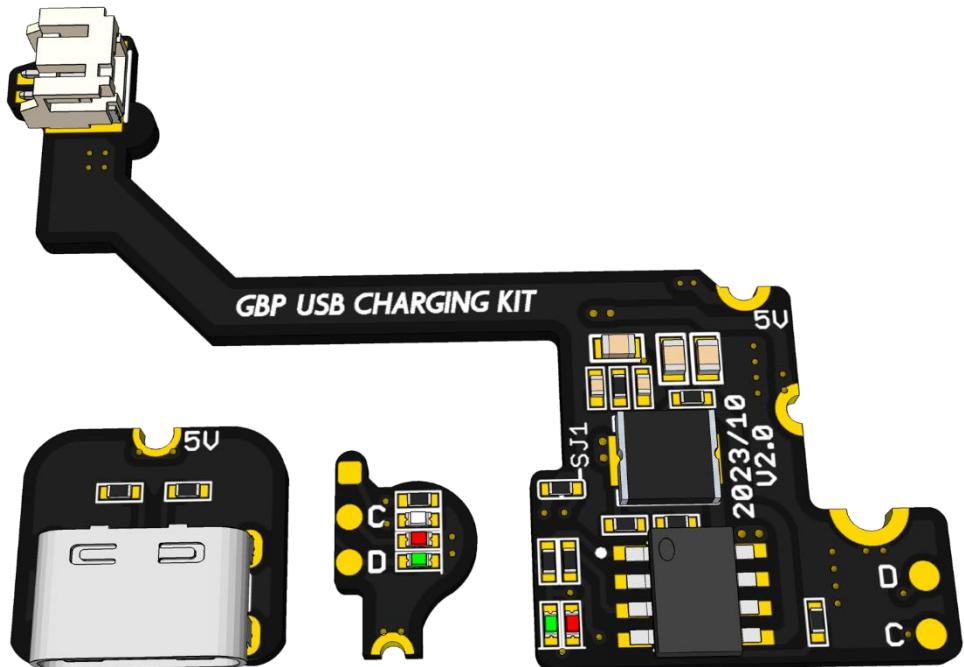


USB-C CHARGING KIT FOR GAME BOY POCKET



PRODUCT V2.0+

[HTTPS://SHOP.GILTESA.COM/PRODUCT/GAME-BOY-POCKET-USBC-CHARGING-KIT](https://shop.giltesa.com/product/game-boy-pocket-usbc-charging-kit)

**PLEASE READ THROUGH THESE INSTRUCTIONS
ENTIRELY BEFORE ATTEMPTING TO INSTALL.**

**WARNING: IF YOU ARE NOT COMFORTABLE WITH
SOLDERING, OR PERFORMING ANY STEP IN THIS
GUIDE, DO NOT PERFORM THE INSTALL YOURSELF.
FIND SOMEONE WHO IS COMFORTABLE TO DO IT FOR
YOU.**

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DESCRIPTION

The **Game Boy Pocket USB-C Charging Kit** is a circuit that allows to charge a Nintendo Game Boy Pocket by USB-C and use a Li-ion battery instead of AAA batteries.

FEATURES

- **Exact shape for Game Boy Pocket.**
- **Li-Ion battery charger** by USB-C with protection for charging level and over discharge.
- **Integrated LED indicators** on the main board, next to the USB-C, for charging battery (red) and full battery (green).
- **External LED indicators** board for playing (white), charging battery (red) and full battery (green). The installation is optional.

INCLUDED

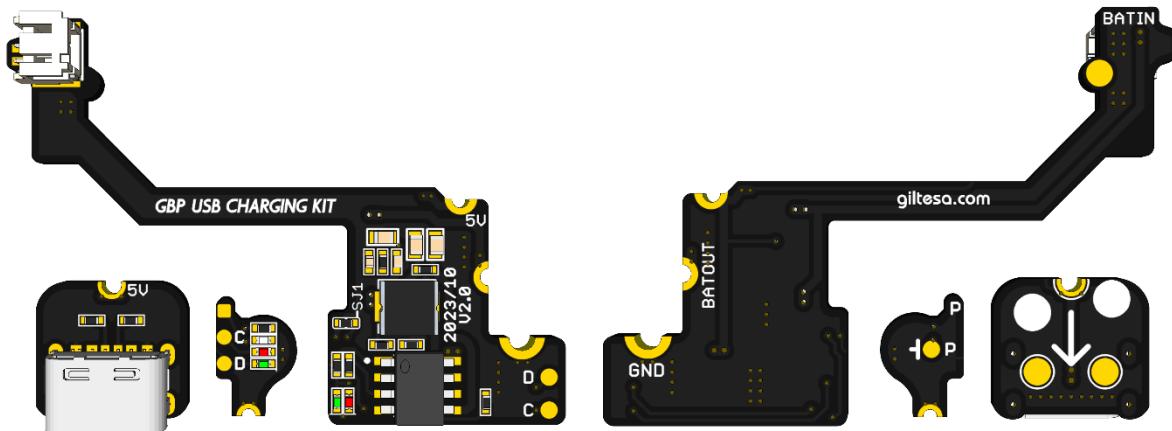
- 1 frame panel which includes the three boards:
 - Main board.
 - USB-C board.
 - Light board.
- 1 Battery cable.
- 1 Cable of 2 wires for connecting the light board.
- 1 Light diffuser pipe.

RECOMMENDED / REQUIRED [NOT INCLUDED]

- 3.7V li-ion battery (for example a 102045, maximum space available: 10(T)x20(W)x47(L)mm cutting the shell)
- Tri-wing and phillips screwdriver
- Tweezers
- Cutter
- Cutting plier
- Soldering iron
- Tin
- Flux
- Desoldering pump
- Desoldering mesh
- Isopropyl alcohol
- Instant glue (Loctite, Super Glue)

BOARD DETAILS

There are many pads on the charging board that need to be soldered to join it to the GBP mainboard. The following explains what each pad is for.



Main board & USB-C board:

- **BATIN:** Input connector of the li-ion battery.
- **5V:** The 5V line from the USB-C.
(There are two of these pads, they are joined by a wire of the GBP mainboard*)
- **BATOUT:** The energy output from battery to the GBP power switch.
- **GND:** The ground pad.
- **SJ1:** Solder jumper. Remove the resistor of 0Ω to disable the integrated LED indicators (and use only the external ones).

Light board (*optional*):

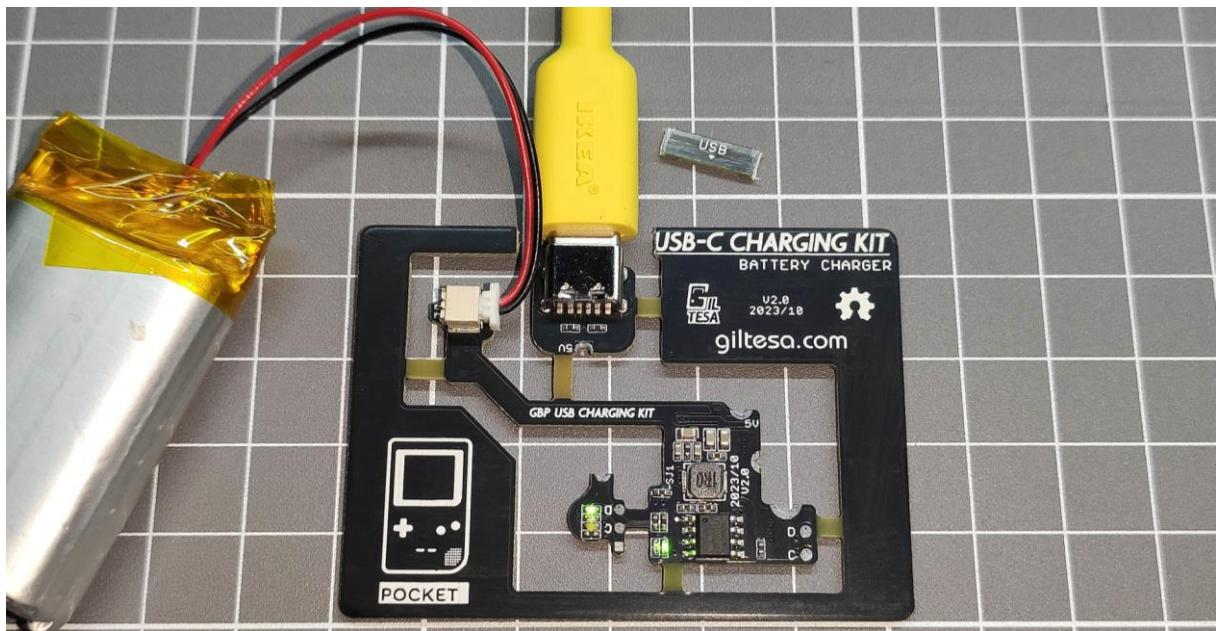
- **P:** Power pad for the original LED.
- **C:** Charging pads for joining the light and main boards.
- **D:** Done pads for joining the light and main boards.
- **GND:** The ground pad.

* There are many versions of the GBP mainboard. Some versions require to join with a cable these 2 pads. More details can be read in “**Installation USB power cable**” step.

