



# Surface Pro 7+ 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 related activities.

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## Device Identity Information

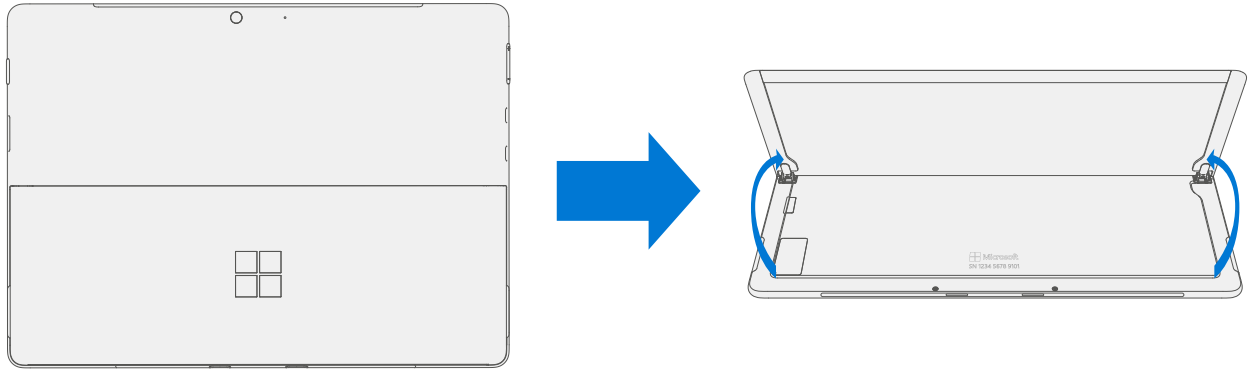
### Surface Pro 7+ for Business Models

1960 – Surface Pro 7+ for Business Wi-Fi (Platinum and Black)

1960 – Surface Pro 7+ for Consumer Wi-Fi (Platinum)

1961 – Surface Pro 7+ for Business LTE (Platinum)

The serial number for Surface Pro 7+ for Business is located under the kickstand on the back cover.



### Glossary of Terms

The following terms are used throughout this manual:

- **SDT** – Surface Diagnostic Toolkit
- **ESD** – Electro-Static Discharge
- **IBC** – Tablet Back Cover
- **TDM** – Touch Display Module is the complete screen with all layers.
- **FRU** – Field Replaceable Units are sub-system components such as the SIM/rSSD door, Kickstand, and rSSD. FRU are available only to ASPs. Some replaceable units will only be available as FRUs and therefore are only supported at an ASP.
- **Commercial Spares/CRU** – Customer Replaceable Units available to commercial customers for repair by a skilled-technician.

## General Information, Precautions, Warnings

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

 This symbol identifies important information in this manual.

 This symbol identifies important cautions in this manual.

## Service Tools and Jigs

### Microsoft Recommended Service Tools:

- SIM eject tool (or equivalent 0.58 mm / 0.023 in diameter paperclip)
- Surface dock
- TDM PSA bonding frame

### Standard Service Tools:

- Anti-static wrist strap (1 MOhm resistance)
- Soft Electro-Static Discharge (ESD) safe mat
- iFixit pick
- iFixit opening tool
- Spudger
- Metric ruler
- Bonding weight
  - Weight Requirement: minimum 32 kg (70 lb) / maximum 35 kg (77 lb)
  - 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 Bonding Frame.
  - 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 lb + 20 lb + 30 lb)
  - Alternate weights: Steel Shot Bags of 9 kg + 9 kg + 14 kg (20 lb + 20 lb + 30 lb)
- Foam pad
  - Material: EVA Foam
  - Thickness: 9.5 mm (3/8 in)
  - Density: 0.03 g/cm<sup>3</sup> (2 lb/cu Ft)
  - Dimensions: Minimum 229 mm x 305 mm (9 in x 12 in)
  - Recommended foam pad (McMaster PN: [86095K43](#))
- Torx-plus screwdriver 3IP
- Isopropyl alcohol dispenser bottle (use 91% or greater IPA)
- Cotton swab
- USB drive
- Wired Ethernet connection to the Internet
- USB keyboard
- Microfiber / lint free cloth

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



## General Safety Precautions

Always observe the following, general safety precautions:

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

For additional product safety information, including information about

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

See [aka.ms/surface-safety](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.

## Repair - Specific Precautions and Warnings

- Prior to repairing device, ensure device is powered off and disconnected from a power supply.
- We recommend wearing protective eyewear as a safety precaution when disassembling/re-assembling a device.
- Before opening device, always check that an anti-static wrist strap is worn, and work area is properly grounded to ensure electrostatic discharge (ESD) safe environment.
- Check to make sure that general guidelines and ESD compliance steps are followed prior to starting activities. Refer to Prior to Device Disassembly section for details.
- As you remove each subassembly from the device, place the subassembly (and all accompanying screws) away from the work area to prevent damage to the device and to the subassembly.

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 **IMPORTANT:** Remove rSSD (removable Solid-State Drive) whenever TDM is removed from device. rSSD removal disconnects the battery from all device logical components for safety purposes. Refer to Procedure – Removal (rSSD) ([page 18](#)) for details.

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## Repair - Cross-reference Documents

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

## Safety Policies/Procedures

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

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

- Any burned or melted components, traces, or plastic parts on the **outside** of the device, or which otherwise exhibits heat damage, including charring seen in charging and other ports.
- Any burned or melted components, traces or plastic parts on the **inside** of the device, or which otherwise exhibits heat damage.
- Any accessories exhibiting melting or heat damage that are included with the Microsoft device, such as power supplies, keyboards, mice, cables, charging connectors, etc.
- Any devices that exhibit a case that has separated apart or opened for reasons other than customer abuse (e.g., impact damage from dropping, evidence of tampering, separation caused by a malfunctioning battery).
- Any other finding that may constitute a possible safety hazard to the user, such as sharp edges on plastics.

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

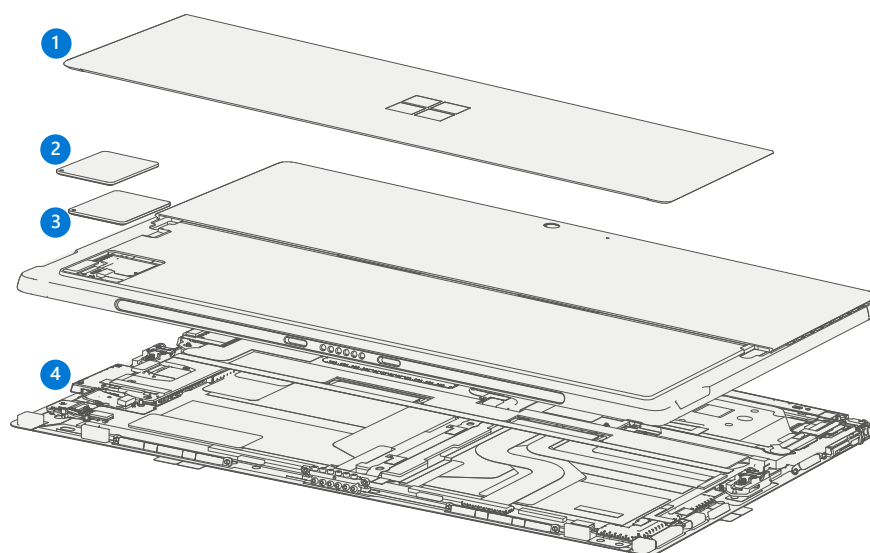
Your email should include:

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

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



## Illustrated Device Diagram



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

|                                                                               |                          |                                |                                | Models |      |
|-------------------------------------------------------------------------------|--------------------------|--------------------------------|--------------------------------|--------|------|
| Item                                                                          | Component                | ASP / FRU Part No.             | CRU Part No.                   | 1960   | 1961 |
| (1) Kickstand                                                                 |                          |                                |                                |        |      |
|                                                                               | Black Kickstand Wi-Fi    | 4KB-00002                      | I5A-00002                      | X      |      |
|                                                                               | Platinum Kickstand Wi-Fi | 4KB-00001                      | I5A-00001                      | X      |      |
|                                                                               | Platinum Kickstand LTE   | 4KB-00003                      | I5A-00003                      |        | X    |
| (2) SSD Door                                                                  |                          |                                |                                |        |      |
|                                                                               | Black SSD Door           | 4KI-00002<br>(Min order Qty 4) | 8LS-00002<br>(Min order Qty 1) | X      |      |
|                                                                               | Platinum SSD Door        | 4KI-00001<br>(Min order Qty 4) | 8LS-00001<br>(Min order Qty 1) | X      | X    |
|                                                                               |                          | 4KI-00001<br>(Min order Qty 1) |                                | X      | X    |
| (3) Removable Solid-State Drive<br>(NOTE: rSSD size must be same as original) |                          |                                |                                |        |      |
|                                                                               | rSSD 128GB               | RPX-00004                      | 8LT-00001                      | X      | X    |
|                                                                               | rSSD 256GB               | RPZ-00005                      | 8LV-00001                      | X      | X    |
|                                                                               | rSSD 512GB               | RQG-00005                      | 8LX-00001                      | X      | X    |
|                                                                               | rSSD 1TB                 | RPY-00003                      | 8LU-00001                      | X      | X    |
| (4) TDM                                                                       |                          |                                |                                |        |      |
|                                                                               | Pro 7 + TDM Wi-Fi        | 4K8-00001                      |                                | X      |      |
|                                                                               | Pro 7 + TDM LTE          | 4K8-00002                      |                                |        | X    |

## Service Diagnostics/Troubleshooting Overview

- For general Surface support, visit [www.support.microsoft.com](http://www.support.microsoft.com)
- To troubleshoot device feature/function problems or learn more about Surface Pro 7+ For Business visit [www.aka.ms/SurfaceProHelp](http://www.aka.ms/SurfaceProHelp)
- If you'd like to learn more about Windows, visit [aka.ms/WindowsHelp](http://aka.ms/WindowsHelp)
- To learn more about the accessibility features of the Surface Pro 7+ For Business, go to the online user guide at [aka.ms/Windows-Accessibility](http://aka.ms/Windows-Accessibility)

### Software Tools:

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

### rSSD Troubleshooting Approach

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 **IMPORTANT:** Ensure that the devices meet all related safety and policy prior to repair. Follow the Safety Policies/Procedures described on page 10 above when applicable in lieu of continuing repair. ASP's: refer to additional processing instructions in the ASP Guidebook.

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The following approach should be considered when troubleshooting Surface devices:

1. Update device to latest OS/FW versions using the SDT tool.

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

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2. Verify any suspected hardware failures by setting the device in a known OS/FW version state and running SDT to verify fault:
  - a. Replace the device's internal rSSD with a BMR imaged rSSD containing latest OS and FW updates (not supplied – must be created as a fault verification jig/tool) – Refer to Software Tools section above for details on imaging.
  - b. Run SDT and verify if condition persists or if resolved with use of BMR imaged drive – Refer to Software Tools section above for details on SDT.
    - i. If problem is resolved, then re-image original rSSD or replace original rSSD and image.

## Component Removal and Replacement Procedures

### Prior to Device Disassembly:

- Before attempting any removal or replacement, always ensure device is powered off and disconnected from a power supply.
- Always ensure that the work surface is covered with an ESD-safe, soft, non-marring material.
- Work surfaces should be cleaned regularly to ensure debris/abrasive particles are not present.
- Check to make sure that general guidelines and ESD compliance steps are followed prior to opening device.

