proper grounding before performing any work on these parts.

**WARNING:** In the instance of a battery event, submerge the entire device in a 1-gallon Enclosure filled with .5 gallons of clean sand. Ensure the entire device is submerged. **DO NOT** attempt to pick up the device.



### Procedure – Installation (Battery)

**Important:** Do not reuse the original battery except in the case of an Enclosure replacement. Use a new battery if the original battery has been damaged.

1. **Inspect the device** – Check the Enclosure for any loose articles that may be present. Perform the following actions:
  - a. Check and remove any foreign objects that the magnets may have attracted.
  - b. Pay special attention to the magnetized areas around the Enclosures edge.
  - c. Verify all removed screws are accounted for and have not been misplaced inside the device.
  - d. Loose screws should never be stored on the magnetic areas of the Enclosure.
2. **Insert the new Battery** – Carefully open the packaging of the battery. Pick up the battery using the handling loops and place it into the device. Align the holes so that the battery is set into place.

**WARNING:** Only handle the new battery by the plastic loops. Bending, twisting, or impacting the 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 battery.



3. **Install the Battery screws** – Using a 3IP (Torx-plus) driver, install the 8 Battery Frame screws (marked ) and the 1 Battery PCB screw (marked ) until finger tight then tighten each by an additional 1/8<sup>th</sup> turn (45-degrees).



**Important:** Be careful not to overtighten screws. If the Battery frame is cracked or the battery is damaged in any way during installation, it cannot be used and must be replaced.

4. **Remove the liner** – After all the screws have been seated, hold one of the tabs on the right or left of the Battery liner. Peel the handling liner away from the Battery. If working on other components, apply the ESD-safe Surface Battery Cover to ensure the Battery is protected.
5. **Connect Battery FPC** – Connect the Battery FPC to the Motherboard by aligning the connector and gently pressing down with your finger, or the flat end of a Nylon Spudger.

**Important:** Be careful not to apply too much pressure on the connector. Too much pressure can damage the Motherboard or the Battery Connector requiring replacement of the damaged part.



6. **Install the Thermal Module + Fan** – Apply new thermal pads to the thermal module or motherboard and place thermal module on top. Fasten 14 screws labelled with **03IP-1**, **03IP-2**, **03IP-3**, **03IP-4** on the bags and reconnect the FPC to the motherboard. Apply a new VC tape to the thermal module. Refer to the [Procedure – Installation \(Thermal Module + Fan\)](#) section for detailed instructions.
7. **Install the Button PCB** – Install the button PCB and secure with 2 screws ( **3IP** ). Assemble the tape and foam (VC gasket - 13NL-5LU0D11) spreading across the button board and thermal module. Refer to the [Procedure – Installation \(Buttons\)](#) section for detailed instructions.
8. **Install the Surface Connect Port** – Apply the new Surface Connect PSA on the cable. Insert the cable into the enclosure and connect it to the motherboard. Secure with 2 screws ( **3IP** ). Refer to the [Procedure – Installation \(Surface Connect Port\)](#) section for detailed instructions.
9. **Install the Display Module** - Install 2 new NFC foams. Reconnect the display FPC and install a new shield and shield tape on top. Align new PSA strips and install new speaker meshes on the display. Align the display on the bottom edge and press onto device. Use bonding frame tool to apply weight. Refer to the [Procedure – Installation \(Display Module\)](#) section for detailed instructions.
10. **Install the Removable Solid-State Drive** – Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled **3IP** .Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.
11. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.

#### Procedure – Finalize (Battery)

1. **Power on Device** – Connect a Power Supply to the device and power it on until it reaches the Windows Desktop.
2. **Connect USB** – Connect USB with the Surface Diagnostic Toolkit (SDT) loaded to an available USB port on the device under repair.
3. **Launch SDT** – From the Windows Desktop, use Windows Explorer to navigate to the USB drive. Select the SDT executable (.exe) to launch the Surface Diagnostic Toolkit.
4. **Allow the Battery to charge** – With the device connected to a power supply, allow the battery to charge until the battery icon in Windows reads at least 50% remaining battery charge.
5. **Run Battery Authentication** – From the SDT launch screen, select **Repair** from the drop-down menu. Next, select **Repair Setup and Validation** to enter the selection screen. Select the **Battery Repair (Validation)** tool and follow the on-screen prompts until a successful authentication is completed.

