



Microsoft Surface Book Keyboard Heat Sink Replacement

Use this guide to remove and replace the...

Written By: Natalie Weisenburger



INTRODUCTION

Use this guide to remove and replace the heatsink in a Microsoft Surface Book.

This will require an extensive teardown of the keyboard's internals. You will be removing the motherboard, SD card slot, USB ports, and other internals. Make sure you have a secure place to store the tiny screws you will be removing.

The heat sink transfers heat from the graphics card and motherboard to the fan, ensuring that your computer doesn't overheat. If this heat sink is damaged and not replaced, you run the risk of permanent damage to your motherboard and graphics card by overheating.



TOOLS:

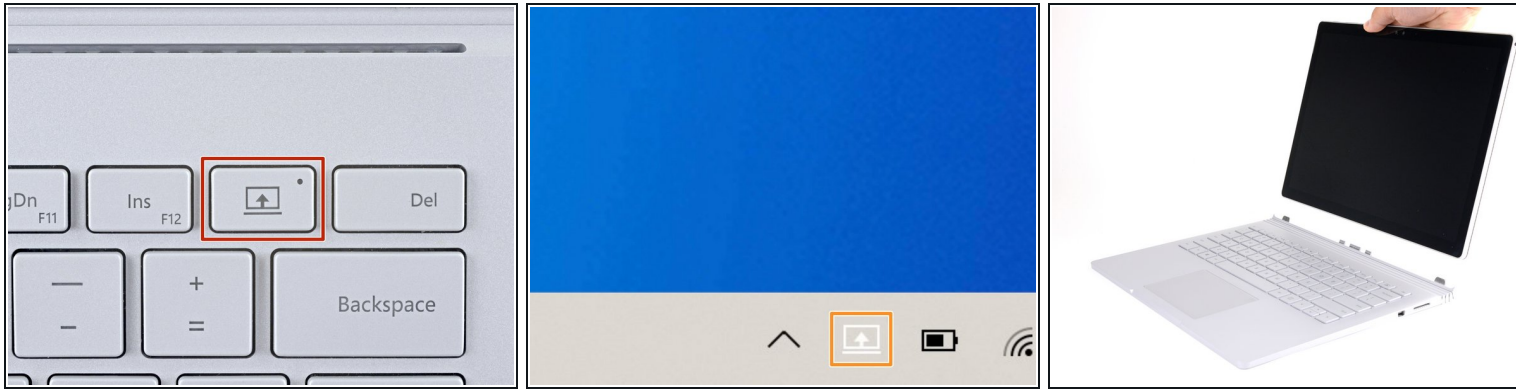
[Paper Clip](#) (1)

[Spudger](#) (1)

[iFixit Opening Tool](#) (1)

[T3 Torx Screwdriver](#) (1)

Step 1 — Remove the display with the Detach button



- ❗ In order for the keyboard to be detached with the Detach buttons, both batteries must be charged above 10 percent. If your device doesn't power on and you can't use the Detach buttons, skip to the next step.
- Press and hold the Detach button on the keyboard.
- ❗ Once pressed, the Detach button it will light up red. After a second, it'll turn green and you'll hear an audible clicking sound.
- Alternatively, click the Detach icon on the right-hand side of the Windows 10 taskbar.
- Remove the display.

