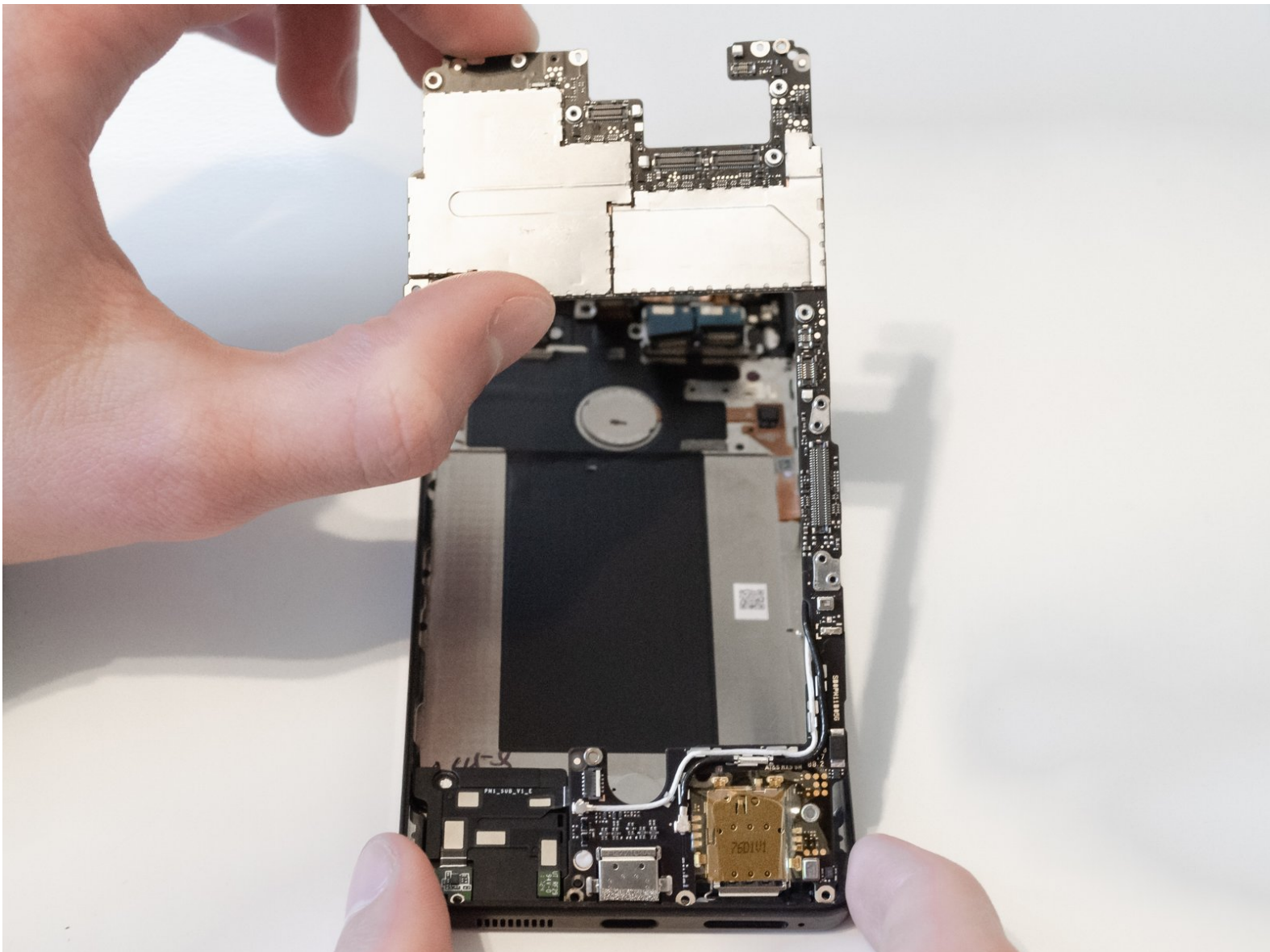




Essential Phone Motherboard Replacement

Use this guide to replace the motherboard in your Essential Phone.

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INTRODUCTION

This guide explains the process behind removing and replacing the Essential PH-1 phone's motherboard and the tools needed to do so.

The motherboard is a central component necessary to the functioning of the phone that allows the CPU, RAM, and other hardware elements to communicate with each other. If your Essential Phone overheats while making calls, charging, or won't turn on altogether, the motherboard may be damaged. Note that replacement motherboards for the Essential Phone may be hard to find.