**Important:** Battery authentication requires a stable internet connection and the latest version of the [Surface Management Extension](#). If the battery validation tool fails or is not detected properly, install the Surface Management Extension, reboot the device, and try again with a new internet connection. If failures continue, reach out to Microsoft Support.

6. **Run the Surface Diagnostic Toolkit (SDT)** – Run all diagnostics to ensure the device is functioning as expected before moving forward.
7. **Power down device** – Power down device using the OS start menu.

## Motherboard Replacement Process

### Preliminary Requirements

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

### Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)
- [ESD-safe Surface Battery Cover - iFixit](#)

### Primary Components

- Motherboard (Refer to [Illustrated Service Parts List](#))
  - 5 x M1.4\*L2 3IP (Motherboard Body and thermal module fan screws),
    - 4 x **3IP-1** and 1 x **3IP-3**
  - Part Number – 13NL-5JN1111/121 x M1.4\*L1.65 3IP (M.2 connector screw), **3IP-2**
    - Part Number – 13NL-5JN0X01/02
  - 8 x M1.4\*L1.9 3IP (Thermal Module screws), **3IP-1**
    - Part Number – 13NL-5JN0Z01/02
  - 1 x M1.4\*L2 3IP (Fan Screw), **3IP-2**
    - Part Number – 13NL-5JN1111/12
  - 1 x M1.6\*L2.9 3IP (Battery side screw), **3IP-3**
    - Part Number – 13NL-5LN1001/03
  - 4 x M1.2\*1.8L 3IP (CPU Bracket screws), **3IP-4**
    - Part Number – 13NL-5EU1K01/02
  - 5 x M1.4\*L1,9 3IP (Button PCBA and left speaker Screws)
    - 2 x **3IP** and 3 x **3IP**
    - Part Number - 13NL-5LN0B01/03
  - 2 x (M1.4 X .3 x 1.7) (Surface Connect Screws), **3IP**

- Part Number – 13NL-5JN1M01/02
- 1 x M 1.2 \* L1.5 3IP (SSD Screw),  3IP
  - Part Number – 13NL-5JN0V01/02
- 1 x RF tape - 13NL-5JU0F31/32
- 1 x RF foam - 13NL-5JU1901/02
- 1 x Camera Shield Lid – 13NL-5LN0721
- 1 x Camera Shield Lid – 13NL-5LN0K01
- 1 x T-putty Syringe - 1330-00360QS
- 1 x Surface Connect PSA – 13NL-5JU2Z01
- 1 x VC gasket – 13NL-5LU0D11
- 1 x VC gasket (OLED) – 13NL-5MU0L21
- 1 x VC tape – 13NL-5LU0E11
- 1 x VC tape (OLED) – 13NL-5MU0K21
- 1 x TDM Shield lid – 13NL-5LN0H01
- 1 x TDM PSA Top – 13NL-5LUA41/43
- 1 x TDM PSA Right – 13NL-5LU0441/43
- 1 x TDM PSA Left – 13NL-5LU0741/43
- 1 x TDM PSA Bottom – 13NL-5LU0961/63
- 1 x Left Speaker Mesh – 13NL-5LU0532/33
- 1 x Right Speaker Mesh – 13NL-5LU0842/43
- 2 x Shielding tape – 13NL-5JU1501/02
- 1 x CPU Pad – 13NL-5MU0Z01
- 2 x NFC foam – 13NL-5MU1A01

#### Additional Components (Ordered Separately)

- N/A

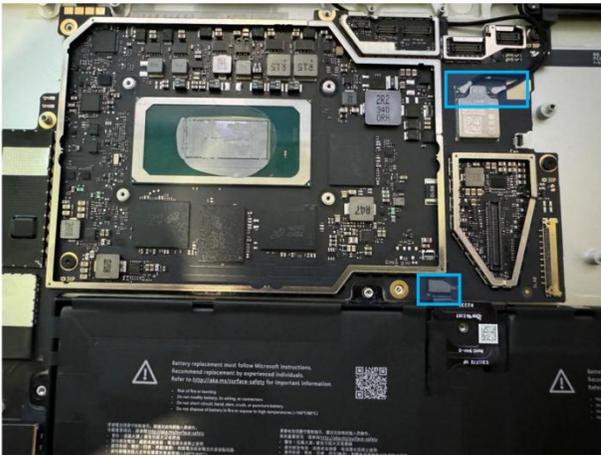
#### Procedure – Removal (Motherboard)

