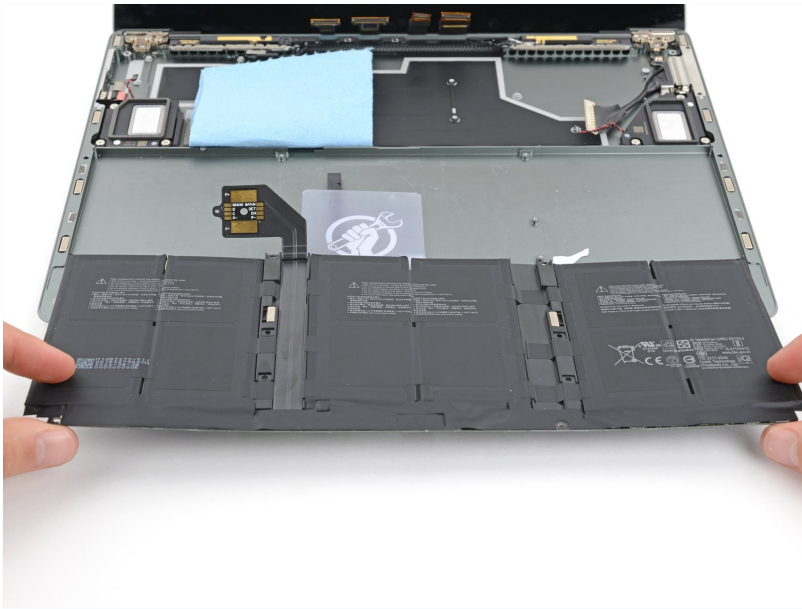




Microsoft Surface Laptop 4 (13.5-inch) Battery Replacement

Follow this guide to replace the battery in...

Written By: Clay Eickemeyer



INTRODUCTION

Follow this guide to replace the battery in your Microsoft Surface Laptop 4 (13.5-inch).

If your battery is swollen, [take appropriate precautions](#).

You'll need replacement adhesive for the battery to complete this repair. Strong double-sided tape like [Tesa 61395](#) is recommended.

Some photos in this guide are from a different model and may contain slight visual discrepancies, but they won't affect the guide procedure.

TOOLS:

- [Tweezers](#) (1)
- [Tesa 61395 Double-Sided Tape](#) (1)
- [T5 Torx Screwdriver](#) (1)
- [Spudger](#) (1)
- [T3 Torx Screwdriver](#) (1)
- [Isopropyl Alcohol \(90% or Greater\)](#) (1)
- [Coffee Filters or a lint-free cloth](#) (1)
- [Thermal Paste](#) (1)
- [iOpener](#) (1)
- [iFixit Opening Picks \(Set of 6\)](#) (1)
- [Plastic Cards](#) (1)
- [iFixit Adhesive Remover](#) (1)

Step 1 — Prepare your laptop for disassembly



⚠️ Allow your laptop's battery to drain below 25% before starting this repair. A charged battery may catch fire if damaged.

- Unplug all cables and fully shut down your laptop.

Step 2 — Flip the laptop over



- Close the screen and lay your laptop down with the rear case facing up to access the four rubber feet.

Step 3 — Feet removal information



- ① Each foot has a recess to help pry it from the laptop:
- The back feet recesses are closest to the back edge of the laptop.
 - The front feet recesses are closest to the front edge of the laptop.

Step 4 — Remove the feet



- Insert one arm of your [tweezers](#) into the recess of one of the feet.
- Twist your tweezers and pry up to separate the adhesive and unclip the foot from the laptop.
⚠ The feet eject very quickly—be careful not to lose them.
- Remove the foot.
- Repeat this process on the remaining feet.

Step 5 — Reassembly information



- ☑ This laptop has two different types of feet. During reassembly, make sure the feet go in their correct recesses.
 - The [rear feet](#) have a single center clip.
 - The [front feet](#) have three clips and can only be reinserted one way.
- ☑ Press the feet into their recesses to secure them to the frame.
 - If the existing feet no longer adhere to the frame, remove the old adhesive and apply a small amount of [Tesa Tape](#) where the old adhesive was.

Step 6



★ If the feet are damaged or worn out, use [8 mm rubber furniture pads](#):

- Peel a pad away from its backing.
- Align the pad over a foot cavity and press down to secure it.

Step 7 — Unfasten the upper case



⚠ These screws strip easily.
Apply constant, downward
force to prevent stripping.

- Use a T5 Torx driver to remove the four 3 mm screws securing the upper case.
- ① Throughout this repair, [keep track of each screw](#) and make sure it goes back exactly where it came from.

Step 8 — Open the screen



- Flip your laptop over and fully open the screen.

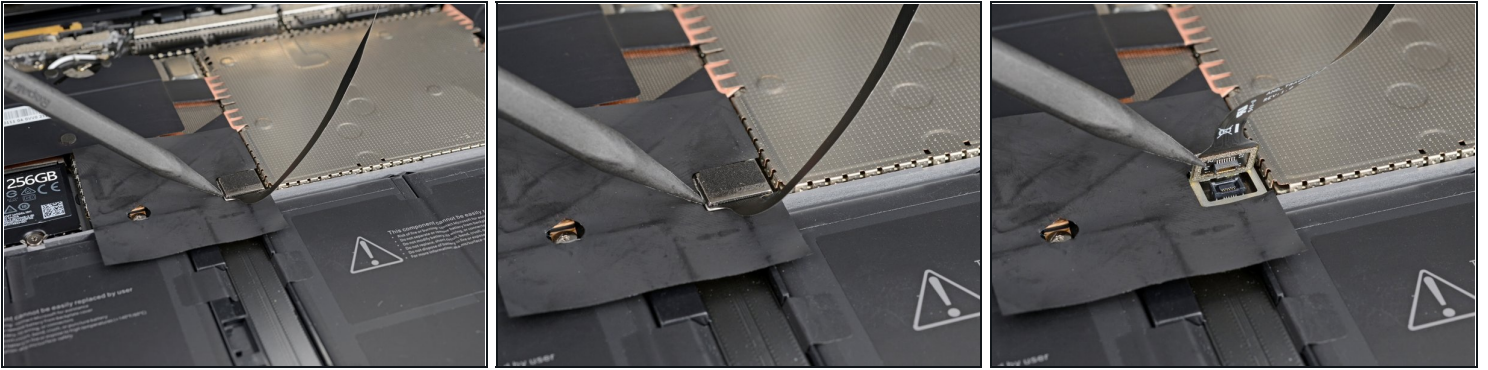
Step 9 — Lift the upper case



i The upper case is secured by magnets.

- Grip the top edge of the upper case above the keyboard and lift straight up to release it.
⚠ Don't try to completely remove the upper case, as it's still connected to the laptop by a cable.
- Lift the bottom edge of the upper case up and away from the laptop, taking care to not strain the ribbon cable underneath.
- ☑ During reassembly, lower the upper case onto the lower case until the magnets snap into place and it lays flat.
⚠ Check that the upper case sits flush around the entire perimeter. Any gaps between the upper and lower case near the screen could damage the screen as it closes.

Step 10 — Disconnect the keyboard and touchpad cable



- ❗ The keyboard and touchpad cable connects the upper case to the laptop.
- Insert the pointed end of a spudger under one edge of the magnet connector and pry up to disconnect it.
- 🔧 To reconnect the cable, align the magnet connector over its socket with the cable facing the bottom of the laptop. Press down on the connector to secure it.

Step 11 — Remove the upper case



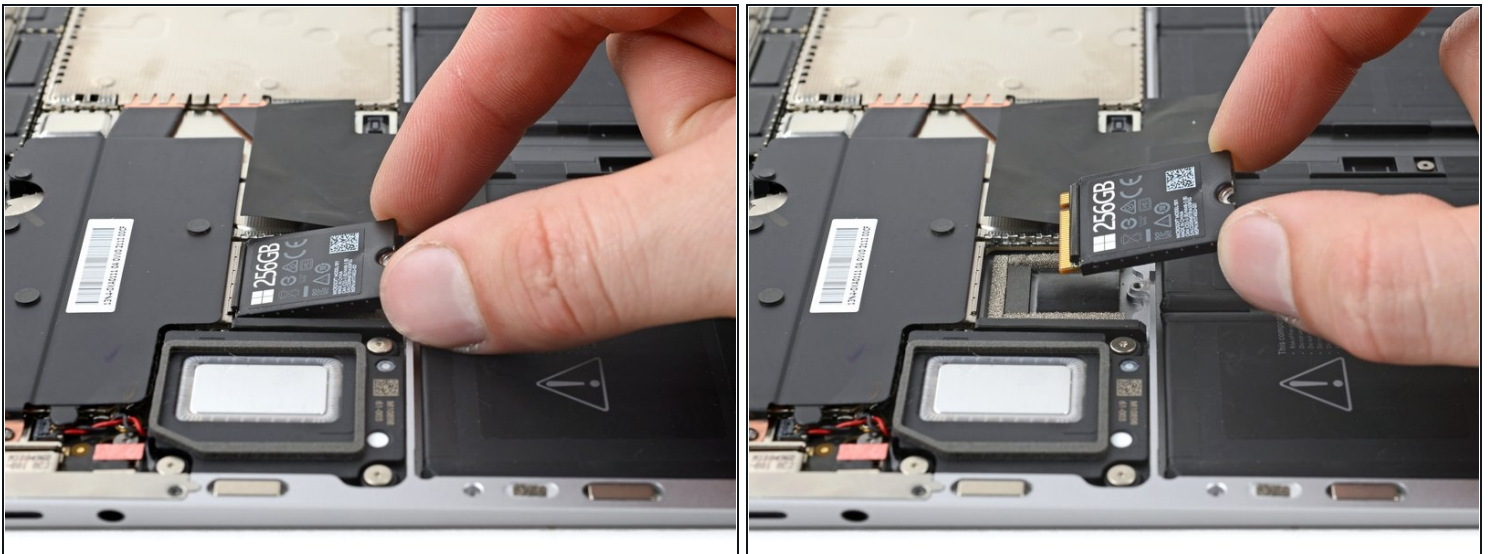
- Remove the upper case and set it keyboard-side down on a clean surface.

Step 12 — Unfasten the SSD



- Use a T5 Torx driver to remove the 2.7 mm screw securing the SSD.
- ① With the screw removed, the SSD pops up at a shallow angle.

Step 13 — Remove the SSD



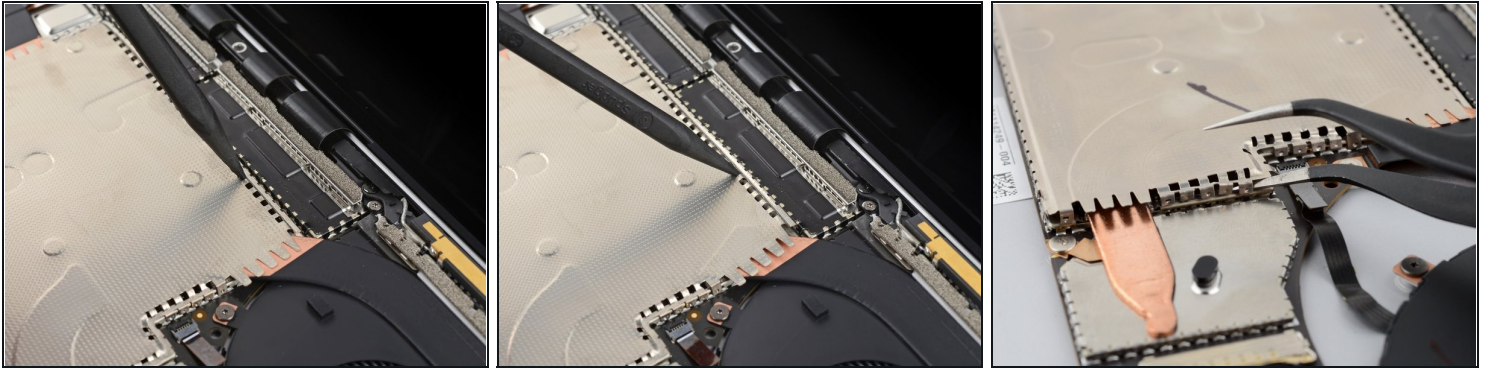
① Removing the SSD also [functions as a battery disconnect](#).

- Pull the SSD out of its socket and remove it.

⚠ Don't pull up at a sharp angle, as this could damage the SSD and its socket.