### Battery Warning

 **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)



# Kickstand Replacement Process

## Preliminary Requirements

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

## Required Tools and Components

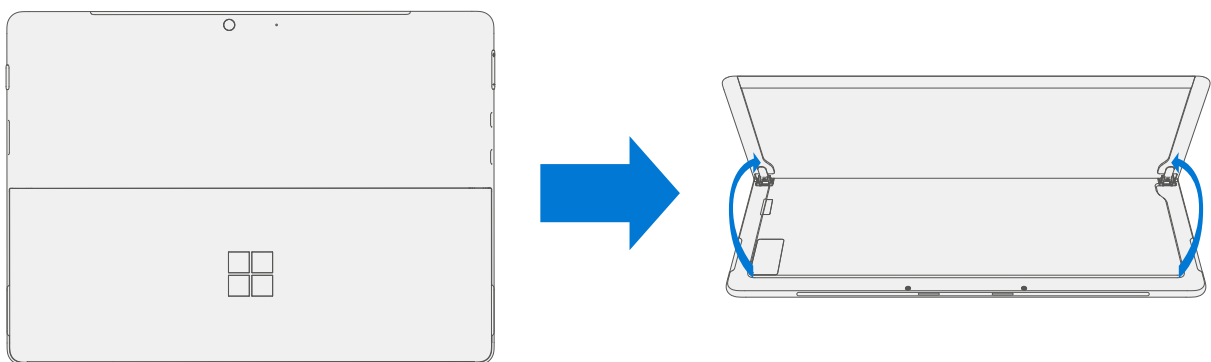
- **Tools:**
  - 3IP (Torx-Plus) driver
  - Soft ESD safe mat
  - Microfiber cloth
- **Components:**
  - Kickstand (Refer to Illustrated Service Parts List)

## Prerequisite Steps:

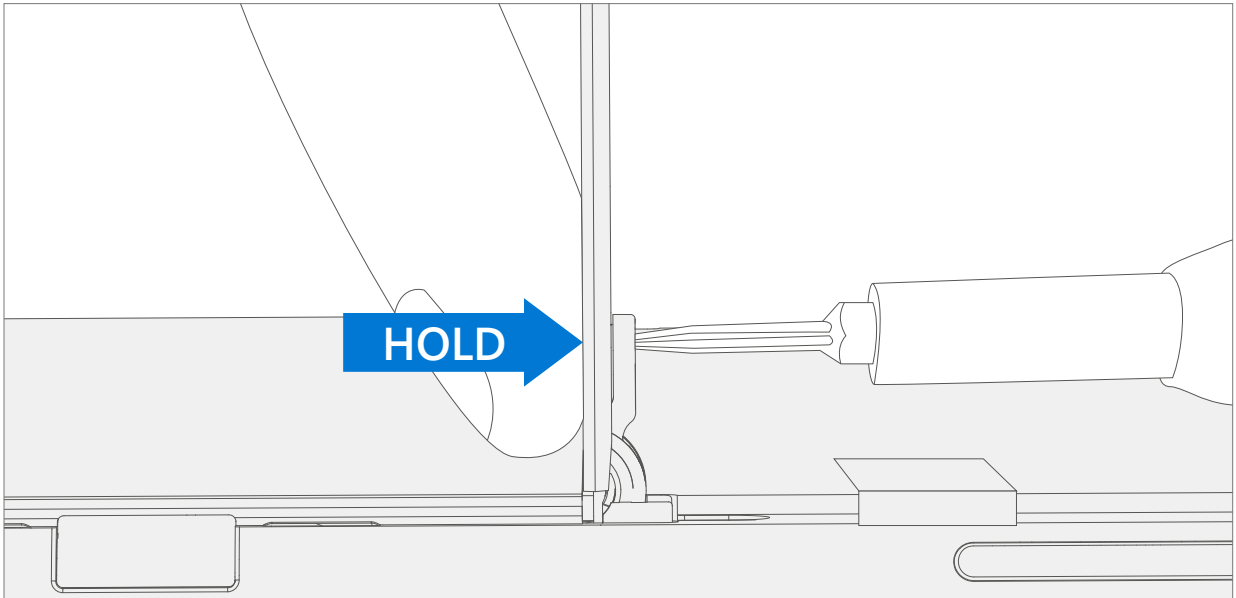
- **Power off device** – Ensure device is powered off and disconnected from a power supply.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening device. Refer to Prior to Device Disassembly section ([page 10](#)) for details.

## Procedure – Removal (Kickstand)

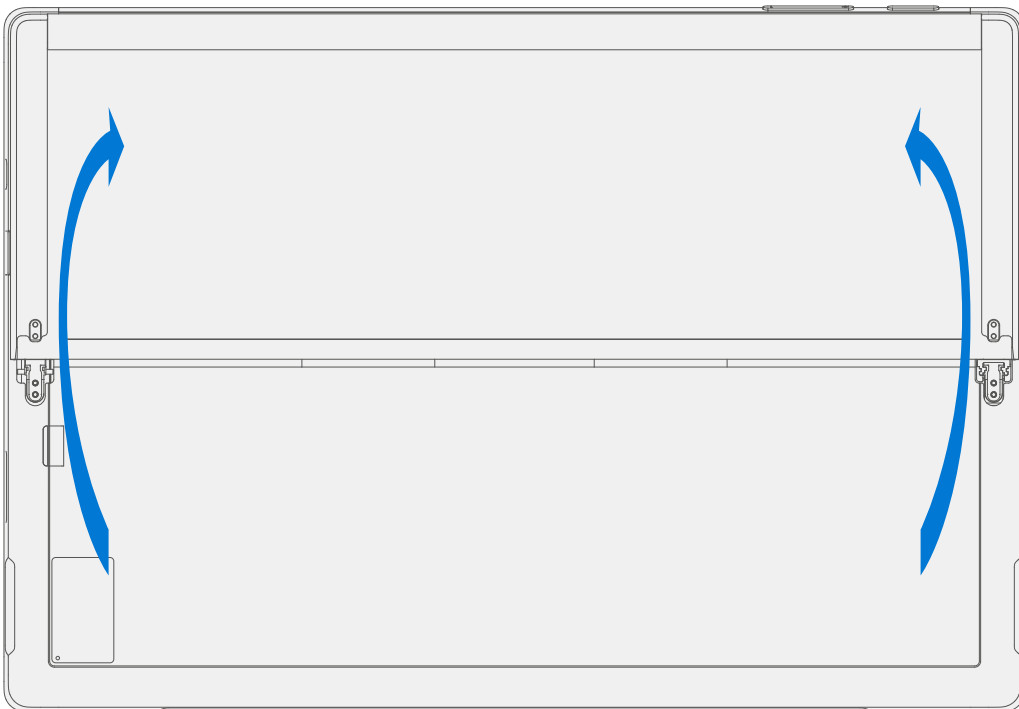
1. **Place device screen-down on soft ESD safe mat.** Ensure mat is clear of any abrasive material that may scratch the Touch Display Module (TDM) glass.
2. **Extend the kickstand to approximately 90 degrees.**



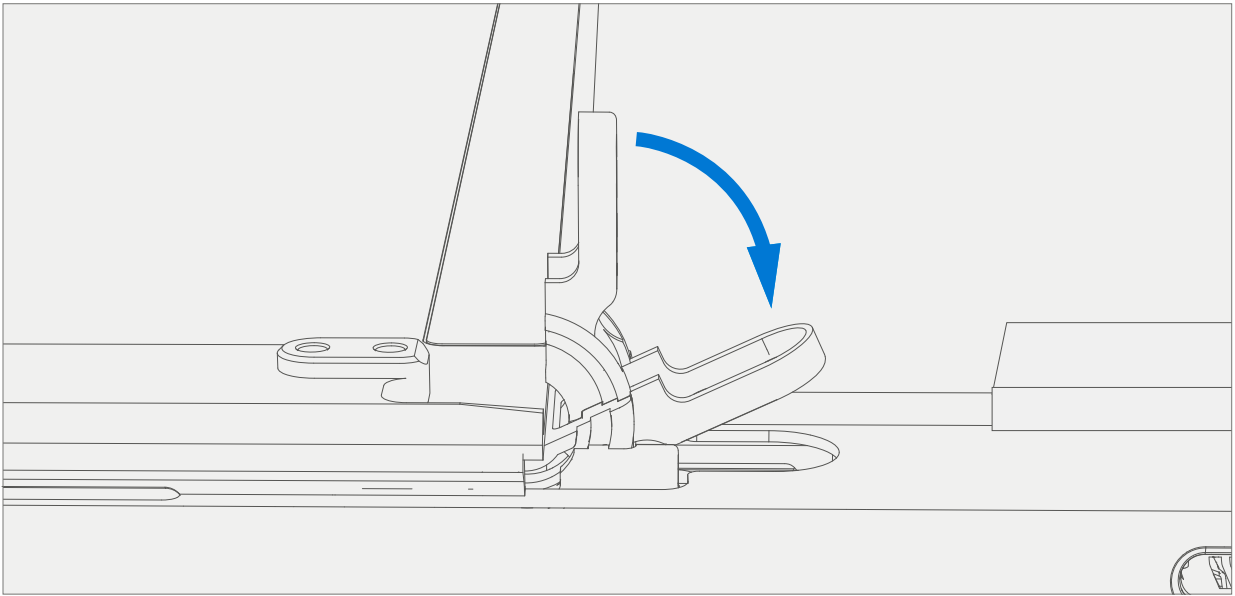
3. **Remove hinge screws** – Using the 3IP (Torx-Plus) driver, loosen all four hinge screws by 2-3 rotations. With the screws loose, use your finger to hold the back of the kickstand behind each hinge while fully removing the two hinge screws. Ensure screws do not fall into the hinge opening.



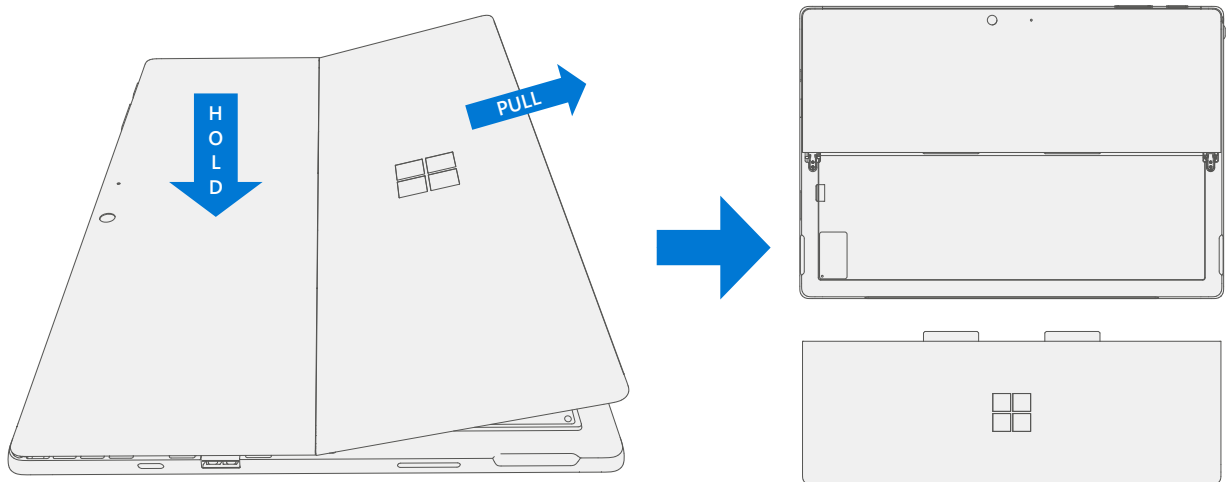
4. **Lay Kickstand Down** – Lay the kickstand flat against the IBC. Be careful not to jostle the kickstand in this position as it may cause abrasions on the IBC.



5. **Angle hinges Down** – Using your thumb or index finger, push both hinges down from 90 degrees to approximately 30 degrees. This will require a great deal of force. If necessary, place the microfiber cloth between your finger and the hinge for comfort. Be careful not to push the hinge all the way into the bucket as it will be difficult to pull back out.



6. **Remove Kickstand** – Using the palm of your hand, firmly hold the device down from the center of the IBC. 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 it is not caught on the hinges.