1. **Remove the Removable Solid-State Drive Door** – Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
2. **Remove the Removable Solid-State Drive** - Remove 1 screw and remove the rSSD. Refer to the [Procedure – Removal \(Removable Solid-State Drive\)](#) section for detailed instructions.
3. **Remove the Display Module** – Using the Surface Debonding Tool, de-bond the display. Remove 1 shielding tape, 2 NFC foams and 1 shield lid and disconnect the FPC. Refer to the [Procedure – Removal \(Display Module\)](#) section for detailed instructions.
4. **Remove the Surface Connect Port Cable** – Remove 2 screws (  3IP ) and peel the Surface Connect off the thermal module. Refer to the [Procedure – Removal \(Surface Connect Port\)](#) section for detailed instructions.
5. **Remove the Left Speaker** – Remove 3 screws (  3IP ). Refer to the [Procedure – Removal \(Speakers\)](#) section for detailed instructions.
6. **Remove the Button PCB** – Remove 2 screws (  3IP ) and the tape and foam spreading across the button board and thermal module. Remove the button board from the device but leave the buttons in place. Refer to the [Procedure – Removal \(Buttons\)](#) section for detailed instructions.
7. **Remove the Thermal Module + Fan** – Disconnect FPC, remove 14 screws (  3IP and  ) and carefully lift the thermal module out of the device. Refer to the [Procedure – Removal \(Thermal Module + Fan\)](#) section for detailed instructions.

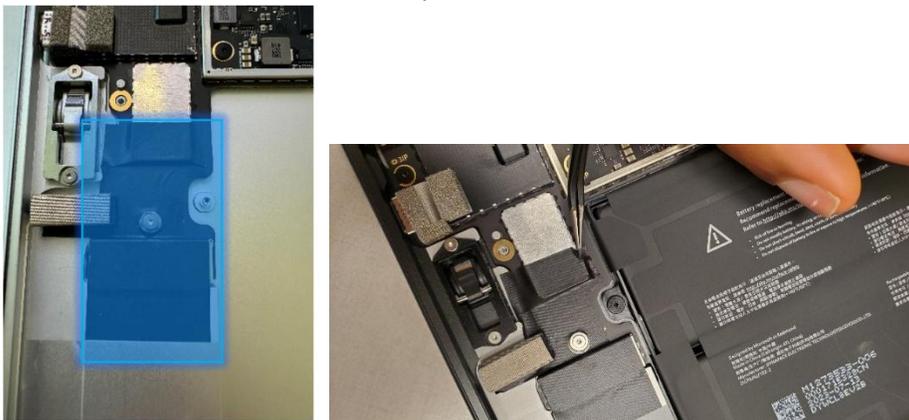
8. **Remove Camera Shields and disconnect Camera FPCs** – Using ESD-safe tweezers, remove the 2 shields covering the Camera FPCs by lifting each shield from the corners. Once removed, use the flat end of a Nylon Spudger to disconnect all 5 Camera FPCs from the Motherboard.



9. **Disconnect Wireless Coax Cables and Battery FPC** – Using the flat end of a plastic opening tool, disconnect the 2 coax cables from the motherboard. Using the flat end of a Nylon Spudger, disconnect the Battery FPC from the Motherboard.



10. **Remove the RF foam and tape**– Using ESD-safe Tweezers, lift and remove the foam and shielding tape from the area shown. These will be replaced with new ones.



11. **Remove Motherboard screws** – Using a 3IP (Torx-plus) driver, remove 5 Motherboard screws labelled with **#3IP** .



- Lift the Motherboard out of the Enclosure** – Using two hands, tilt the board to the left, and then pull the Motherboard out from the Enclosure. Ensure the USB connectors are free from the enclosure before fully removing the board to avoid damage. Do not damage the battery or cameras during disassembly.



- Clean the enclosure** – Using IPA and cleaning swabs, clean any residual tape from the enclosure. If reusing the motherboard, clean the main chip and tape area with IPA and cleaning swabs.



### Procedure – Installation (Motherboard)

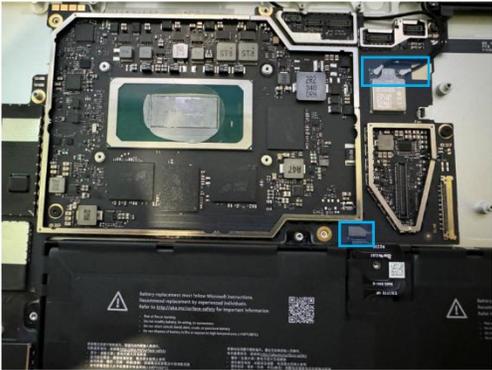
- Install the new Motherboard** – Using two hands, insert the new motherboard so that the USB ports enter the open spots in the Enclosure. Once inserted, align the Motherboard with the screw bosses and holes. Ensure all connectors and cables are on top of the motherboard.