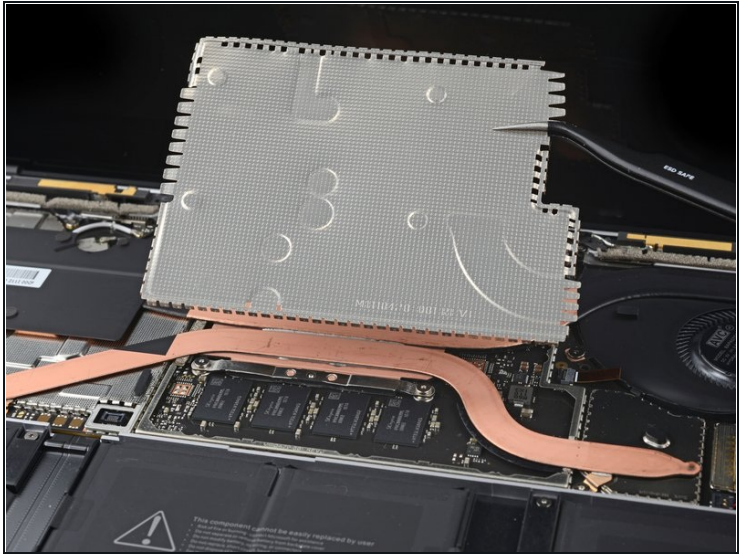
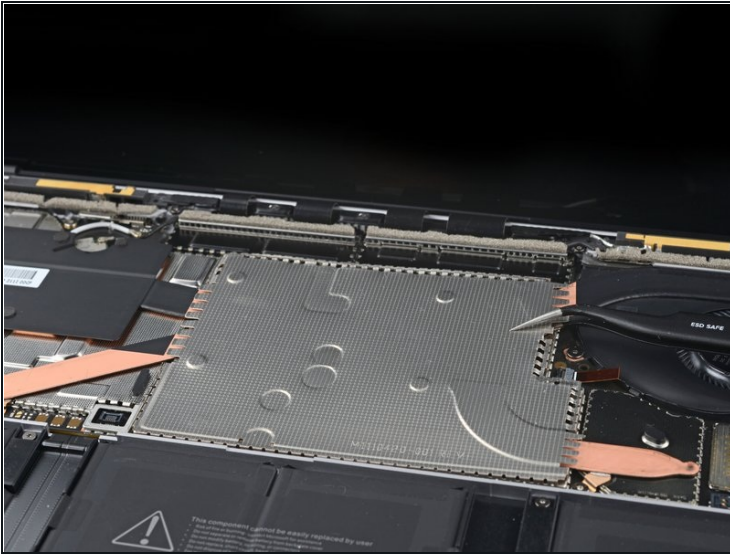
- ★ During reassembly, insert the SSD at a slight angle.

Step 14 — Unclip the heatsink shield



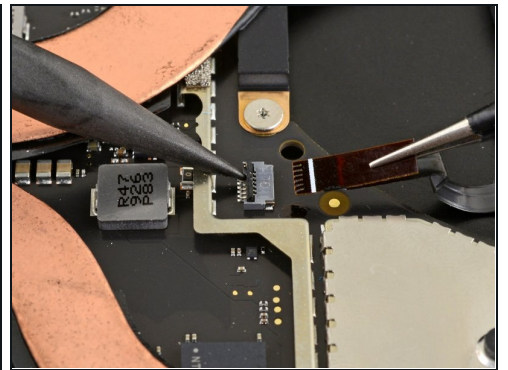
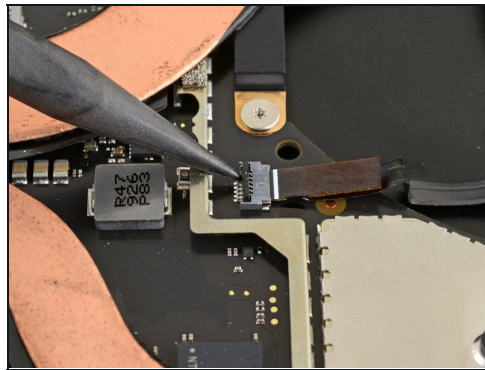
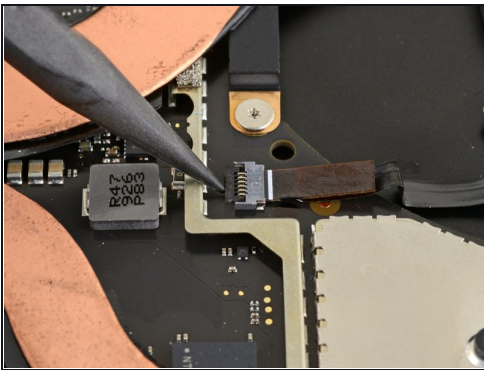
- ⓘ Try not to deform the shield too much. You'll need to reinstall it during reassembly.
- Insert the pointed end of a spudger in one of the gaps on the top edge of the [heatsink shield](#).
 - Gently pry up to release the clips securing the shield.
 - Repeat this process along the right edge.
 - Insert one arm of your [tweezers](#) under the bottom right edge of the heatsink shield.
 - Gently pry up to release the remaining clips.

Step 15 — Remove the heatsink shield



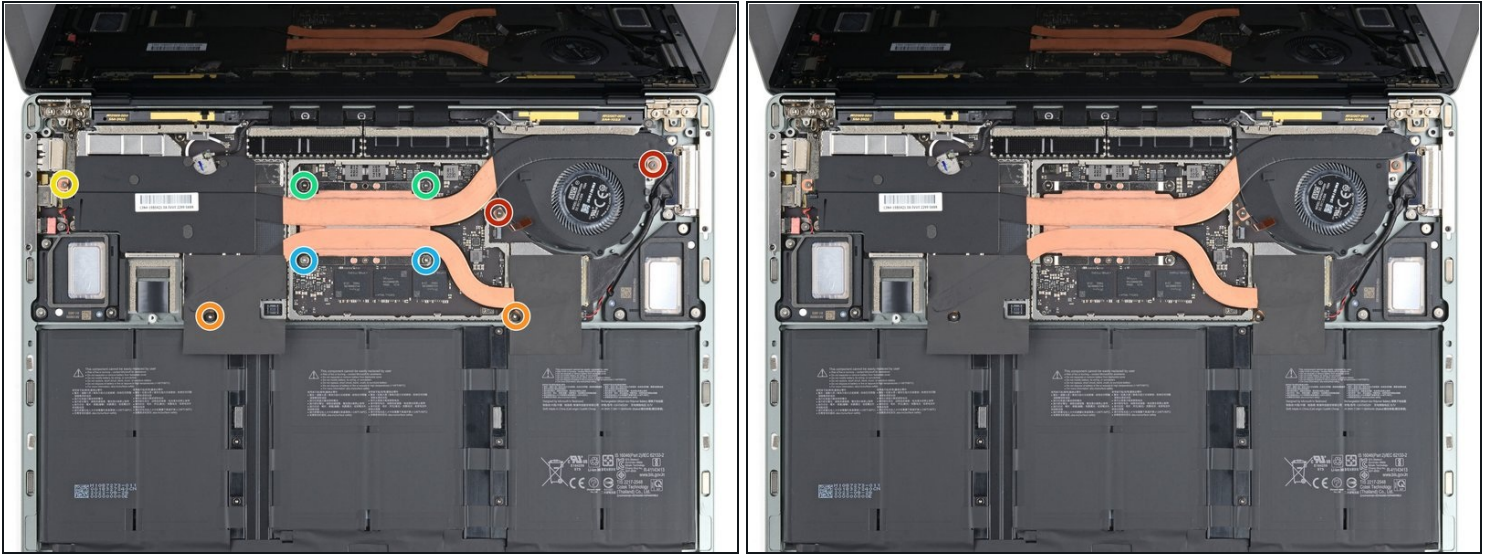
- Remove the heatsink shield.
- ☒ To reinstall a shield, press down around its perimeter to engage the shield clips.

Step 16 — Disconnect the fan



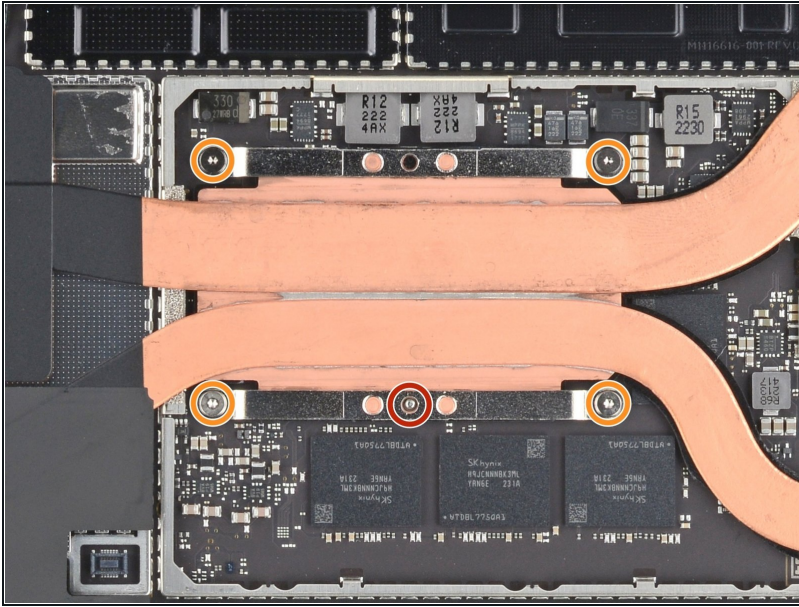
- Use the pointed end of a spudger to flip up the locking flap on the fan cable [ZIF connector](#).
- Grip the fan cable pull-tab with tweezers and pull the cable straight out of the connector.

Step 17 — Unfasten the heatsink



- Use a T3 Torx driver to remove the nine screws securing the heatsink:
 - Two 2.5 mm screws
 - Two 2 mm screws
 - One 3 mm screw
 - Two 4.1 mm screws
 - Two 3.4 mm screws

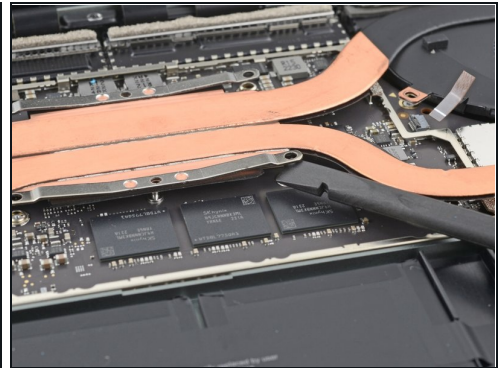
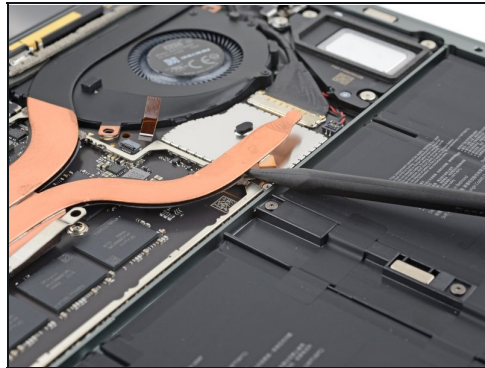
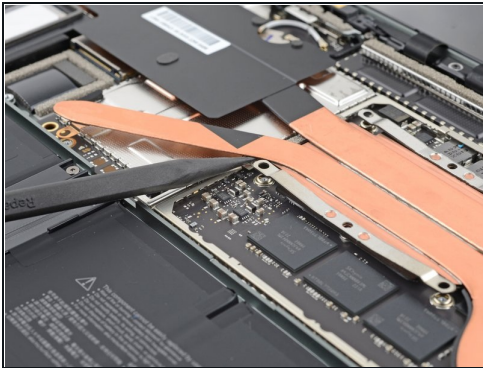
Step 18 — Reassembly information



During reassembly:

- Align the heatsink with the centering peg on the motherboard.
- Tighten the four CPU tension screws in an "X" pattern: top left, bottom right, top right, bottom left.

Step 19 — Pry up the heatsink



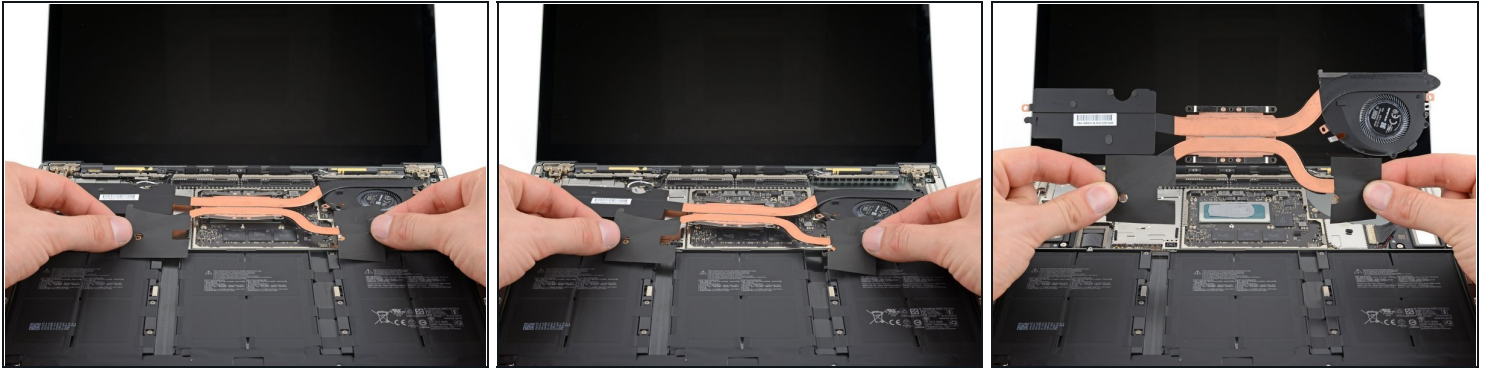
i Thermal paste bonds the heatsink to the CPU.

