



Left Speaker Removal

A prerequisite-only guide for how to remove the left speaker on a Microsoft Surface Pro 7.

Written By: Sam Omiotek



INTRODUCTION

This is a prerequisite-only guide! This guide is part of another procedure and is not meant to be used alone.

Follow this guide to replace the left speaker on a Microsoft Surface Pro 7.

There is a significant chance that you may break the unreinforced and fragile display panel during this procedure. Be sure to apply adequate heat and be extremely careful while slicing through the adhesive. Wear safety glasses in case the glass shatters.



TOOLS:

- [iOpener](#) (1)
 - [iFixit Opening Picks \(Set of 6\)](#) (1)
 - [Spudger](#) (1)
 - [Tweezers](#) (1)
 - [iFixit Opening Tool](#) (1)
 - [T3 Torx Screwdriver](#) (1)
 - [T5 Torx Screwdriver](#) (1)
 - [Arctic Silver Thermal Paste](#) (1)
 - [Isopropyl Alcohol](#) (1)
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Step 1 — Tape the screen



⚠️ Wear safety glasses to protect your eyes, and be careful not to damage the LCD screen.

- If your display glass is cracked, keep further breakage contained and prevent bodily harm during your repair by taping the glass.
- Lay overlapping strips of clear packing tape over the Surface's display until the whole face is covered.
 - ⓘ This will keep glass shards contained and provide structural integrity when prying and lifting the display.
- Do your best to follow the rest of the guide as described. However, once the glass is broken, it will likely continue to crack as you work, and you may need to use a metal prying tool to scoop the glass out.

Step 2 — Heat the right edge of the screen



⚠ Completely power off the Surface before you begin disassembly.

- [Heat an iOpener](#) and apply it to the right edge of the Surface's screen for two minutes.
- ⓘ You may need to reheat and reapply the iOpener several times to get the tablet warm enough. Follow the iOpener instructions to avoid overheating.

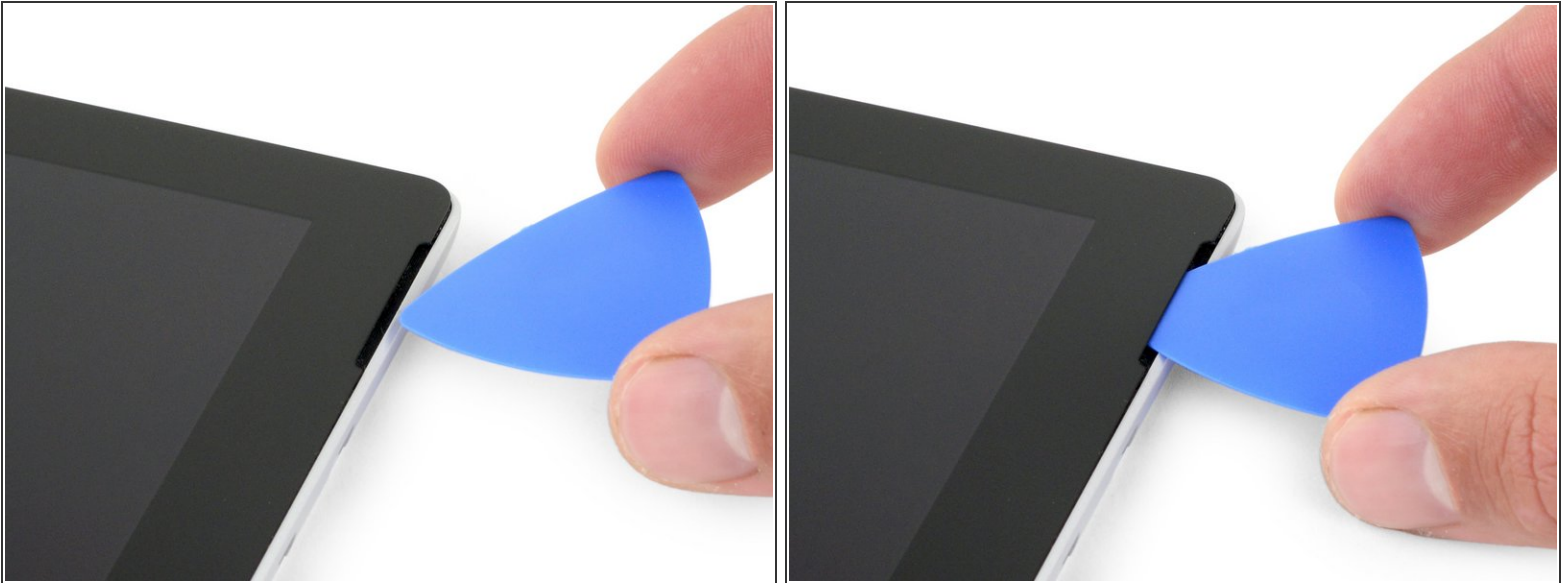
⚠ A hair dryer or heat gun may also be used for more heat, but be careful not to overheat the Surface—the screen and internal battery are susceptible to heat damage.

Step 3 — Take note of the adhesive layout



- Take note of the screen adhesive layout before continuing:
 - These areas only contain adhesive and are safe to cut.
 - The display board and flex cables sit here close to the edge. Cut carefully and do not insert the pick more than 1/8 inch (3 mm).
 - Fragile antenna cables lie under this part of the screen. Carefully follow the procedure in step 13 to avoid damaging them. The adhesive is also the thickest here.