TOOLS:

- [Phillips #00 Screwdriver](#) (1)
- [Heat Pad](#) (1)
- [Heat Gun](#) (1)
- [Heavy-Duty Suction Cups \(Pair\)](#) (1)
- [Technician's Razor Set](#) (1)
- [Halberd Spudger](#) (1)
- [iFixit Opening Picks set of 6](#) (1)
- [Spudger](#) (1)
- [Tesa 61395 Tape](#) (1)
- [1 mm](#)
- [ESD Gloves](#) (1)
- [Tweezers](#) (1)
- [Phillips #000 Screwdriver](#) (1)



PARTS:

- [Essential Phone \(PH-1\) Screen](#) (1)

Step 1 — Display

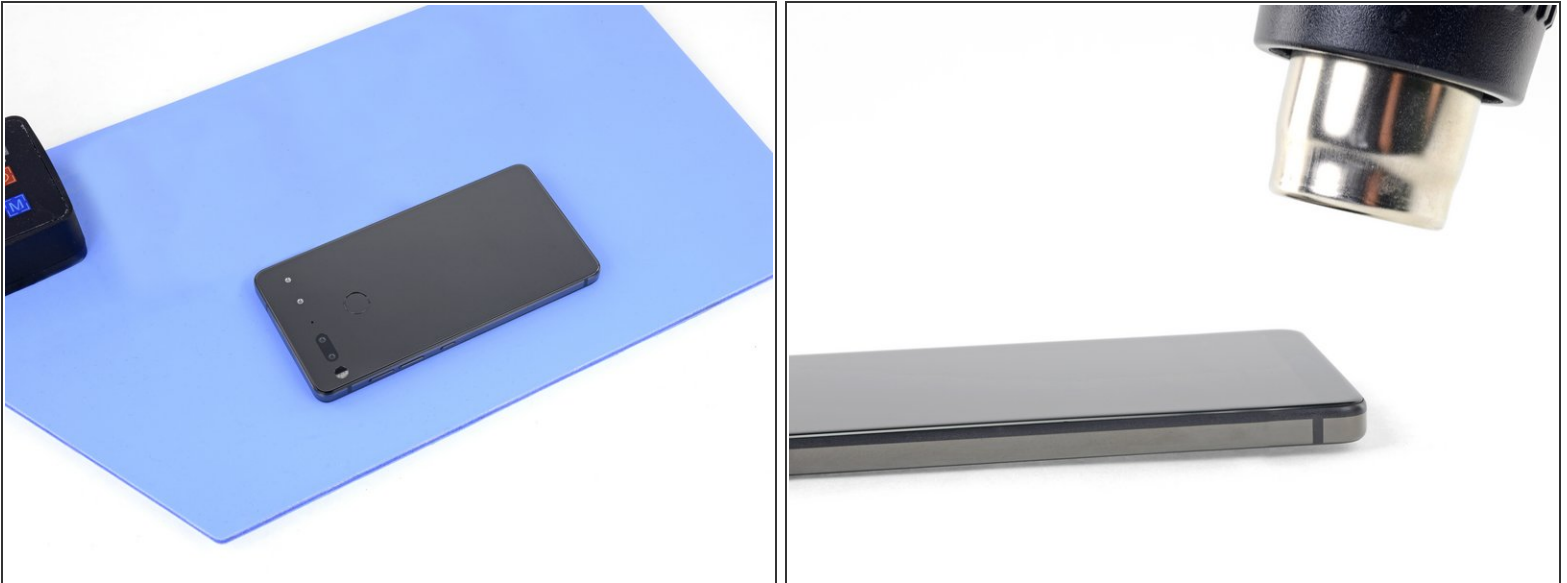


⚠ Power your phone off before you begin.

- If possible, drain the battery before disassembly. When the battery is charged, there's increased risk of a dangerous thermal event if the battery is overheated or damaged during repairs.

⚠ If your display is cracked, completely cover it with packing tape to contain the glass shards and avoid injury.