- Insert your spudger under the left heat pipe.
- Pry up to release the left section of the heatsink.

⚠ This may take some force. Be careful not to bend the heat pipes.

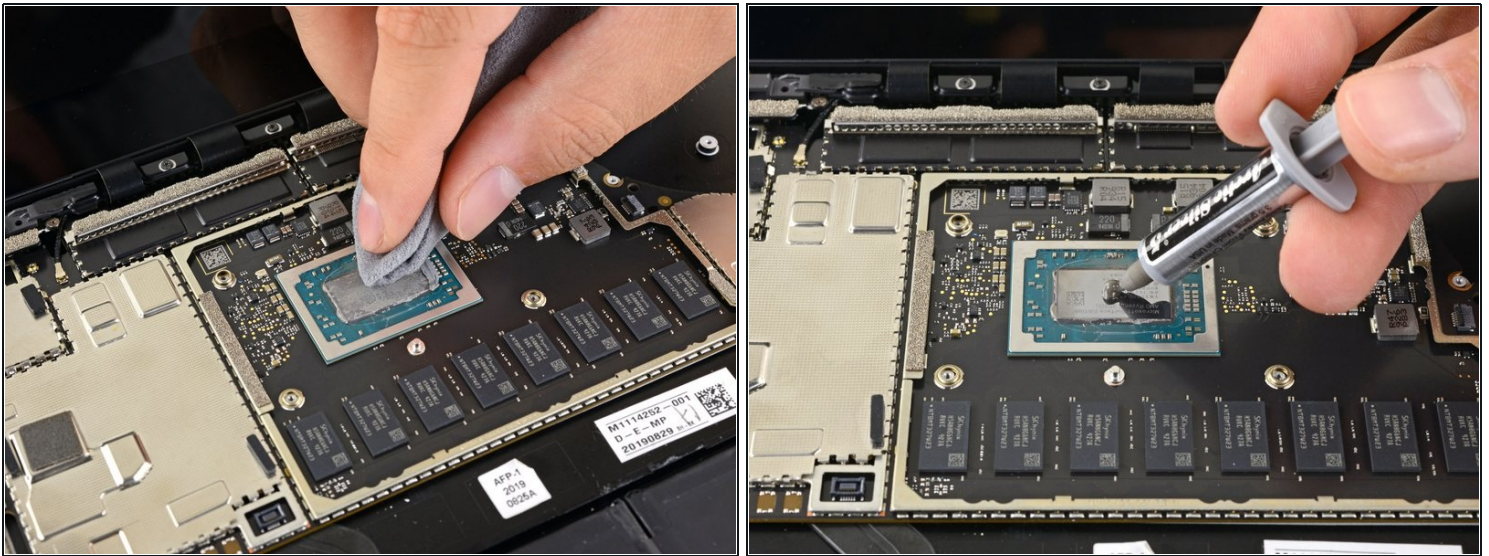
- Repeat this procedure for the right heat pipe and the CPU screw mounts until the heatsink is completely separated from the motherboard.

Step 20 — Remove the heatsink



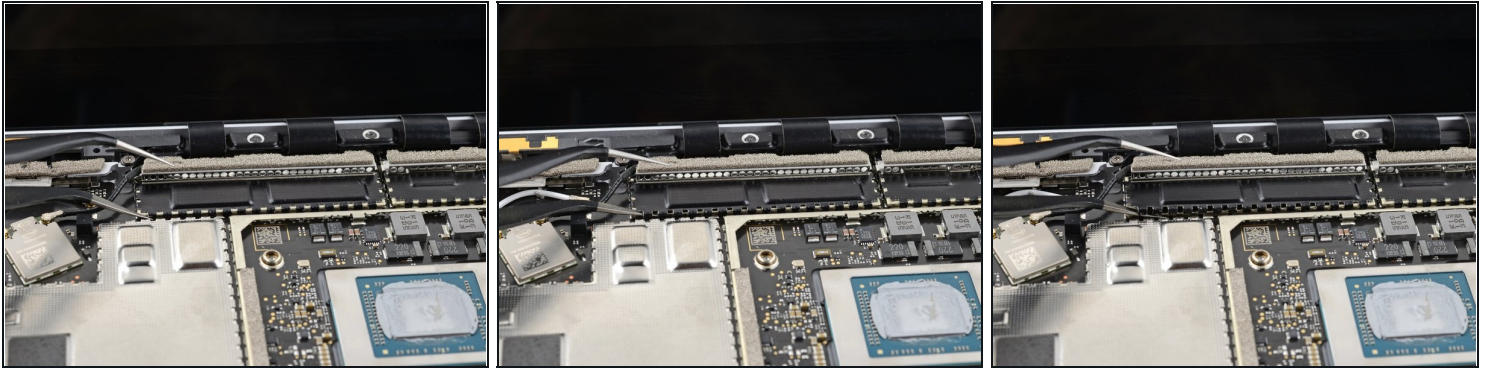
- Lift the heatsink and fan over the [alignment peg](#) in the upper right corner.
- Slide the heatsink and fan toward the front edge of the laptop and remove it.

Step 21 — Reapply thermal paste



- ☑ Before reinstalling the heatsink, follow [this guide](#) to clean the heatsink and CPU and reapply thermal paste.

Step 22 — Remove the display cable shields



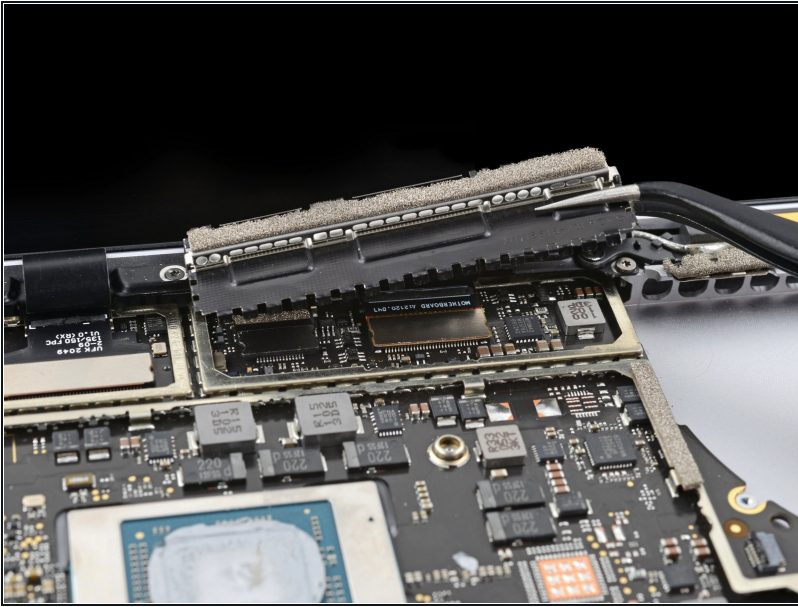
- Insert one arm of your [tweezers](#) under the corner of the [left display cable shield](#).
- Gently pry up to release the clips securing the shield.
 - ❗ Try not to deform the shield too much. You'll need to reinstall it during reassembly.
- Repeat this process around the perimeter of the shield until you can remove it.

Step 23



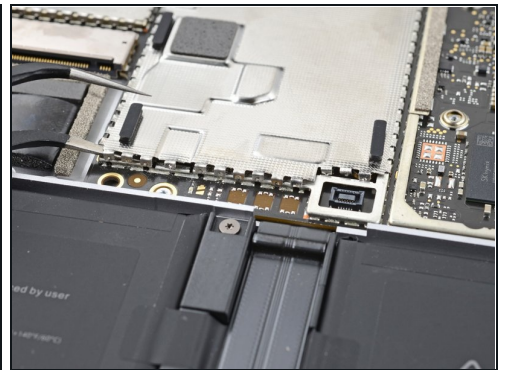
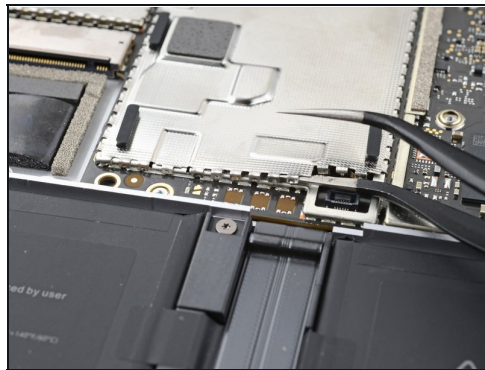
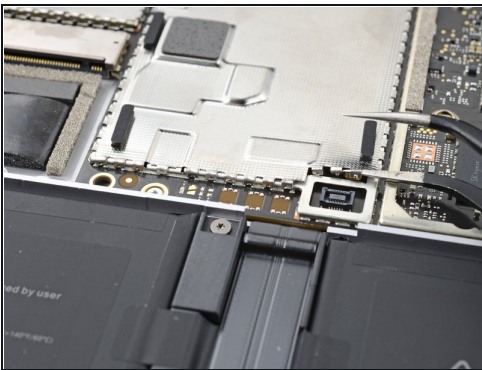
- Pull the left display cable shield way from the screen to free it from its recess.
- Remove the shield.

Step 24



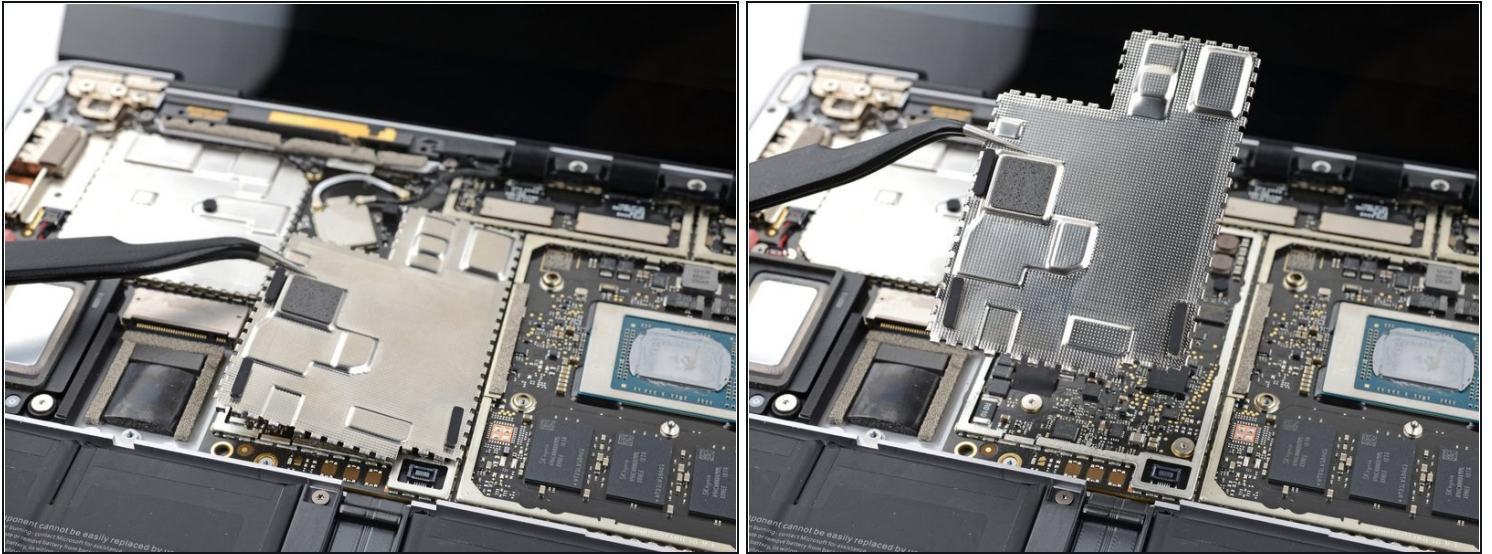
- Repeat the previous two steps to remove the [right display cable shield](#).