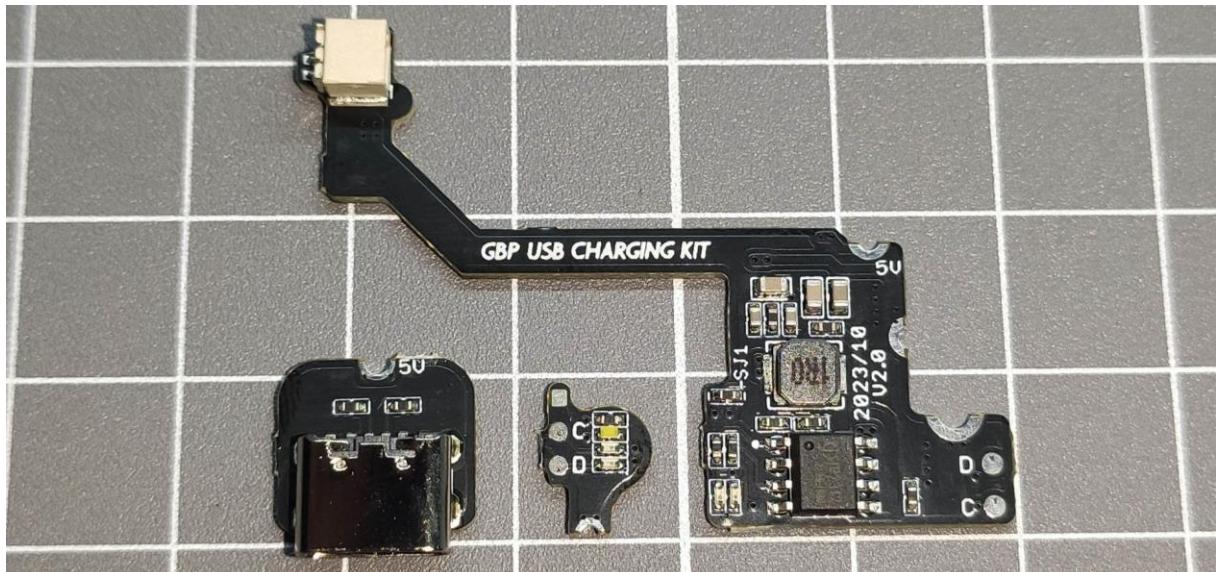
TEST THE BOARD

Before starting the installation, you should test the board. If it doesn't work contact me [for a replacement](#) (*all boards are fully tested, but they may damage during the shipping, we try to package them as better as possible*), if this work, go ahead with the installation.

First cut the frame bridges (see photo), then you will be able to connect the USB-C cable, into the GBP USB-C board, and battery. **Wait until the light turns green** (*Even if the battery is already fully charged, it can take 5-10 minutes to detect it and switch to green*), indicating that the battery is fully charged.



Second, If the board works as expected you can cut the bridges to separate the main board from the frame (see photo). It's recommendable separate the rest of the boards during the installation to avoid lose them.



INSTALLATION STEPS

Please, carefully read the following steps for a successful installation.

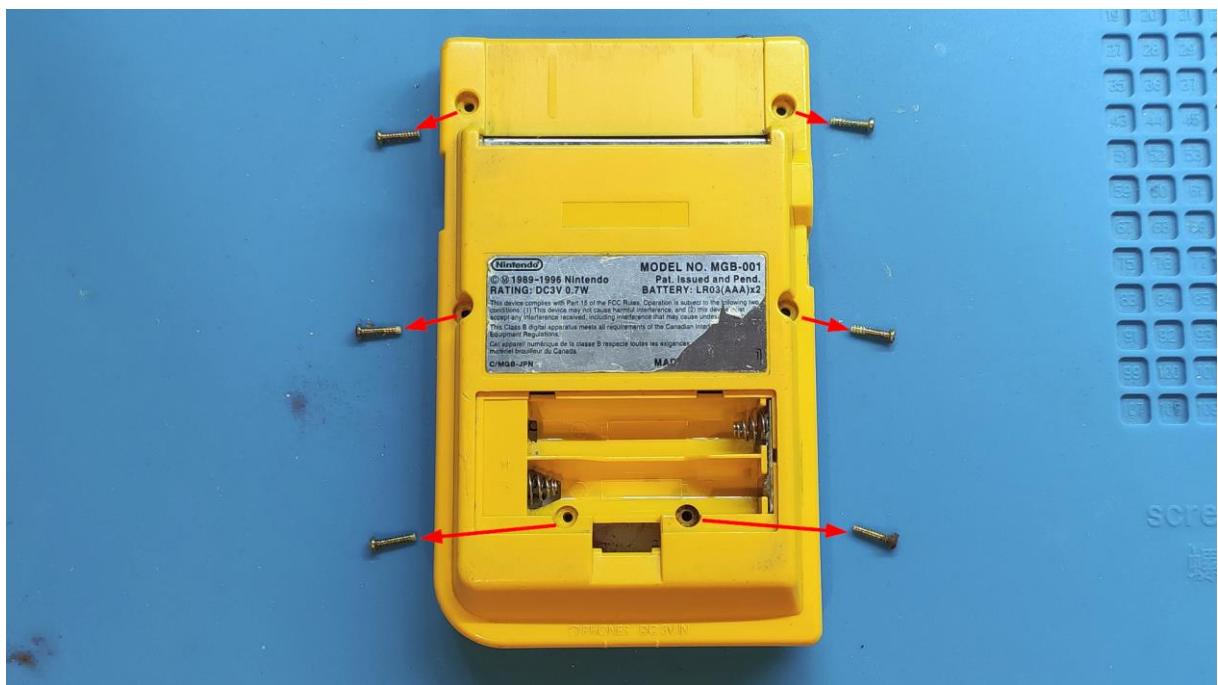
PRE INSTALLATION STEPS

Before the installation, your GBP may need some extra steps to have it ready for the kit.

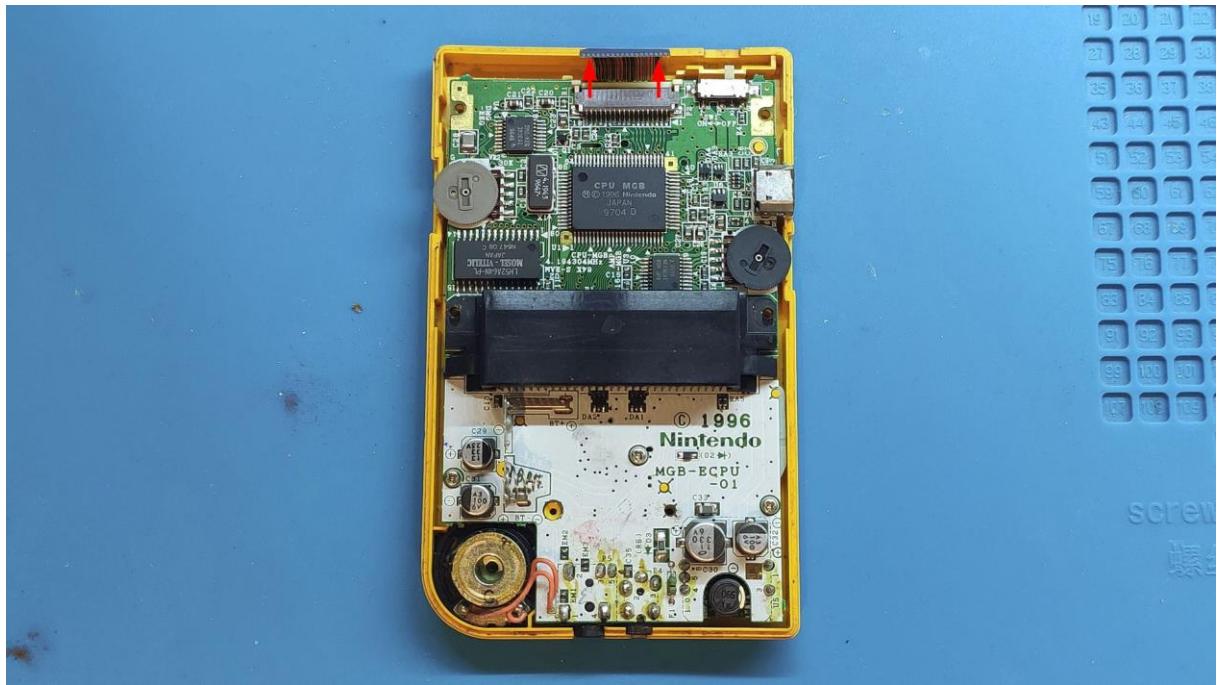
1. DISASSEMBLY THE GAME BOY POCKET

Nintendo products in general use two kind of screws. The first one called **tri-wing** to close the shell, and the second one called **phillips** to hold the main board to the shell.

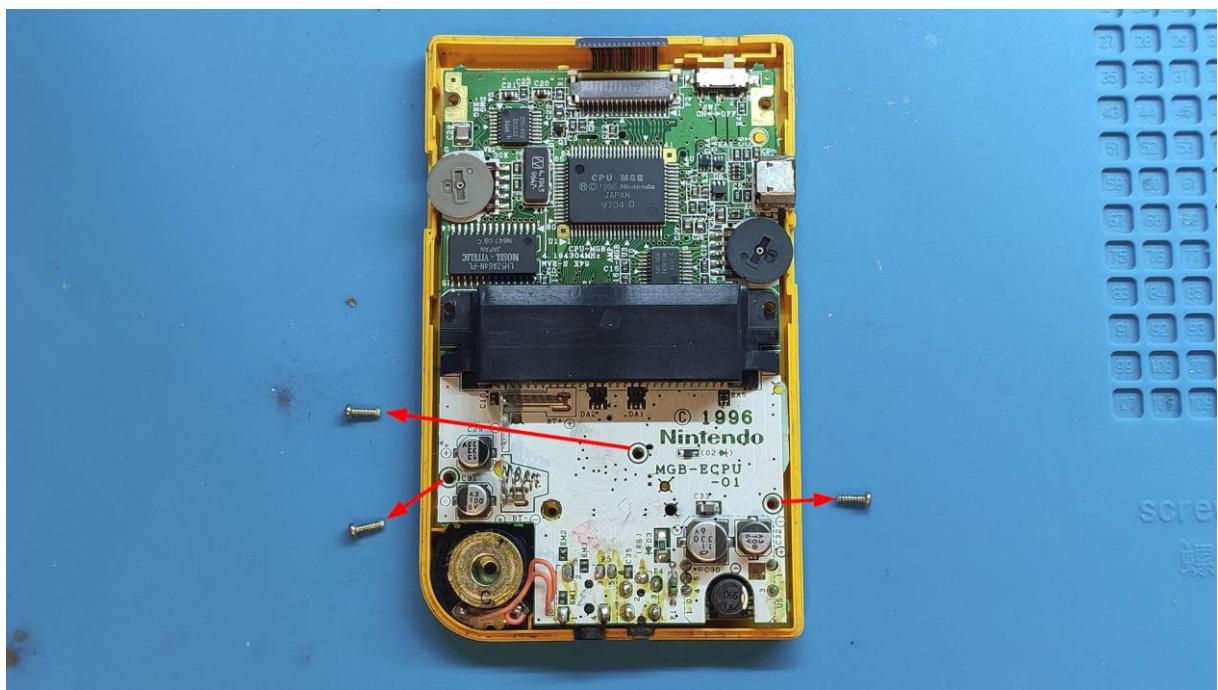
Use the **tri-wing** screwdriver to open the shell and remove the 6 **tri-wing** screws.