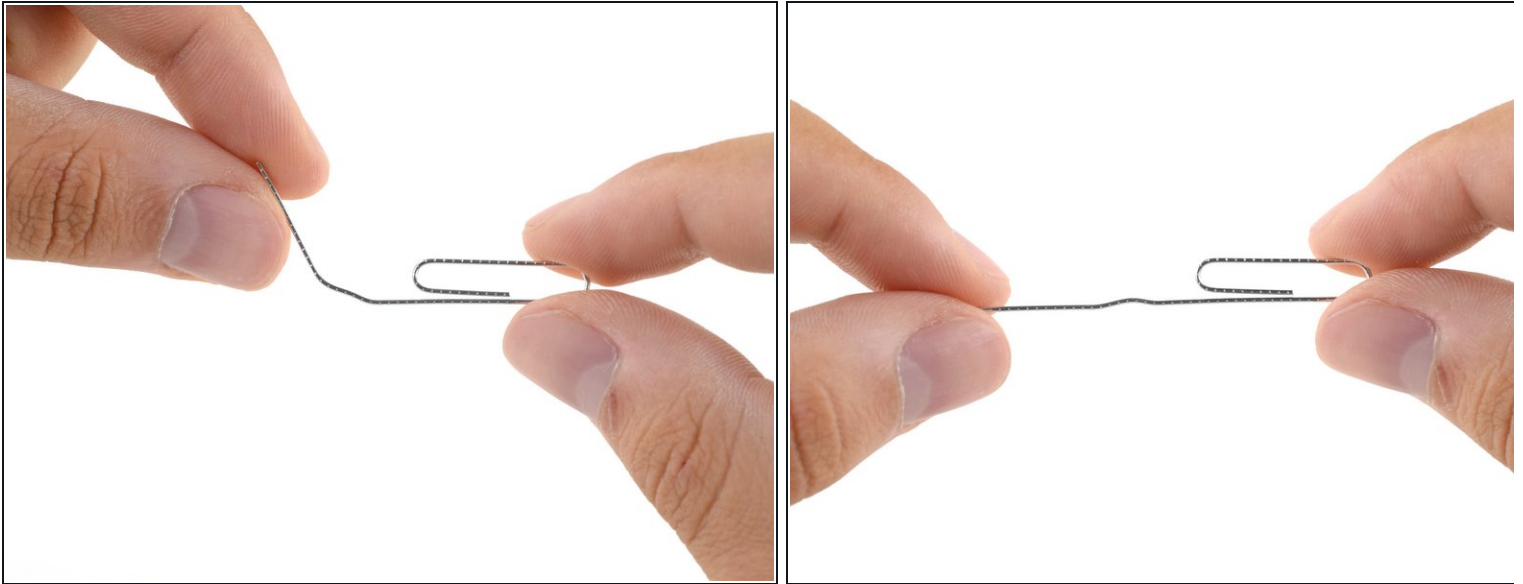
Step 2 — Manually detach the display



i The next six steps show how to detach the display manually if you're unable to power on the Surface Book.

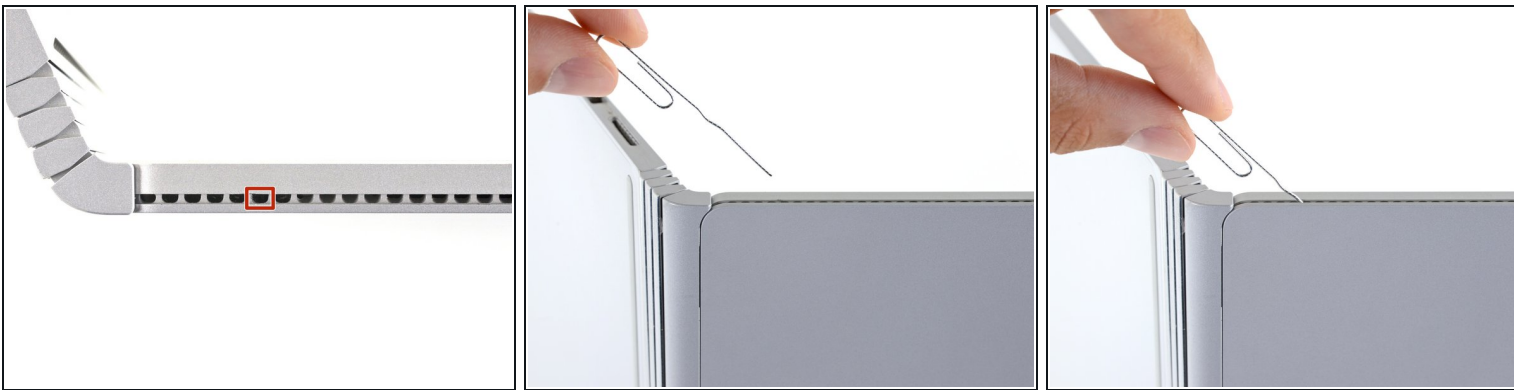
- Flip open the display as far as it will go.
- Lift the device up and place it on its side, with the display facing away from you and the SurfaceConnect port facing up.