**Important:** Ensure all cables and connectors are on top of the Motherboard when installed before moving forward. Count: 5 FPCs for mic/cameras, 2 coax cables and 1 battery connector.

- Install Motherboard screws** – Using a 3IP (Torx-plus) driver, install the 4 Motherboard screws from the bag labelled **#3IP-1** in the locations shown below. Install 1 motherboard screw from the bag labelled **#3IP-2**.



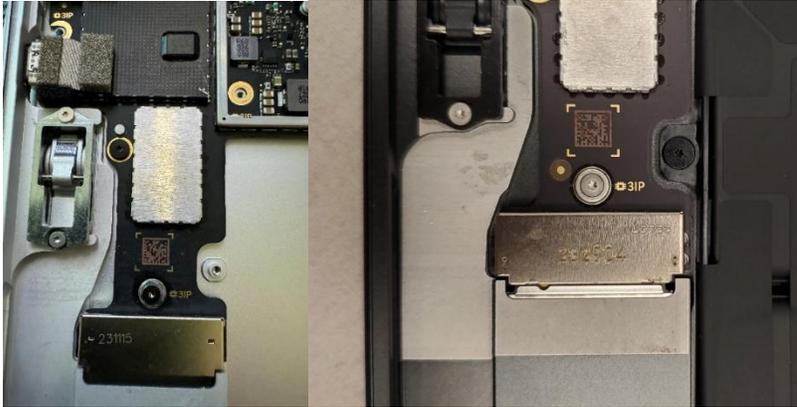
3. **Reconnect the Battery Connector and 2 Wireless Coax cables** – Using the flat-end of a Nylon Spudger, align the Battery FPC with its corresponding connector on the Motherboard and press down to complete the connection. Route the coax cables as shown below and connect them to the motherboard. The coax cable from the left antenna board connects to the connector on the left, and the coax cable coming from the right antenna board connects to the motherboard on the right. The left antenna board coax cable will partially be under the motherboard as shown below. Ensure alignment of the connectors before applying light pressure as the ports can be damaged requiring replacement of the Motherboard.



4. **Reconnect the Camera FPCs** – Using the flat end of a Nylon Spudger, align the 5 FPCs with their corresponding connector on the Motherboard. Press each down to complete the connection.



5. **Install RF tape** – Using your hands, or ESD-Safe Tweezers, place the tape near the bottom motherboard screw. Start by aligning the hole on the tape with the screw and carefully attaching the tape above and below that area. Use the etching on the enclosure to help guide alignment.



6. **Install RF Foam on the RF tape** – Place the Foam on top of the Shielding Tape. The top and left edges should align to the edges of the tape as shown.



7. **Install the Thermal Module + Fan** – Apply new thermal pads to the thermal module or motherboard and place thermal module on top. Fasten 14 screws labelled with 03IP-1, 03IP-2, 03IP-3, 03IP-4 on the bags and reconnect the FPC to the motherboard. Apply a new VC tape to the thermal module. Refer to the [Procedure – Installation \(Thermal Module + Fan\)](#) section for detailed instructions.
8. **Install the Button PCB** – Install the button PCB and secure with 2 screws ( 3IP ). Assemble the tape and foam (VC gasket - 13NL-5LU0D11) spreading across the button board and thermal module Refer to the [Procedure – Installation \(Buttons\)](#) section for detailed instructions.
9. **Install the Left Speaker** – Install the part with 3 screws ( 3IP ). Refer to the [Procedure – Installation \(Speakers\)](#) section for detailed instructions.
10. **Install the Surface Connect Port** – Apply the new Surface Connect PSA on the cable. Insert the cable into the enclosure and connect it to the motherboard. Secure with 2 screws ( 3IP ). Refer to the [Procedure – Installation \(Surface Connect Port\)](#) section for detailed instructions.
11. **Install the Display Module** - - Install 2 new NFC foams. Reconnect the display FPC and install a new shield and shield tape on top. Align new PSA strips and install new speaker meshes on the display. Align the display on the bottom edge and press onto device. Use bonding frame tool to apply weight. Refer to the [Procedure – Installation \(Display Module\)](#) section for detailed instructions.
12. **Install the Removable Solid-State Drive** – Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled 3IP . Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.

13. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.

#### Procedure – Finalize (Motherboard)

**Important:** If replacing both the Motherboard and the Display Module – complete the Motherboard replacement prior to performing the Display Module Replacement to ensure proper part operation.

1. **Power on Device** – Connect a Power Supply to the device and power it on until it reaches the Windows Desktop.
2. **Connect USB** – Connect USB with the Surface Diagnostic Toolkit (SDT) loaded to an available USB port on the device under repair.
3. **Launch SDT** – From the Windows Desktop, use Windows Explorer to navigate to the USB drive. Select the SDT executable (.exe) to launch the Surface Diagnostic Toolkit.
4. **Run Touch Display Calibration** – From the SDT launch screen, select **Repair** from the drop-down menu. Next, select **Repair Setup and Validation** to enter the selection screen. Run the **Touch Display (Calibration)** tool to calibrate the display. Follow all on-screen instructions and allow the device to restart when prompted.

**Important:** If the calibration fails, reboot the device, and try again. If the failure continues, then the display may be faulty and require replacement.

5. **Allow the Battery to charge** – With the device connected to a power supply, allow the battery to charge until the battery icon in Windows reads at least 50% remaining battery charge.
6. **Launch SDT** – Once the device has rebooted and is at the Windows Desktop, use Windows Explorer to navigate to the USB drive. Select the SDT executable (.exe) to launch the Surface Diagnostic Toolkit.
7. **Run Battery Authentication** – From the SDT launch screen, select **Repair** from the drop-down menu. Next, select **Repair Setup and Validation** to enter the selection screen. Select the **Battery Repair (Validation)** tool to ensure the battery is detected as properly authenticated. If the battery reads anything other than authenticated, run the Validation tool in its entirety.

**Important:** Battery authentication requires a stable internet connection and the latest version of the [Surface Management Extension](#). If the battery validation tool fails or is not detected properly, install the Surface Management Extension, reboot the device, and try again with a new internet connection. If failures continue, reach out to Microsoft Support.

8. **Run the Surface Diagnostic Toolkit (SDT)** – Run all diagnostics to ensure the device is functioning as expected before moving forward.
9. **Power down device** – Power down device using the OS start menu.

# Enclosure Replacement Process

## Preliminary Requirements

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

## Required Tools

- 3IP (Torx-plus) driver
- Anti-static wrist strap (1 MOhm resistance)
- Microfiber / Lint free cloth
- Soft ESD-safe mat
- Isopropyl alcohol (91 % or greater IPA)
- Cleaning swab
- USB drive with Surface Diagnostic Toolkit
- Nylon Spudger
- Plastic Opening pick
- Two 2-in spring clamps
- Metric ruler
- Fine tipped marker
- 3mm Allen Driver
- Foam Pad (see the [Tools](#) section for specifics)
- Display bonding weights (see the [Tools](#) section for specifics)
- [Surface Display Debonding Tool \(M1214770-001\) - iFixit](#)
- [Surface Display Bonding Frame \(M1260233-001\) - iFixit](#)
- [ESD-safe Surface Battery Cover - iFixit](#)

## Primary Components

- Enclosure (Refer to [Illustrated Service Parts List](#))
  - 6 x M1.2\*2.7L 3IP (Antenna PCB screw), **Ⓢ3IP**
    - Part Number - 13NL-5LN0F01/03
  - 8 x M1.6\*L1.8 4IP (Battery Frame), **Ⓢ3IP-1**
    - Part Number – 13NL-5LN0A01/03
  - 1 x M1.6\*L2.9 3IP (Battery FPC screw), **Ⓢ3IP-2**
    - Part Number – 13NL-5LN0V01/03
  - 5 x M1.4\*L2 3IP (Motherboard Body and thermal module fan screws),
    - 4 x **Ⓢ3IP-1** and 1 x **Ⓢ3IP-3**
    - Part Number – 13NL-5JN1111/12
  - 1 x M1.4\*L1.65 3IP (M.2 connector screw), **Ⓢ3IP-2**
    - Part Number – 13NL-5JN0X01/02
  - 9 x M1.4\*L1,9 3IP (Button PCBA and left speaker screws)
    - 2 x **Ⓢ3IP** and 6 x **Ⓢ3IP** and 1 x fan duct (unmarked)
    - Part Number - 13NL-5LN0B01/03
  - 2 x M1.2\*L1.3 3IP (Rear Camera screws), **Ⓢ3IP**
    - Part Number - 13NL-5LN0901/03
  - 4 x M1.2\*L2.7 3IP (Mic deck screws), **Ⓢ3IP**
    - Part Number - 13NL-5LN0E01/03
  - 8 x M1.4\*L1.9 3IP (Thermal Module screws), **Ⓢ3IP-1**
    - Part Number – 13NL-5JN0Z01/02