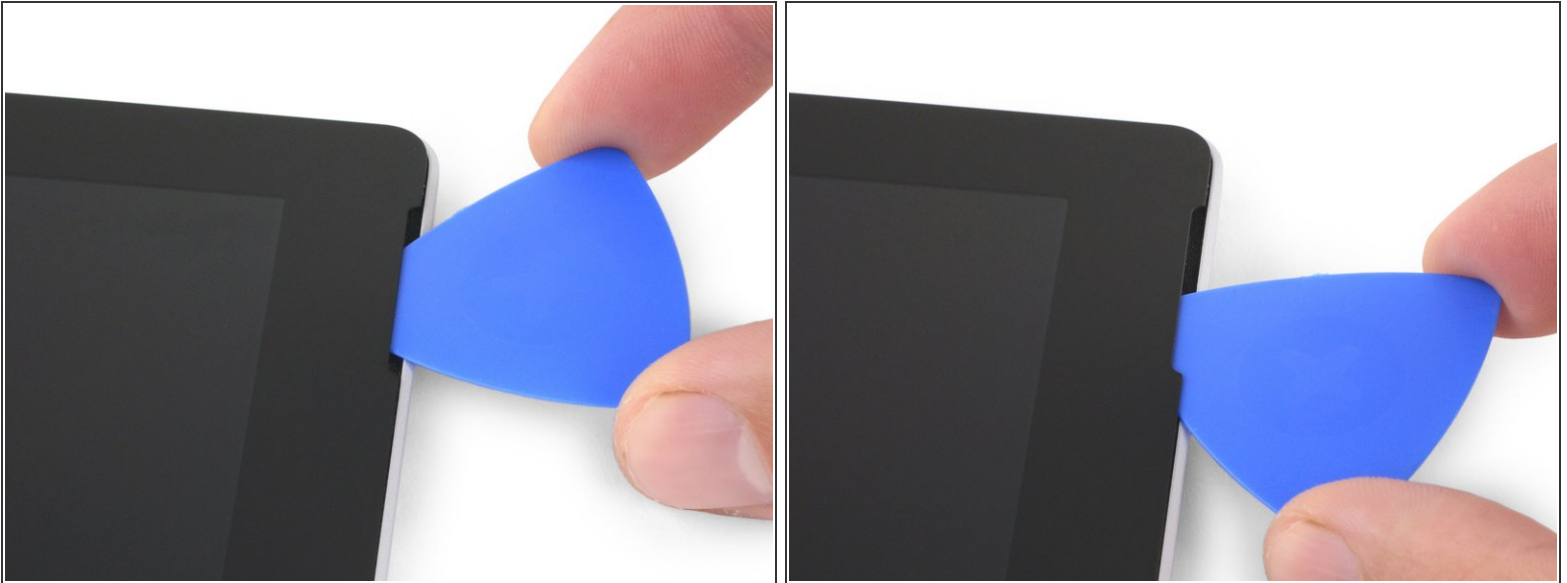
Step 4 — Insert an opening pick into the speaker opening



- Insert an opening pick into the speaker opening on the screen and slide the pick between the glass and speaker grille.

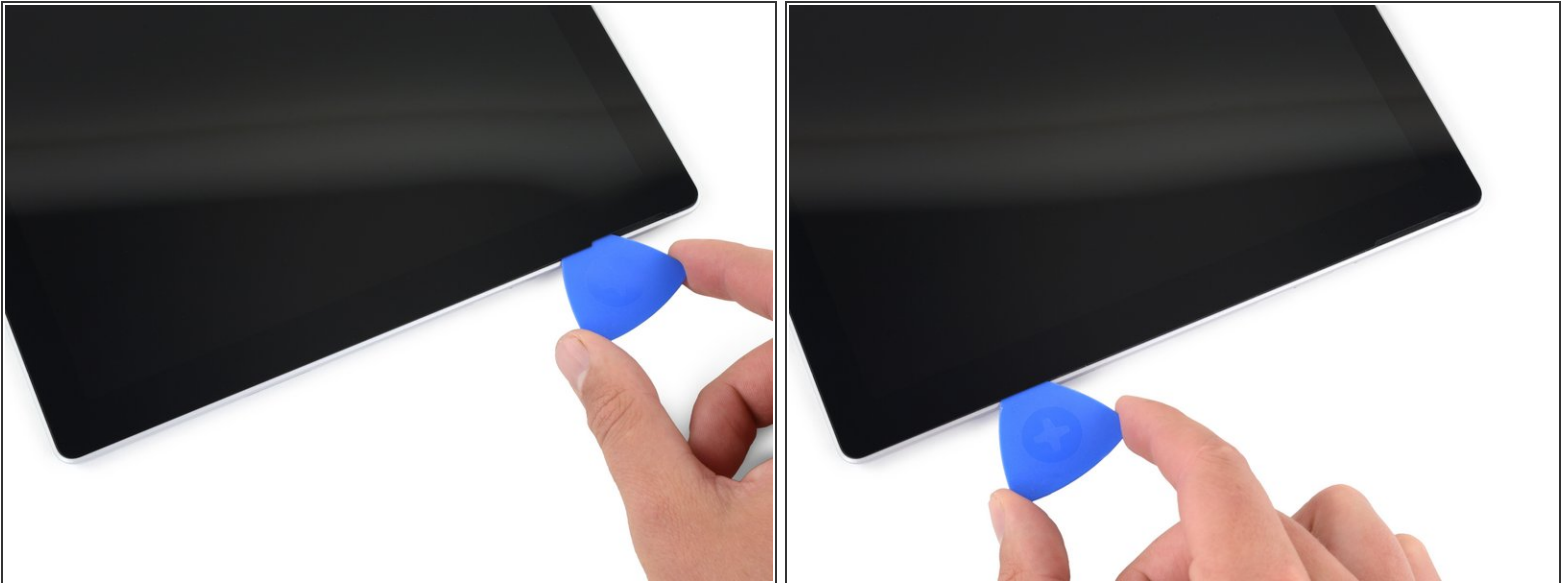
⚠ Don't insert the opening pick any deeper than the black bezel on the edge of the screen. Inserting the pick too far may damage the LCD.

Step 5 — Slide the opening pick under the screen



- Rotate the pick toward the bottom of the Surface to slide it underneath the lower edge of the speaker cutout.

Step 6 — Cut through the screen adhesive



- Slide the pick down the right edge of the Surface to slice through the adhesive under the screen.

⚠ Throughout the rest of the procedure, if you encounter significant resistance while sliding the pick, stop and reheat the section you're working on. Applying too much pressure with the pick can crack the glass.

- Leave this opening pick in the right edge to prevent the adhesive from resealing.

Step 7



- [Reheat your iOpener](#) and apply it to the bottom edge of the Surface's screen for two minutes.
- ⓘ You may need to reheat and reapply the iOpener several times to get the tablet warm enough. Follow the iOpener instructions to avoid overheating.

⚠ A hair dryer or heat gun may also be used for more heat, but be careful not to overheat the Surface—the screen and internal battery are susceptible to heat damage.