Step 25 — Unclip the left motherboard shield



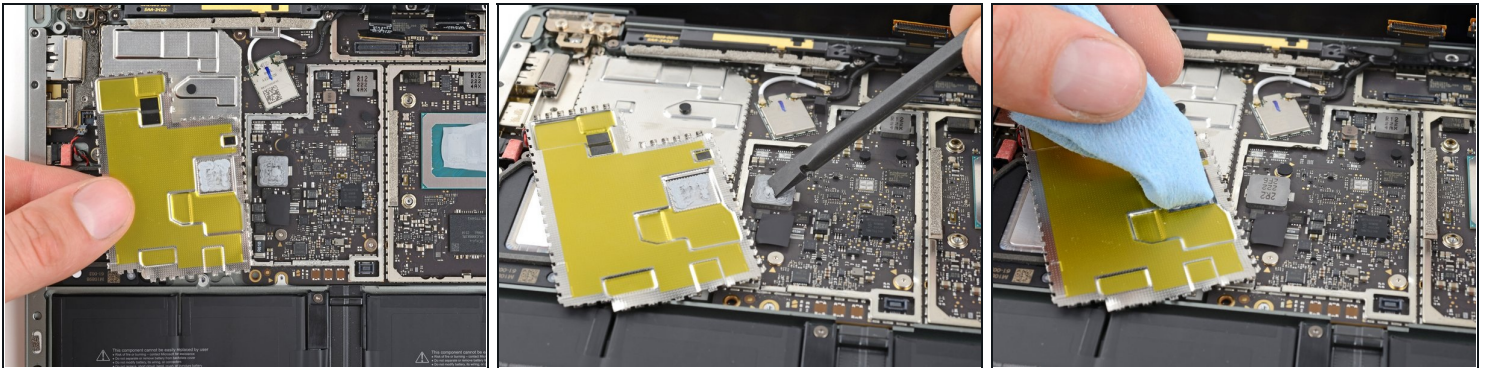
- ① Some motherboard screws are located under [two of the metal shields](#), both of which need to be removed.
- Insert one arm of your tweezers under the corner of the left touchpad shield.
- Gently pry up to release the clips securing the shield.
 - ① Try not to deform the shield too much. You'll need to reinstall it during reassembly.
- Repeat this process around the perimeter of the shield until you can remove it.

Step 26 — Remove the left motherboard shield



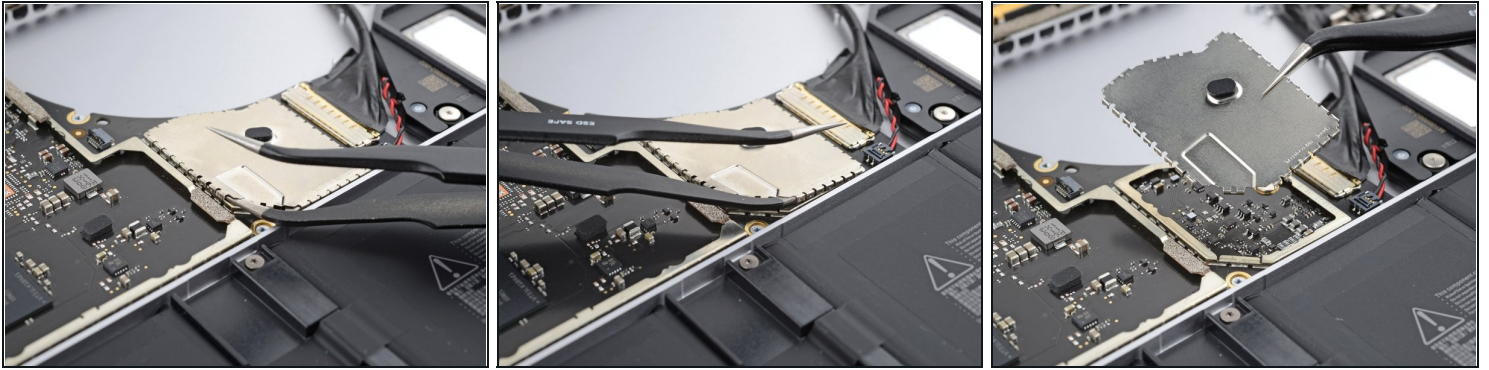
- Remove the left motherboard shield.

Step 27 — Clean and reapply thermal paste



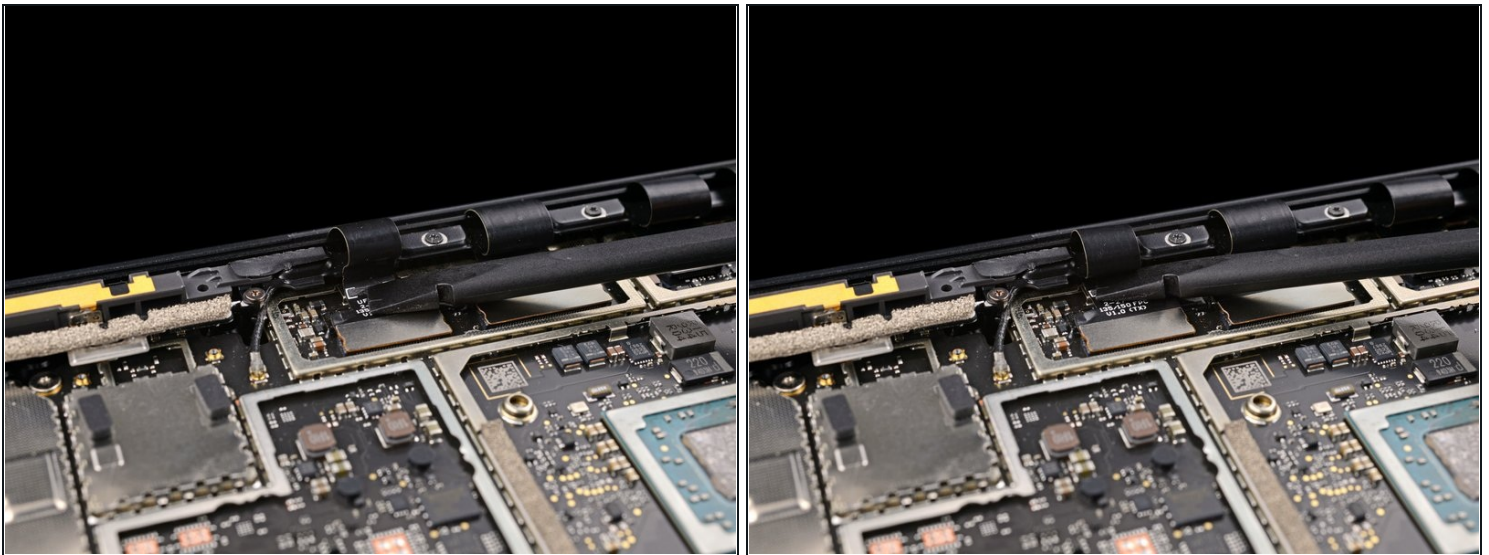
- ⓘ There may be thermal paste between the motherboard and its left shield.
- ☑ Before reinstalling the left motherboard shield, follow [this guide](#) to clean and reapply thermal paste.

Step 28 — Remove the right motherboard shield



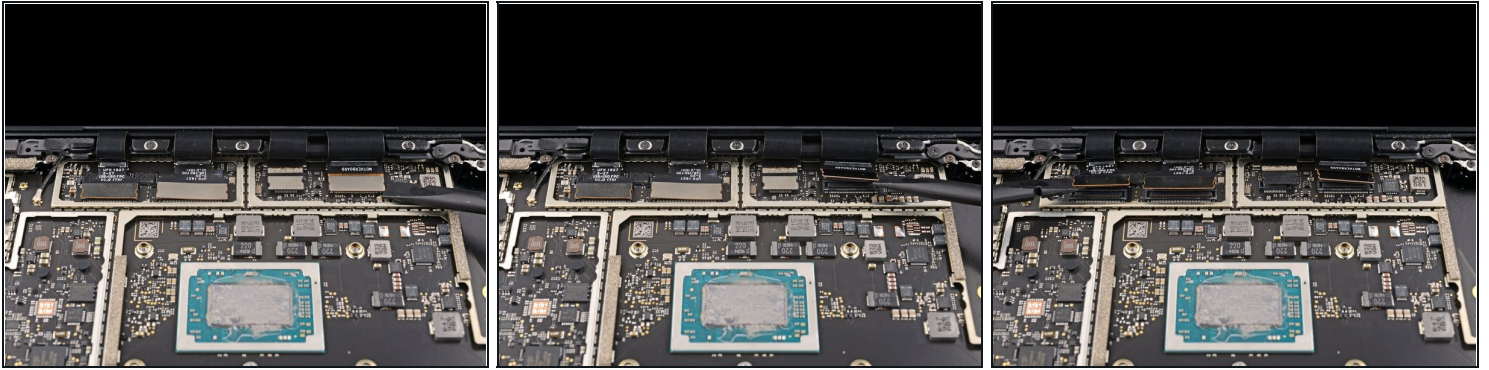
- Insert one arm of your tweezers under the corner of the right motherboard shield and pry around its perimeter up to release the clips.
- Remove the right motherboard shield.

Step 29 — Reassembly information



- ☑ During reassembly, use the flat end of a spudger to gently push the display cables back into their cavity in the lower case after reconnecting the press connectors.

Step 30 — Disconnect the display cables



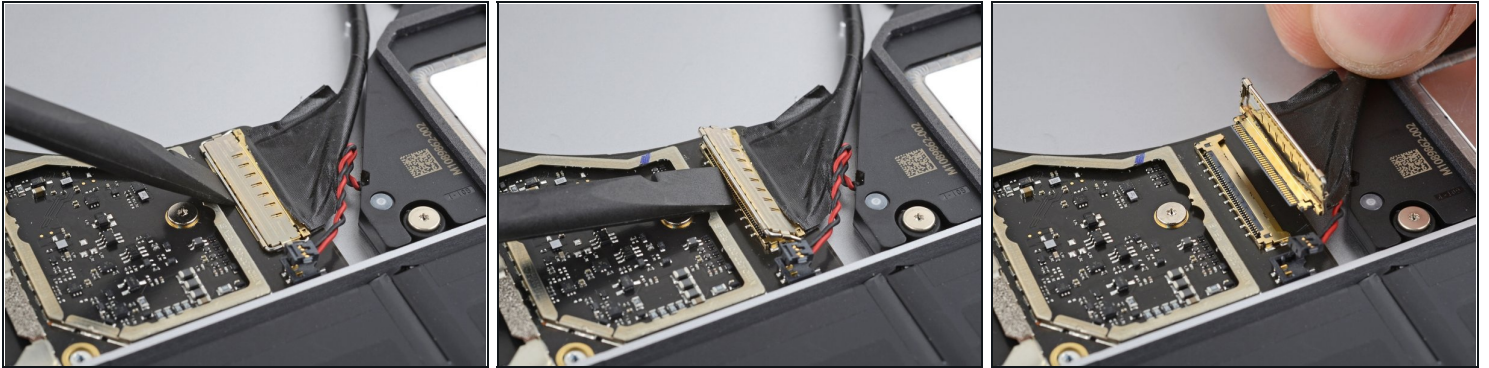
- Use the flat end of a spudger to pry up and disconnect all four display cable press connectors.
- ① To re-attach [press connectors](#), carefully align and press down on one side until it clicks into place, then repeat on the other side. Don't press down in the middle. If the connector is misaligned, the pins can bend and cause permanent damage.

Step 31 — Disconnect the right speaker



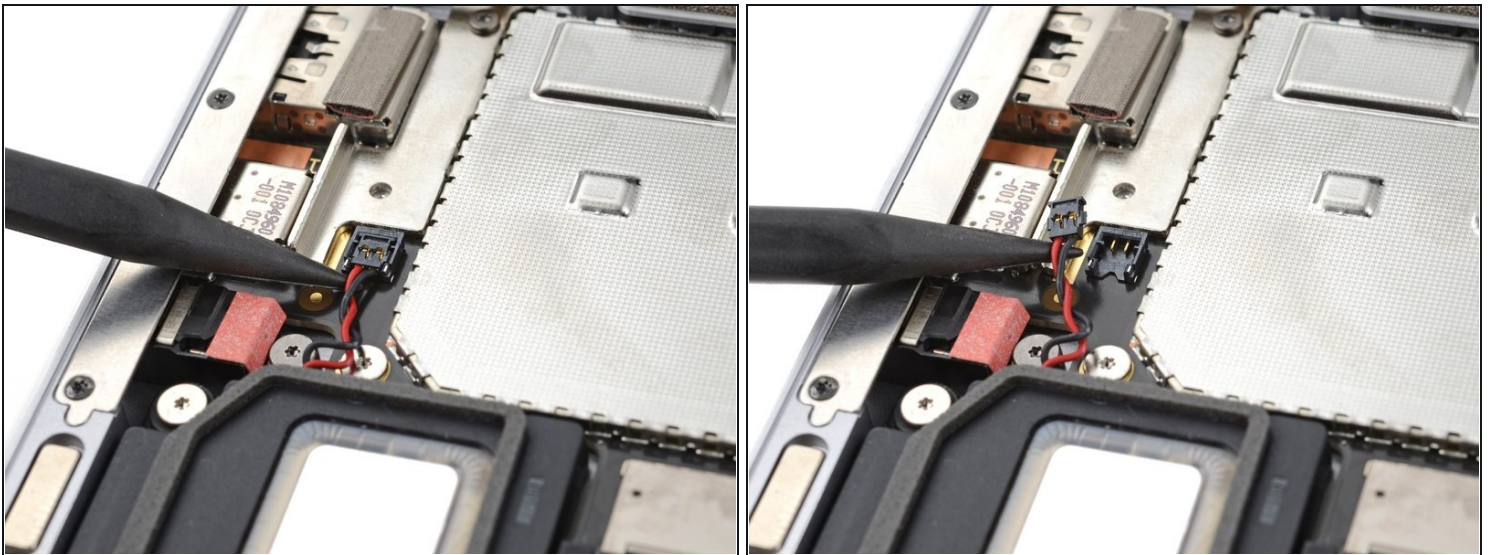
- Use the pointed end of a spudger to lift and disconnect the right speaker wire from its connector on the motherboard.