- 1 x M1.4\*L2 3IP (Fan Screw), **①3IP-2**
  - Part Number – 13NL-5JN1111/12
- 4 x M1.2\*1.8L 3IP (CPU Bracket screws), **①3IP-4**
  - Part Number – 13NL-5EU1K01/02
- 2 x (M1.4 X .3 x 1.7) (Surface Connect Screws), **⚡3IP**
  - Part Number – 13NL-5JN1M01/02
- 1 x M 1.2 \* L1.5 3IP (SSD Screw), **■3IP**
  - Part Number – 13NL-5JN0V01/02
- 1 X Front Camera Cover - 13NL-5LU1301
- 1 x Fan duct foam - 13NL-5LU0B21/22
- 1 x RF tape - 13NL-5JU0F31/32
- 1 x RF foam - 13NL-5JU1901/02
- 1 x Camera Shield Lid – 13NL-5LN0721
- 1 x Camera Shield Lid – 13NL-5LN0K01
- 1 x T-putty Syringe - 1330-00360QS
- 1 x Surface Connect PSA – 13NL-5JU2Z01
- 1 x VC gasket – 13NL-5LU0D11
- 1 x VC gasket (OLED) – 13NL-5MU0L21
- 1 x VC tape – 13NL-5LU0E11
- 1 x VC tape (OLED) – 13NL-5MU0K21
- 1 x TDM Shield lid – 13NL-5LN0H01
- 1 x TDM PSA Top – 13NL-5LUA41/43
- 1 x TDM PSA Right – 13NL-5LU0441/43
- 1 x TDM PSA Left – 13NL-5LU0741/43
- 1 x TDM PSA Bottom – 13NL-5LU0961/63
- 1 x Left Speaker Mesh – 13NL-5LU0532/33
- 1 x Right Speaker Mesh – 13NL-5LU0842/43
- 2 x Shielding tape – 13NL-5JU1501/02
- 2 x NFC foam – 13NL-5MU1A01
- 1 x CPU Pad – 13NL-5MU0Z01

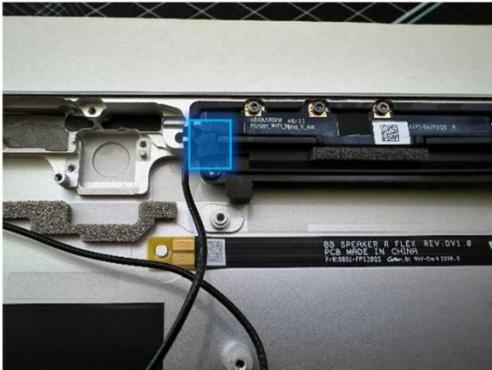
#### **Additional Components (Ordered Separately)**

- N/A

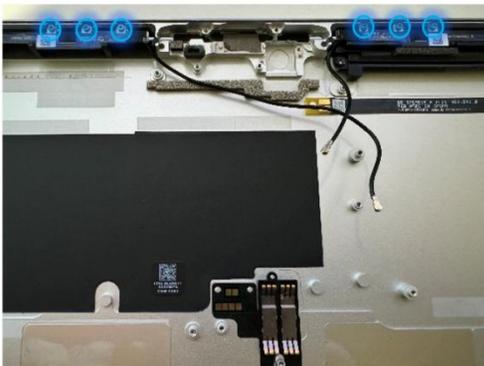
#### **Procedure – Removal (Enclosure)**

1. **Remove the Removable Solid-State Drive Door** – The door will not be reused; the enclosure comes with a new one. Refer to the [Procedure – Removal \(Solid-State Drive Door\)](#) section for detailed instructions.
2. **Remove the Removable Solid-State Drive** - Remove 1 screw and remove the rSSD. This will be installed in the new enclosure. Refer to the [Procedure – Removal \(Removable Solid-State Drive\)](#) section for detailed instructions.
3. **Remove the Display Module** – Using the Surface Debonding Tool, de-bond the display. Remove 1 shielding tape, 2 NFC foams and 1 shield lid and disconnect the FPC. Refer to the [Procedure – Removal \(Display Module\)](#) section for detailed instructions.
4. **Remove the Surface Connect Port Cable** – Remove 2 screws ( **⚡3IP** ) and peel the Surface Connect off the thermal module. Refer to the [Procedure – Removal \(Surface Connect Port\)](#) section for detailed instructions.

