

Replacing the Screen and Battery of Samsung Galaxy S20

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Figure 1

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Introduction

This set of technical instructions was created to provide a step-by-step guide in the process of replacing a broken screen and battery on a Samsung Galaxy S20.

Tools needed are:

- Philip's Head screwdrivers (#1 and #2)
- Zip ties
- Thermal Paste
- Needle nose pliers
- Flashlight.
- Card Needle
- Heating Instruments
- Pyrometer
- Dustproof tape
- Cell phone charger
- iOpener (heat gun)
- Spudger
- Isopropyl Alcohol
- Suction Handle

 **Warning:** you may passively pick up a static charge that could damage your components if you do not discharge before working with your components. To discharge a simple tough piece of metal, or if you want to be completely sure that no static charge will make its way into your build, get an anti-static mat or bracelet.

For these repairs these are the following components that will be needed:

Galaxy S20	Samsung Galaxy S20 phone (\$499.99)
Replacement Glass	LCD Digitizer Screen Replacement (\$269.95)
Replacement Battery	Samsung Replacement Battery EB-BG360CBU 2000mAh (\$12.16)

These products were chosen due to them coming with the necessary tools, this will ensure the price of the repair will stay as low as possible.

Definitions

- IOpener
 - A smart device tool that makes it easier to separate the screen from the device.



Figure 2 IOpener

- Spudger
 - A tool that has an angled edge allowing it to slide in between small cracks, such as the screen and body.



Figure 3 Spudger

- Isopropyl Alcohol
 - A solvent used to dissolve the glue on electronic devices. It does not damage electronics.

Section A- Removal of the Back Cover

1. The first step to replacing the screen is to make sure the phone is turned off and unplugged from any power source.
2. Then heat the edges of the phone with the iOpener or any sort of heat gun. Once heated, apply a suction cup to the back of the phone to separate the back cover from the frame.



Figure 4

⚠ Warning: The temperature of the back cover after being heated by the heating apparatus is very high, so be careful not to burn your hands.

3. Slide the pick back and forth around the edges to help separate the back cover.



Figure 5



Figure 6

4. Repeat for all sides of the phone until the back cover is completely off.



Figure 7

Section B- Remove the parts from the old screen.

1. When the back cover is removed, the first step is to put dustproof tape on the camera.

⚠ Warning: The Camera Lens is sensitive and failure to comply with this step could result in camera failure.

2. Next, heat and separate the black adhesive around the perimeter of the device. Heat an iOpener and apply it to the top edge of the display for two minutes. Apply a suction cup to the display glass, as close to the center of the top edge as possible.

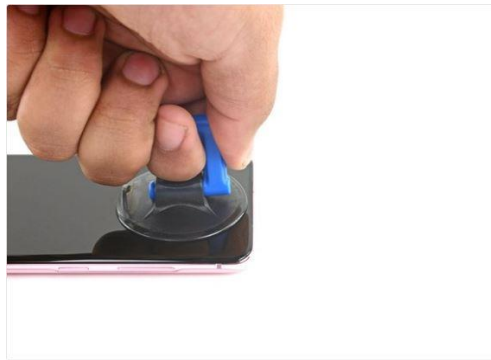


Figure 8

3. Pull on the suction cup with a strong, steady force to create a gap between the display glass and the frame. Insert the point of an opening pick into the gap in the center of the earpiece speaker notch, working it downwards underneath the display.

Note: It is important to leave the opening pick in the seam for the next few steps to prevent the adhesive from resealing.

4. Insert a second pick into the same gap and slide it to the top left corner of the display to slice the adhesive.

5. Insert the third pick into the center gap and slide it to the top right corner of the display to slice the adhesive.



Figure 9

6. Slide the center pick further into the device's top edge to slice the adhesive surrounding the earpiece and front-facing camera.
7. Insert another pick into the gap at the top right corner of the display. Slide the pick down to the bottom right corner to slice the adhesive.