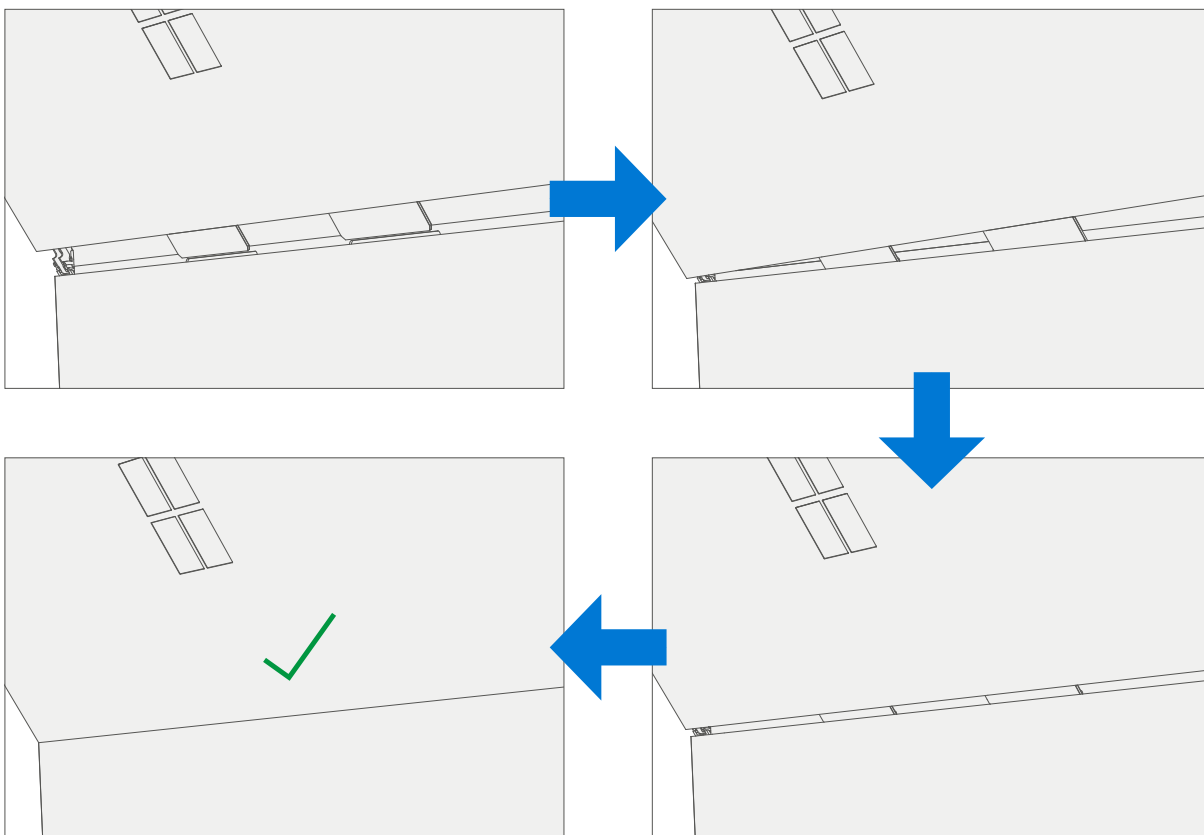


## Procedure – Installation (Kickstand)

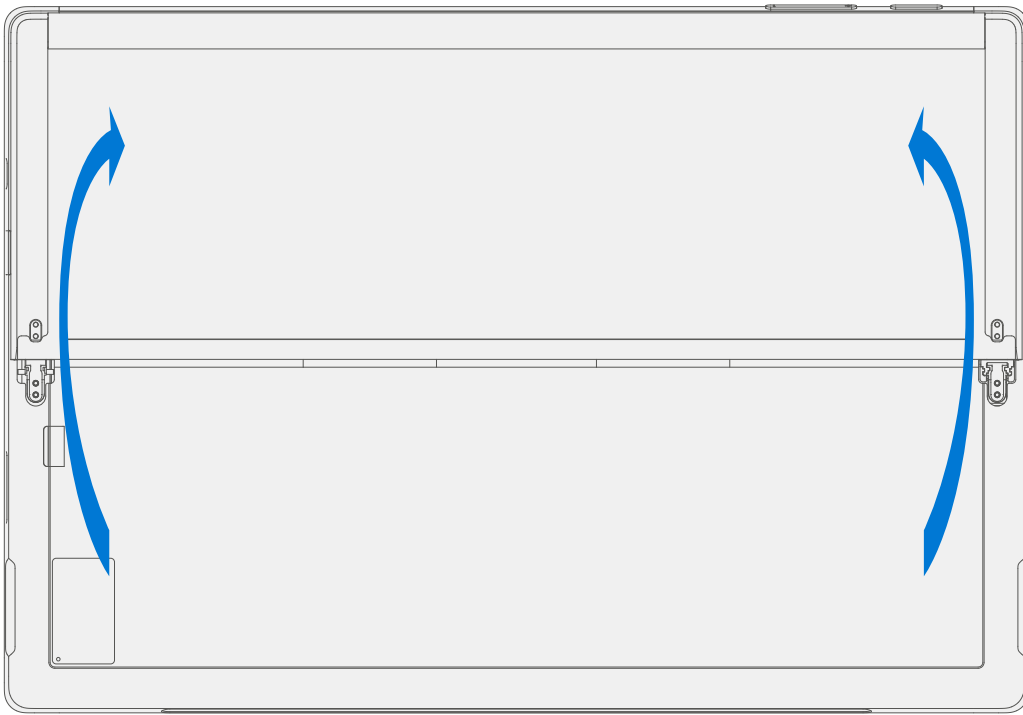
 **IMPORTANT:** Use caution when handling new kickstand assembly to avoid cosmetic damage of the kickstand and the device.

1. **Insert Foam Tabs** – With the hinges still at ~30 degrees start to slide the new kickstand's foam tabs into the slots on the back of the IBC. Foam should slide in with minimal force—do not crumple the foam by using excess force.

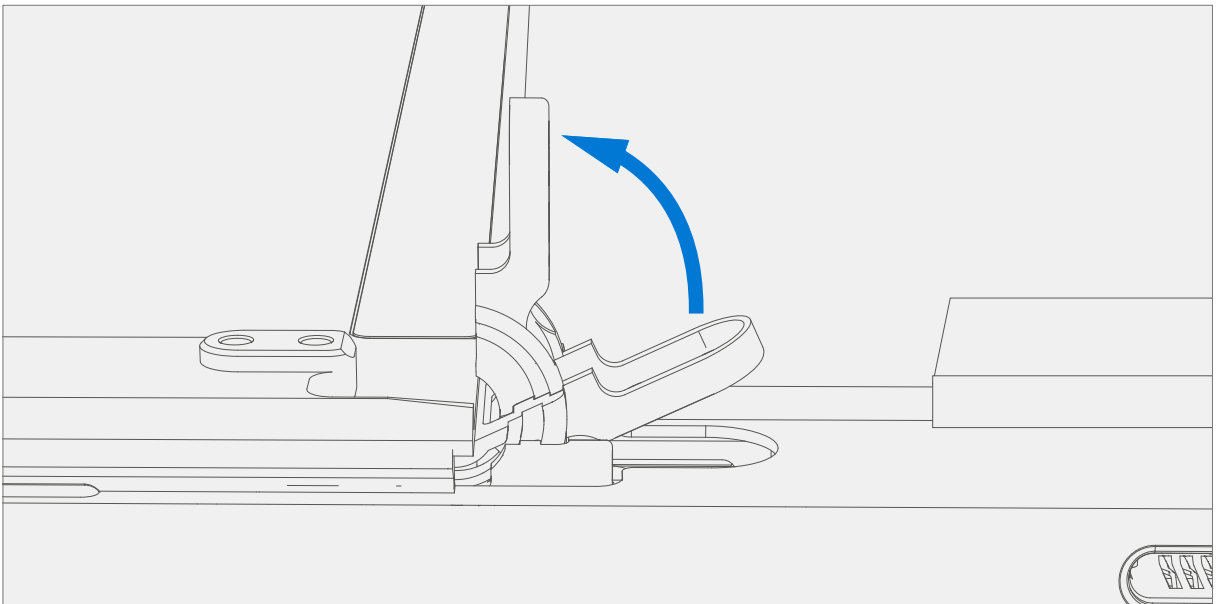
**CAUTION:** Do not use any tool or sharp object to assist inserting the tabs into the slots. Only the tabs should be inserted. Doing so could damage to internal components.



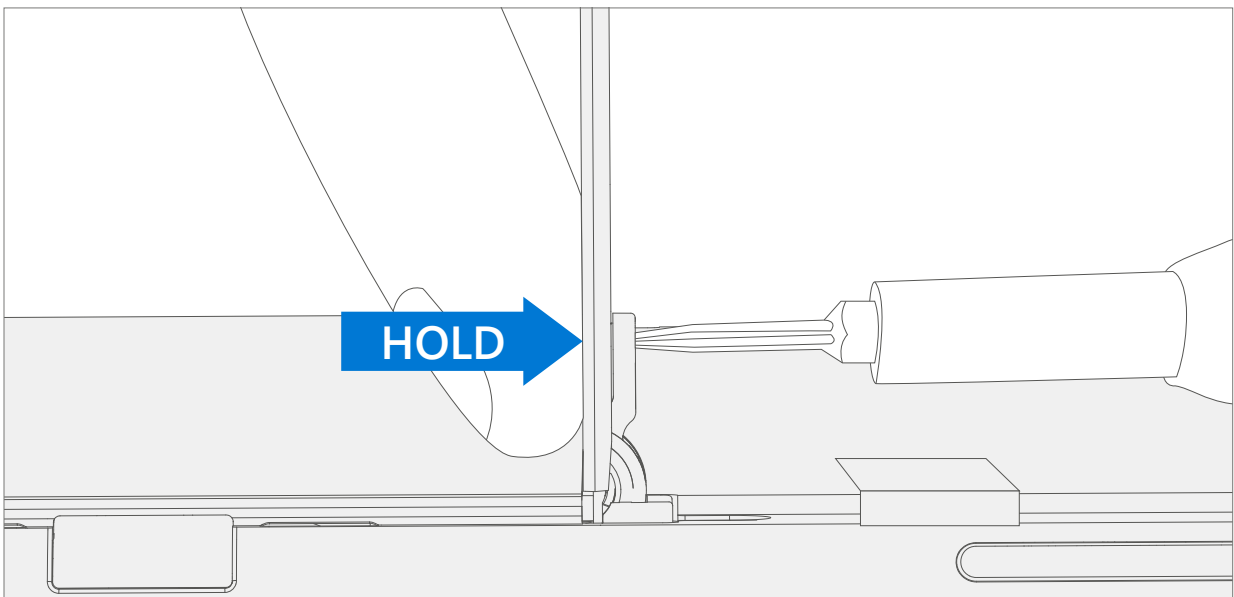
2. **Lay Kickstand Down** – Lay the kickstand flat against the IBC. Be careful not to jostle the kickstand in this position as it may cause abrasions on the IBC.



3. **Angle hinges Up** – Using your thumb or index finger, push both hinges up from 30 degrees to approximately 90 degrees. This will require a great deal of force. If necessary, place the microfiber cloth between your finger and the hinge for comfort.



4. **Install hinge screws** – Flip the kickstand up to approximately 90 degrees such that the threaded holes of the kickstand align with the mounting holes of the hinge. Install the hinge screws in the order shown below with the 3IP (Torx-Plus) driver. Ensure screws do not fall into the hinge opening. Use your finger to hold the back of the kickstand behind the hinge while installing the screws until they are fully seated. Verify the kickstand is properly aligned and seated in the hinges, then tighten the screws an additional ~quarter turn (~90 degrees).



5. **Final inspection Kickstand installation** – Fold the kickstand down and peel off protective plastic from the kickstand and logo if present. Verify 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 IBC. Wipe the device thoroughly (including under the kickstand) with the microfiber cloth to remove all fingerprints.