Carefully disconnect the display cable from the mainboard.



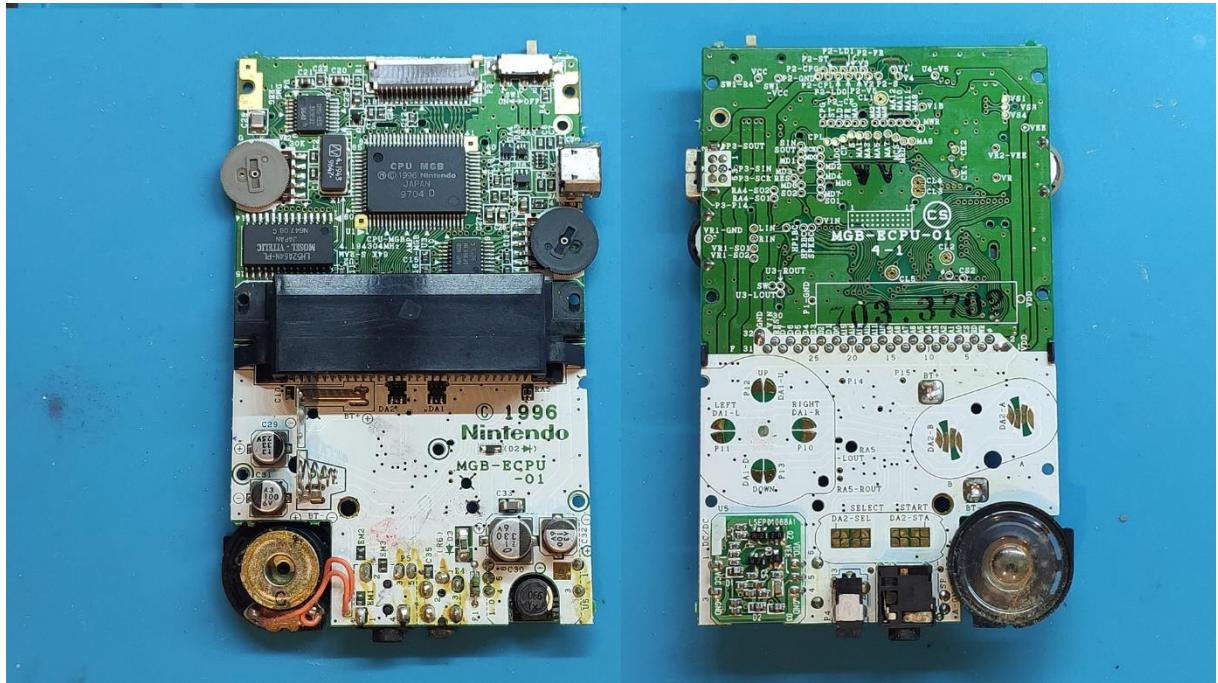
Then, remove the 3 phillips screws with a phillips screwdriver.



2. CLEANING THE MAINBOARD

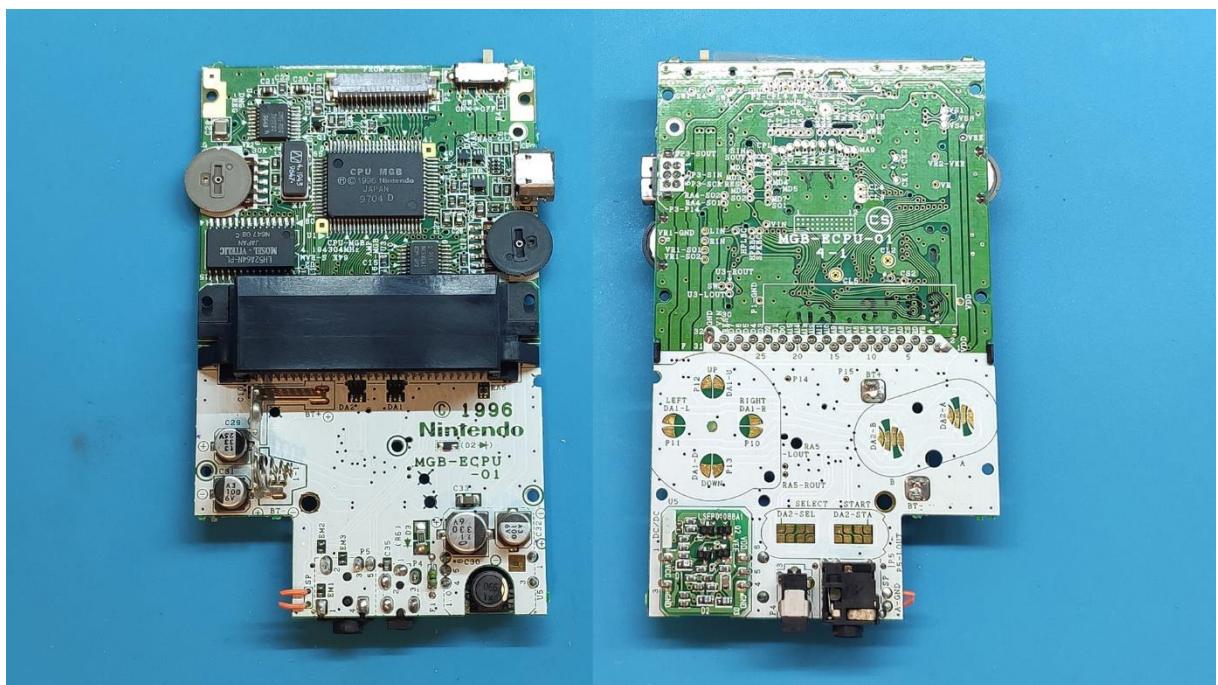
Use isopropyl alcohol to clean the board. Since the board was made in 1996, the board may be full of dust or with the flux from the factory (yellow spots). All this dirt can be cleaned with alcohol.

Before:



After:

(Don't remove the speaker as the photos show, this kit doesn't require it)



3. CLEANING THE POWER SWITCH

Depending on how the GBP has been stored, the switch can be also full of dust inside and prevent a good electrical connection. If you see when you turn on the GBP, sometimes it doesn't turn on well at the first time, this may be the cause.

However, cleaning the power switch is a bit difficult to do. You must be extremely careful about cleaning it or you may damage it.

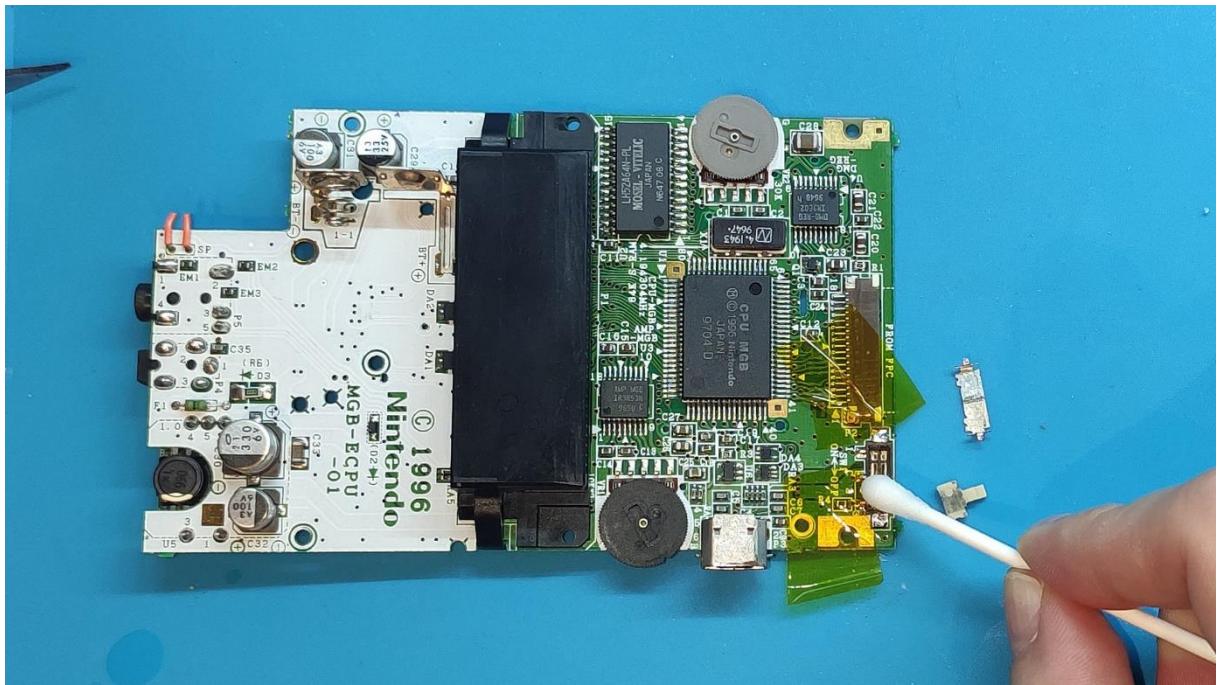
First, protect the nearby parts with kapton tape to avoid burning them with the soldering iron.

Then, heat the pads, first one and with a tweezer or flat screwdriver pry the veneer apart first on one side, then repeat this on the other side.