5. **Remove the Speakers** – Remove 6 screws (  ). Refer to the [Procedure – Removal \(Speakers\)](#) section for detailed instructions.
6. **Remove the Buttons** – Remove 2 screws (  ) and the tape and foam spreading across the button board and thermal module. Remove the button board from the device but leave the buttons in place. Refer to the [Procedure – Removal \(Buttons\)](#) section for detailed instructions.
7. **Remove the Thermal Module + Fan** – Disconnect FPC, remove 14 screws (  and  ) and carefully lift the thermal module out of the device. Refer to the [Procedure – Removal \(Thermal Module + Fan\)](#) section for detailed instructions.
8. **Remove the Microphone Module** – Disconnect 3 FPCs and remove 4 screws (  ). Refer to the [Procedure – Removal \(Microphone Module\)](#) section for detailed instructions.
9. **Remove the Rear Camera** – Disconnect the FPC and remove 2 screws (  ). Refer to the [Procedure – Removal \(Rear Camera\)](#) section for detailed instructions.
10. **Remove the Front Camera** – Disconnect the FPC and remove the camera by applying pressure under the camera with a Nylon spudger. Install the camera cover (13NL-5LU1301) before removal. Refer to the [Procedure – Removal \(Front Camera\)](#) section for detailed instructions.
11. **Remove the Motherboard** – Disconnect the battery connector and 2 coax cables and remove the RF foam and tape. Remove 5 screws and tilt the motherboard to remove. Refer to the [Procedure – Removal \(Motherboard\)](#) section for detailed instructions.
12. **Remove fan duct foam** – Using tweezers, remove the foam between the right antenna board and the fan duct as shown below.



13. **Remove the Antenna Boards and Coax Cables** – Using a 3IP (Torx-plus) driver, remove the 6 screws holding in the Antenna Boards. The coax cables are attached to the boards, so do not separate them during removal. Lift out of the Enclosure and set aside for re-use.



14. **Remove the fan duct Bracket** – Using a 3IP (Torx-plus) driver, remove the 1 screw securing the Bracket. Once removed, lift the Bracket out of the Enclosure and set aside for re-use.



15. **Remove the Battery** – Remove 9 screws. Lift the battery from the original enclosure and install it directly into the new bucket. Lift the battery from the sides on the frame. Refer to the [Procedure – Removal \(Battery\)](#) section for detailed instructions.

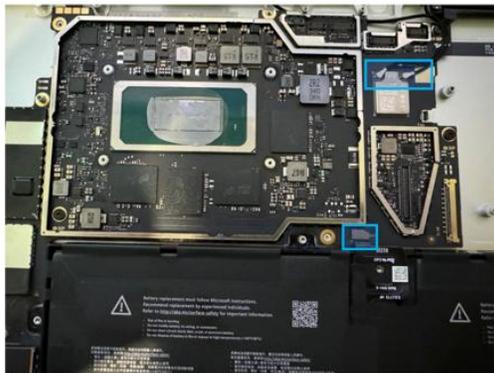
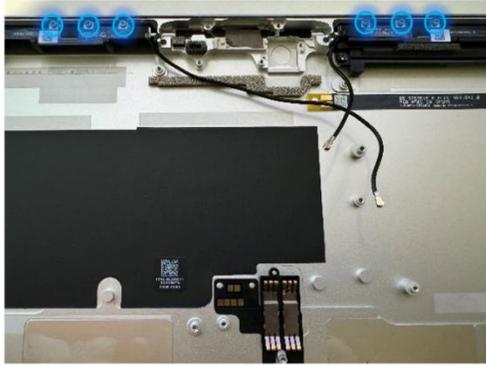
#### Procedure – Installation (Enclosure)

1. **Finish installation of the Battery** – Install 8 screws around the frame with **3IP-1** screws and 1 screw in the middle with a **3IP-2** screw. Refer to the [Procedure – Installation \(Battery\)](#) section for detailed instructions.
2. **Install the fan duct Bracket** – Place the bracket back into place in the new Enclosure and using a 3IP (Torx-plus) driver, fasten the 1 screw (13NL-5LN0B03 – bag labelled with **3IP** and **3IP** ) until finger tight then turn it an additional 1/8<sup>th</sup> turn (45-degrees) until it is secure.