# rSSD Replacement Process

## Preliminary Requirements

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

---

## Required Tools and Components

- **Tools:**
  - 3IP (Torx-Plus) driver
  - Anti-static wrist strap (1M Ohm resistance)
  - Soft ESD safe mat
  - Microfiber / Lint free cloth
  - SIM eject tool (or equivalent 0.58 mm / 0.023 in diameter paperclip)
- **Components:**
  - rSSD (Refer to Illustrated Service Parts List)

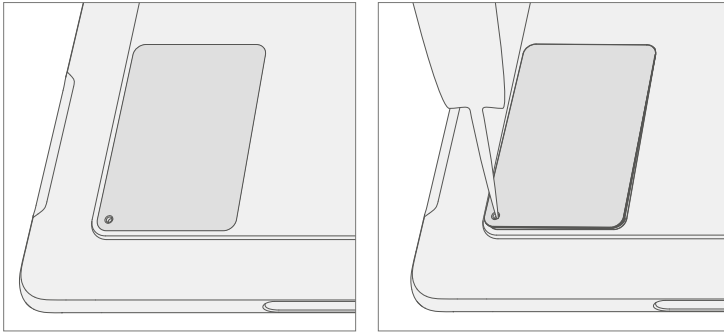
## Prerequisite Steps:

- **Power off device** - Ensure device is powered off and disconnected from a power supply.
- **General Safety** - Check to make sure that general guidelines and ESD compliance steps are followed prior to opening device. Refer to Prior to Device Disassembly section ([page 10](#)) for details.

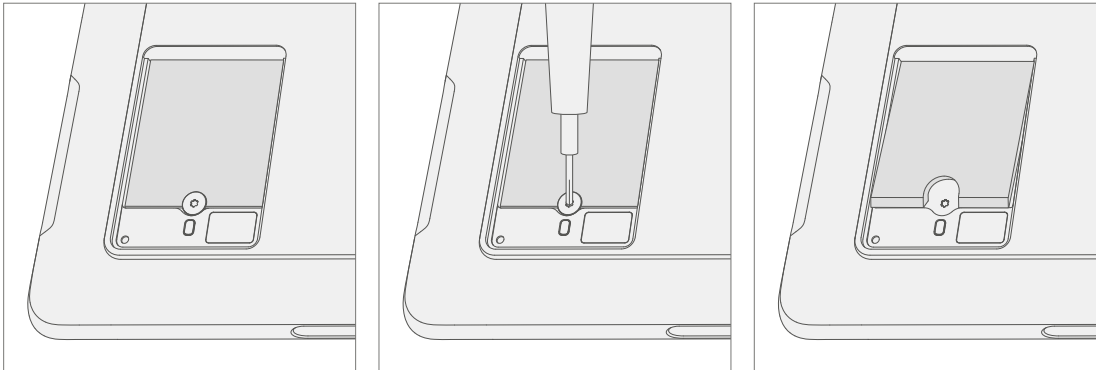


## Procedure – Removal (rSSD)

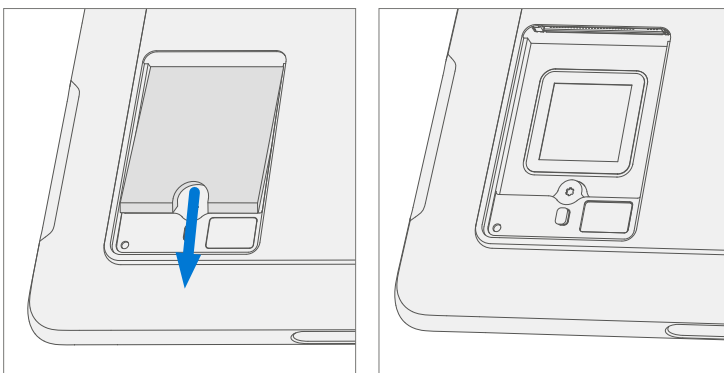
1. **Remove rSSD door** – Use SIM eject tool.



2. **Remove rSSD 3IP Screw** – Use a 3IP (Torx-Plus) driver to remove the screw securing the rSSD.



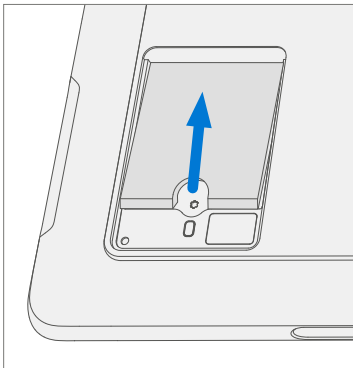
3. **Remove rSSD** – The rSSD should lift upwards to ~15 degree tilt after screw is removed. Carefully grab sides of rSSD case and pull out of main board socket at same ~15 degree angle.



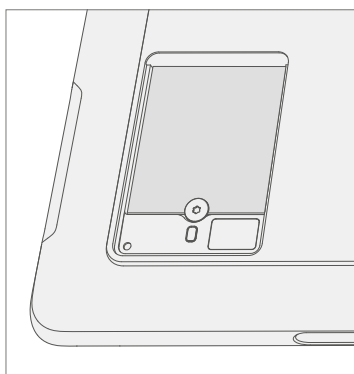
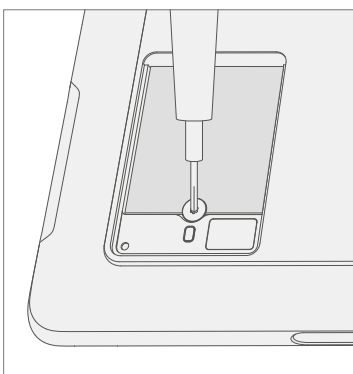
## Procedure – Installation (rSSD)

 **IMPORTANT:** Only a Microsoft rSSD of like capacity should be replaced in the device.

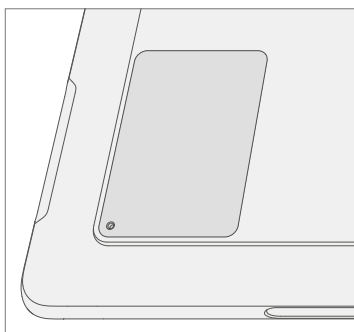
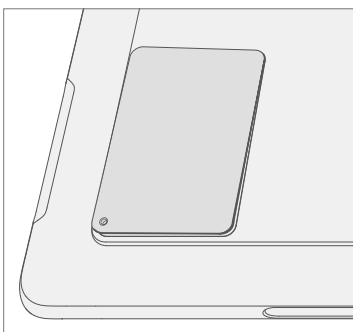
1. **Insert rSSD** – Insert the connector end of the rSSD into the rSSD connector on Main board at ~15-degree angle.



2. **Install new rSSD 3IP screw** – Use a 3IP screwdriver to install a new rSSD screw until the screw is just snug and seated, and then turned another 45 degrees (1/8 turn) or until screw is fully fastened.



3. **Replace rSSD door.**



4. **Imaging** – Image the new rSSD by using a BMR Imaging USB drive specific to the device model.

 **IMPORTANT:** Refer to Surface imaging process - [Surface Imaging Tools](#)

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

# Swap rSSD to a new device process

## Preliminary Requirements

- 
- ✎ **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section. The rSSD 3IP screw will be reused in this process. Only a Microsoft rSSD of like capacity should be replaced in the device.
- 

## Required Tools and Components

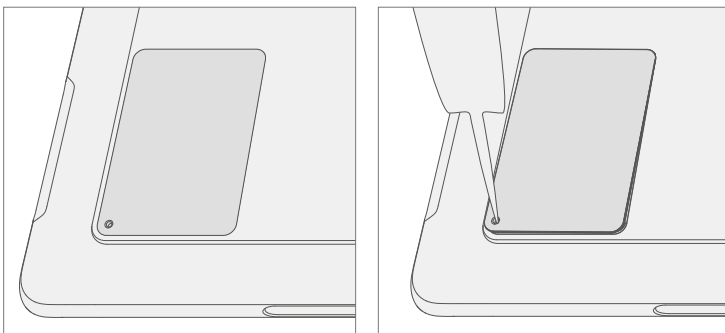
- **Tools:**
  - 3IP (Torx-Plus) driver
  - Anti-static wrist strap (1M Ohm resistance)
  - Soft ESD safe mat
  - Microfiber / Lint free cloth
  - SIM eject tool (or equivalent 0.58 mm / 0.023 in diameter paperclip)
  - USB Drive
  - Surface Dock
  - Wired Ethernet connection to the Internet
  - USB keyboard
- **Components:**
  - New SIM/rSSD door if required. (Refer to Illustrated Service Parts List)

## Prerequisite Steps:

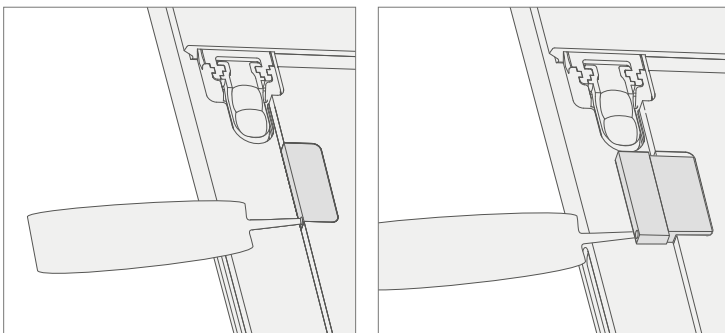
- Using an Internet connection install all available updates: Navigate to **Settings > Update & Security** and check for Windows Update.
- Consumer using Windows Home:
  - The Bitlocker recovery key is automatically generated for users with an MSA and can be found by the user by searching the web for “Bitlocker recovery key” and logging into their MSA. If the user does not have an MSA based account, the disk will not be encrypted.
- Commercial using Windows Pro:
  - This is managed via commercial policy, and each business may have their own Bitlocker policy / recovery method.
  - Confirm that the customer knows the **Windows password to the device**.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening device. Refer to Prior to Device Disassembly section ([page 10](#)) for details.

## Procedure – Swap (rSSD)

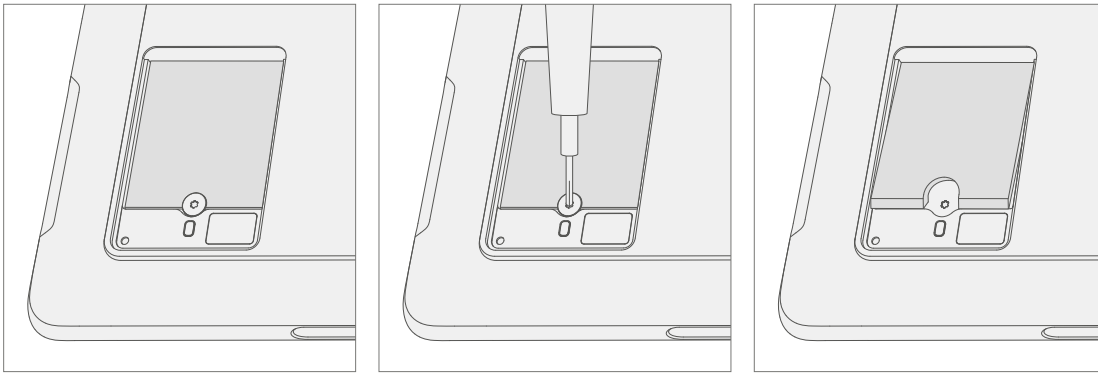
1. **Manage Bitlocker**
  - a. If rSSD remains encrypted during swap
    - i. Navigate to **Bitlocker > Manage Bitlocker > Generate Bitlocker Recovery Key**
    - ii. Plug in USB drive.
    - iii. Save the recovery key to USB storage.
    - iv. Remove the USB drive.
  - b. If rSSD can be unencrypted before swap:
    - i. Navigate to **Bitlocker > Manage Bitlocker**
    - ii. Select **Turn Off Bitlocker**
2. **Shut down customer's old device and remove SIM/rSSD door**  
**remove SIM/rSSD door on new device** – Use SIM eject tool.