You can see it in the following video:

<https://youtu.be/P-4KIovaQ2M>

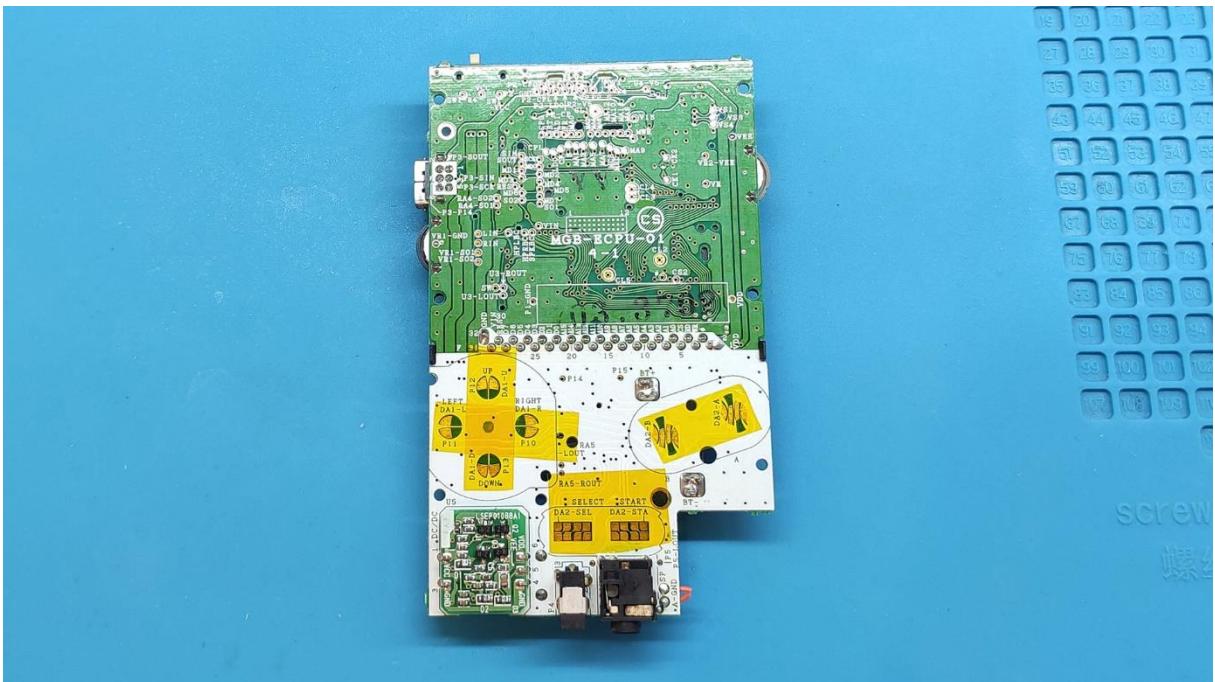
Once the metallic veneer is removed. The switch can be cleaned with alcohol and close and solder it as before.



INSTALLATION STEPS

1. PROTECT THE BUTTON PADS

Because many pads need to be soldered and they are next to the button pads. This can cause the buttons pads get dirty with tin and interfere with proper operation. To avoid that, **protect them with kapton tape until the installation is completed.**

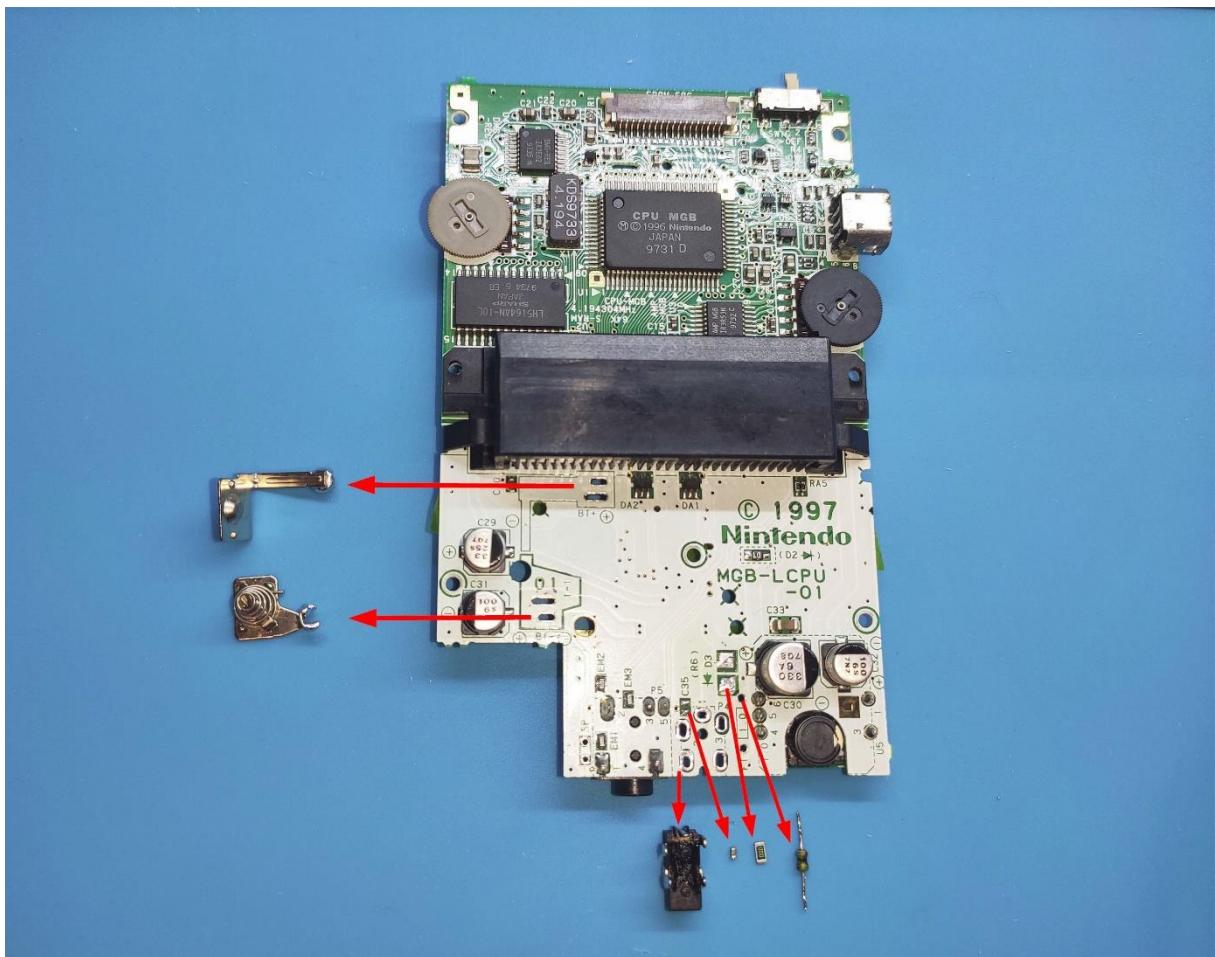


2. REMOVE UNNECESSARY COMPONENTS

There are some components that the kit doesn't need, and they are in the middle where the kit needs to be installed.

Remove the components one by one. You can follow this list from the easier one to the harder one to remove:

- Capacitor C35
- Resistor R6 or diode D3 (Depending on the GBP version may have one or another one)
- Fuse F1
- Red light (optional, only if you want to install the light board of the kit)
- Power plates BT+ and BT- for the AAA batteries.
- DC Jack



The speaker doesn't need to be removed from the mainboard; however, it can help during the installation. It can be soldered again at the end.

3. CLEAN THE EXCESS OF TIN

All the pads where the components were before need to be clean and free of tin. Otherwise, the kit will not be flat over the GBP mainboard.

Use a desoldering pump or/and flux and desoldering mesh for removing the tin.

4. CLEAN THE BOARD

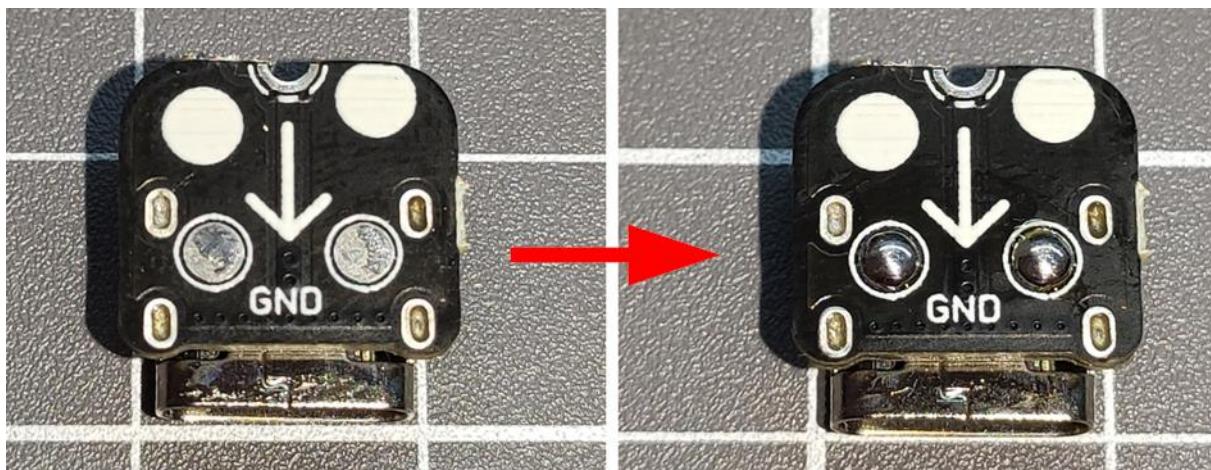
After the components are removed, it may be dirty, clean it again.