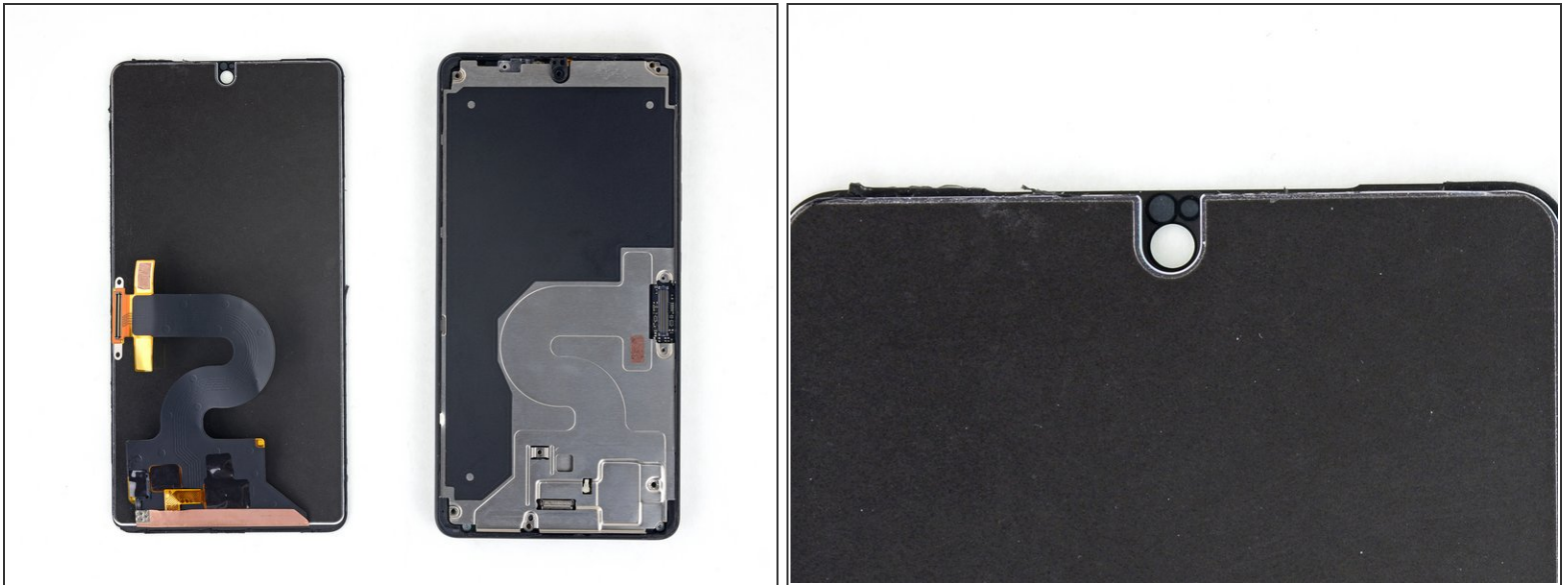
Step 2



- Heat the perimeter of the display to soften the adhesive securing it.
 - If available, use a hot plate or heat pad. Place the Essential Phone face-down and heat it to 85° C for at least 15 minutes.
 - Otherwise, use a heat gun to evenly heat the entire perimeter of the display until it's too hot to touch. Try to maintain a high temperature for 15-20 minutes—but beware that without exact control over the temperature, you can easily destroy the display.

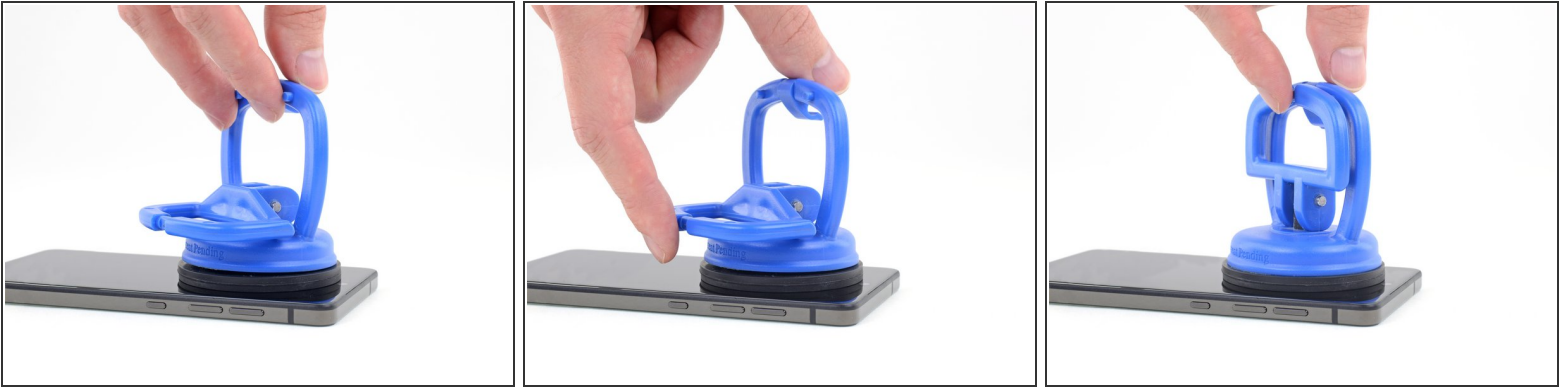
 Wear heat-resistant anti-static gloves as needed to safely handle the phone after this step.

Step 3



- i** In the following steps, you will separate the display panel and cover glass assembly from the Essential Phone's chassis.
- For reference, the back of the display panel is shown at left. Note the contours of the display panel. Tools can only safely be inserted into the camera notch at the top, and along the very thin (just over 1 mm) black bezel surrounding the display.
- !** Inserting tools at any other location risks permanent damage to the LCD.

Step 4



- While the phone is still hot, apply a heavy-duty suction cup to the top half of the display.
 - After positioning the suction cup, gently press down, and then close the handle to securely fasten the suction cup to the display surface.
- i** If your display is badly cracked, the suction cup may not adhere. Skip the next step below and use your blade to slice under the display as best you can.

Step 5



- Pull on the suction cup handle to open a slight gap between the top edge of the display and the Essential Phone's titanium enclosure.

 You only need a very slight gap, but this may require a significant amount of force. If you're having trouble, apply more heat and try again.

Step 6



- Insert a thin blade or pry tool into the camera notch at the top of the display.
 - ❗ The gap where you can safely insert a tool is only about 5 mm wide. If you hit the LCD with your tool, you will damage it.
- Use your suction cup and blade or pry tool to widen the gap at the top of the display until you can insert a second tool under the glass, closer to the corner.

Step 7



- Insert a halberd spudger no more than 1 mm under the display, and cut the adhesive all along the top edge.
 - ❗ The bezel surrounding the LCD panel is slightly over 1 mm deep. If you insert your tool any deeper, you can damage the display.

Step 8



- Continue carefully separating the adhesive at the top corners and down both sides of the display.

⚠ Do not insert your tool more than 1 mm.