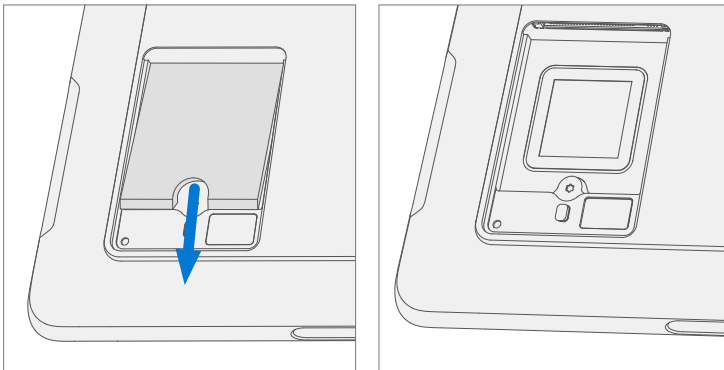
3. **Remove SIM (if present in customer's old device).**



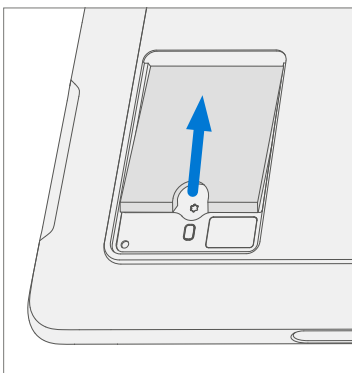
4. **Remove rSSD 3IP Screw from both devices** – Use a 3IP (Torx-Plus) driver to remove the screw securing the rSSD. Take care not to damage the screw; it will be reused.



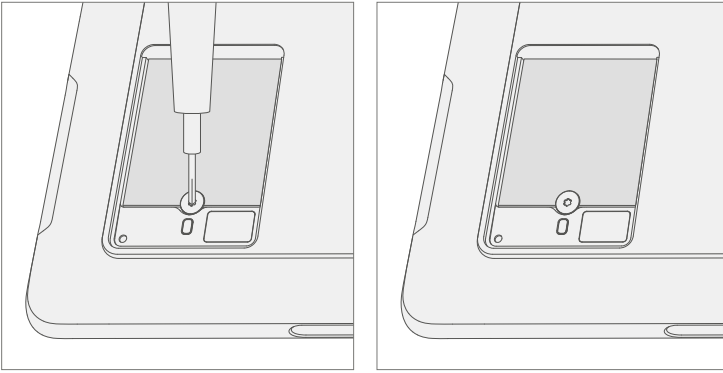
5. **Remove rSSD from both devices** – The rSSD should lift upwards to ~15-degree tilt after screw is removed. Carefully grab sides of rSSD case and pull out of main board socket at same ~15-degree angle.



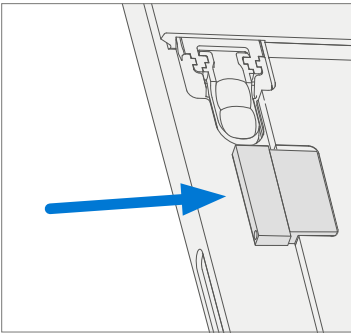
6. **Insert rSSD** – Insert the connector end of the rSSD into the rSSD connector on Main board at ~15-degree angle. Place the rSSD removed from the new device into the customer's original device. Place the customer's original rSSD into the new device.



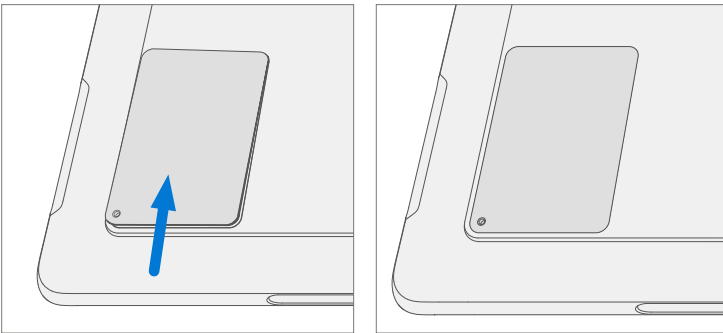
7. **Install rSSD 3IP screw in both devices** – Use a 3IP screwdriver to install the rSSD screw until it is just snug and seated, and then turn another 45 degrees (1/8 turn) or until screw is fully fastened.



8. **Install SIM (if present from the customer's old device in the new device).**



9. **Replace rSSD door on both devices.**



10. **Plug new device into power and wired Internet connection.**
11. **Power on new device** – The device may go through a firmware update during startup.
12. **If the SSD remained encrypted during the swap:**
  - a. Plug in USB drive with Bitlocker recovery key.
  - b. Open the .txt file with the Bitlocker recovery key.
  - c. Manually enter the recovery key into the new device.
13. **Connect a keyboard to the new device.**
14. **Navigate to Sign-In Options->Password (key icon on the left side).**
15. **Customer enters Windows password. Select “Sign In”.**
16. **Customer may need to go through two-factor authentication.**
17. **Once fully signed in, navigate to Start->Account->Sign Out**
18. **Customer signs in with Windows password again.**
19. **Customer prompted to setup Windows Hello and PIN.**
  - a. If the device was previously Bitlocked, navigate to **Bitlocker >Manage Bitlocker >Resume Bitlocker**
20. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
21. **Check Windows activation** – Navigate to **Settings >Activation**. If there is any error message, select Troubleshoot.
22. **Check Office Account** – Open Office app and then navigate to **File > Account** and check for any error messages.
23. **Check cellular (if SIM present)** – Unplug device from wired network and disable Wi-Fi. Check that cellular network shows connected, and that the device can open a webpage.
24. **Return customer’s original device per established procedures.**



# TDM Replacement Process

## Preliminary Requirements

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

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## Required Tools and Components

- **Tools:**
  - 3IP (Torx-Plus) driver
  - Anti-static wrist strap (1M Ohm resistance)
  - Soft ESD safe mat
  - Microfiber / lint free cloth
  - SIM eject tool (or equivalent 0.58 mm / 0.023 in diameter paperclip)
  - Isopropyl alcohol dispenser bottle (use 91% or greater IPA)
  - Cotton swab
  - USB drive with Surface Diagnostic Toolkit
  - Spudger
  - iFixit pick
  - Metric ruler
  - TDM PSA bonding frame
  - Foam Pad  
(Material: EVA Foam, Thickness: 9.5 mm, Density: 0.03 g/cm<sup>3</sup>, Minimum 229 mm x 305 mm)  
(Recommended McMaster PN: [86095K43](#))
  - TDM bonding weights minimum 32 kg (70 lb) / maximum 35 kg (77 lb)  
(Recommended using three Ruck weights two 9 kg, one 14 kg)  
(Alternate Steel Shot Bags two 9 kg, one 14 kg)
- **Components:**
  - TDM (Refer to Illustrated Service Parts List)

## Prerequisite Steps:

- **Prep Device** – Device must be set in **TDM Replacement Mode** prior to removing TDM.
  - a. **Connect software tools USB drive** with SDT to USB connector on device under repair.
  - b. **Connect power supply** to device.
  - c. **Power on device** – Depress the power button on the side of the device.
  - d. **Run software tool** – At the device OS, use Windows Explorer, navigate to USB drive and run:  
**SDT** – Select Repair setup and validation. Run the Touch Display Setup. At the end of the tool process device will power down.

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 **WARNING:** This step must be carried out on the device successfully before the TDM is replaced.

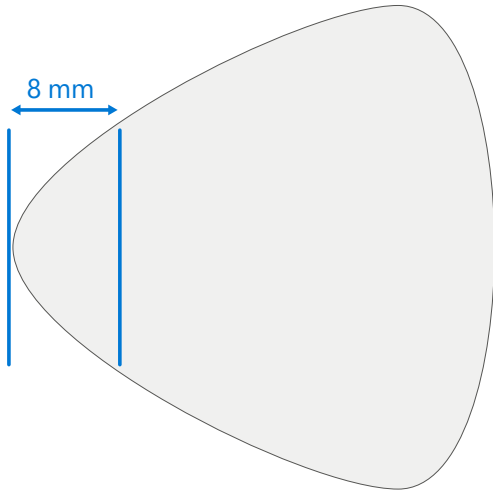
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- **Power off device** – Ensure device is powered off and disconnected from a power supply. Remove all attached cables and drives.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening device. Refer to Prior to Device Disassembly section ([page 10](#)) for details.
- **Remove rSSD** – Remove the rSSD as detailed in the Procedure – Removal (rSSD) ([page 18](#))

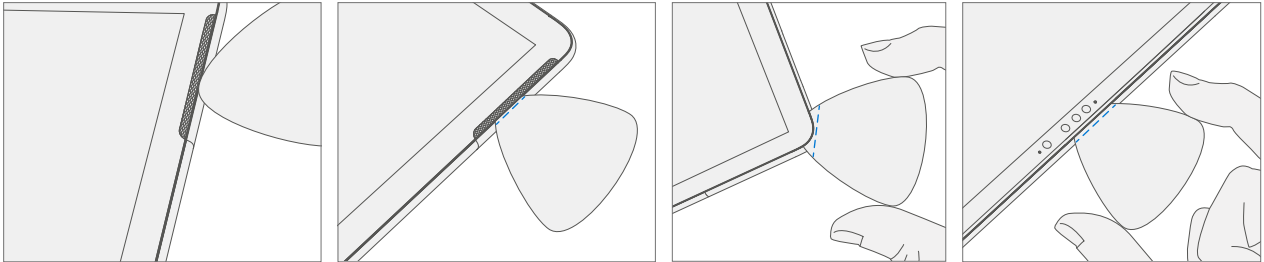


## Procedure – Removal (TDM)

1. **Debonding TDM Marking Pick Depth** – Using a metric ruler draw an 8 mm mark on the iFixit pick.

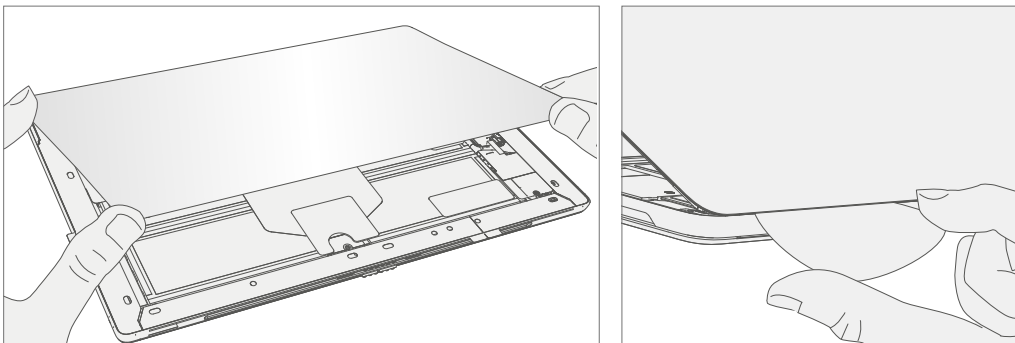


2. **Debonding TDM** – Place the device face up on a Soft ESD safe mat. Replace the iFixit pick if all the tips look scratched or deformed. Securing the device with one hand insert one of the iFixit pick tips into the right speaker area. Carefully cut the PSA applying a steady force along all edges of the TDM. Limit the pick depth to 8 mm. Run the pick 2 times around all edges of the TDM.



! **CAUTION:** Do not insert the pick more than 8mm along the edge of the TDM.