5. INSTALLATION OF THE USB-C BOARD

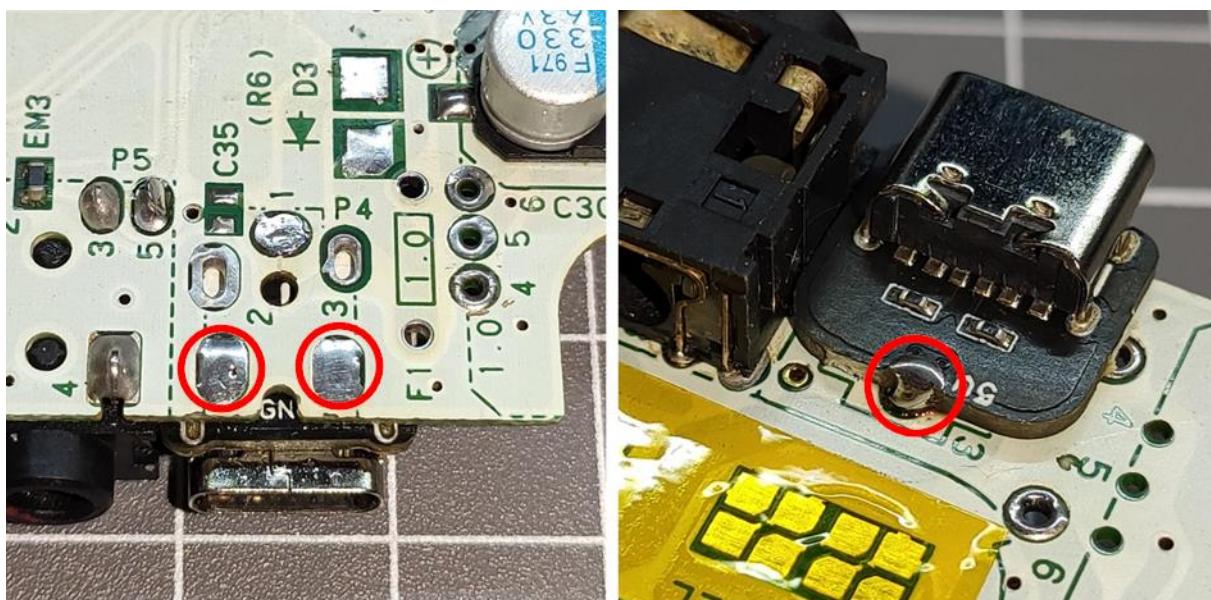
This board must be installed first of all, as later the pads where they are soldered will be covered by the main board.

First, pre-solder the two pads on the bottom side of the board; do not add too much solder.



Then, place the board in its position and heat the lower pads; this will cause the solder to begin melting and join the USB-C board to the GBP motherboard. If this doesn't happen, add more solder and heat it adequately. Since these two pads are connected to GND, the heat dissipates quickly, so you will need to use your soldering iron at the highest temperature.

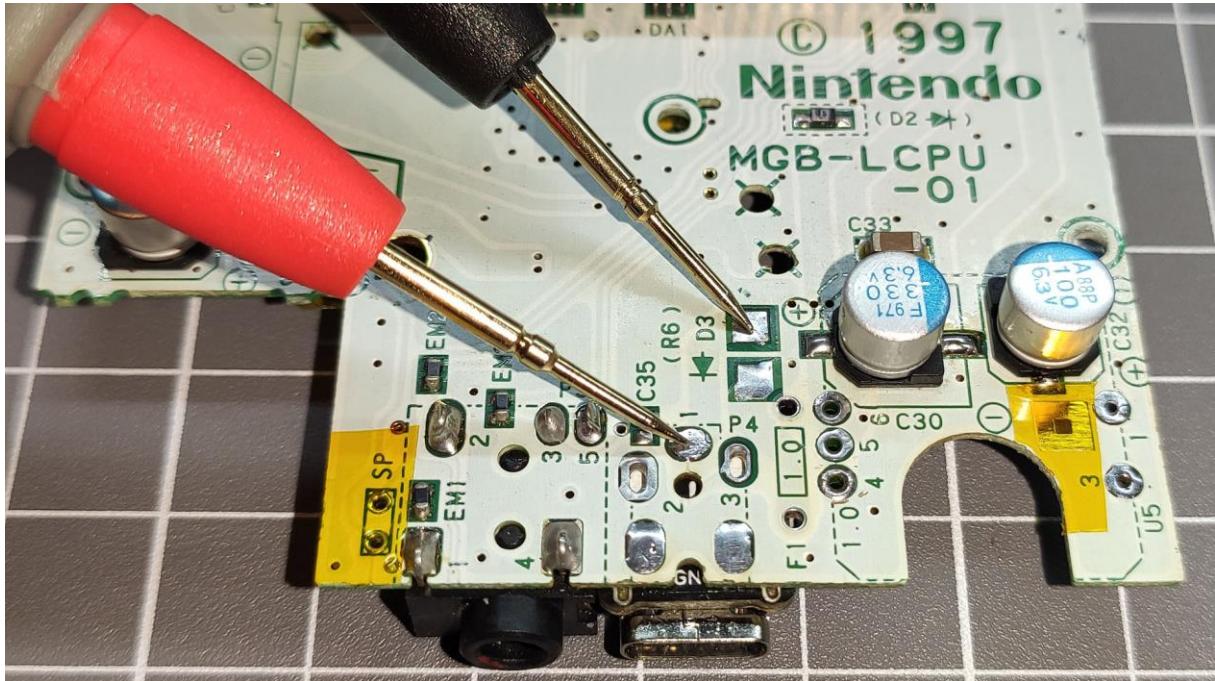
Once the plate is joined, remove any excess solder; the surface should be completely flat!



6. CONTINUITY TEST FOR THE 5V LINE

There are many versions of PCB for GBP, some of which may require an additional cable that connects the 5V pad of the USB-C board with the 5V pad of the main board.

If you have a multimeter, you can check if there is continuity between these two pads:



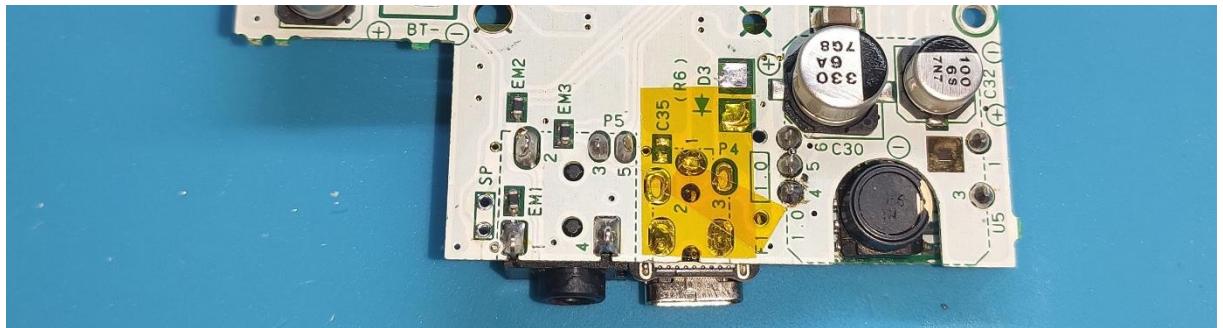
If you have continuity, then you don't need to solder extra wires. Continue with the step 7.

If you don't have continuity between those two pads, jump to step "[9. Installation of the cable for the 5V line](#)" to perform the **insulation** of the pad with kapton tape, then come back here.

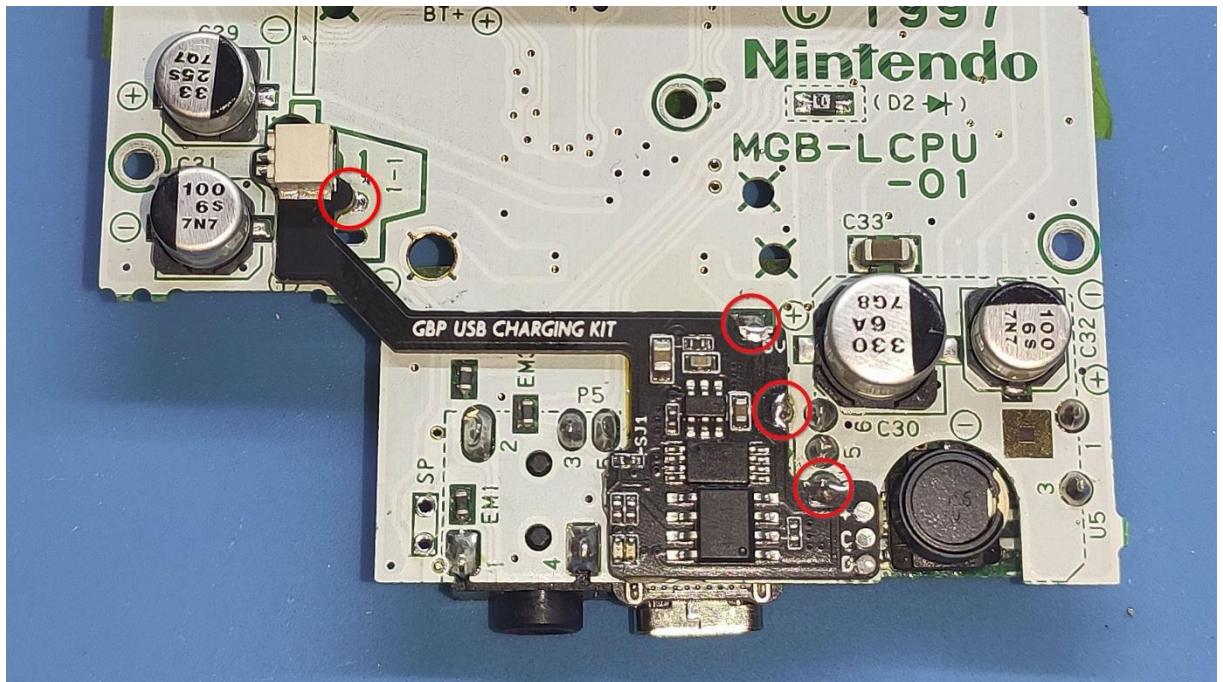
7. INSTALLATION OF THE MAIN BOARD

There are some pads on the board that the kit doesn't need, and they may interfere with the correct operation of it. In the worst case, they can cause short circuit and burn the kit or the GBP.