Step 8



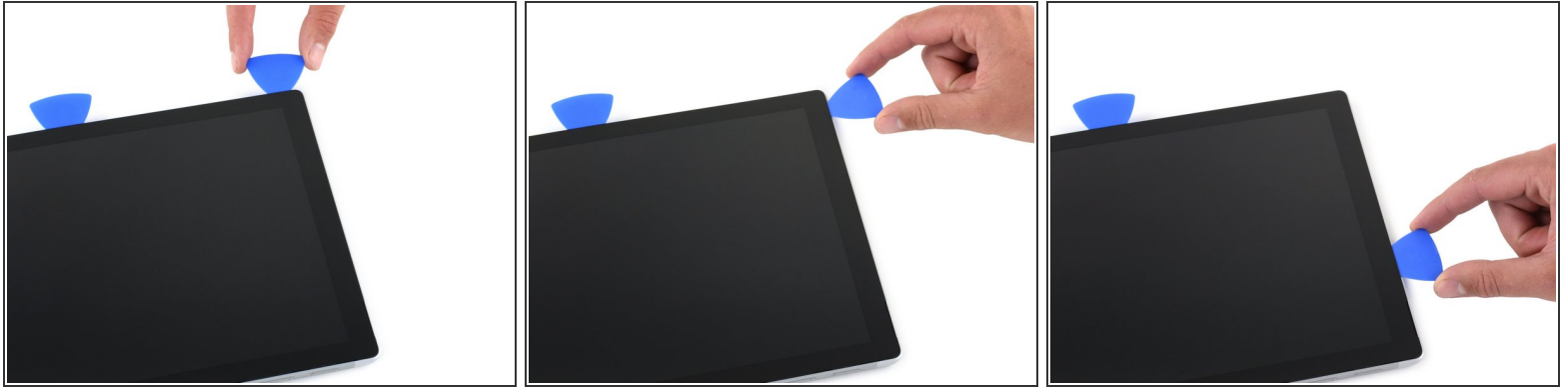
- Insert a new opening pick into the bottom right corner and slide it around the corner toward the bottom edge.
- ⚠ Don't insert the opening pick any deeper than the black bezel on the side of the screen. Inserting the pick too far may damage the LCD.
- Slide the pick along the bottom edge of the Surface to cut through the screen adhesive.
- Leave this pick in the bottom edge to prevent the adhesive from resealing.

Step 9



- [Reheat your iOpener](#) and apply it to the left edge of the Surface's screen for two minutes.
 - ⓘ You may need to reheat and reapply the iOpener several times to get the tablet warm enough. Follow the iOpener instructions to avoid overheating.
- ⚠ A hair dryer or heat gun may also be used for more heat, but be careful not to overheat the Surface—the screen and internal battery are susceptible to heat damage.

Step 10



- Insert a new opening pick into the bottom left corner and slide it around the corner toward the left edge.
 - ⚠ Be careful cutting under the lower 2.5 inches (65 mm) of the left edge. Do not insert the opening pick more than 1/8 inch (3 mm) here. The display cables sit near this part of the bezel and are easily damaged. Once past the display cable area, do not insert the pick past the bezel.
- Slide the pick along the left edge of the Surface to cut through the screen adhesive.
- Leave this pick in the left edge to prevent the adhesive from resealing.

Step 11



- [Reheat your iOpener](#) and apply it to the left edge of the Surface's screen for two minutes.
- ⓘ The adhesive is thickest along this edge, and you may need to reheat and reapply the iOpener several times to get the tablet warm enough. Follow the iOpener instructions to avoid overheating.

⚠ A hair dryer or heat gun may also be used for more heat, but be careful not to overheat the Surface—the screen and internal battery are susceptible to heat damage.

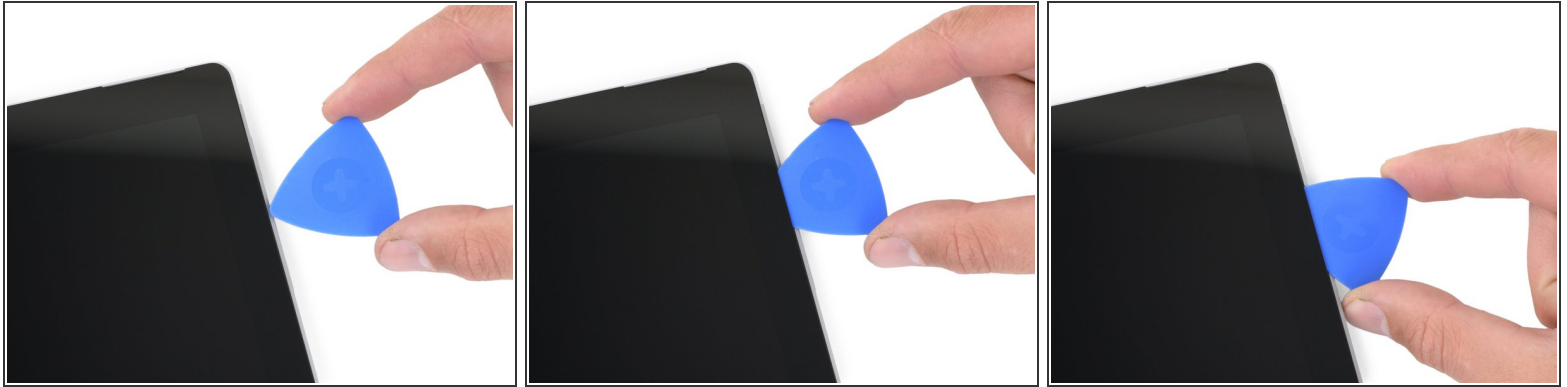
Step 12



- Round the left corner with the opening pick and slide it along the top edge of the Surface. Stop when the pick is 2.75 inches (70 mm) away from the left edge.

⚠ The next 6 inches (15 cm) of the top edge of the case is covered by the left and right antennas, which sit between the case and the screen bezel. Follow the next steps carefully to avoid damaging the antennas.

Step 13



⚠️ Fragile antenna cables lie under the top edge of the screen. Carefully follow the procedure to avoid damaging them.