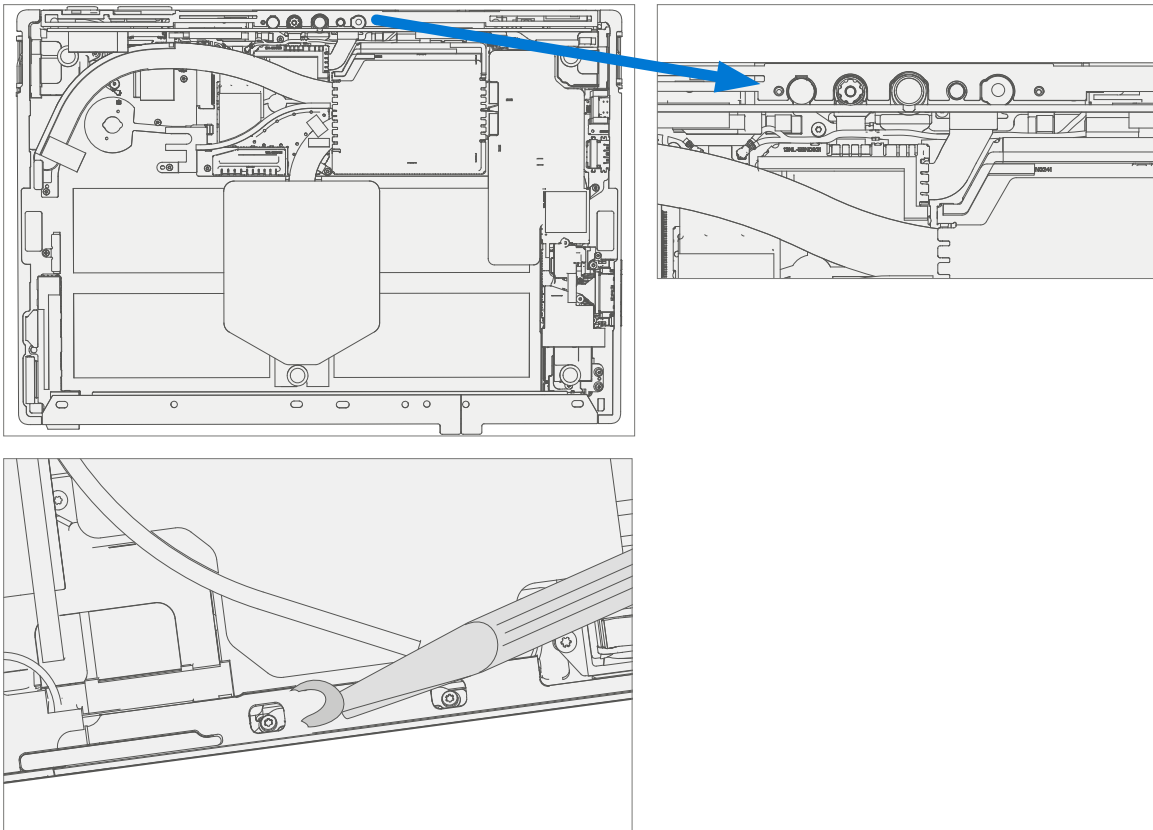
3. **Separate TDM From IBC** – Gently pull up vertically on the top edge of the glass while pushing down on the IBC with your thumbs to separate the glass. Lift the edges of the TDM and inspect for any remaining PSA. Slice or remove (with an iFixit Pick) any strands still connecting the TDM to the IBC.



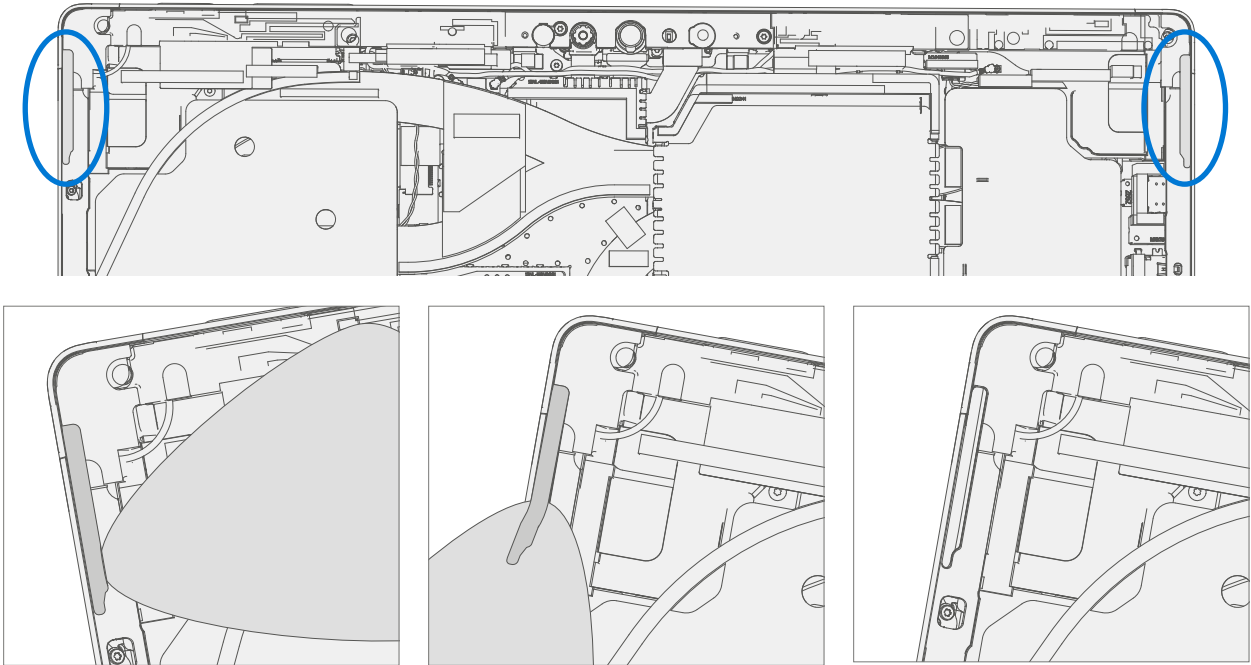
4. **Disconnect TDM FPCs** – While supporting the TDM with one hand, remove the shield lid on the TDM FPC by inserting pointed end of a spudger underneath the inner edge the of the shield. Then gently pull upwards and the shield will come off. Disconnect the TDM FPCs using the pointed end of a spudger. Do not pull on the FPCs to disconnect.



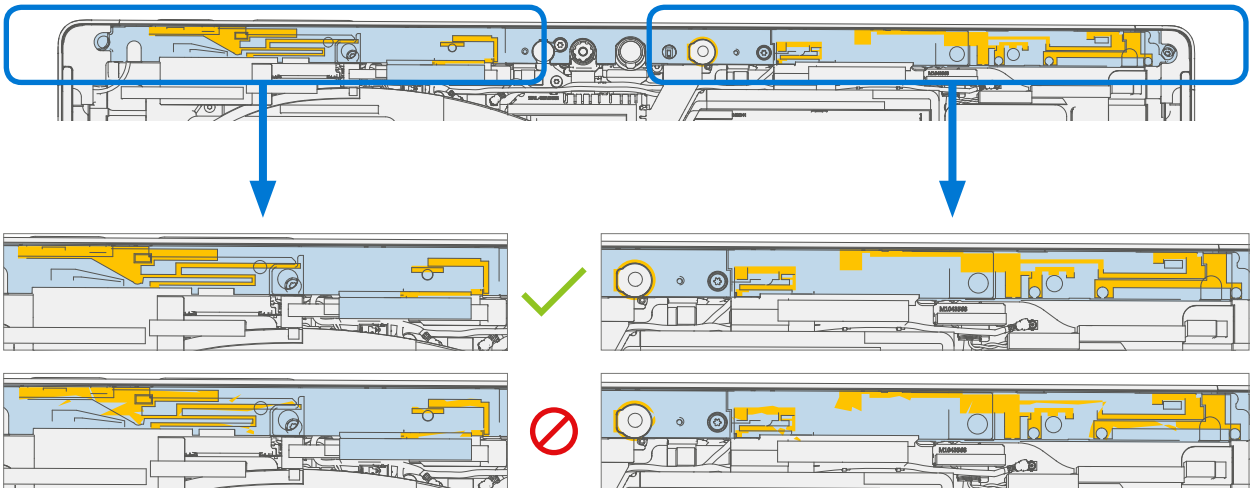
5. **Remove Residual IBC PSA** – Using flat side of a spudger, IPA, and cotton swabs, clean residual PSA off the IBC. Use only IPA and cotton swabs to clean the top edge. Ensure area around the Camera and IR Sensor is clean and free of any dust or other contamination. Wipe the area around the camera with a lint free cloth.



6. **Speaker Mesh** – Inspect speaker mesh for any signs of damage. Remove damaged speaker mesh from the IBC. Insert a pick between the Speaker mesh and the enclosure. Remove any residual adhesive using IPA and cotton swabs.



7. **Inspect for Antenna Deck (LTE Only)** – After removing the TDM on LTE devices, inspect the antenna deck gold traces. The passing criteria is shown below. Devices with damaged traces require **whole unit exchange**.

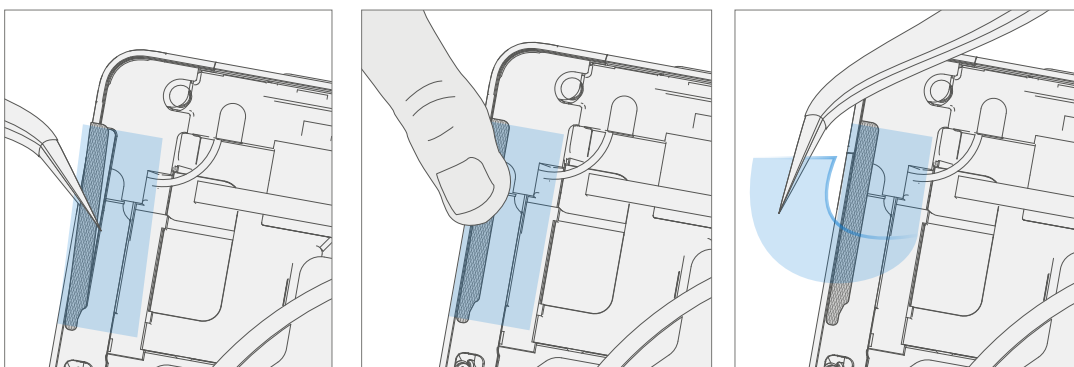


## Procedure – Installation (TDM)

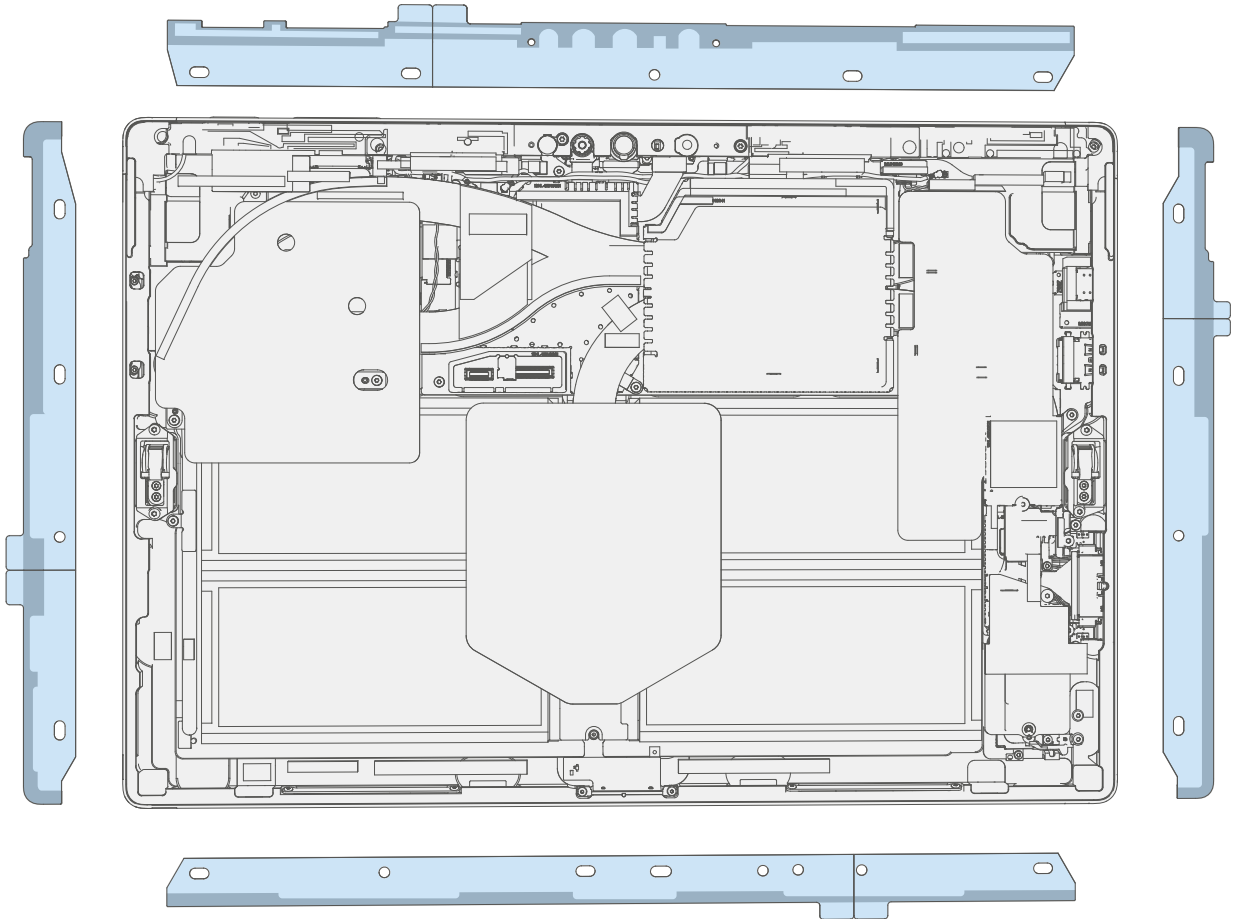
### 1. Pre-installation Device Inspection

- ⚠ **WARNING:** Verify the battery's condition refer to the M1153910 In Device Battery Inspection process. Devices exhibiting battery issues as outlined in the Battery Inspection Process require whole unit replacement.
- ✍ **IMPORTANT:** Leave protective cling on new TDM during all installation steps.
- ✍ **IMPORTANT:** Carefully inspect the internal areas of the bucket. Ensure the area around battery is free of any foreign objects.