Please, protect these pads with kapton tape following the next picture:



Then, put the board over the main board and solder these 4 pads (the pad on the left need to be soldered in the opposite side):



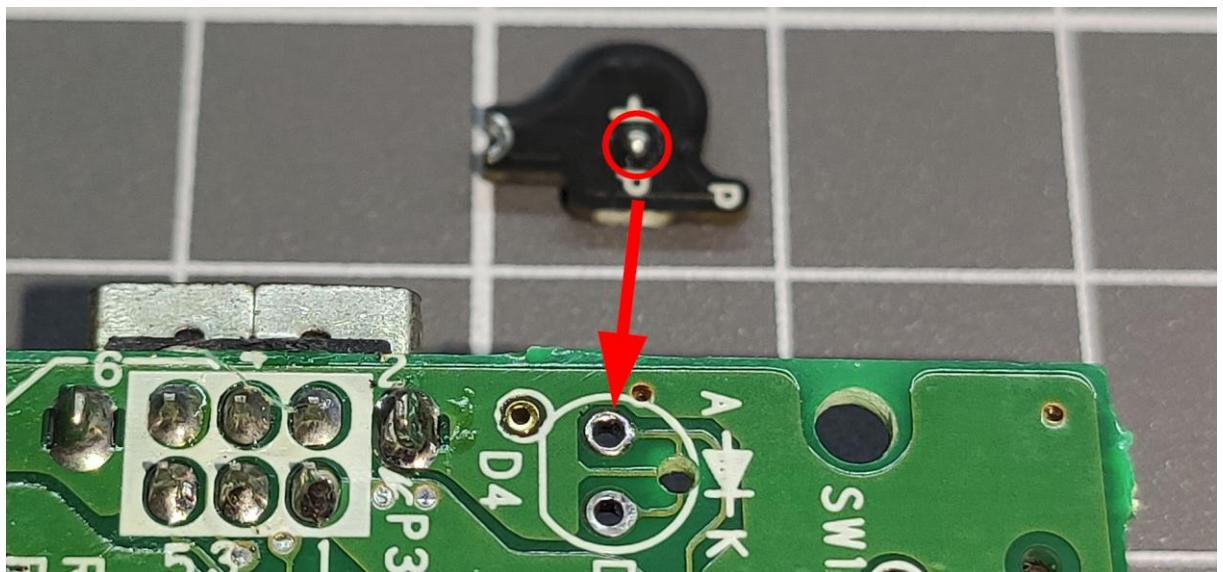
8. INSTALLATION OF THE LIGHT BOARD [OPTIONAL]

There are many GBP mainboard versions. One of the bigger differences is that the board can have or not red light. Follow the corresponding steps for your specific case:

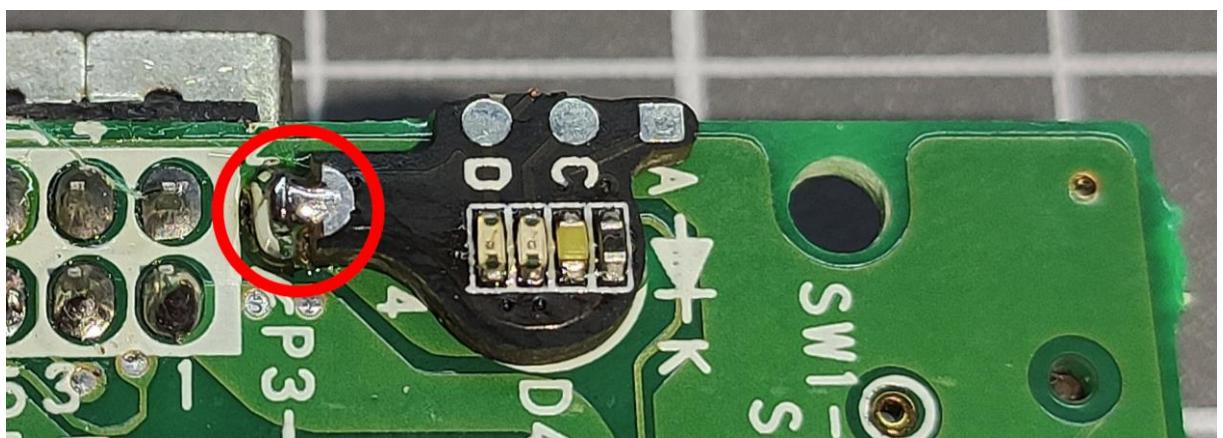
1. SPECIFIC FOR GBP MAINBOARD WITH RED LIGHT

If your GBP has red light, first, you need to desolder the original LED if you haven't already done so in previous steps.

The best way to solder the light board is by **pre-soldering the pad on the underside first**. Then, place the board onto the GBP mainboard and heat the pad from the opposite side. The solder will melt, and the light board will be joined together.

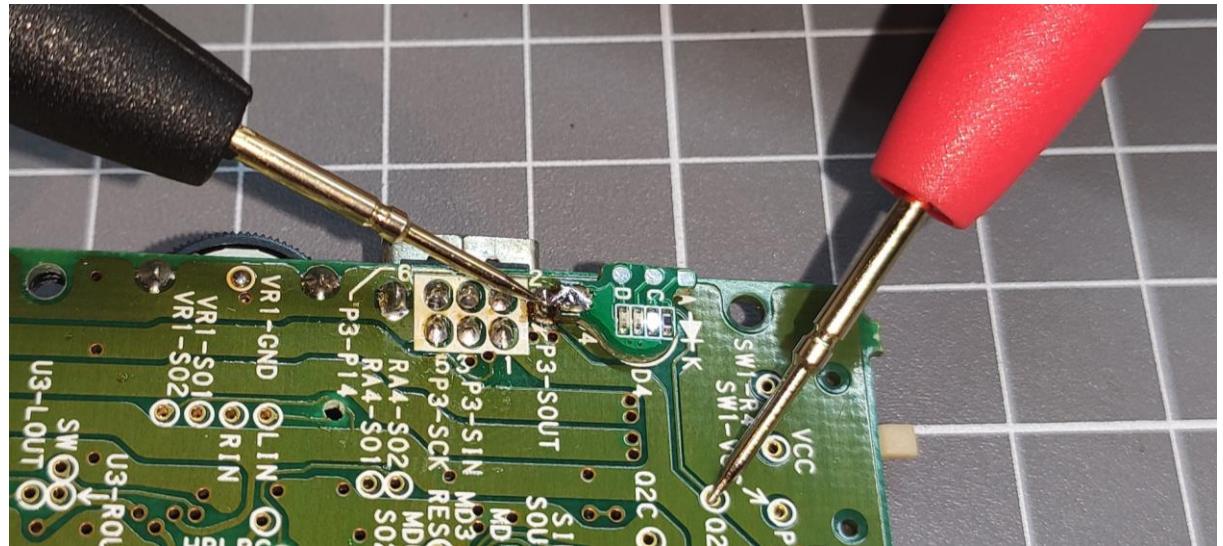


Now solder the pad on the bottom of the board. You need to connect it to one of the legs of the Link connector.



If you wish, you can now verify that the white light of the light board is functioning correctly and that both soldering joints are well done.

Select the diode measurement mode on your multimeter and place it in this position:

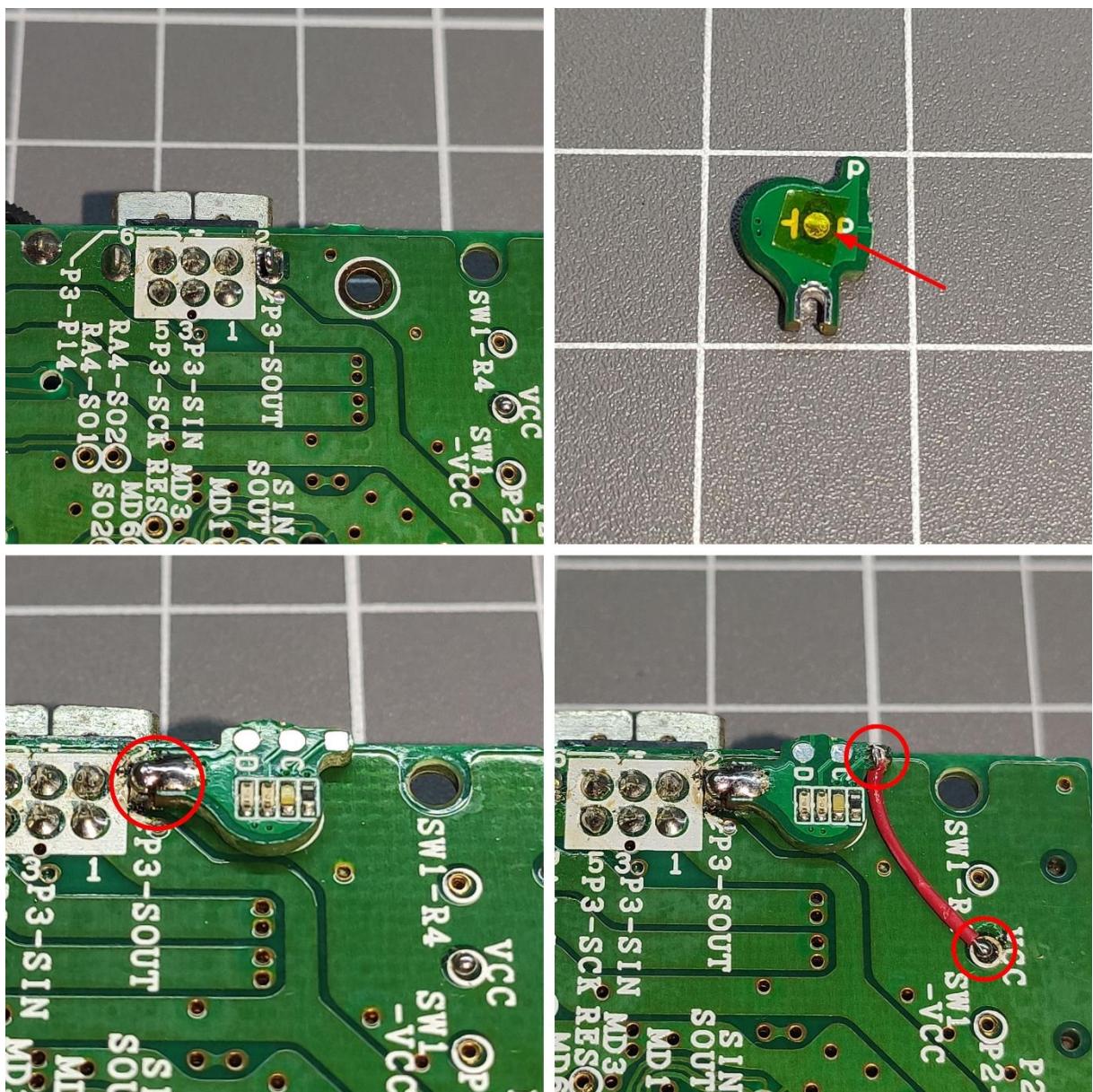


Test points on GBP

2. SPECIFIC FOR MAINBOARD WITHOUT RED LIGHT

Since this model does not have an LED, once you have soldered the light board to the Link connector pin, you will need to solder a wire between these two points.