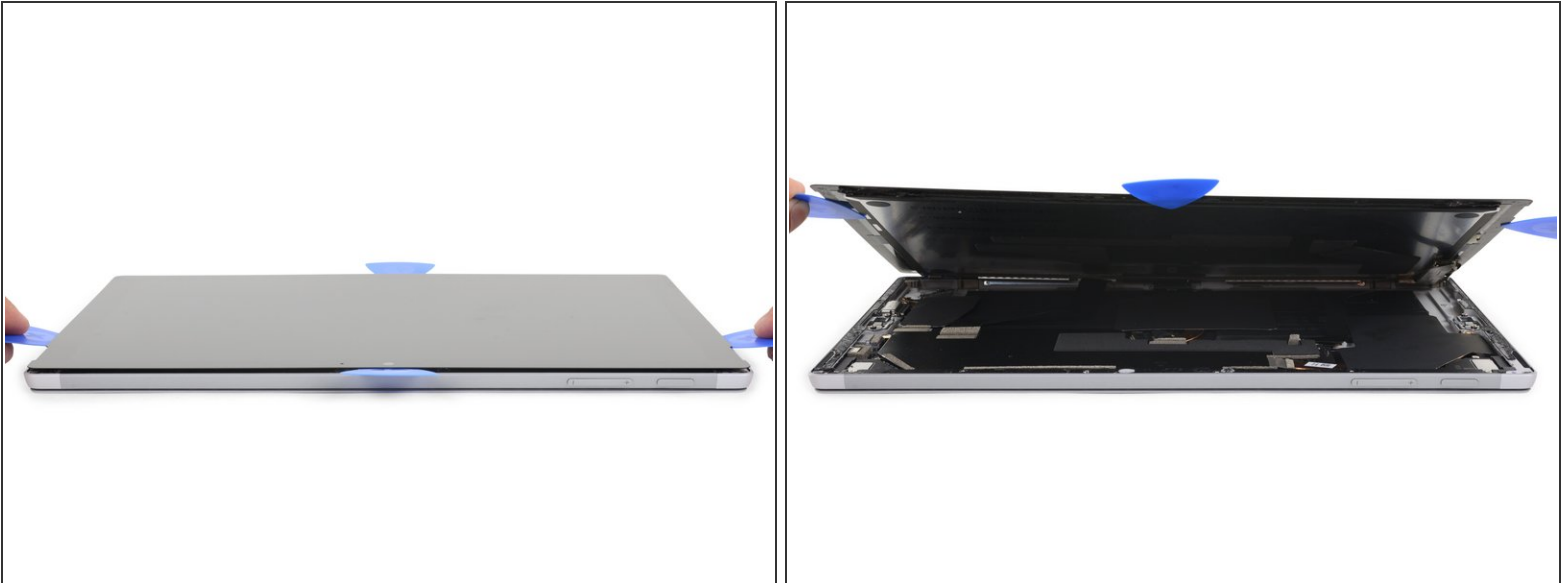
- Insert the point of a pick under the display where you just stopped cutting. Do not insert the pick deeper than the edge of the bezel.
- Carefully roll the pick to the right, pressing the long edge of the pick into the screen adhesive underneath the bezel, cutting the adhesive as you go. Do not slide the pick along the edge of the Surface.
- Repeat this motion of inserting the point of the pick where you just cut, and rolling to the right all along the top edge of the Surface, until the pick is 2.5 inches (64 mm) from the right edge of the Surface.

Step 14



- Once you cut the adhesive over the antennas (8.5 inches, or 22 cm, from the left edge), slide the pick the rest of the way along the top edge of the surface and round the top right corner to slice through any remaining adhesive.

Step 15 — Open the Surface



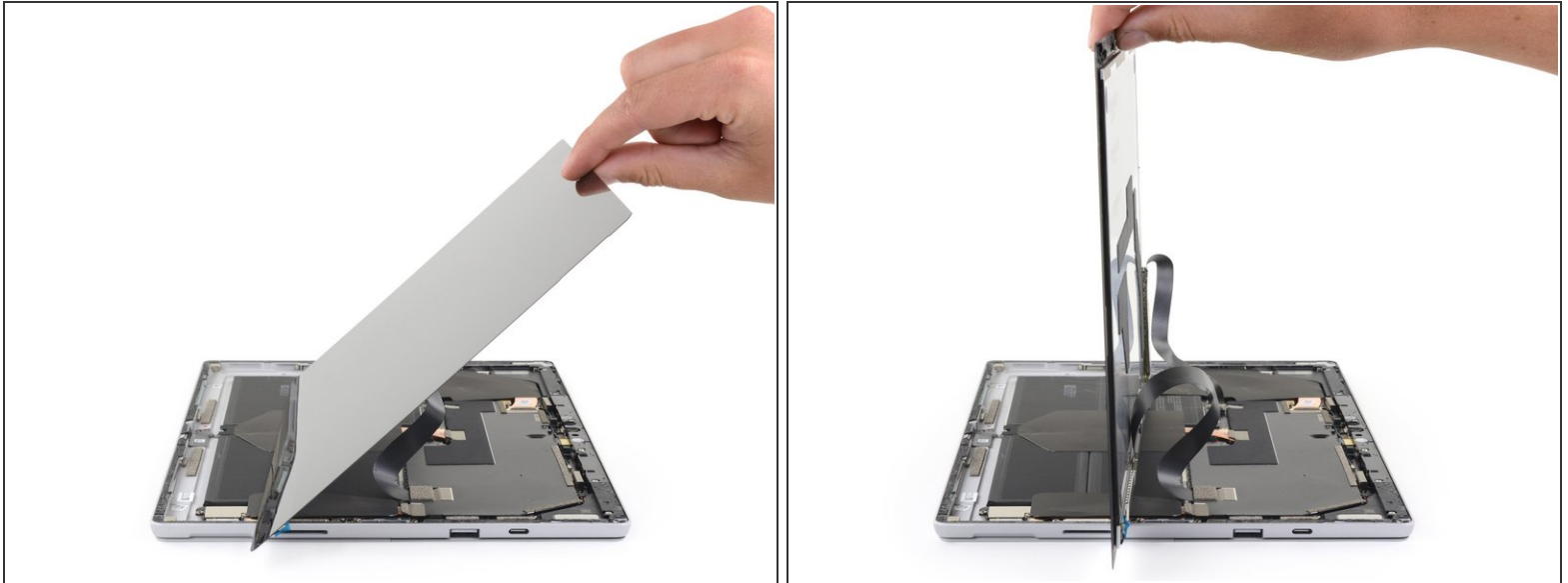
- Very slowly lift the screen assembly away from the Surface case. If you encounter any resistance, stop and check that all the adhesive is separated.

⚠ Do not remove the screen yet. It is still connected to the motherboard by two cables.

- Use an opening pick to cut through any remaining adhesive.

☞ The flash lens may fall out of the Surface case. Keep track of the lens and return it to its cutout in the case during reassembly.

Step 16



 Make sure you have your tweezers and spudger within reach.

- Lift the top of the screen assembly away from the case while sliding the bottom of the screen closer to the motherboard display connectors.

 Do not put any tension on the display ribbon cables.

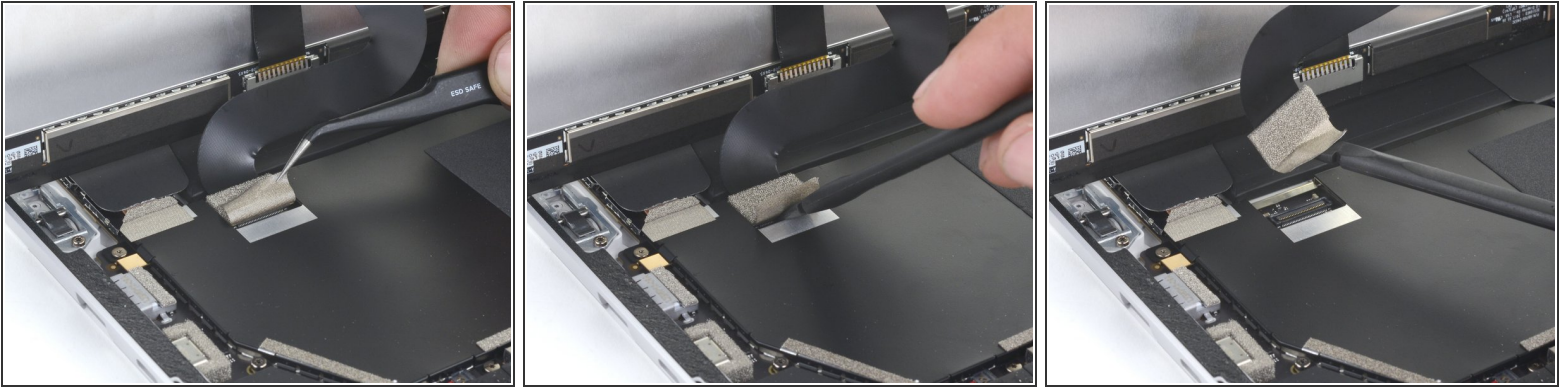
- Use one hand to hold the screen still.