Step 3 — Bend a paper clip



- Straighten out one section of a paper clip.

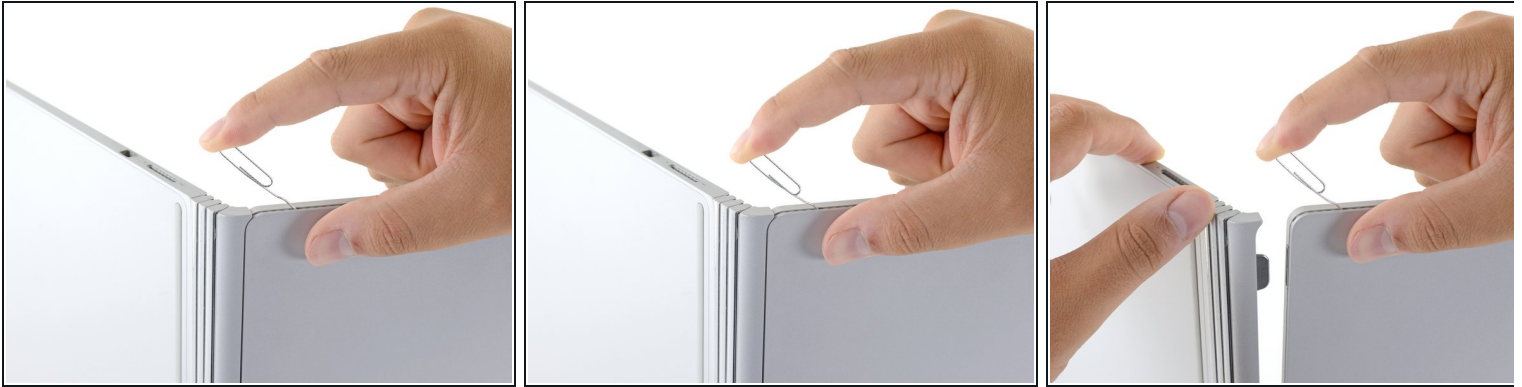
Step 4 — Push the paper clip into the hole



ⓘ The Surface Book has an internal lever arm mechanism that can be manually actuated through an access hole in the vents on side of the display.

- Insert the straight end of the paper clip at a 45 degree angle into the **sixth hole from the left**.

Step 5 — Release the mechanism



- Firmly push the paper clip into the hole.
 - ⓘ This may take a considerable amount of force.
 - ⓘ Once the internal lever arm is fully depressed, you can disconnect the display.
- Pull the base away from the display to detach it.
 - ⓘ If you are unable to detach the display from the base on this side, release pressure on the paper clip and try again.

Step 6 — Detach the second side



- ⓘ The magnetic connections are prone to snap back into place, so hold the two halves apart.
- With one side detached, pull firmly to pivot the display out to disconnect the second side.
 - ⓘ If the magnetic connection feels extra strong and the display won't detach on the second side, [keep the detached side separated](#) with a spudger, pen, or pencil, and repeat the paper clip process on the other side of the display.

Step 7 — Remove the display



- Remove the display.

⚠ Completely power down your Surface Book before opening it up for any repairs.

Step 8 — Back Panel



- Flip the keyboard over so you can see the back panel.