⚠ Do not pry or slice on the bottom edge yet. The display's FPC is folded under the bottom edge and may be damaged.

Step 9



- Pull carefully on the suction cup to swing the top edge of the display away from the chassis.

ⓘ Leave the bottom edge connected for now; the glue will most likely continue to hold it in place.

Step 10



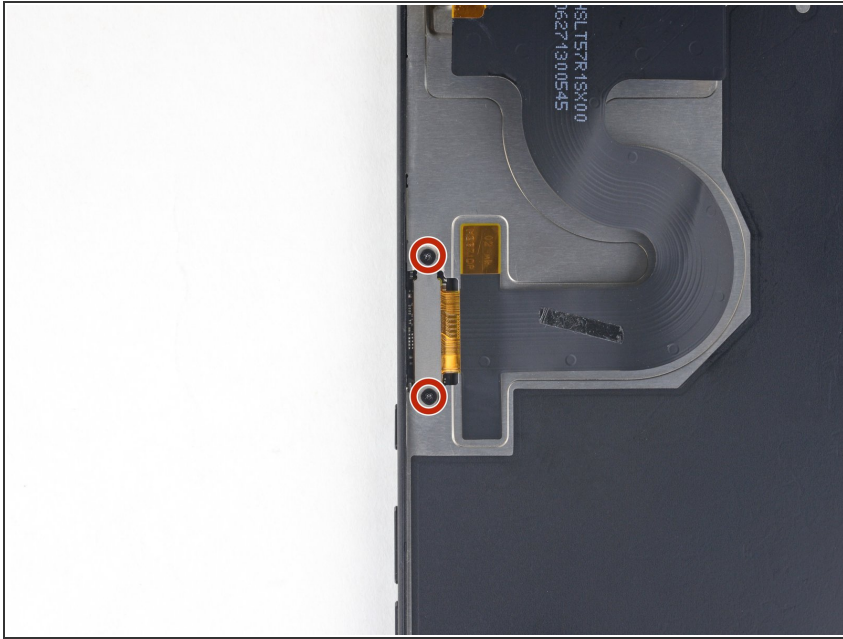
- Carefully open the clamp on the suction cup to release the suction, and remove the suction cup.

Step 11



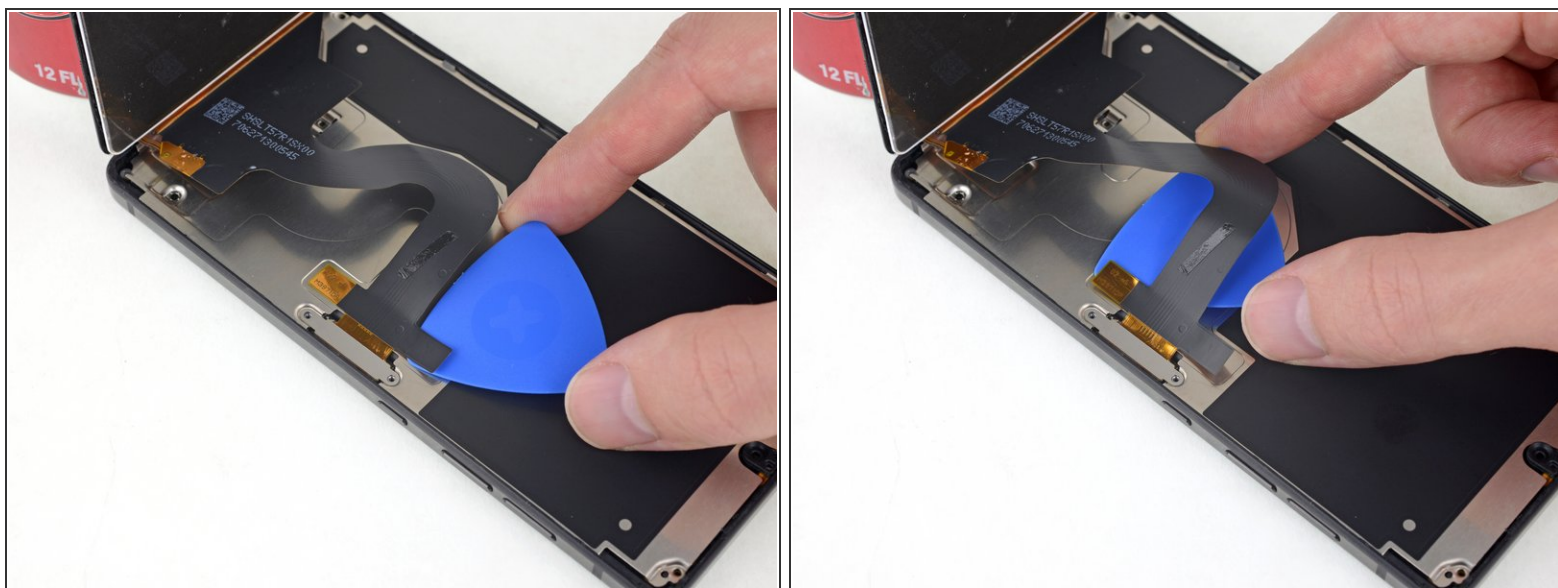
- Swing the display open to about 90° and prop it up against something sturdy so it doesn't move while you work.
- ❗ An unopened soda or can of soup works well as a prop.
- If needed, gently add a rubber band to help secure the display.