Step 17 — Disconnect the battery



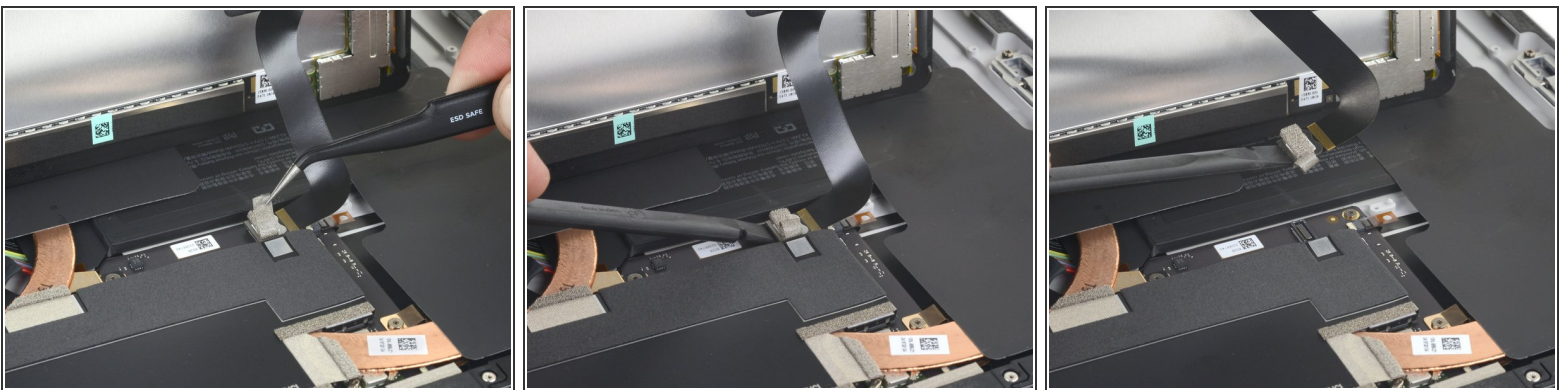
- Use the pointed tip of a spudger to carefully push on each side of the battery connector.
- Alternating from one side to the other, gently “walk” the connector out of its socket.

Step 18 — Disconnect the display cables



- Use a pair of tweezers to peel back the silver tape covering the left display cable connector.
 - ❗ Do not remove the tape from the ribbon cable.
- Insert the flat end of a spudger underneath the tape and pry up on the connector to disconnect it from the motherboard.

Step 19



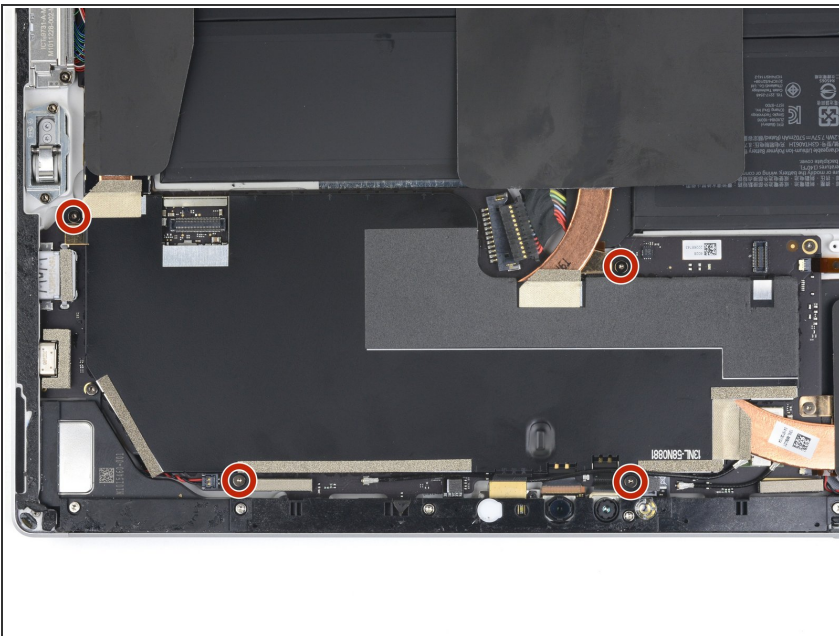
- Use a pair of tweezers to peel back the silver tape securing the right display cable to the motherboard.
 - ❗ Do not remove the tape from the ribbon cable.
- Use the flat end of a spudger to lift the right display cable straight up and disconnect it from the motherboard.

Step 20



- Remove the screen.
- ★ Once you have reached this step during reassembly, follow the [screen adhesive replacement guide](#) for the remainder of the repair.

Step 21 — Remove the motherboard EMI shield



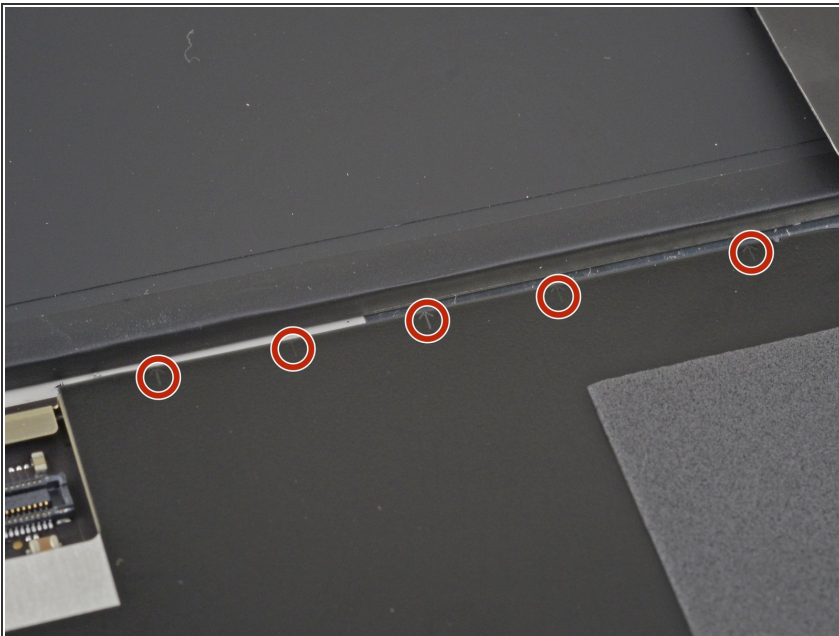
- Use a T3 Torx screwdriver to remove the four 2.4 mm screws securing the EMI shield.