Step 32 — Disconnect the Surface Connect port



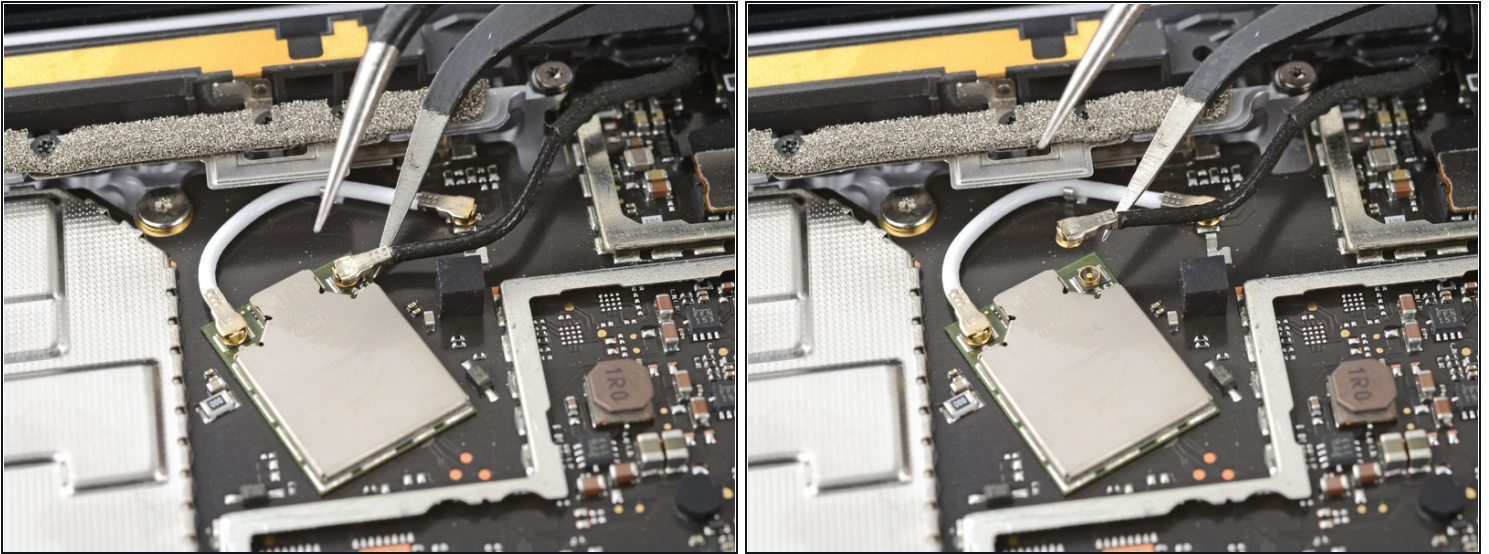
- Use the flat end of a spudger to flip open the locking arm on the Surface Connect port connector.
- Grip the Surface Connect port cable and pull it straight out of its socket.

Step 33 — Disconnect the left speaker



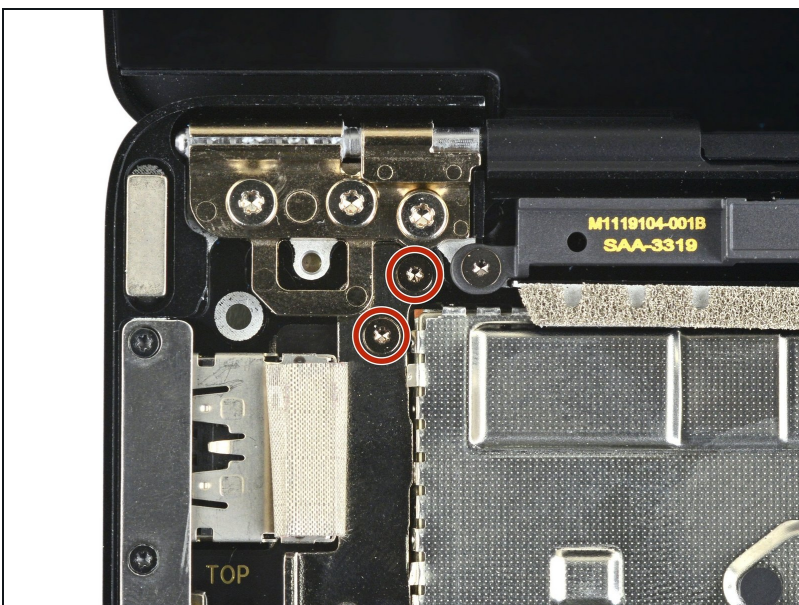
- Use the pointed end of a spudger to lift and disconnect the left speaker wire from its connector near the left ports.

Step 34 — Disconnect the black antenna cable



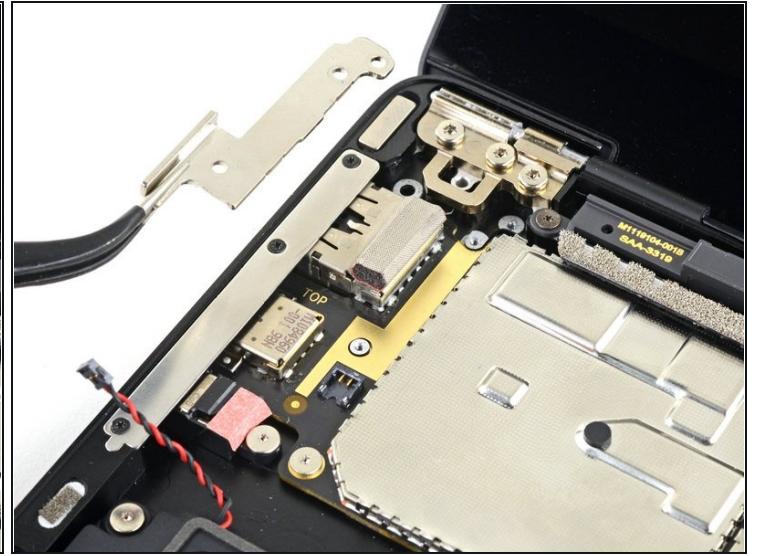
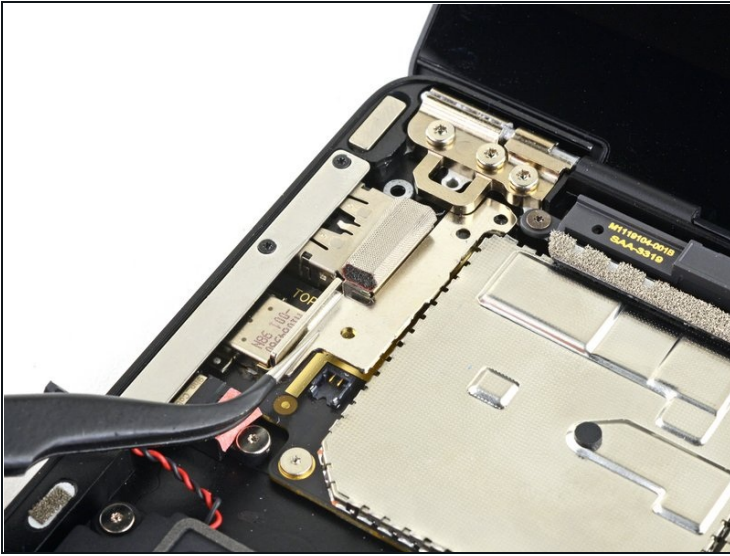
- Slide one arm of your tweezers under the **black antenna connector**, as close to the head as possible.
 - Lift straight up to disconnect the cable.
- ☒ To reattach antenna connectors, align the head of the connector over its socket and press down with the flat end of a spudger. The connector will snap into place.

Step 35 — Unfasten the motherboard bracket



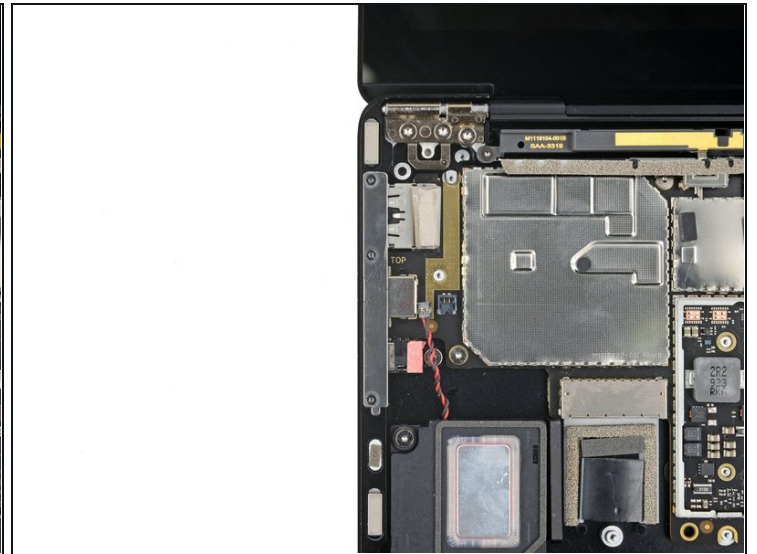
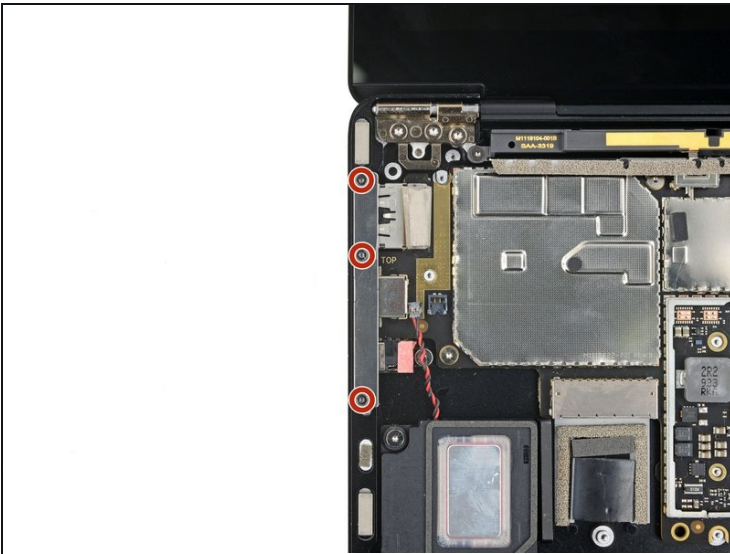
- Use a T3 Torx driver to remove the two 3 mm screws securing the motherboard bracket.