Step 12



- Use a Phillips #00 driver to remove the two 1.5 mm screws securing the display cable.

Step 13



- Carefully slide a pick underneath the display cable to separate the adhesive securing it to the metal shield beneath.
- ⓘ If necessary, add a little heat to soften the adhesive and make it easier to separate.
- ✦ The two adhesive pads securing the display cable are conductive and should be firmly re-adhered during assembly. If necessary, replace the pads.

Step 14



- Use the point of a spudger to pry the display cable [pop connector](#) straight up from its socket.

Step 15



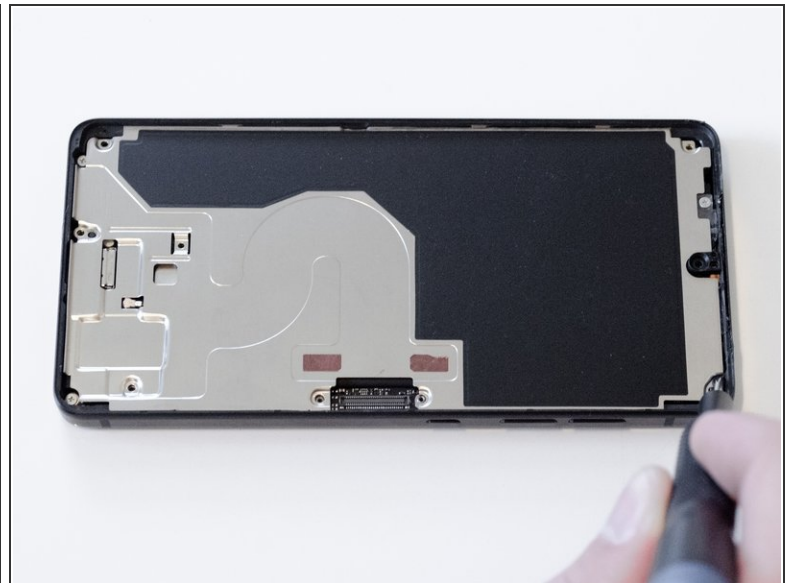
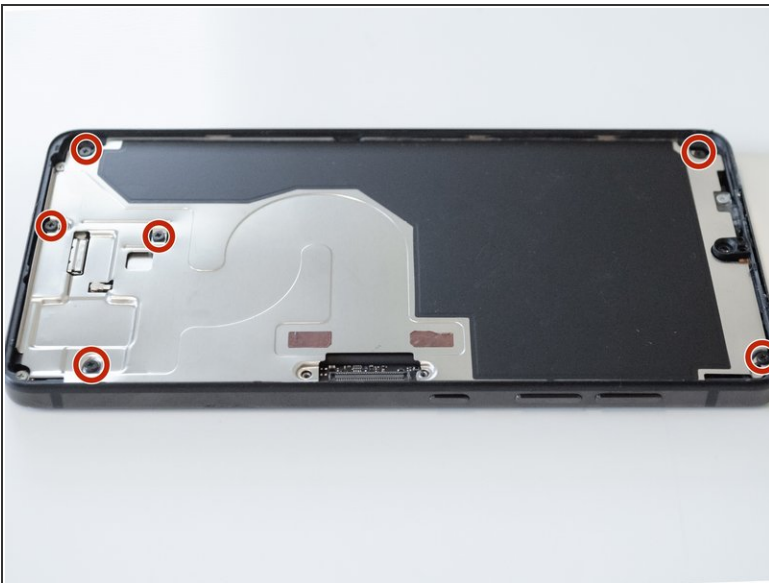
- Use your halberd spudger to carefully separate any remaining adhesive along the bottom edge of the phone.