Step 22



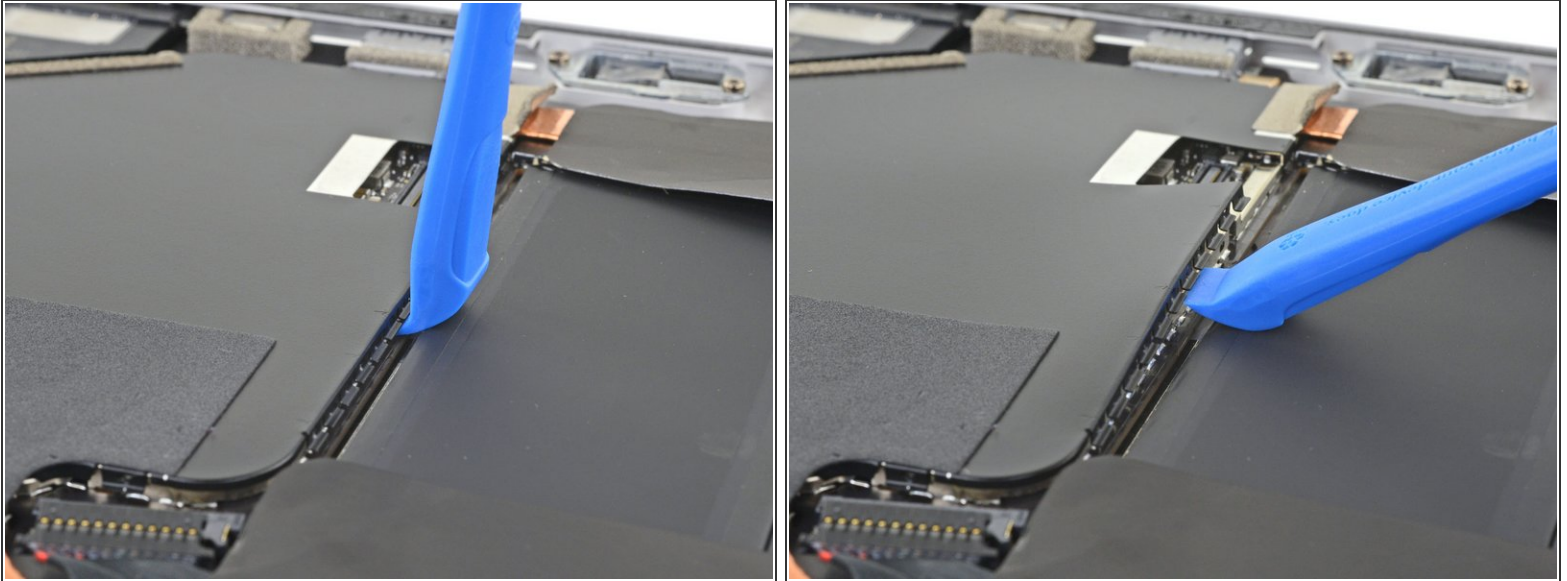
- Use a pair of tweezers to carefully peel back the three pieces of silver tape adhering the motherboard EMI shield to the copper heatsink.
- ❗ These pieces of tape can be left on the motherboard EMI shield and do not need to be completely removed.

Step 23



- Notice the small arrows surrounding the perimeter of the motherboard EMI shield. These mark the locations of each clip securing the shield to the motherboard.
- ☑ During reassembly, press down on each of these arrows to make sure the clips are secured.

Step 24



⚠ Be careful not to puncture or deform the battery with your opening tool.

- Starting with the clips adjacent to the battery, use an opening tool to carefully pry the motherboard EMI shield straight up from underneath each arrow to disconnect the clips.

⚠ Take care to deform the EMI shield as little as possible. It will need to be reused.

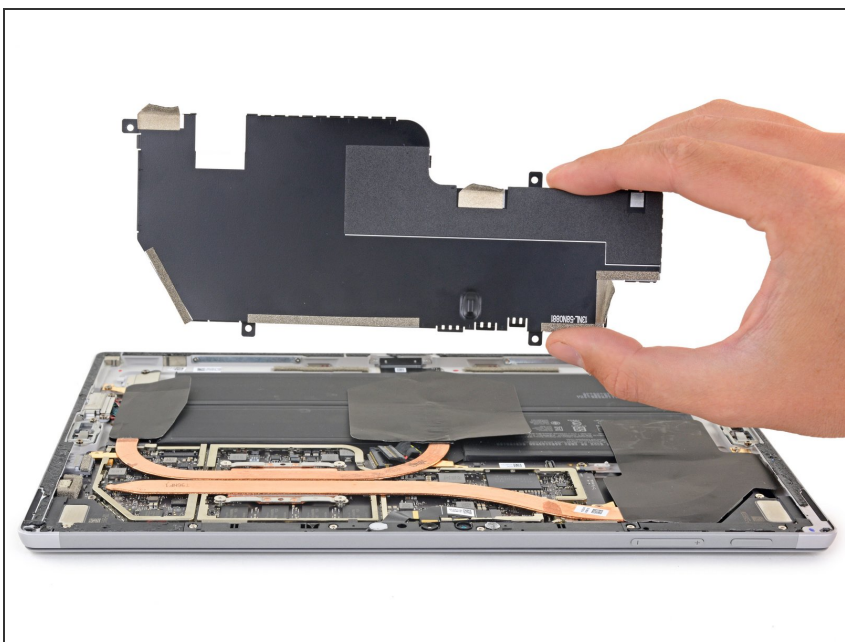
Step 25



- Continue using your opening tool to disconnect the clips around the entire perimeter of the motherboard EMI shield.