Step 36 — Remove the motherboard bracket



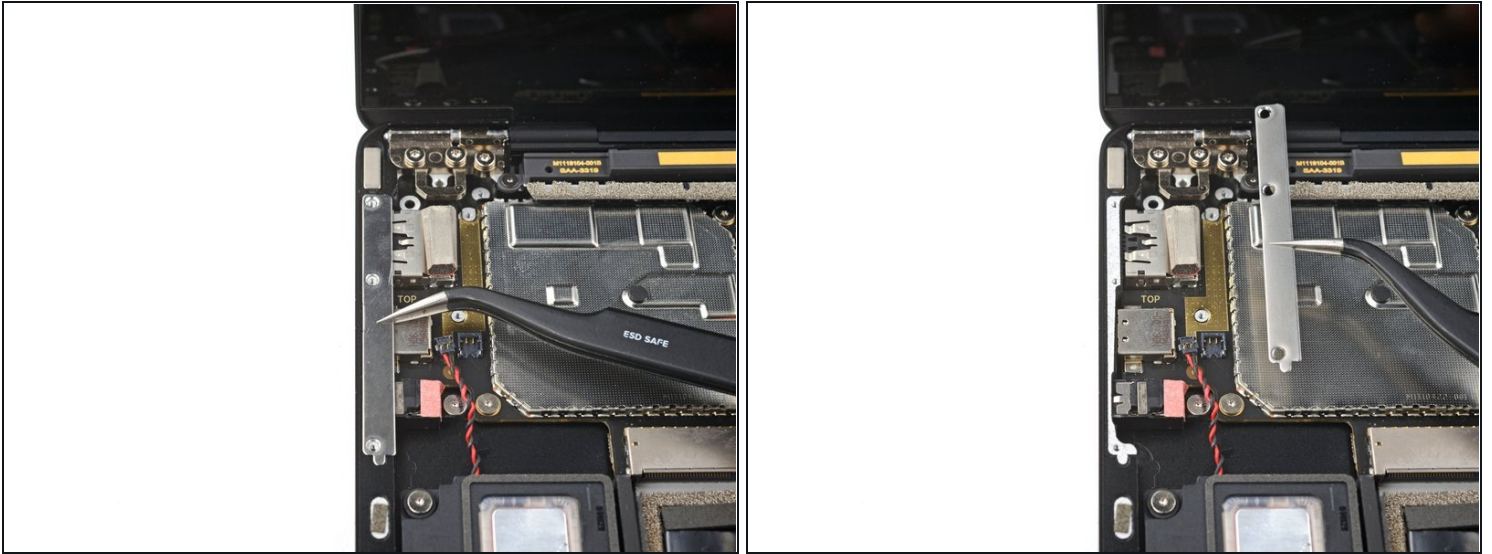
- Remove the motherboard bracket.

Step 37 — Unfasten the left port cover



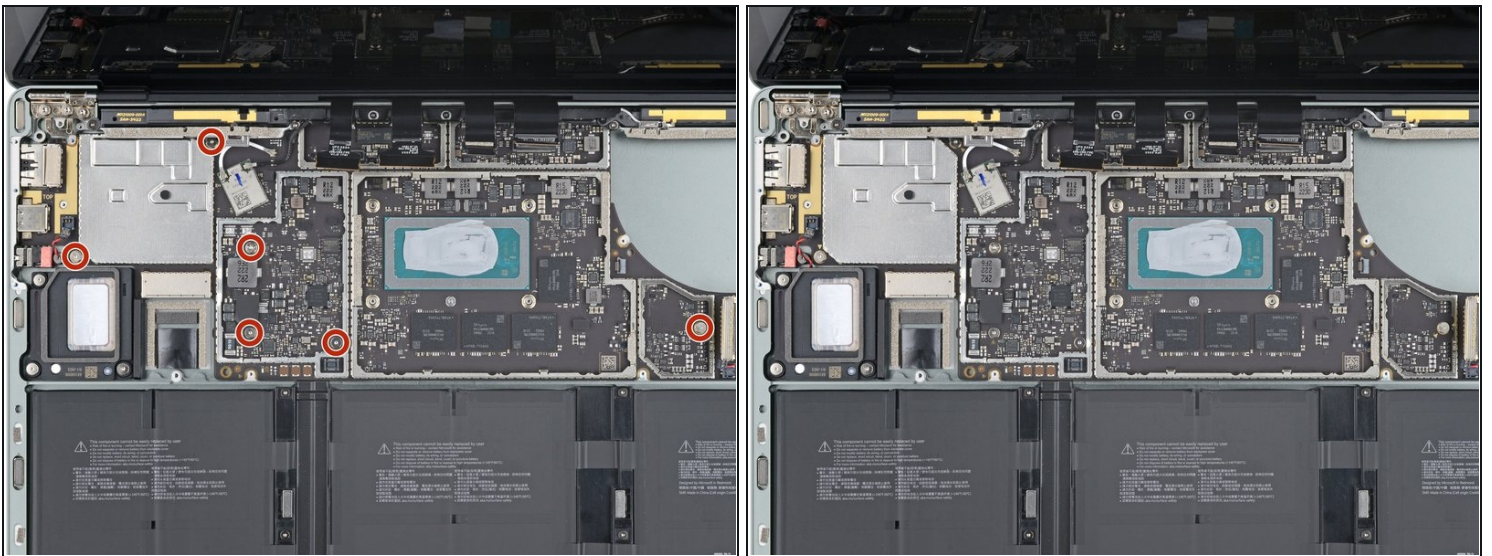
- Use a T3 Torx driver to remove the three 2.1 mm screws securing the left port cover.

Step 38 — Remove the left port cover



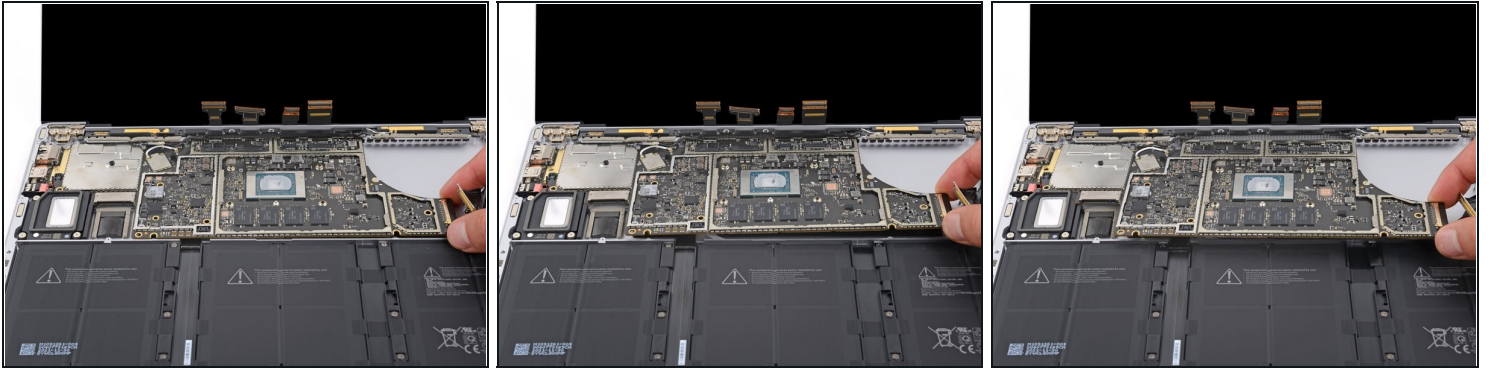
- Remove the left port cover.

Step 39 — Unfasten the motherboard



- Use a T3 Torx driver to remove the six 2 mm screws securing the motherboard.
 - ⓘ If any of your screws have rubber covers, peel and remove them.

Step 40 — Lift the right edge



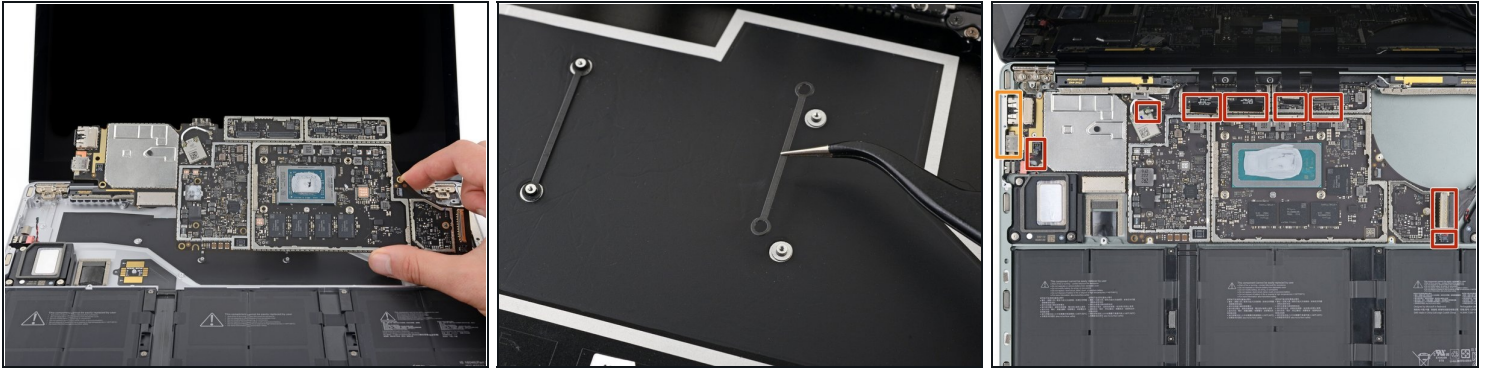
- ① The left edge of the motherboard is held tight by the port cutouts, the speaker, and the frame.
- Lift the right edge of the motherboard slightly over the battery.
- Hold the motherboard in place while you follow the step to free the left edge.

Step 41 — Pry the left edge



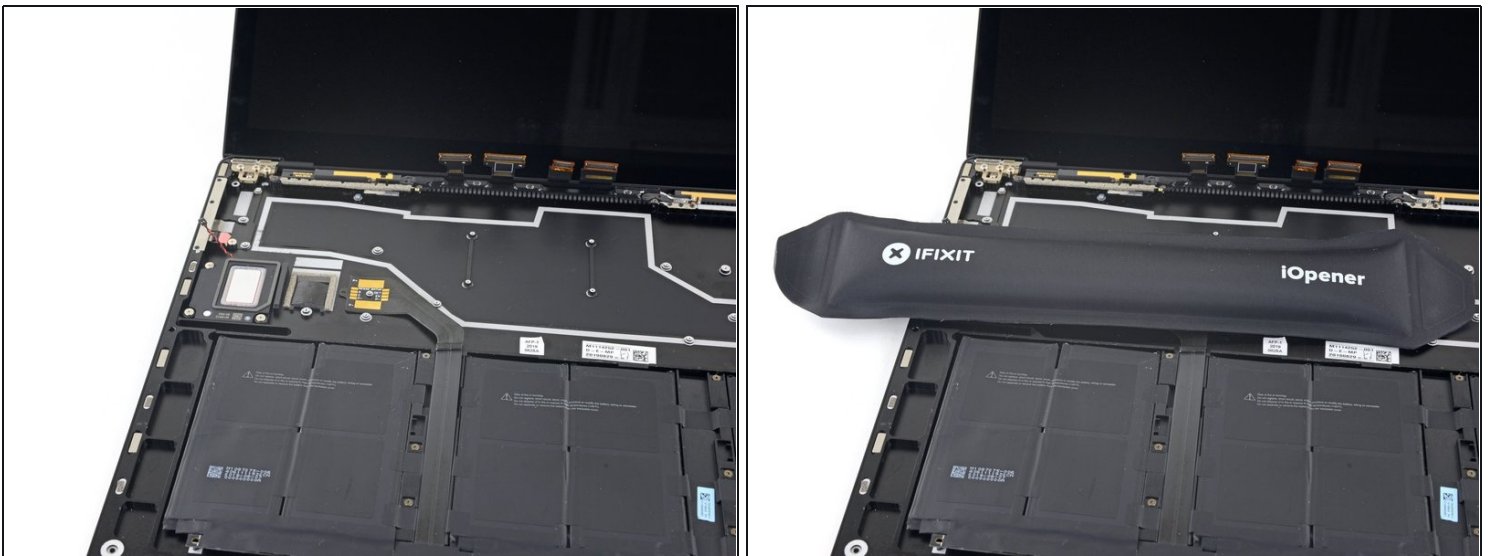
- ① A [tab on the upper left of the motherboard](#) presses against protrusions in the frame, preventing the left edge from coming free.
- Insert the tip of a spudger against the tab in the upper left corner of the motherboard. Wedge the spudger between the frame and the screen hinge.
- Pry up on the tab with your spudger while you lift the right edge of the motherboard toward the front of the laptop.
- ① If the motherboard can't lift over the left speaker, the tab may still be stuck. Change the angle of your spudger and try again.

Step 42 — Remove the motherboard



- Remove the motherboard.
- ⓘ Ensure the two screwpost braces underneath the motherboard don't get lost during removal.
- ☑ During reassembly:
 - Make sure none of the eight cables get trapped underneath.
 - Position the left ports in their recess before sliding the motherboard into place.

Step 43 — Soften the battery contact cable adhesive



- [Heat an iOpener](#) and lay it on top of the battery contact cable for one minute.
- ⓘ A [hair dryer](#) or [heat gun](#) may also be used.