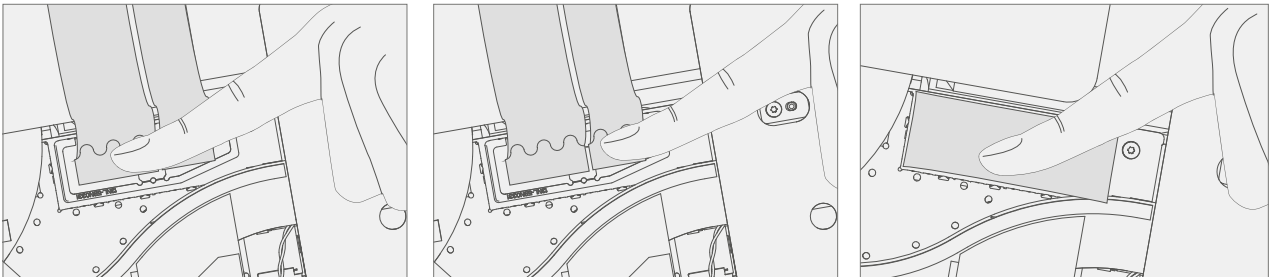
2. **Speaker Mesh Application (as required)** – Wipe down the outer edges of the speaker mesh region on the bucket with a cloth to remove any residue or debris before application of new mesh. Remove the protective liner from the speaker mesh. Align the speaker mesh into the corresponding bucket opening. Press onto the mesh for 10 seconds to activate the adhesive. Carefully remove the clear handle. Repeat this process for the other side of the bucket.



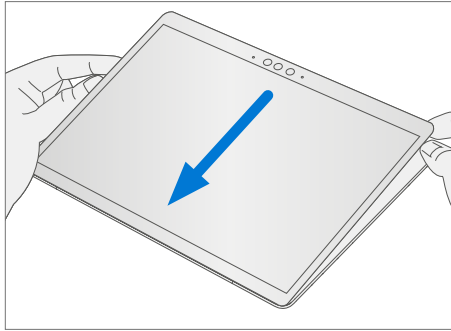
3. **TDM PSA Application** – Thoroughly clean the IBC along the TDM PSA bonding surface using IPA and a cotton swab. Wait at least 30 seconds before applying new PSA. Apply the 4 strips of PSA to the IBC. Align the PSA following the outline on the IBC. Leave the blue liner on the PSA, it will be removed at a later step. Refer to the below illustration for PSA locations.



4. **Connect TDM FPCs** – While supporting the TDM with one hand, connect the TDM FPCs by pressing them into the mainboard. Install a new shield over the TDM FPCs. Ensure all edges of the shield are snapped into place.

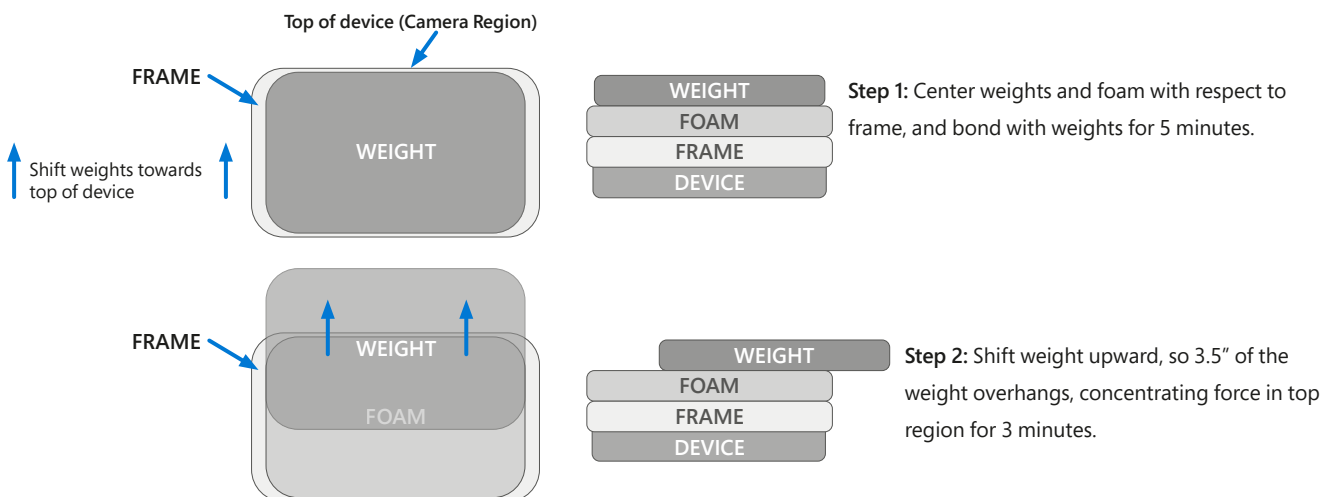
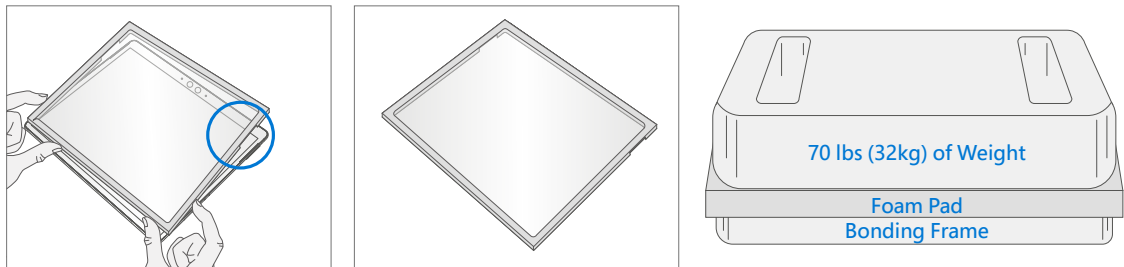


5. **Apply TDM to Bucket** – Hover the TDM and remove the PSA Liners to expose adhesive. Align the TDM along the bottom edge first (Toe-in) and lower after alignment is found. Ensure that the glass sits flush in the IBC and does not rest anywhere on top of the IBC lip.



6. **Bonding PSA** – Bonding is a two-step process. Refer to the below illustrations.

-  **IMPORTANT:** Weight Requirement:  
Minimum 32 kg (70 lb) / Maximum 35 kg (77 lb)  
Minimum Dimensions: 280mm x 200mm  
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 Bonding Frame.  
Weight must contact the full perimeter of the frame when placed above it.  
Recommended weights (Ruck Plates of 9 kg + 9 kg + 14 kg)  
When using Ruck weights place the 14 kg weight 1st  
then stack the two 9 kg of weight on top.



7. **After Bonding Inspection** – Remove the weights, foam pad, and the frame. Lift carefully to avoid damaging the device. Inspect the TDM for scratches, cracks, large gaps, and its flushness with respect to the IBC.
8. **Install rSSD** – Install the rSSD as detailed in the Procedure – Installation (rSSD) ([page 19](#))
9. **TDM Calibration** – Device final calibration relies on the successful completion of the **TDM Replacement Mode**.
  - a. **Connect software tools USB** drive with SDT to USB connector on device under repair.
  - b. **Power on device** – Depress the power button on the side of the device.
  - c. **Run software tool** – At the device OS, use Windows Explorer, navigate to USB drive and run:  
**SDT** – Select Repair setup and validation. Run the Touch Display Calibration. Accept the restart prompt at the end of the tool process.

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⚠ **WARNING:** This step must be carried out on the device successfully. Any tool failures require restarting the TDM replacement process with a new FRU.

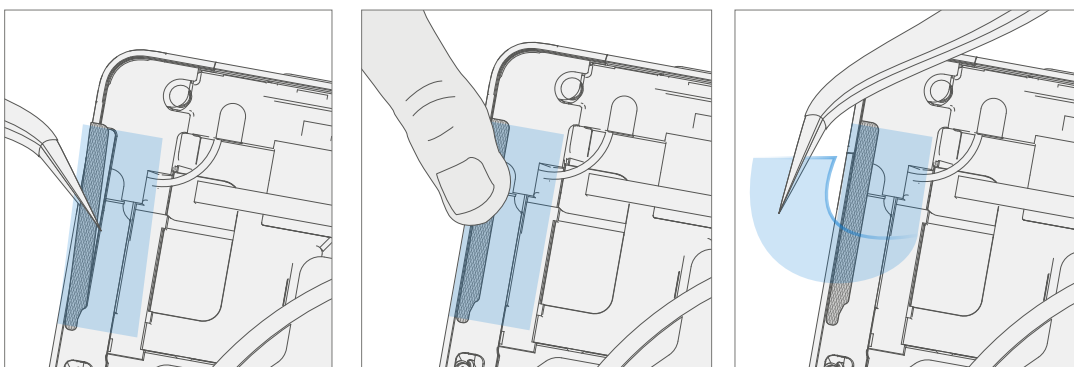
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10. **Run SDT** – Run all SDT tests to ensure all device features and functions operate as expected.
11. **Final inspection TDM installation** – Remove protective cling from the TDM. Verify the side edges of the TDM are flush, and that there are no obvious steps/gaps between the TDM and the IBC. Wipe the device thoroughly (including under the kickstand) with the microfiber cloth to remove all fingerprints.