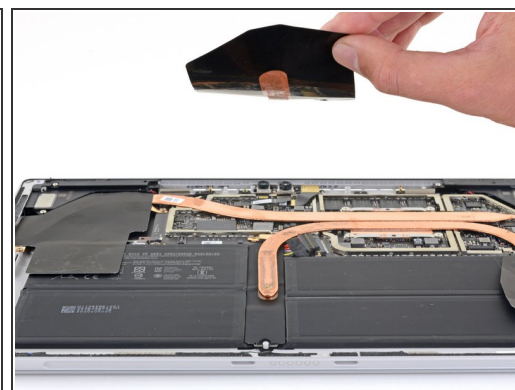
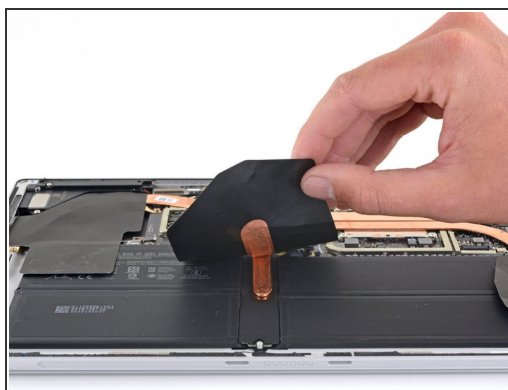
⚠ Take care to deform the EMI shield as little as possible. It will need to be reused.

Step 26



- Remove the motherboard EMI shield.

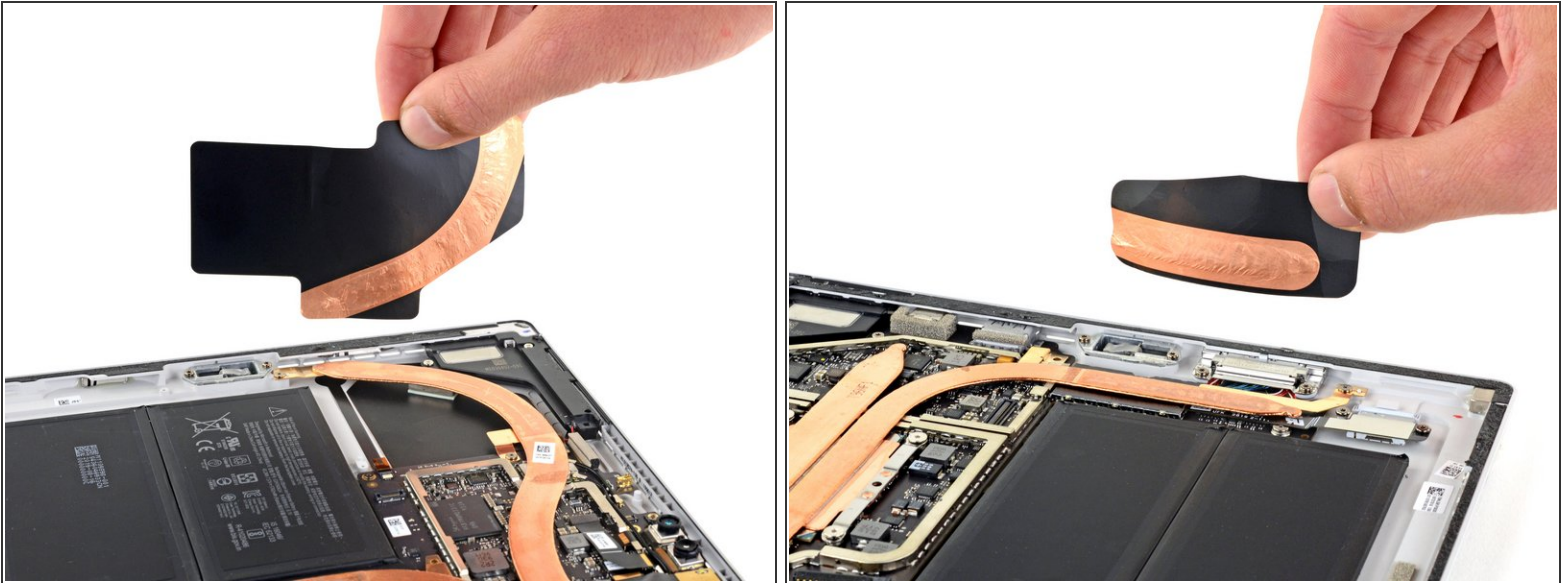
Step 27 — Remove the heatsink



- Gently peel the center thermal pad off of the copper heatsink.
 - ⓘ The thermal pads are held in place with light adhesive.

⚠ The thermal pads are delicate and tear easily.

Step 28



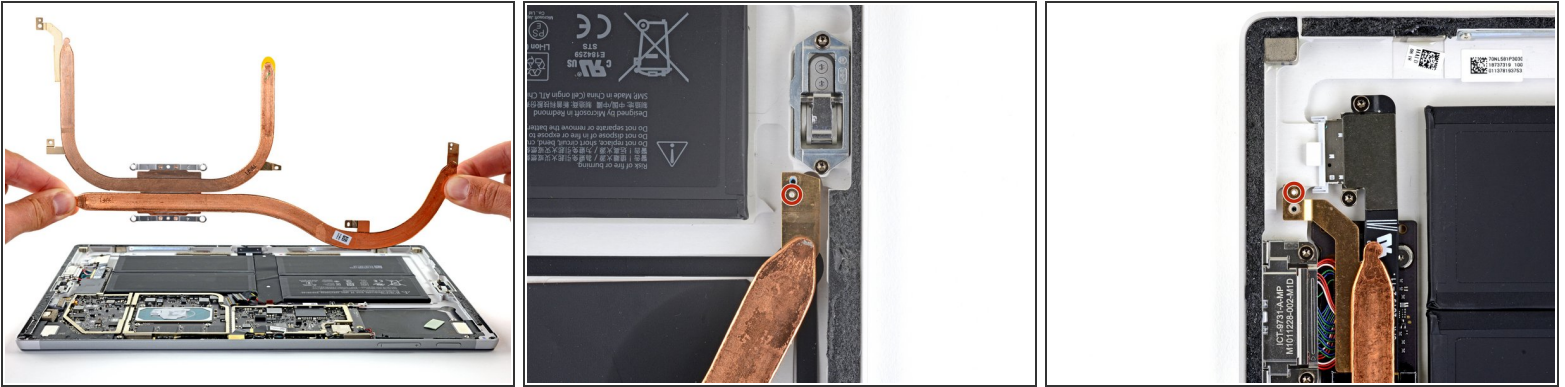
- Peel the remaining two thermal pads off of the heatsink.
- ☞ During reassembly, realign the copper strip on the thermal pad with the heatsink.