Figure 10

8. Insert a pick underneath the center of the screen's right edge to prevent the adhesive from resealing.

9. Insert a pick into the gap at the top left corner of the display. Slide the pick down to the bottom left corner to slice the adhesive.
10. Insert a pick underneath the center of the screen's left edge to prevent the adhesive from resealing. Apply a high concentration (over 90%) of isopropyl alcohol behind the display as close to the clear adhesive (marked red) as possible.
11. After the alcohol is applied, tilt the bottom of the phone down for two to three minutes to help the alcohol penetrate further. Slowly insert a spudger under the top edge of the screen to separate the clear adhesive.
12. Remove the display from the frame. Use tweezers to remove any remaining adhesive from the frame. Use isopropyl alcohol and a lint-free cloth to thoroughly clean the frame's surface and prepare it for a new adhesive. Wipe in one direction to avoid smearing.


 **Warning: The front camera and screen of this phone are not detachable, so do not force the front camera to be removed.**



Figure 11

Section C- Replacing The old screen

1. Position the sensor in its place in the device and press it down slightly.
2. Place the earpiece in its opening. Press the earpiece down to glue it back in place.
3. Put the vibration motor back in its place and press it down.
4. Position the USB board diagonally at the bottom of the device and then push it into the frame.
5. Use a Phillips #00 screwdriver to put the screws back into place.



Figure 12

6. Bend all flex cables a bit to the side and then put the mainboard into the device. Position it at the top and guide the board down until it fits properly.

Note: Ensure not to pinch any cables under the board. If the motherboard lies flush and flat in the unit, you can screw it in place.

7. Put the SIM holder back in place. If it is stuck, do not push it in with force, but check whether the mainboard is already positioned correctly. Then connect all connectors.
8. Place the top cover at an angle and then press it down. When it is clicked in place on all sides, you can fasten it.

9. Check the adhesive residues on the underside of the battery. Make sure that the adhesive does not wrinkle, otherwise it could push the battery upwards. If the new display comes with adhesive surfaces for the battery, you should remove all old adhesives from your battery. Then insert the battery into the device. Make sure that it has a little space on all sides and is not pushed against the frame anywhere.
10. Reinsert the flex cables that run above the battery.



Figure 13

11. The side labeled "MAIN" should face up inside the unit. Connect the connectors to the mainboard and the USB board.
12. Insert the speaker, press it down and screw it in place. Make sure it's hooked in at the bottom.
13. Position the battery contact over its socket on the mainboard and press it down. Put on the metal cover with the charging coil. Hook it in at the top and fasten all screws.

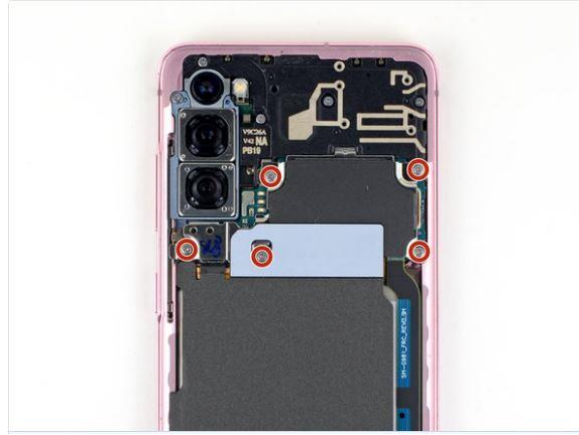


Figure 14

14. Test your Galaxy S20 before you finally close the device. Switch on the device and open the telephone app. Here you enter *#0*# and a test menu opens. In the test menu, you can test the display for pixel errors and check the touchscreen and other functions such as the camera, the speaker, or the status LED. If everything is OK, you can lock your smartphone for good.

⚠ Warning: Be sure to dispose of excess glue on time, as failure to clean it up quickly may lead to other problems with your phone.