Step 9



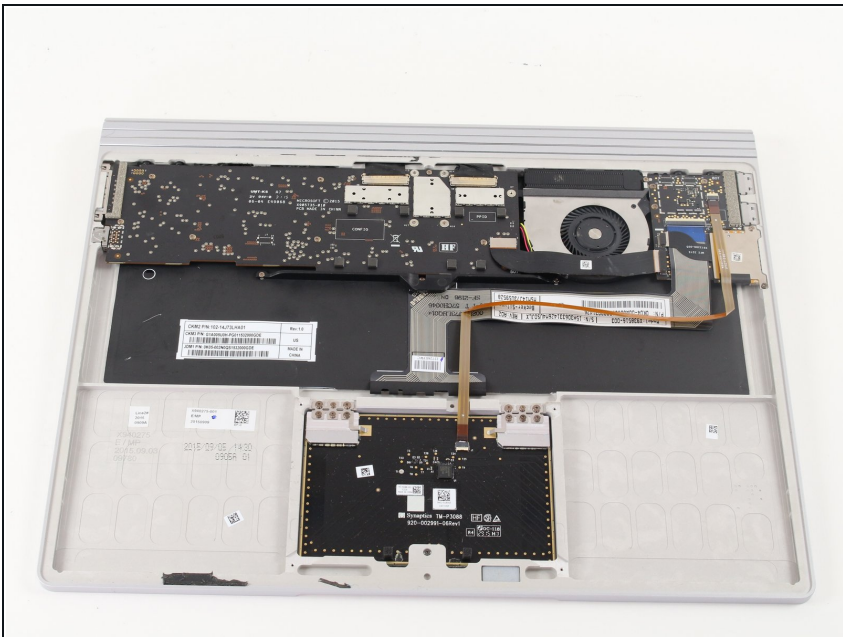
- Insert the plastic opening tool in the crevice between the panel and the keyboard.
- Apply some pressure and lift up so that the back panel is pried away from the keyboard.
- ⓘ The panel is glued down on the inside so this may require some force to lift away the panel.
- Continue to lift until the panel is completely separated from the keyboard.
- ⓘ The panel is still attached to the keyboard by a ribbon cable so only lift the panel a few inches.

Step 10



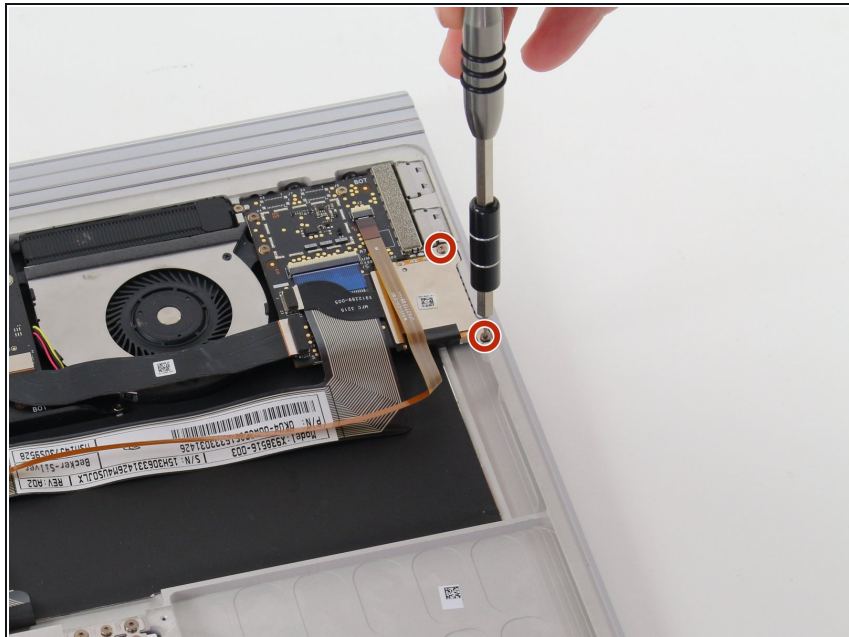
- Lift the panel away with the ribbon cable still attached and set aside the panel so that you can work on other components.