Step 16



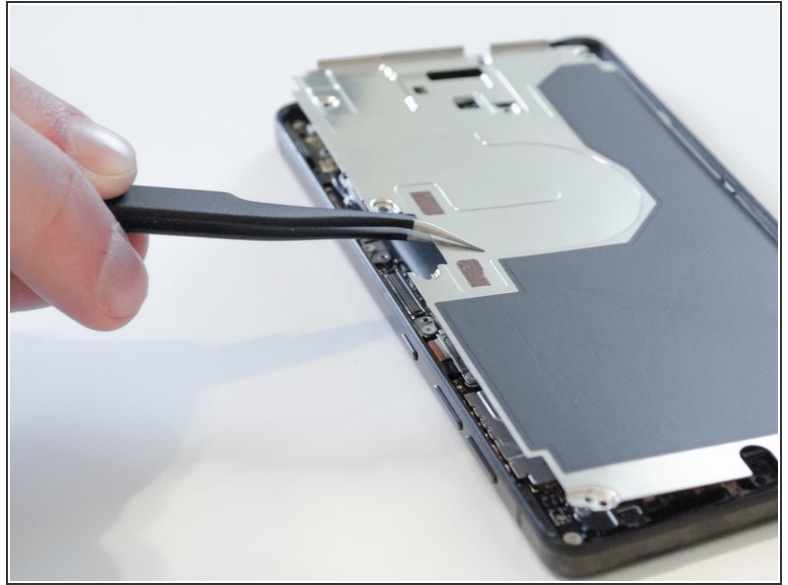
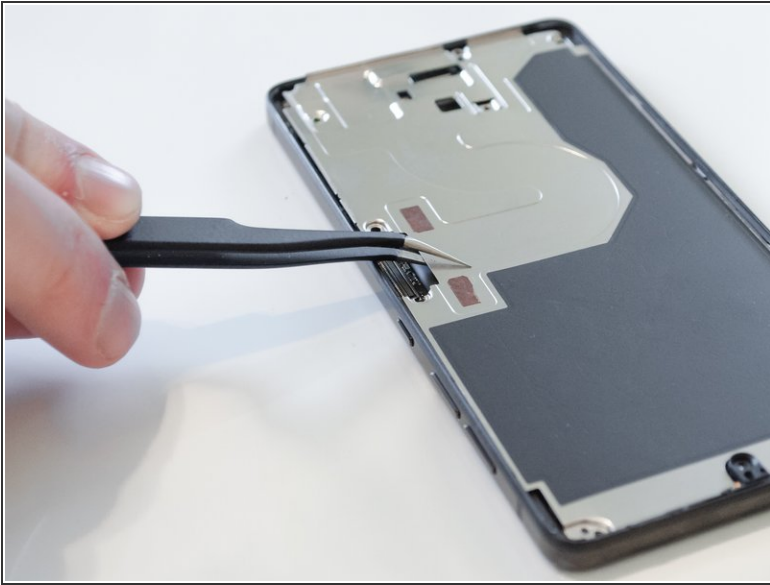
- Remove the display.
- ★ Before installing the display, remove all traces of the old adhesive, then clean and prep the glued areas of the chassis and display (if you're re-using it) with isopropyl alcohol and a lint-free cloth.
- ★ Connect the display and power on the Essential Phone to test your repair before sealing the display panel in place.
- ★ You may re-secure the display with a strong double-sided adhesive tape, such as 1 mm [Tesa 61395](#).

Step 17 — Battery



- Use a Phillips #000 driver to remove the six 3.4mm screws holding on the back panel.

Step 18



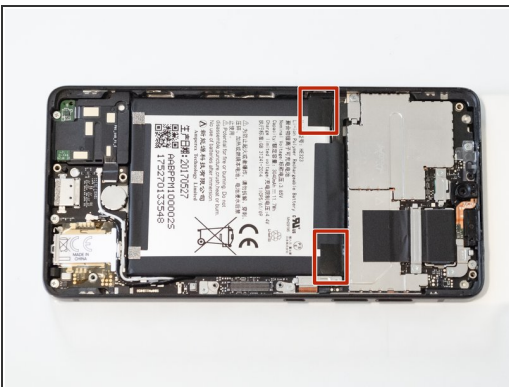
- Use tweezers to carefully lift the back panel off of the phone.
- ⓘ Make sure to only lift the panel from the rectangular space adjacent to the power button.

Step 19



- Use a Phillips #000 screwdriver to remove the 2.4mm screw securing the battery clip over the battery connector.
- ⓘ The battery clip should come off with the screw. If it doesn't, carefully remove it using tweezers.
- Using the tweezers carefully disconnect the battery from the motherboard.

Step 20



- Pull off the two pieces of black adhesive tape on the battery.
- ⓘ If the tape doesn't pull the battery out with it, use a spudger to carefully pry the battery from the phone.
- In this case, use the spudger to also separate any extra adhesive under the battery.

Step 21



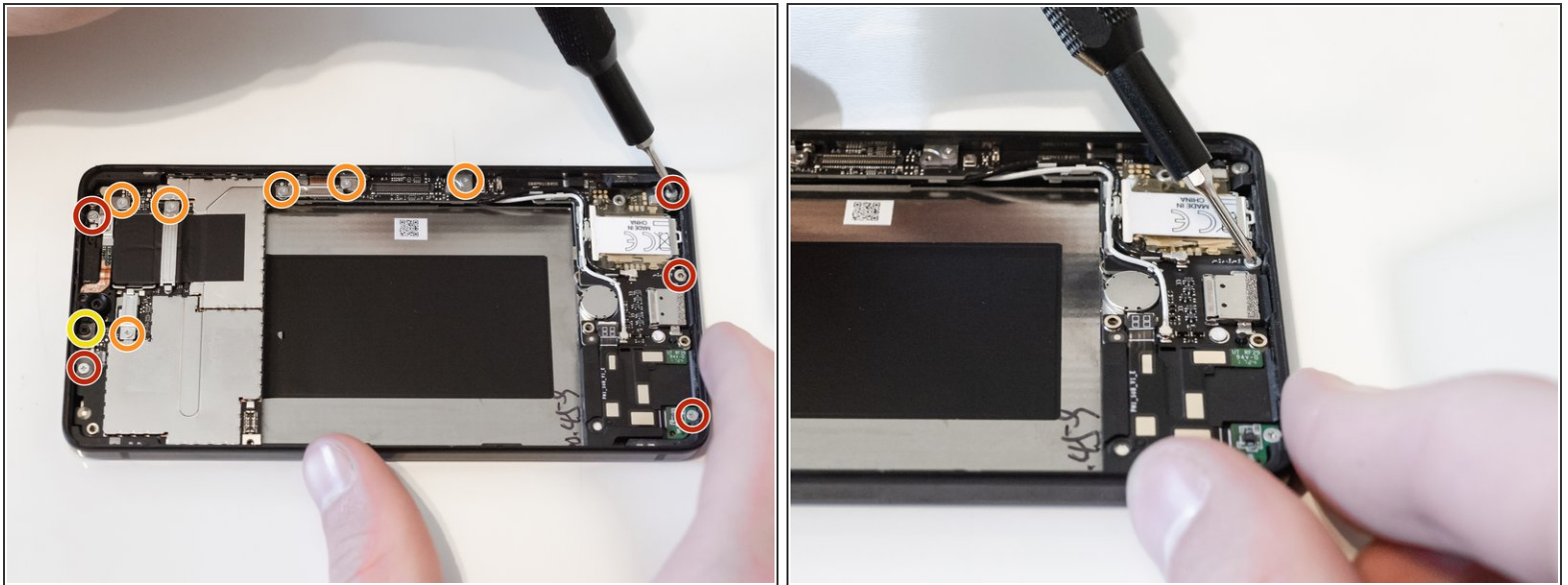
- Remove the battery from the phone.
- ★ After reassembling the phone, force restart your phone to prevent potential software issues.