3. **Install the Motherboard** – Install the motherboard by toeing it in on the left side and fasten 5 screws ( **3IP-1** and **3IP-2** ). Reconnect the 2 coax cables, battery connector and 5 camera FPCs at the top. See the [Procedure – Installation \(Motherboard\)](#) section for detailed instructions.
4. **Install the Antenna Boards with Coax Cables** – Place the Antenna Boards and Coax Cables into the Enclosure. Using a 3IP (Torx-plus) driver, secure both boards with 6 screws (bag labelled with **3IP** ) – 3 screws each. Route the cables as shown below and connect them to the Motherboard using the flat end of a Nylon Spudger. Refer to the [Procedure – Installation \(Motherboard\)](#) section for detailed instructions.

**Important:** Be sure to be careful when connecting the antenna cables as they are sensitive. Each cable should be pressed into the connector on the board until a click is heard.



5. **Install the fan duct foam** – Using tweezers to hold the foam, carefully place the foam on top of the cable in the cutout shown below.



6. **Install the Rear Camera** – Install the rear camera with 2 screws (  ) and connect the FPC to the motherboard. Refer to the [Procedure – Installation \(Rear Camera\)](#) section for detailed instructions.
7. **Install the Front Camera** – The enclosure will come with the camera PSA pre-installed with a liner on top. With the original camera covered with a cap, use the pin holes to line up the camera and install it on top of the PSA. Press it down for 10 seconds. Connect the FPC to the motherboard. Refer to the [Procedure – Installation \(Front Camera\)](#) section for detailed instructions.
8. **Install the Microphone Module** – Remove the front camera cover before starting. Install the mic deck with 4 screws (  ) and connect 3 FPCs to the motherboard. Refer to the [Procedure – Installation \(Microphone Module\)](#) section for detailed instructions.
9. **Install the Thermal Module + Fan** – Apply new thermal pads to the thermal module or motherboard and place thermal module on top. Fasten 14 screws labelled with , , ,

- ①3IP-4 on the bags and reconnect the FPC to the motherboard. Apply a new VC tape to the thermal module. Refer to the [Procedure – Installation \(Thermal Module + Fan\)](#) section for detailed instructions.
10. **Install the Button board** – Install the button PCB and secure with 2 screws ( 3IP ). Assemble the tape and foam (VC gasket - 13NL-5LU0D11) spreading across the button board and thermal module. Refer to the [Procedure – Installation \(Buttons\)](#) section for detailed instructions.
  11. **Install the Speakers** – Install both speakers with 3 screws each ( 3IP ). Refer to the [Procedure – Installation \(Speakers\)](#) section for detailed instructions.
  12. **Install the Surface Connect Port Cable** – Apply the new Surface Connect PSA on the cable. Insert the cable into the enclosure and connect it to the motherboard. Secure with 2 screws ( 3IP ). Refer to the [Procedure – Installation \(Surface Connect Port\)](#) section for detailed instructions.
  13. **Install the Display Module** – Install 2 new NFC foams. Reconnect the display FPC and install a new shield and shield tape on top. Align new PSA strips and install new speaker meshes on the display. Align the display on the bottom edge and press onto device. Use bonding frame tool to apply weight. Refer to the [Procedure – Installation \(Display Module\)](#) section for detailed instructions.
  14. **Install the Removable Solid-State Drive** - Turn the device over, reinstall the solid-state drive and fasten a new screw from the bag labelled 3IP . Refer to the [Procedure – Installation \(Removable Solid-State Drive\)](#) section for detailed instructions.
  15. **Install the Removable Solid-State Drive Door** – Refer to the [Procedure – Installation \(Solid-State Drive Door\)](#) section for detailed instructions.
  16. **Power on device** – Carefully place device screen side up. Connect the device to a power supply, open display, and power on to the Windows desktop screen.
  17. **Run the Surface Diagnostic Toolkit (SDT)** - Run SDT's full diagnostic test to ensure device functions as expected.
  18. **Power down device** – Power down device using the OS start menu.

## 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](mailto:AskECT@microsoft.com) .