## Procedure – Alternate Installation (TDM)

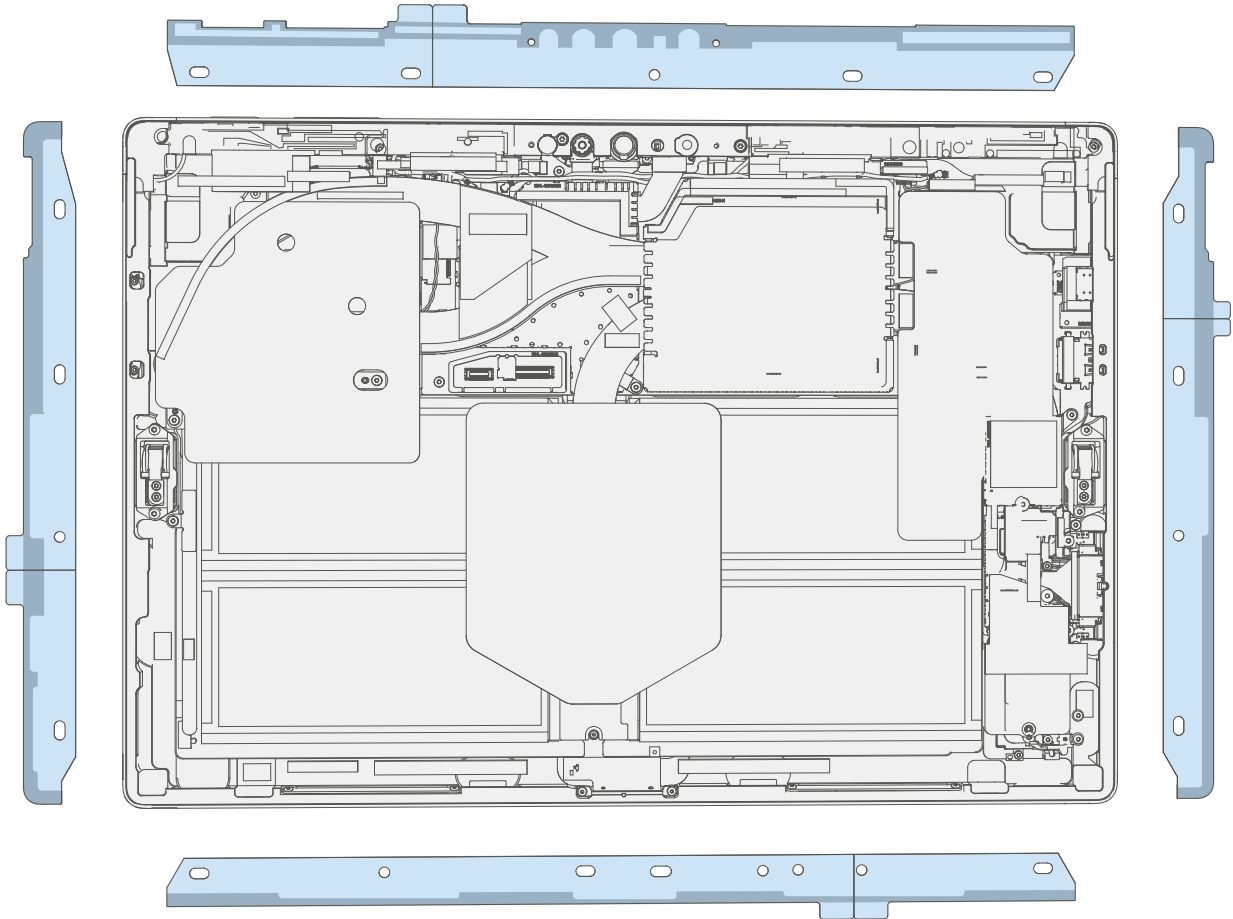
### 1. Pre-installation Device Inspection

- ⚠ **WARNING:** Verify the battery's condition refer to the M1153910 In Device Battery Inspection process. Devices exhibiting battery issues as outlined in the Battery Inspection Process require whole unit replacement.
- ✍ **IMPORTANT:** Leave protective cling on new TDM during all installation steps.
- ✍ **IMPORTANT:** Carefully inspect the internal areas of the bucket. Ensure the area around battery is free of any foreign objects.

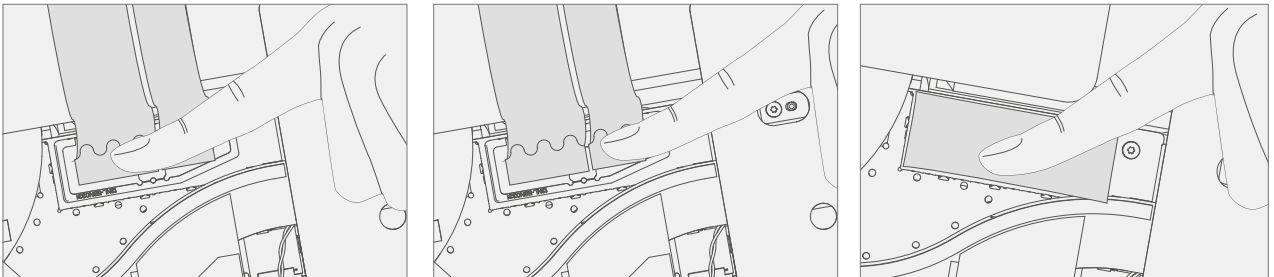
2. **Speaker Mesh Application (as required)** – Wipe down the outer edges of the speaker mesh region on the bucket with a cloth to remove any residue or debris before application of new mesh. Remove the protective liner from the speaker mesh. Align the speaker mesh into the corresponding bucket opening. Press onto the mesh for 10 seconds to activate the adhesive. Carefully remove the clear handle. Repeat this process for the other side of the bucket.



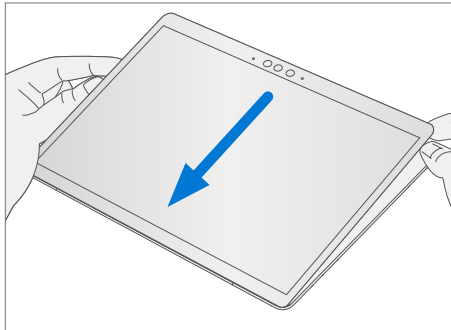
3. **TDM PSA Application** – Thoroughly clean the IBC along the TDM PSA bonding surface using IPA and a cotton swab. Wait at least 30 seconds before applying new PSA. Apply the 4 strips of PSA to the IBC. Align the PSA following the outline on the IBC. Leave the blue liner on the PSA, it will be removed at a later step. Refer to the below illustration for PSA locations.



4. **Connect TDM FPCs** – While supporting the TDM with one hand, connect the TDM FPCs by pressing them into the mainboard. Install a new shield over the TDM FPCs. Ensure all edges of the shield are snapped into place.

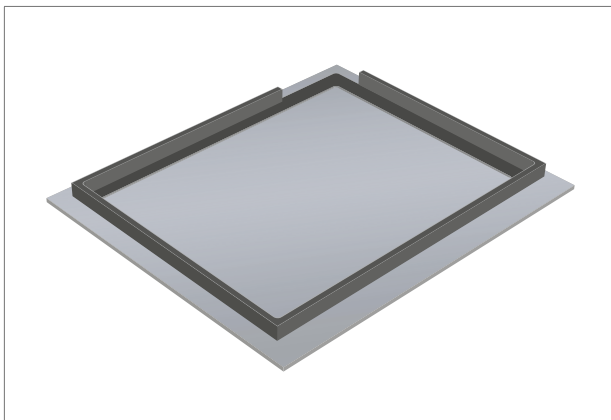


5. **Apply TDM to Bucket** – Hover the TDM and remove the PSA Liners to expose adhesive. Align the TDM along the bottom edge first (Toe-in) and lower after alignment is found. Ensure that the glass sits flush in the IBC and does not rest anywhere on top of the IBC lip. Lightly press on the edges of the TDM to create an initial bond.

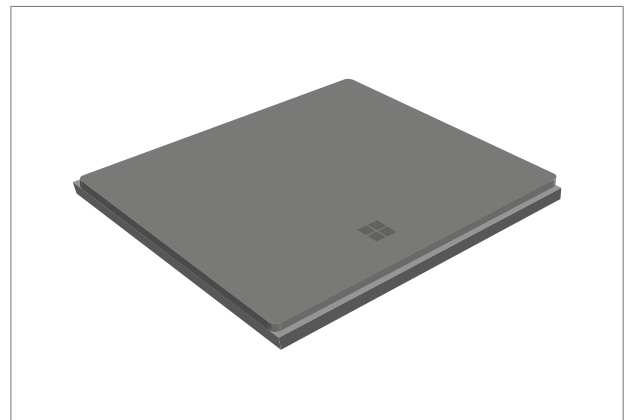


6. **Alternate Bonding PSA** – Bonding is a multi-step process. Refer to the below illustrations.

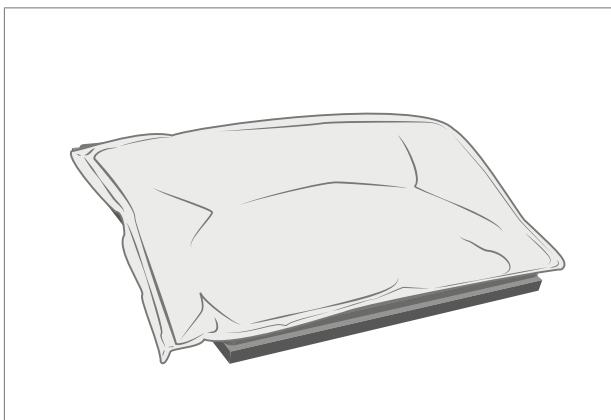
 **IMPORTANT:** Use steel shot bags two 9 kg and one 14 kg. Apply the 1st 9 kg bag, then the 14 kg bag, and then the 2nd 9 kg bag.



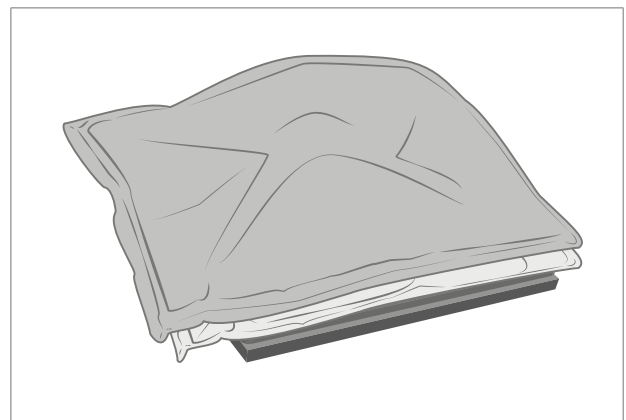
Foam pad with bonding frame face down



Place device display side down into bonding frame

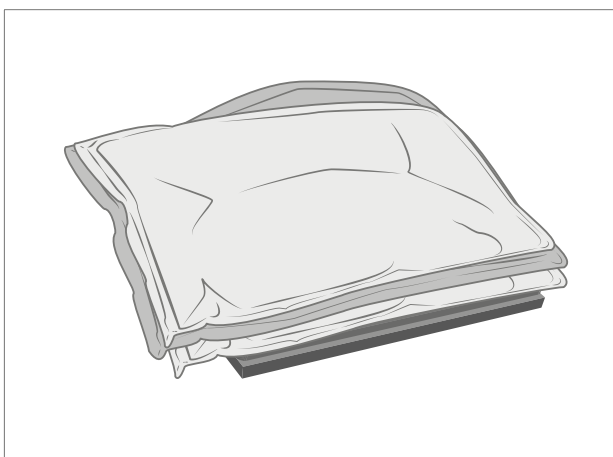


Place first 9 kg steel shot bag onto device



Place 14 kg steel shot bag onto first 9 kg bag

Continued on next page.



Place second 9 kg steel shot bag onto 14 kg 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 steel shot bags and lift device out of the frame. Lift carefully to avoid damaging the device. Inspect the TDM for scratches, cracks, large gaps, and its flushness with respect to the IBC.
  8. **Install rSSD** – Install the rSSD as detailed in the Procedure – Installation (rSSD) ([page 19](#))
  9. **TDM Calibration** – Device final calibration relies on the successful completion of the **TDM Replacement Mode**.
    - a. **Connect software tools USB** drive with SDT to USB connector on device under repair.
    - b. **Power on device** – Depress the power button on the side of the device.
    - c. **Run software tool** – At the device OS, use Windows Explorer, navigate to USB drive and run: **SDT** – Select Repair setup and validation. Run the Touch Display Calibration. Accept the restart prompt at the end of the tool process.
- 
- ⚠ WARNING:** This step must be carried out on the device successfully. Any tool failures require restarting the TDM replacement process with a new FRU.
- 
10. **Run SDT** – Run all SDT tests to ensure all device features and functions operate as expected.
  11. **Final inspection TDM installation** – Remove protective cling from the TDM. Verify the side edges of the TDM are flush, and that there are no obvious steps/gaps between the TDM and the IBC. Wipe the device thoroughly (including under the kickstand) with the microfiber cloth to remove all fingerprints.

## Environmental Compliance Requirements

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