Step 22 — Motherboard



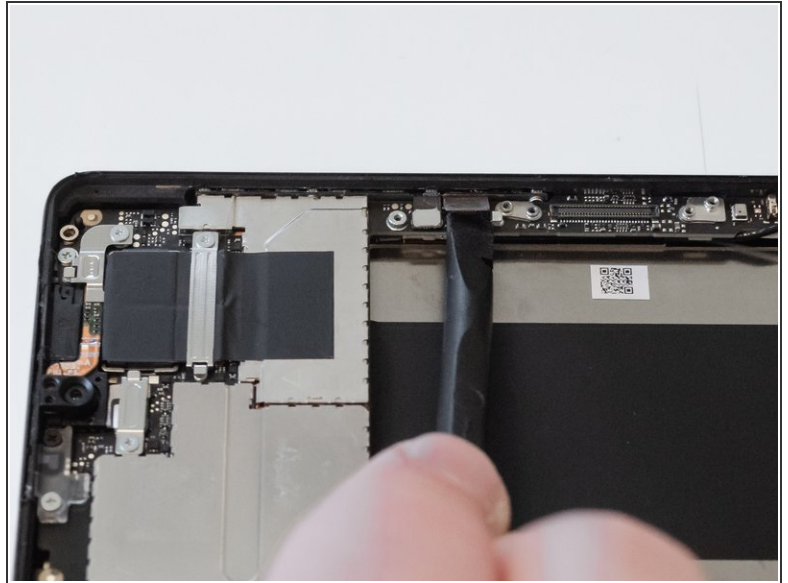
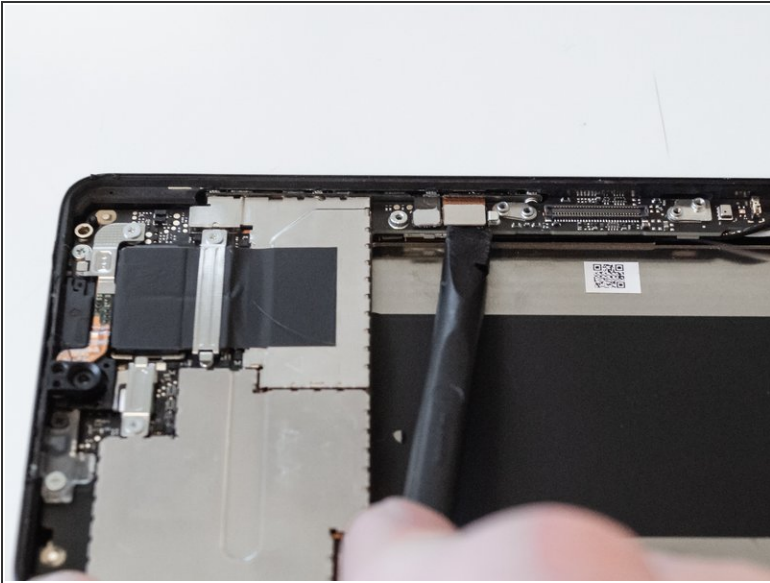
- Remove the tape covering the loud speaker cable connector with a tweezer.
- Use the flat end of a spudger to lift the tab of the loud speaker cable connector.
- Using a tweezer, pull out the connector from the motherboard.

Step 23



- Use the Phillips #000 screwdriver to remove the five 2.4 mm screws holding down the motherboard.
- Use the same screwdriver to remove the six 1.25 mm screws holding down connect clips onto the motherboard.
- Remove the remaining 3.4 mm screw at the top of the motherboard with the same screwdriver.