15. Before you put the back cover on you should check the glue. It should be evenly distributed on the edge of the back cover. Remove excess glue if necessary.
16. Before attaching a new adhesive frame, you must first remove all old adhesive residues on the back cover and frame. You can use a plastic sludger to scrape off some of the glue. Cleaning alcohol and a lint-free cloth can help to remove the residue.
17. Check the alignment of the frame, then peel off the first protective film and apply the adhesive to the frame. Do not press it down yet but check that it is properly seated on all sides. The adhesive should not protrude anywhere. Press the adhesive down all around so that it bonds properly to the frame.
18. Loosen the second foil. Make sure that the adhesive does not come off the frame. Position the back cover over the device and put it down slowly.
19. Heat the back cover again with hot air so that the adhesive bonds again. As long as the glue cools down, you can press the back cover down with your fingers or weight it down with a few books.

Section D- Replacing the Battery

1. Turn off the phone and make sure it is not plugged into any power source.
2. Begin taking off the back cover with the iOpener or a heat gun.
3. Then use the picks to help separate the back cover from the phone.



Figure 15

4. With the back cover off you want to unscrew the motherboard bracket and take it out.

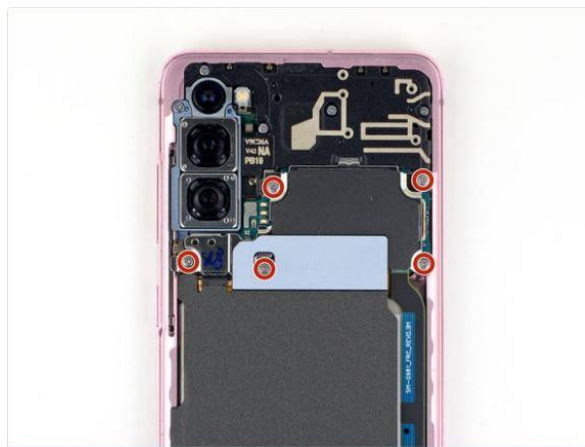


Figure 16

5. Remove the wireless charging coil by slowly peeling it off with your hands.



Figure 17

⚠ Warning: Lithium-Ion battery are very flammable, handle with care.

6. By using a spudger gently lift up and disconnect the battery connector.



Figure 18

7. Unscrew the lower midframe and then take out the loudspeaker.



Figure 19

8. Then disconnect the motherboard and the disconnect and take the main flex cable out.
9. Then disconnect the main display cable and position it, so it is not in the way when replacing the battery.



Figure 20

10. Apply a high concentration (over 90%) of isopropyl alcohol to the gaps between the frame and the edges of the battery. Tilt the device as you apply the alcohol to help it penetrate the adhesive underneath the battery.

 **Warning: Lithium-Ion battery are very flammable, handle with care.**



Figure 21

11. After you apply the alcohol, continue tilting the phone in all directions for two to three minutes to help the alcohol penetrate further.
12. Apply a suction handle to the center of the battery. Brace the top and bottom of the device against your work surface with one hand and firmly pull up on the suction handle with the other. When the battery begins to lift from the device, proceed to the next step.



Figure 22

13. Insert an opening pick underneath the bottom edge of the battery and twist to loosen the battery adhesive. Remove the battery.



Figure 23

14. Pull out the old battery carefully but also forcefully because it's stuck with adhesive at the back and replace it with the new battery.

References

Replacement screen

Original LCD Display Digitizer Screen Replacement for Samsung Galaxy S20 Ultra G988u G988a G988w Touch Screen Assembly Replacement 6.8 inch +Tools (with Frame) (Grey with Frame) is sold by Amazon.com. The package was produced March 25, 2022.

Phone

Galaxy S20 FE 5G is sold by Samsung. The package was produced March 6, 2022.

Photos

Thiruma, Tarun. "Samsung Galaxy S20 Battery Replacement." IFIXIT. 22 Nov. 2021, <https://www.ifixit.com/Guide/Samsung+Galaxy+S20+Battery+Replacement/132827>

Frauenheim, Carsten. "Samsung Galaxy S20 Screen Replacement." IFIXIT. 21 Jan. 2021, <https://www.ifixit.com/Guide/Samsung+Galaxy+S20+Screen+Replacement/138829>

Tools

iOpener is sold by IFIXIT.com. The package was produced in 2020.

IFIXIT Jimmy (Spudger) is sold by Amazon.com. This product was produced in Sept. 2014.