Step 11 — SD Card Reader



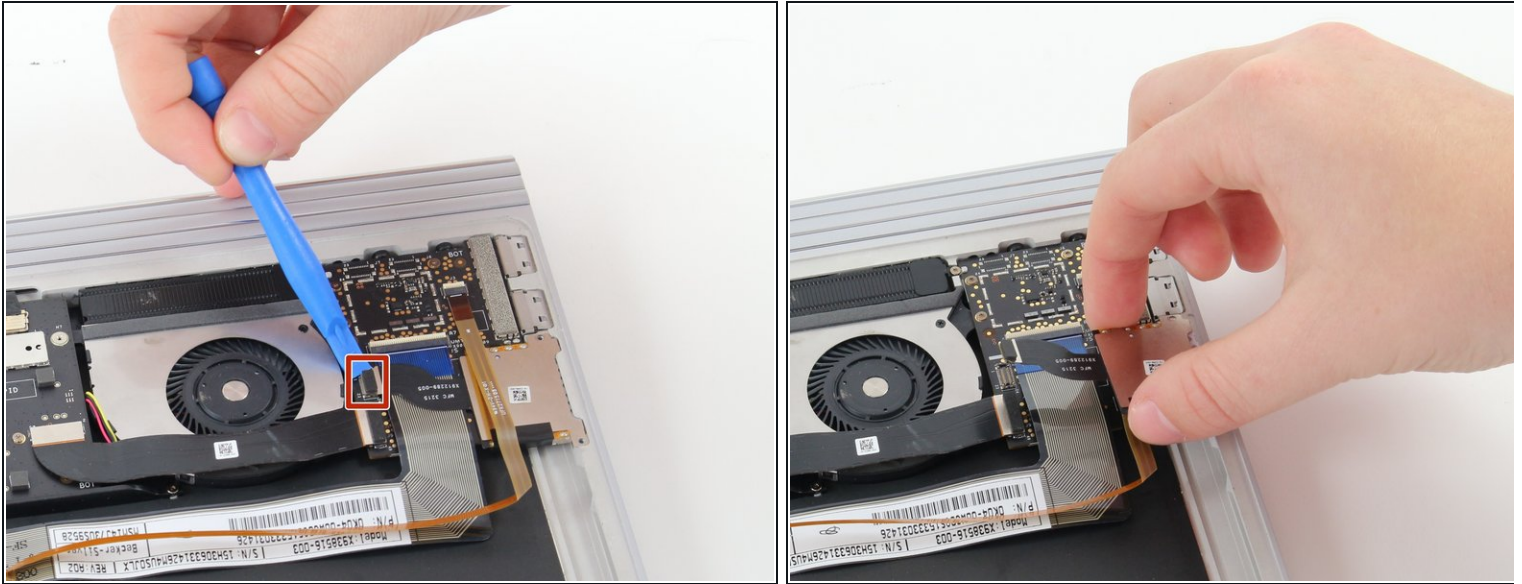
- Orient your keyboard with the internals facing up and the USB ports on the right.

Step 12



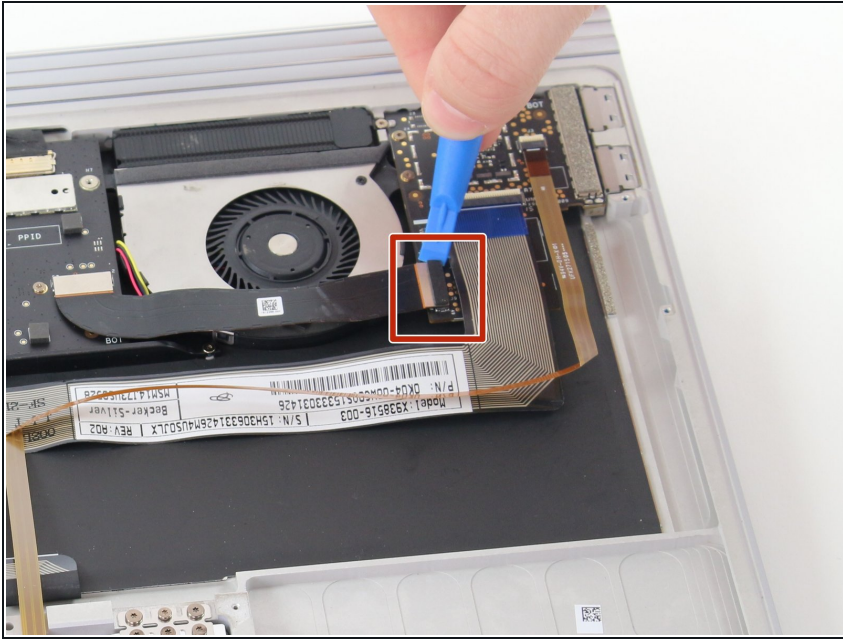
- Use the T3 screwdriver to remove the two 4 mm screws on the right side of the SD Card Reader.