Step 24



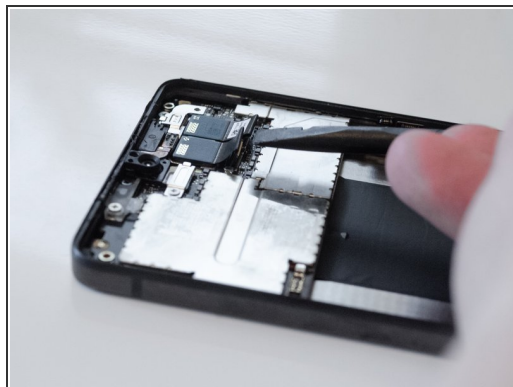
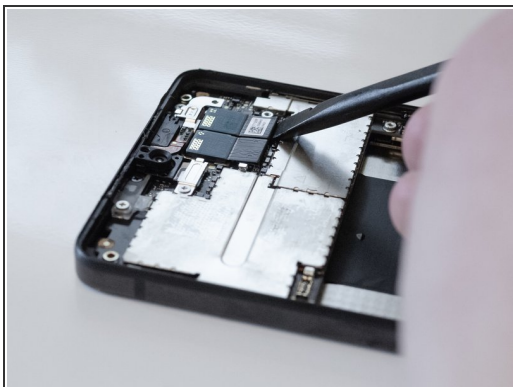
- Use the flat end of a spudger to lift up the tab of the connector from the motherboard.

Step 25



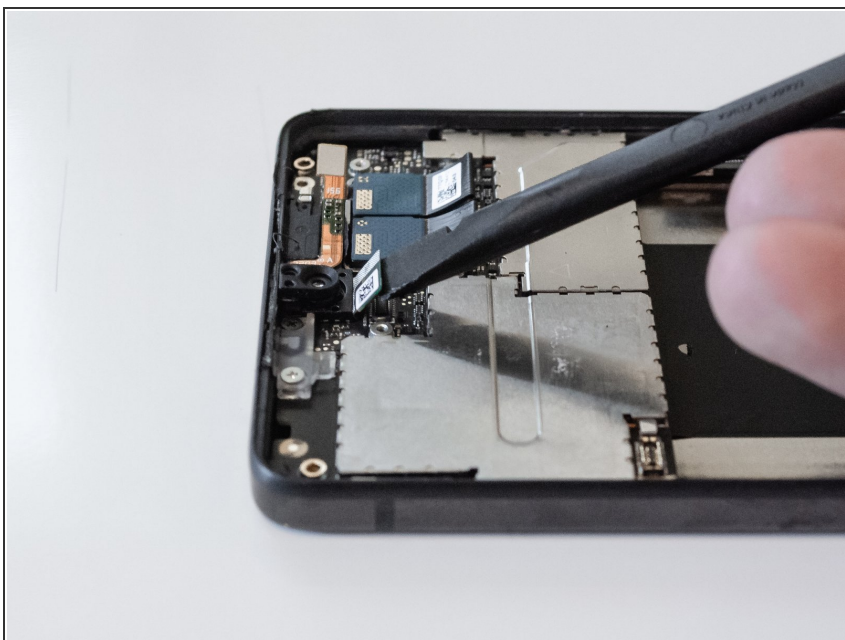
- Use a tweezer to remove the tape covering the rear cameras from the motherboard.

Step 26



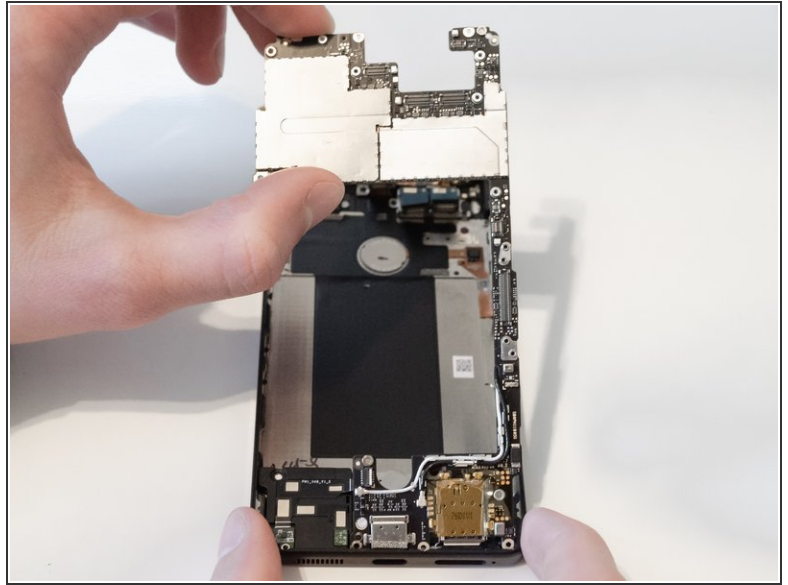
- Use the flat end of a spudger to lift up the clip connectors attached to the rear-facing camera.

Step 27



- Use the flat end of a spudger to lift up the clip connectors located near the front-facing camera.

Step 28



- Carefully lift the motherboard out of the phone. This may require some fidgeting to unhook the motherboard.
- ⓘ You will have to remove the SIM card tray from the phone to remove the motherboard.
- ⓘ You can also use a spudger to lift the motherboard off the phone as well.

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