Step 29



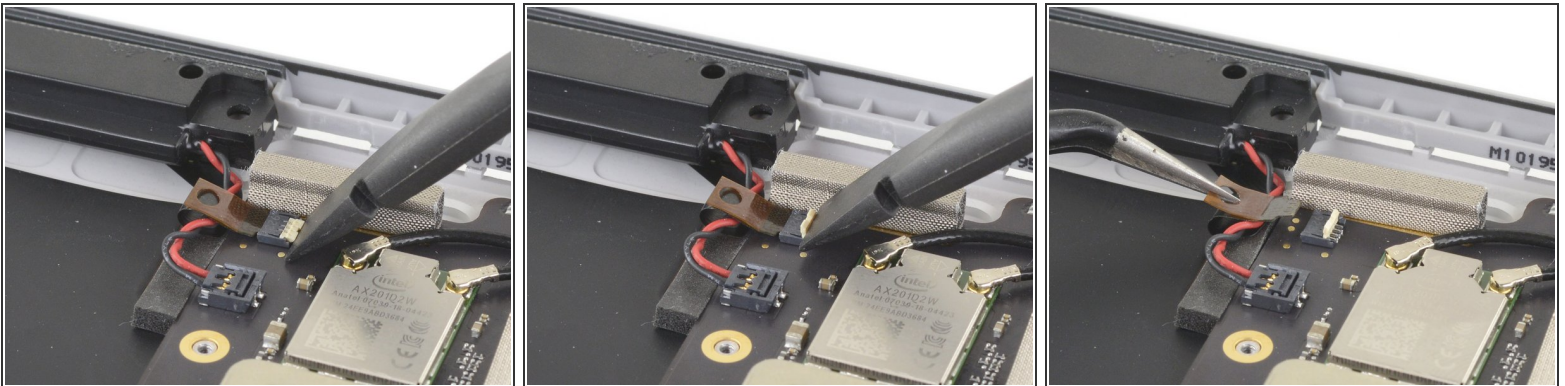
- Use a screwdriver to remove the following seven screws securing the heatsink:
 - Four 3.4 mm T5 Torx screws
 - Three 2.7 mm T3 Torx screws

Step 30



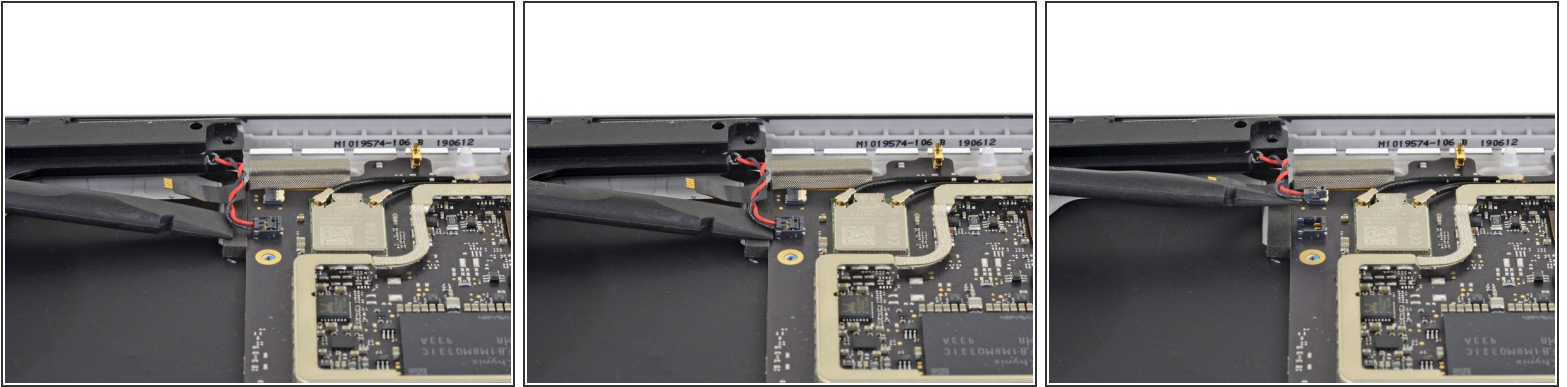
- Gently lift the heatsink straight up and off of the device.
- ❗ The heatsink will be lightly stuck to the CPU by thermal paste.
- ☑ During reassembly, be sure to [install new thermal paste](#).
- Place the two small holes on each end of the heatsink pipes onto the corresponding pegs in the case to ensure proper alignment.



Step 31 — Remove the left speaker



- Use the flat end of a spudger to flip up the white plastic locking flap of the ZIF connector at the top-left corner of the motherboard.
- ⚠ Be sure to pry up on the hinged flap, not the connector itself.
- Use your fingers or a pair of tweezers to pull the cable out.

Step 32



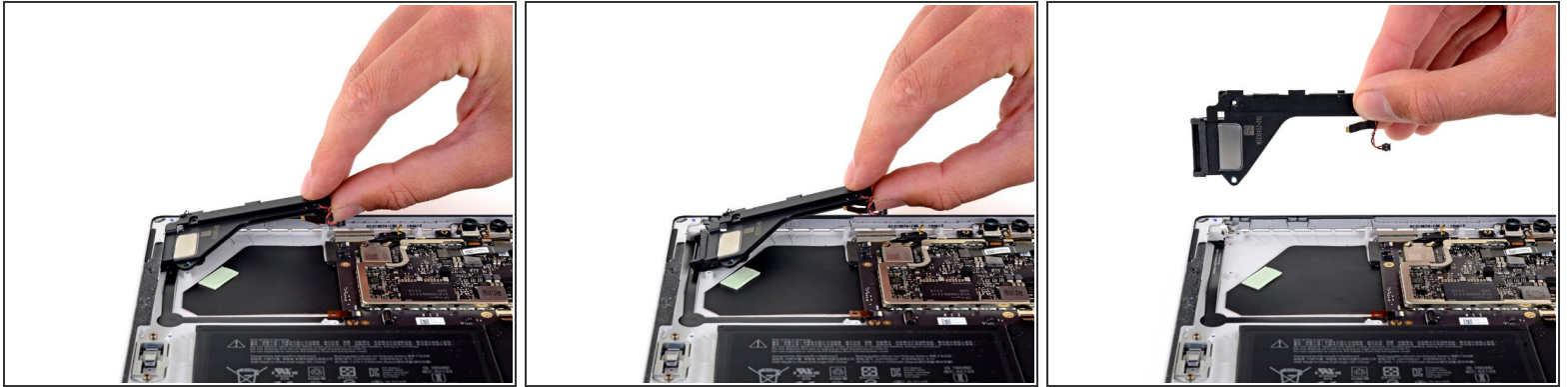
- Gently slide the flat end of a spudger between the speaker wires and the motherboard until it is resting against the connector.
- Carefully pry straight up on the connector to disconnect it from the motherboard.
 **Be gentle—the speaker wires are delicate.**
-  During reassembly, place the new speaker wire harness on top of the connector on the motherboard and gently press it straight down with your finger to reconnect it.

Step 33



- Use a T5 Torx screwdriver to remove the following screws from the left speaker:
 - One 6 mm screw
 - One 4 mm screw

Step 34



- Grab the speaker by the end of the top edge and lift it slightly.
- Pull the speaker out from the case horizontally to remove it.

To reassemble your device, follow the above steps in reverse order.

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.