Step 44 — Separate the battery contact cable

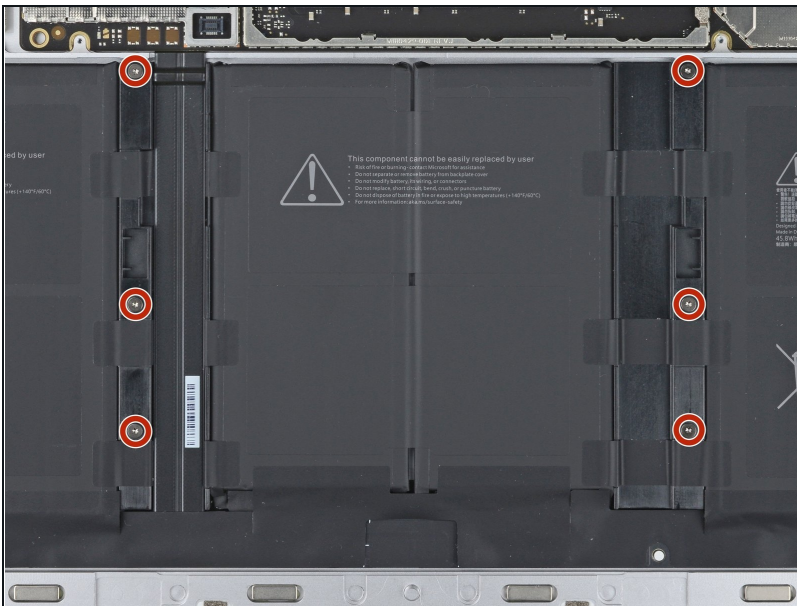


- Slide an opening pick under the battery cable and pry up to separate it from the frame.
 - ⓘ If the adhesive is stubborn, don't force the pick. Reheat the cable and try again.

✦ During reassembly:

- If your battery cable has a plastic liner, remove it. Otherwise, apply double-sided tape to the underside of the cable.
- Line up the cable with its screw post and alignment peg, and press down to secure the cable to the frame.

Step 45 — Unfasten the battery spacers



- Use a T3 Torx driver to remove the six 2.7 mm screws securing the battery spacers to the frame.

✦ During reassembly, skip this step if you've already installed your battery spacers.

Step 46 — Safety precautions

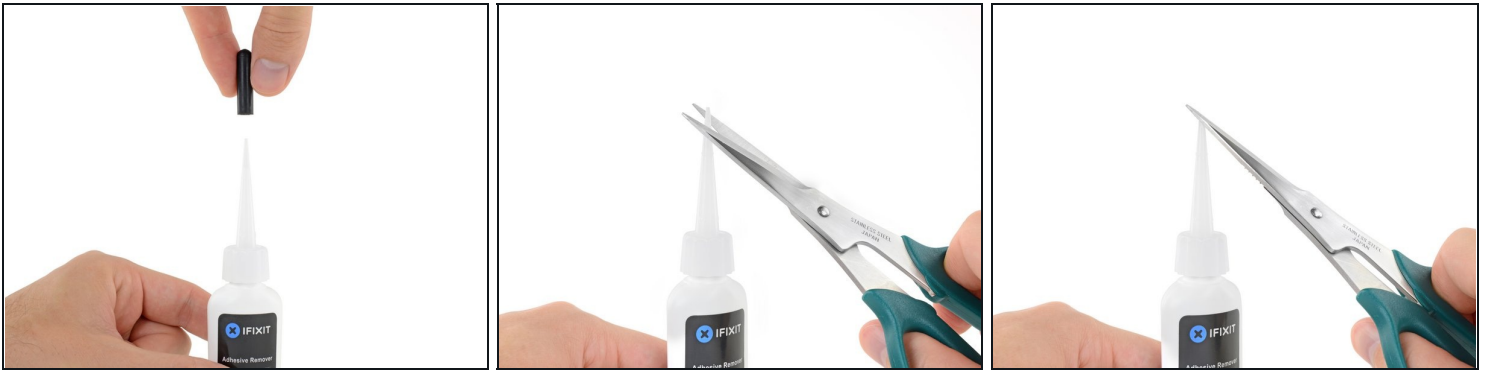


ⓘ The next few steps use adhesive remover. Isopropyl alcohol (greater than 90%) can also be used, but the process will take significantly more time.

⚠ iFixit adhesive remover contains acetone, a mild skin and eye irritant.

- Wear eye protection when handling and applying the adhesive remover.
- **Do not** wear contact lenses without eye protection.
- Wear protective gloves to prevent skin irritation.

Step 47



- Hold your bottle of adhesive remover right side up and pull off the black rubber stopper.

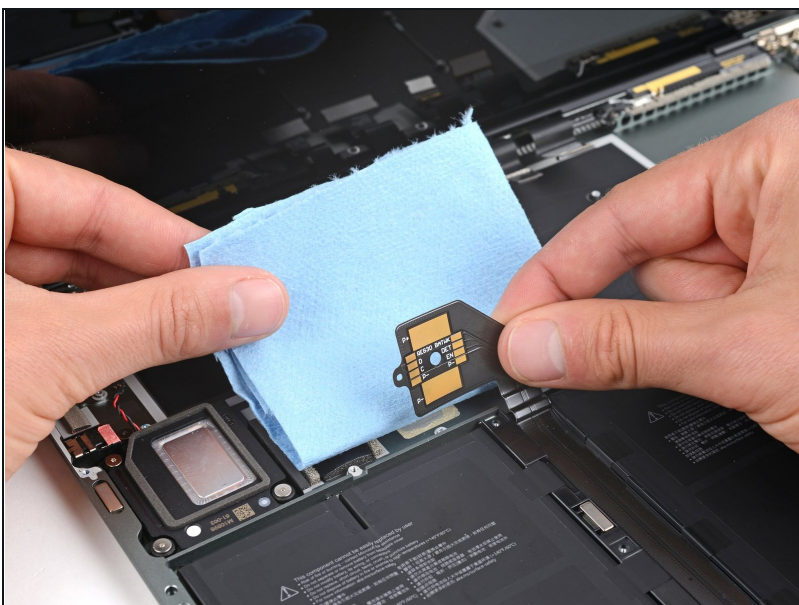
⚠ Loosen or remove the bottle cap before you cut the applicator tip.

ⓘ **If you skip this step, the adhesive remover may spray out unexpectedly when the tip is cut.** This unseals the bottle and allows the pressure to equalize before you cut the applicator tip.

- Use scissors to cut off the sealed tip of the applicator.
 - ⓘ Cut close to the tip so the adhesive remover can be applied in small amounts.

⚠ Securely close the bottle cap before moving on to the next step.

Step 48 — Prepare to remove the battery



ⓘ Adhesive remover may damage components in the laptop.

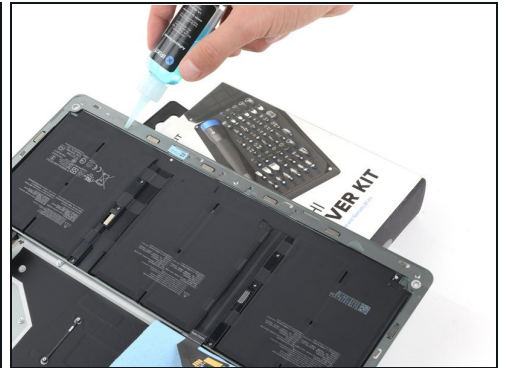
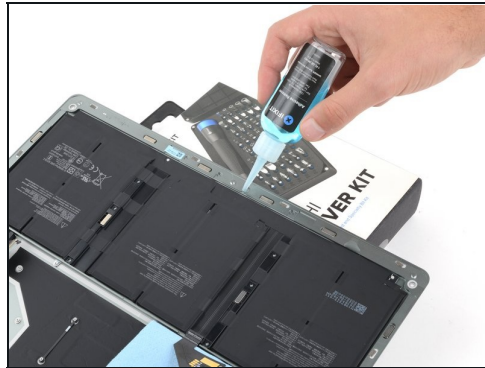
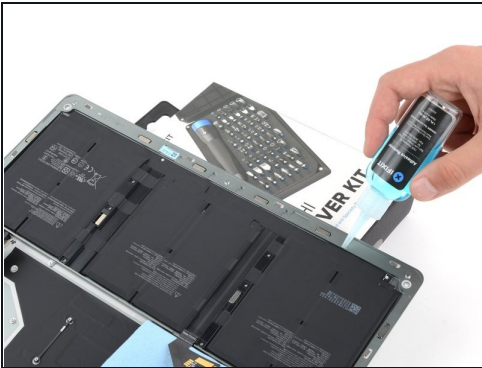
- Place a paper towel under the battery contact cable to prevent excess adhesive remover from flowing through its cutout.

Step 49



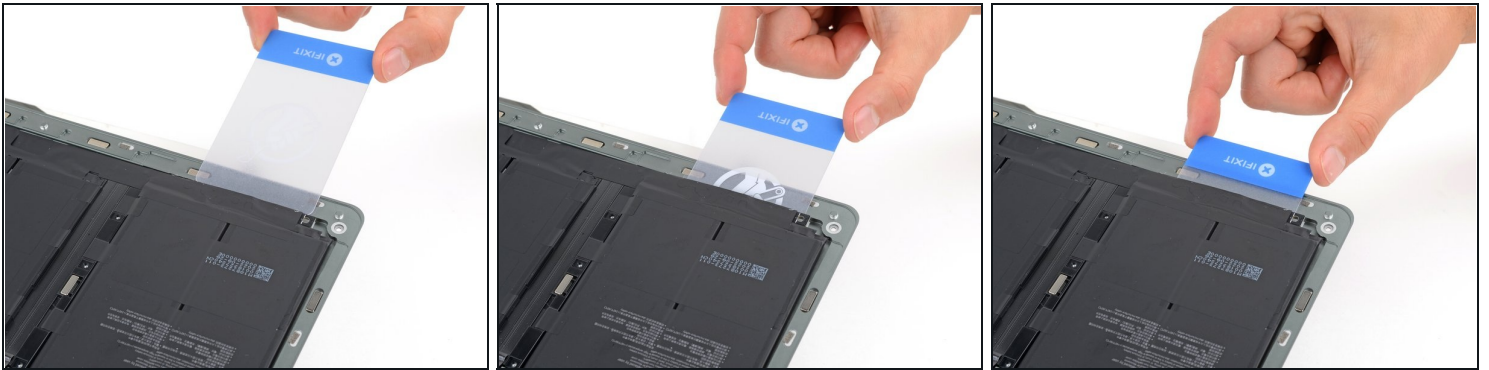
- Prop up the front edge of your laptop slightly to allow the adhesive remover to flow under the battery.

Step 50 — Apply the adhesive remover



- Apply a few drops of adhesive remover evenly under the elevated edge of the battery cells.
- Wait two minutes for the adhesive to soften.

Step 51 — Separate the left battery cell adhesive

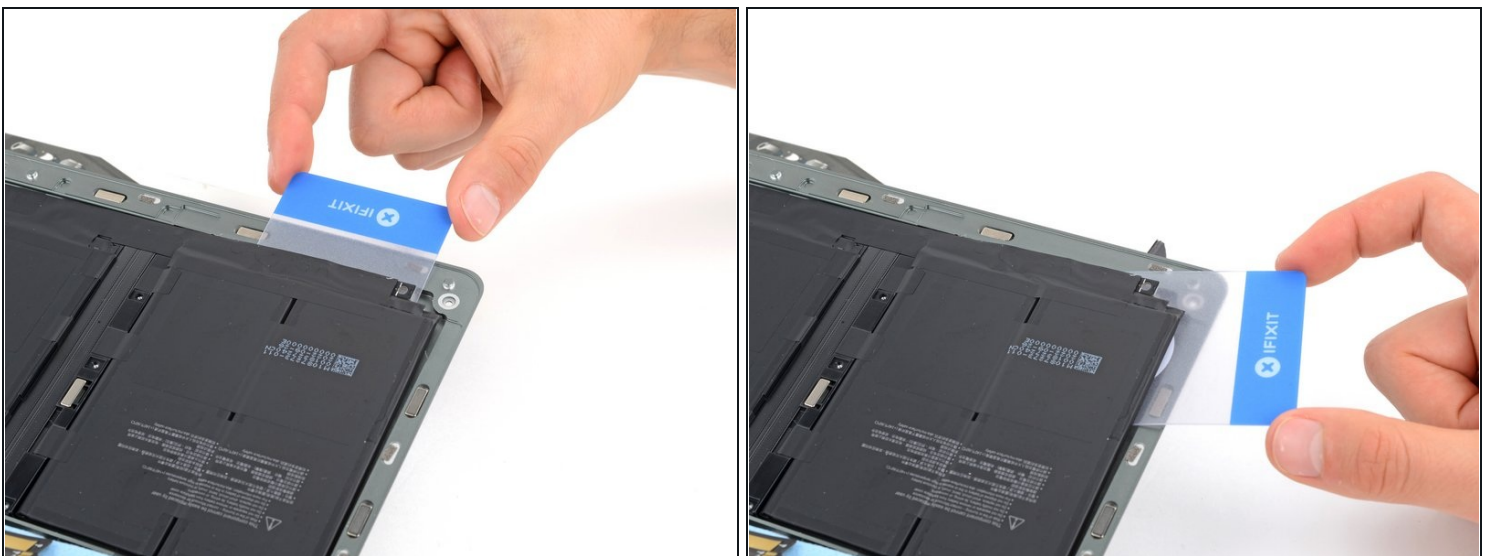


ⓘ There are [multiple layers of adhesive](#) securing the battery. If at any point the battery feels stubborn, apply a few more drops of adhesive remover and wait two minutes before continuing.