Step 13



- Remove the black ribbon cable tab on the SD card reader from the chip with a plastic opening tool. Place the tool underneath the tab and pry it off.
- ⓘ Removing this tab can be a little difficult. Be sure that you have a good angle and do not get discouraged if removing the tab takes you multiple tries.
- Lift the SD card reader away from the keyboard to replace it.

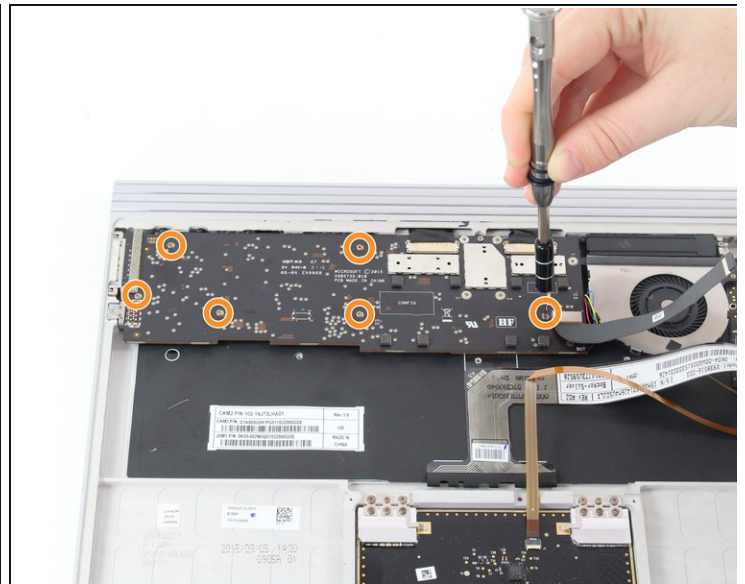
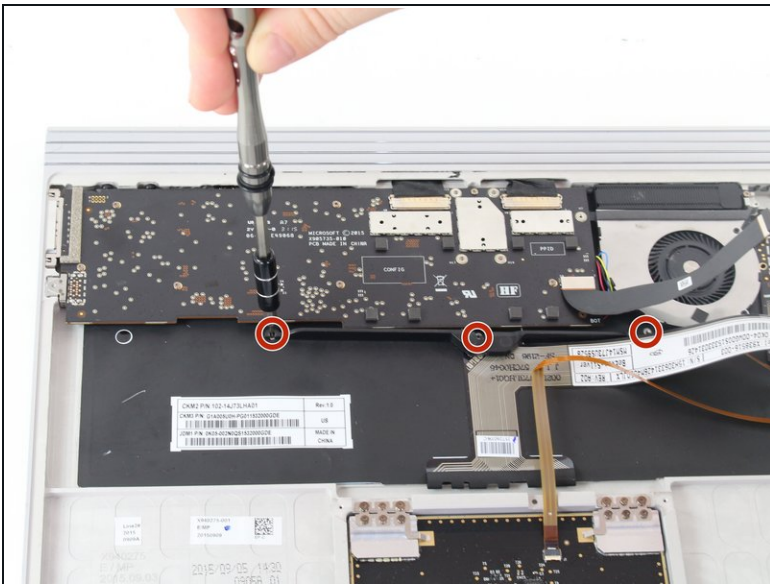
Step 14 — GPU Board



- Remove the larger, black ribbon cable located on the USB card with a plastic opening tool by lifting the tab away from its connector. Again, place the tool underneath the tab and pry it off.