⚠ Take care not to puncture or bend the battery, as doing so may release dangerous chemicals or cause a fire.

- Insert a [plastic card](#) under the elevated edge of the left battery cell.
- Slide the card under the battery to separate the adhesive securing it to the frame.

Step 52



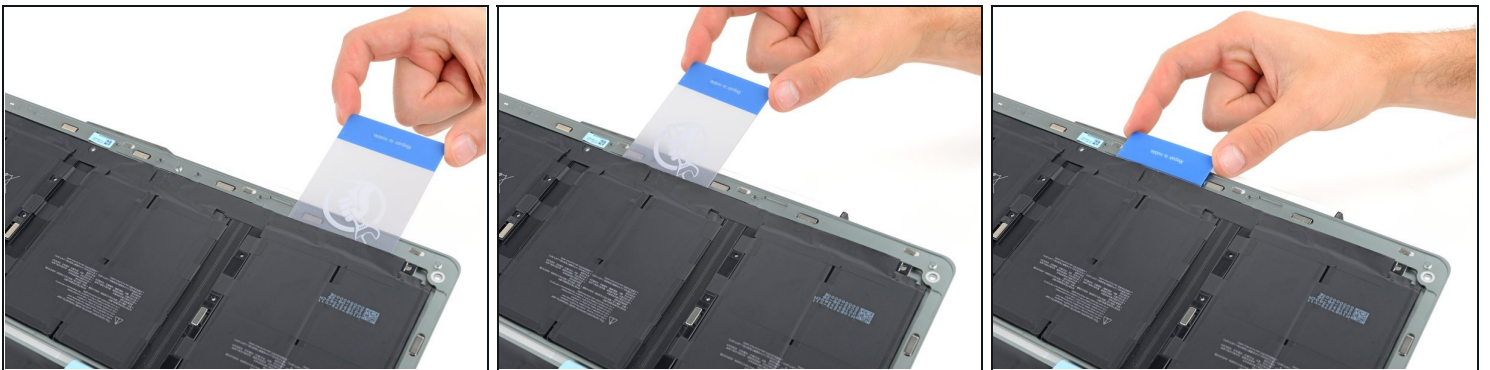
- Slide your plastic card around the outer corner of the left battery cell.

Step 53



- Slide your plastic card under the outer edge of the left battery cell to completely separate it from the frame.

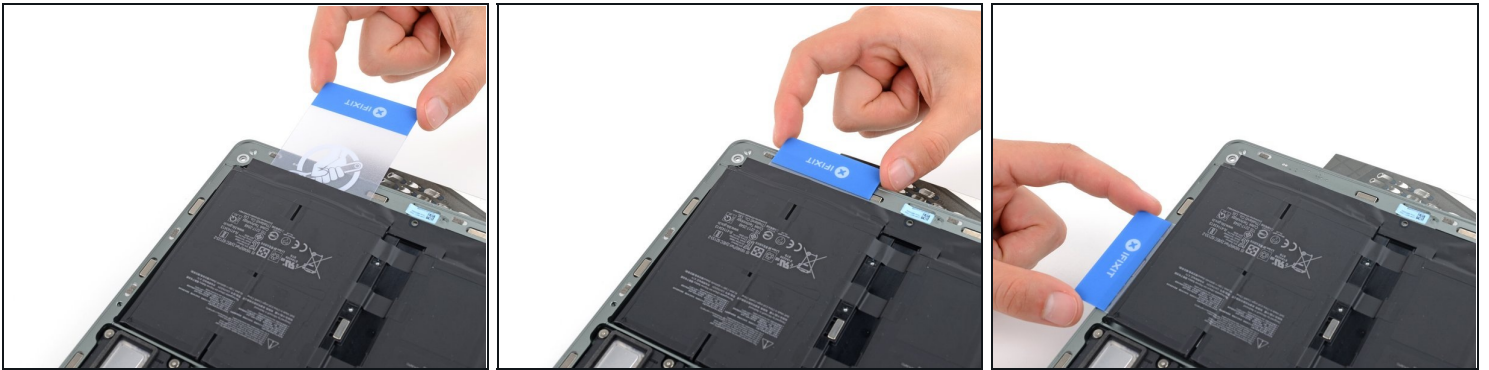
Step 54 — Separate the middle battery cell adhesive



⚠️ Avoid bending the battery board as you insert your card. The board may snap if pried at a sharp angle.

- Remove your plastic card so it's only underneath the battery board.
- Keep your card under the battery board and slide it to the middle cell.
- Slide your card under the middle battery cell to separate the adhesive securing it to the frame.

Step 55 — Separate the right battery cell adhesive



⚠ Take care not to bend the battery or battery board.

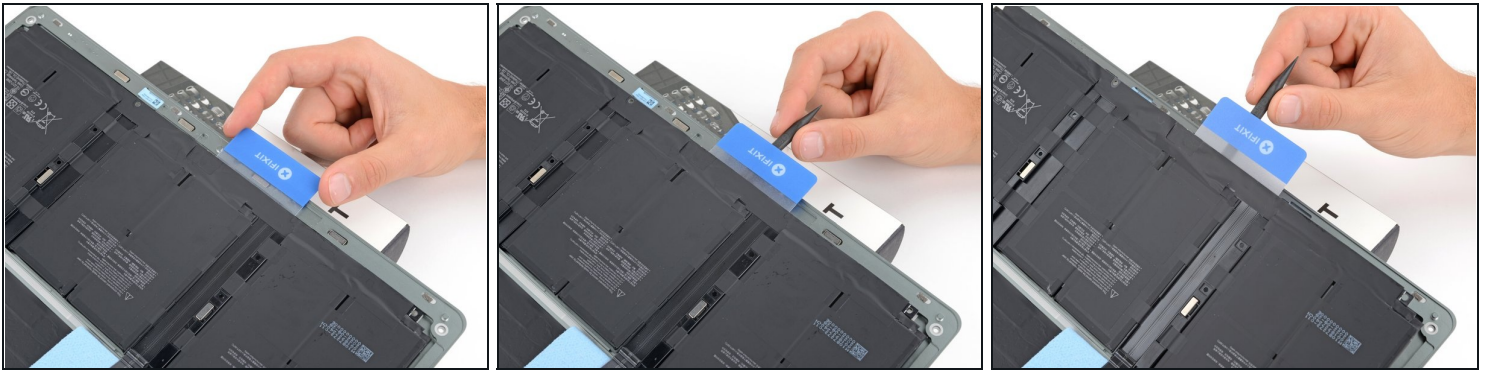
- Separate the right battery cell adhesive using the same process as the left cell.

Step 56 — Separate the battery spacers



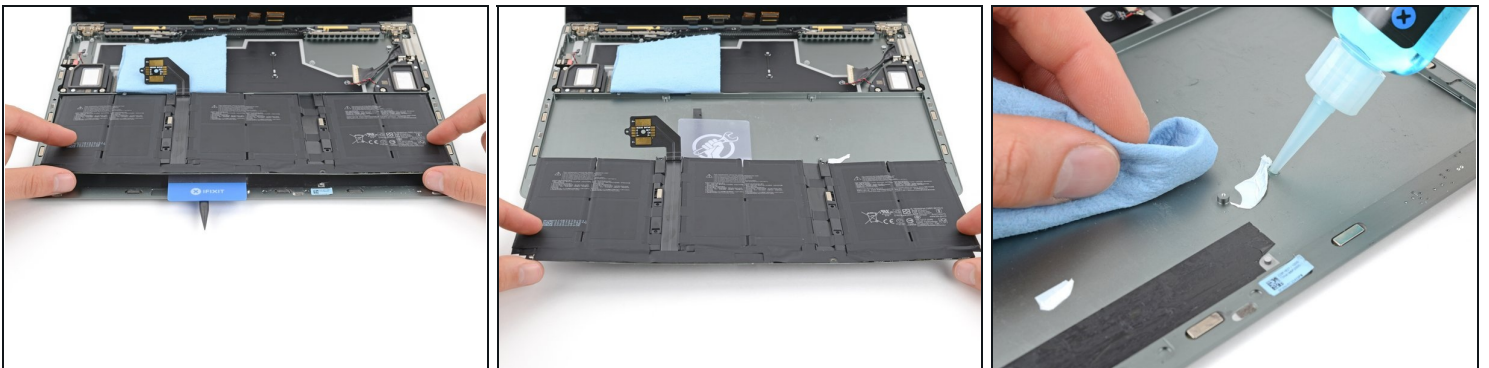
- Slide your plastic card under the right battery spacer, on the [inside edge of the screw posts in the frame](#).
- ⓘ If your spacer is still strongly adhered to the frame, use an opening pick or spudger to lift it enough to get the plastic card underneath.
- Slide a spudger under the plastic card and gently lift to separate the adhesive securing the battery spacer to the frame.

Step 57



- Slide your plastic card again underneath the left battery spacer and pry it up with a spudger.
 - ① If any part of the battery feels stuck to the frame, check for remaining adhesive and slice it with your plastic card.

Step 58 — Remove the battery



- Remove the battery from its recess.
- Use adhesive remover or highly-concentrated isopropyl alcohol (over 90%) to soften any residue on the frame.
- Wipe the residue from the frame using a [microfiber](#) or lint-free cloth.

Step 59 — Battery spacer information



- Your new battery must have the spacers between the cell groups before installing it.
- ① If your new battery comes with the spacers, then it's ready to be installed, and you can skip to [this step](#). If not, follow the next four steps to transfer the spacers to your frame.

Step 60 — Peel the adhesive from the spacers



- Flip your battery over and locate the spacers between the cell groups.
- Use your fingers to peel away any adhesive strips from the battery spacers.
- ① You don't need to completely remove the leftover adhesive—only the strips that are covering the spacers.

Step 61 — Remove the battery spacers



- Hold up the battery cell groups on either side of the right spacer.
- Peel the spacer from the strips of tape connecting the cell groups.
- Remove the spacer.

Step 62



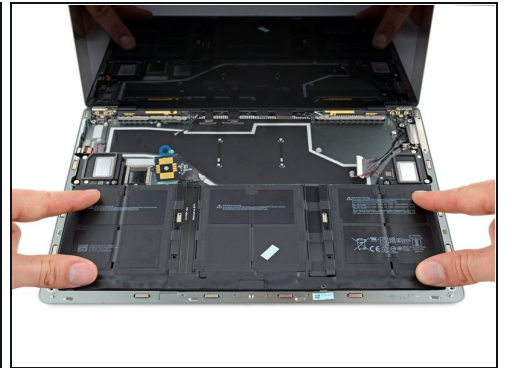
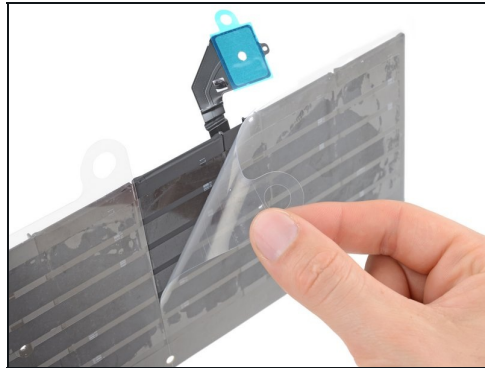
- ① If you can't easily access the left battery spacer, fold the battery contact cable out of the way.
- Peel the left spacer from the strips of tape connecting the left cell groups and remove it.

Step 63 — Install the battery spacers



- Orient the battery spacers so their screw holes are on the outside.
- Use your T3 Torx driver to install the six 2.7 mm screws into the spacers.

Step 64 — Install your new battery



☒ During reassembly:

- Orient your battery using the [two alignment pegs and six screw posts in the frame](#).
- If your new battery already has adhesive, peel off its protective liners. If not, secure the battery with thin double-sided tape such as [Tesa 61395](#).
- Set the battery into place. Firmly press on the entire surface of each battery cell to secure it to the frame.

Compare your new replacement part to the original part—you may need to transfer remaining components or remove adhesive backings from the new part before installing.

To reassemble your device, follow these instructions in reverse order.

For optimal performance, [calibrate your newly installed battery](#) after reassembly.

Take your e-waste to an [R2 or e-Stewards certified recycler](#).

Repair didn't go as planned? Try some [basic troubleshooting](#), or ask our [Answers community](#) for help.