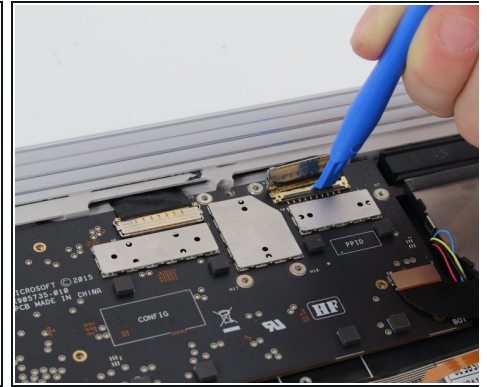
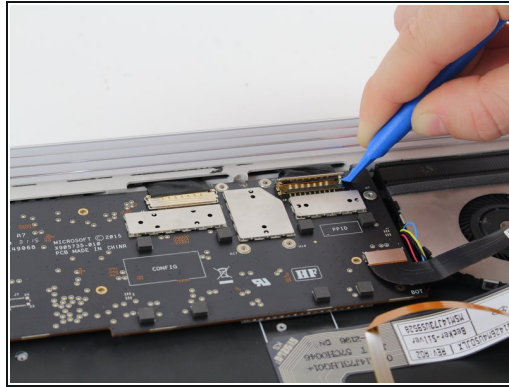
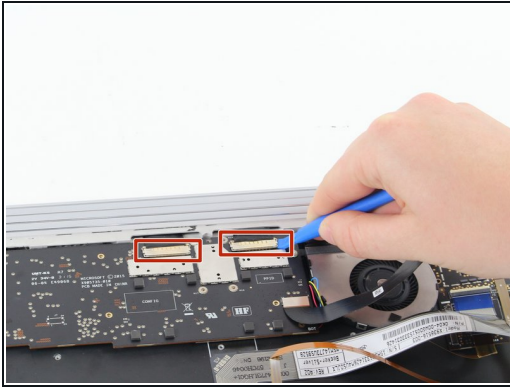
i This may require some force. Do not get discouraged if it does not detach on the first try.

Step 15



- Use the T3 screwdriver to remove three 4 mm screws located on the black bar towards the bottom of the board.
- Use the T3 Torx Screwdriver to remove the remaining six 4 mm screws.

Step 16



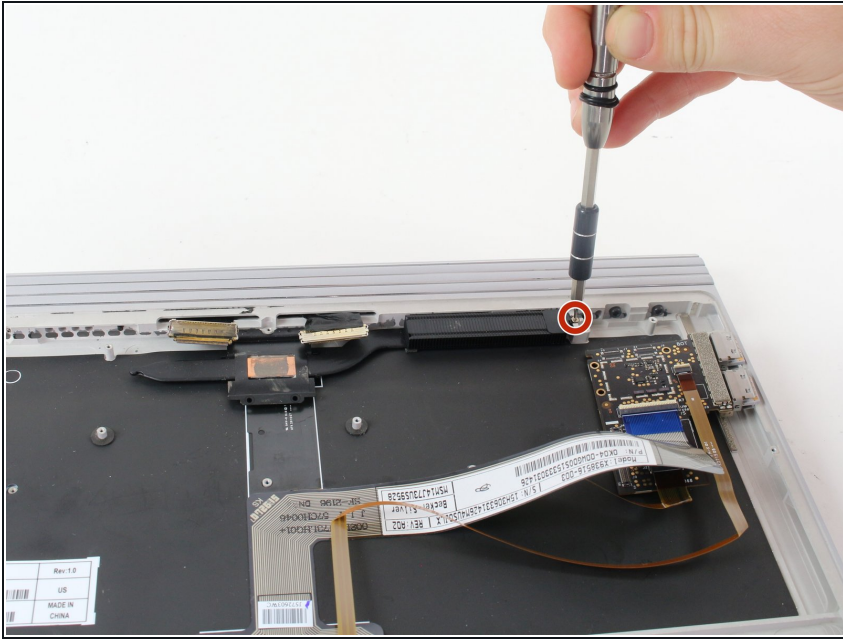
- Lift both clamps with the blue plastic opening tool. Place the tool underneath the clamps and pry them open.
- Use the plastic opening tool to slide ribbon cable toward the wall of the keyboard until the ribbon cables come loose.

Step 17



- Wiggle the the GPU board out away from the keyboard.
- ⓘ This may require some force to remove.

Step 18 — Heat Sink



- Unscrew the screw on the side of the black fan vent.

Step 19



- Remove the heat sink. It's the long, flat, black piece that runs against the bottom of the keyboard, from the graphics card to the fan vent.
- ☑ Reapply thermal paste before reinstalling the heat sink.

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 the above steps in reverse order.

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

Repair didn't go as planned? Check out our [Answers community](#) for troubleshooting help.