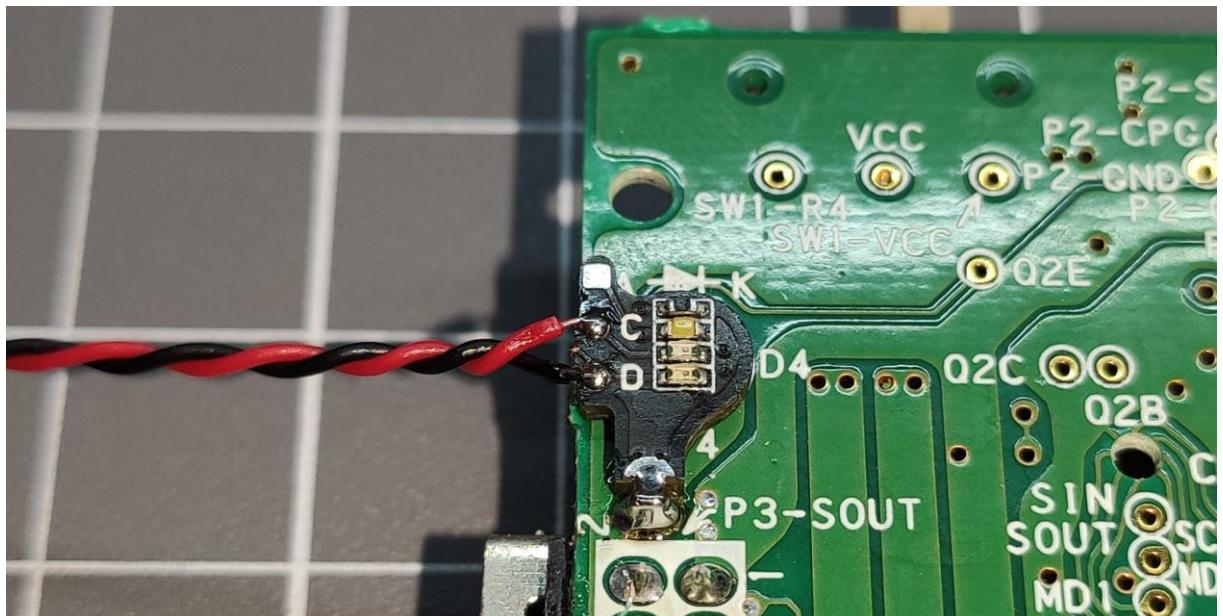
Don't forget to protect the bottom pad with a bit of Kapton tape.



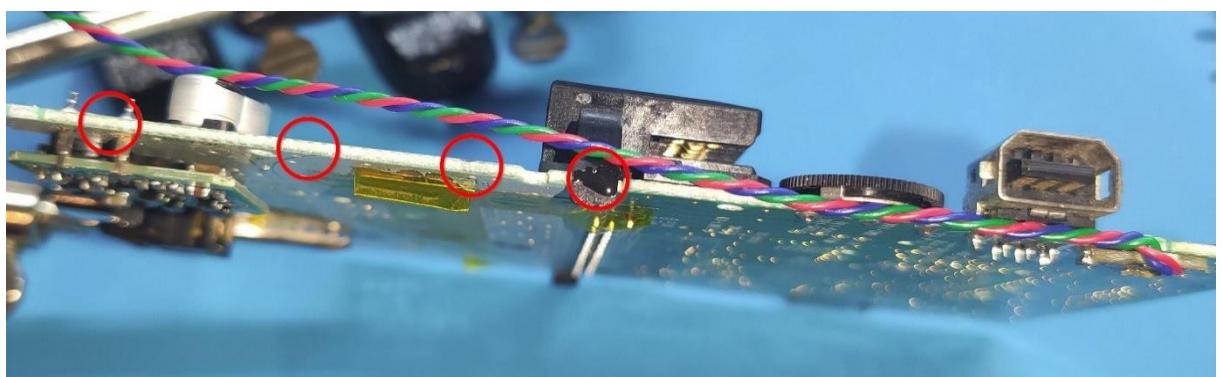
3. COMMON PART FOR BOTH KINDS OF INSTALLATION

Once the light board is installed, all that remains is to solder the two-wire cable included with the kit. You should connect the **C** pads and the **D** pads respectively. The color of the cables may vary, but what's important is that the **C** pad on the light board is connected to the **C** pad on the main board, and the **D** is connected to the **D** pad.

The cable is about 3 or 4 cm longer than necessary; you can start soldering it from the light board and cut the excess later:



Once it's soldered to the light board, my recommendation is to attach it with **instant glue** to the side of the GBP's motherboard. It will be securely fastened, although it won't prevent you from removing it if you need to in the future.

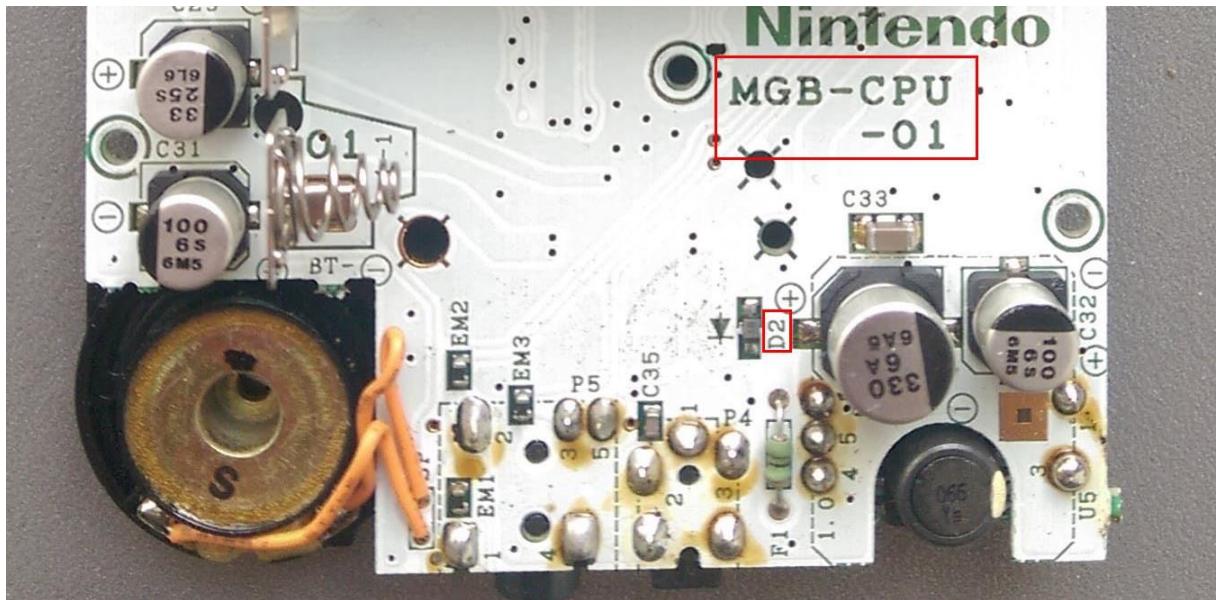


When the cable is near to the mainboard, cut the excess of cable (the cable is always longer than you need to), and solder it:



9. INSTALLATION OF THE CABLE FOR THE 5V LINE

Depending on your GBP mainboard version you may need to do this step.
You can check your version of the board here:

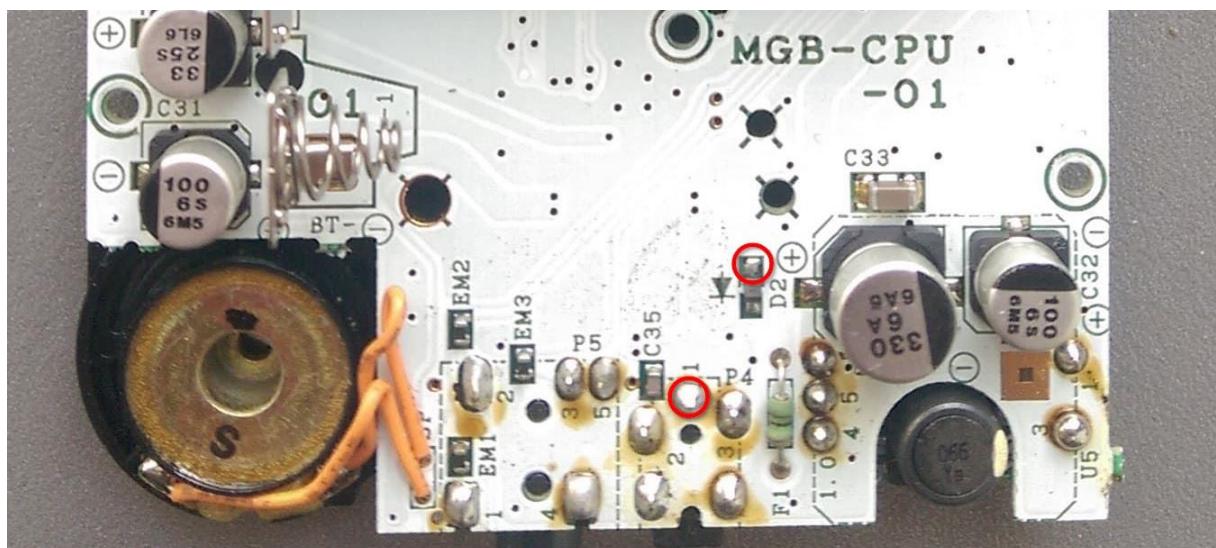


If you have one of these versions, you don't need to do this step:

- MGB-ECPU-01
- MGB-LCPU-02

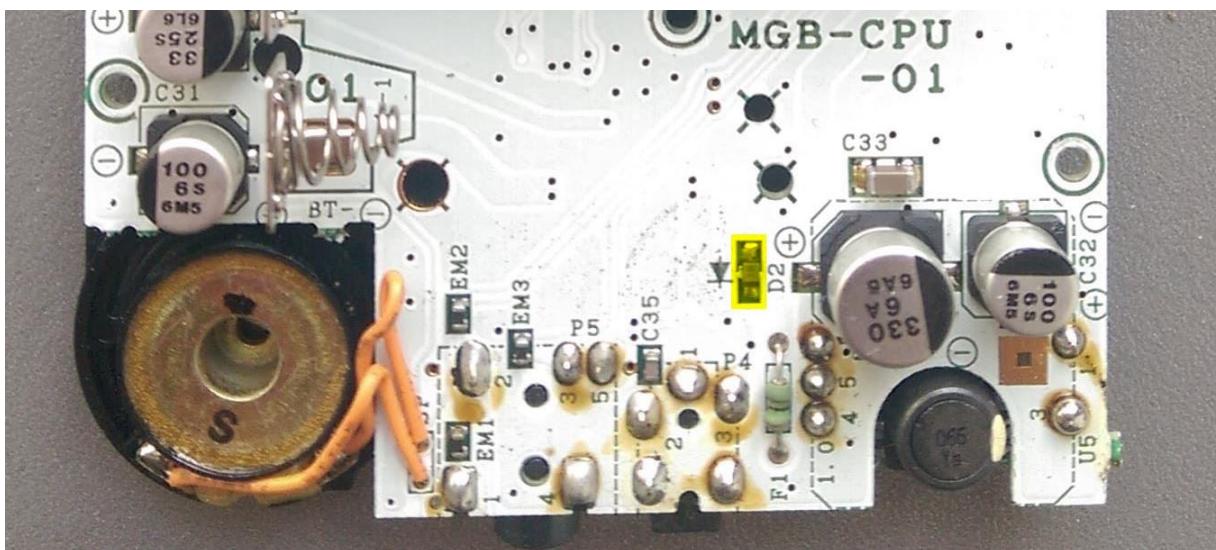
- If you have one of these, you need to solder a cable:

- MGB-CPU-01
- Other versions, please check the continuity between these two points with a multimeter. If you don't have continuity, you need to do this step. (*If you are so kind, please contact me with your version with no continuity, I will add to the manual. Thanks! <https://shop.giltesa.com/contact>*)



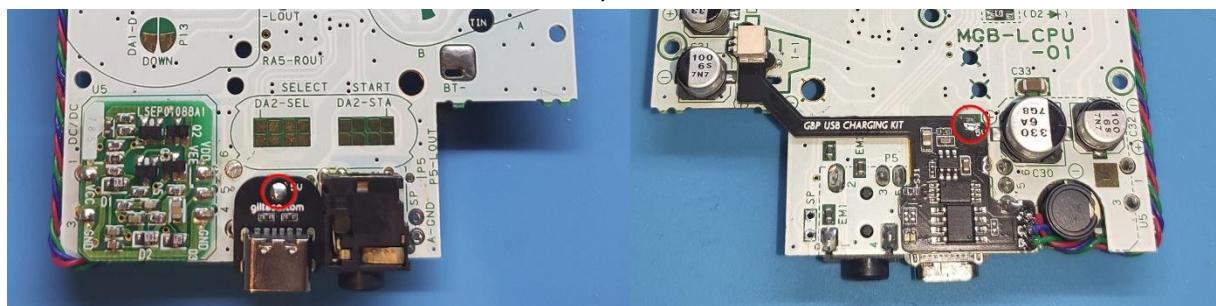
4. INSULATE

Add a bit of tape to insulate this part:



5. CABLE INSTALLATION

Solder a cable between these two points:

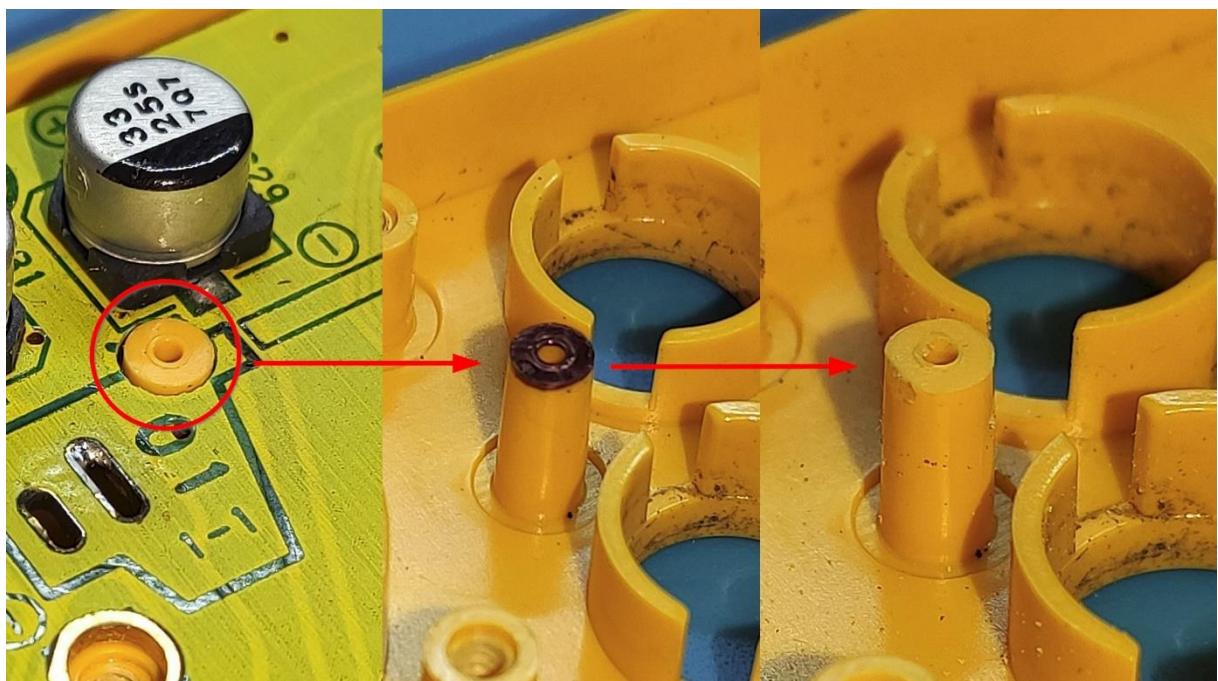


10. CUTTING THE PLASTIC SHELL

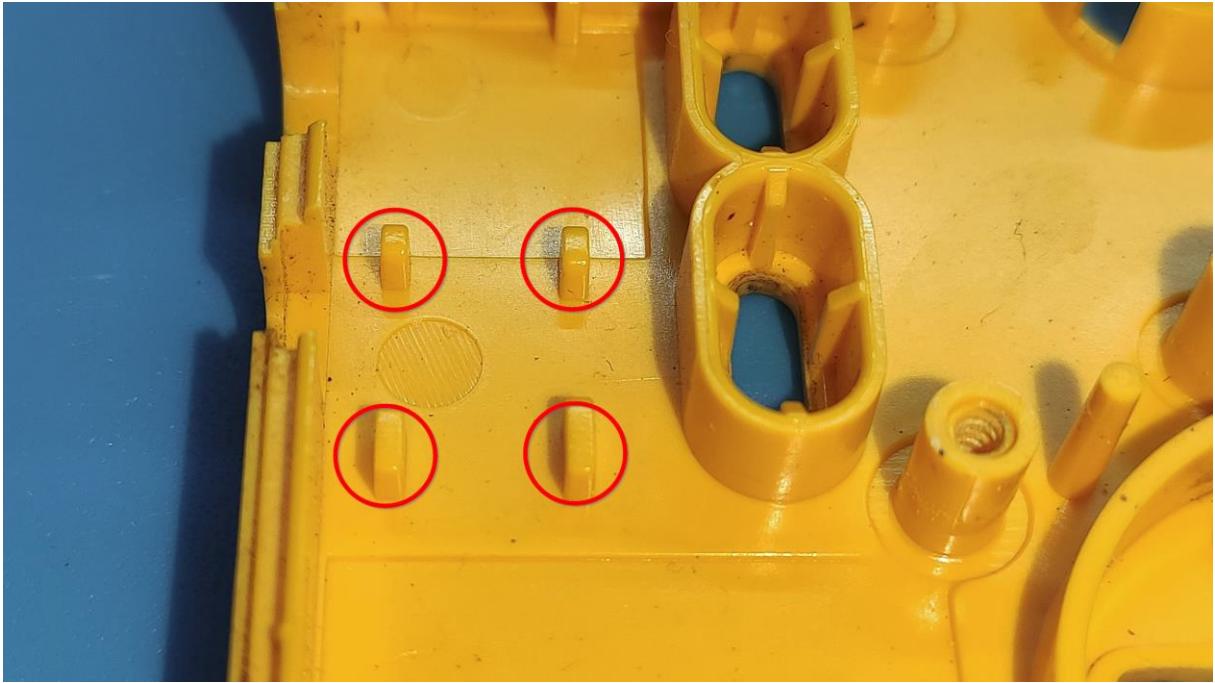
The GBP board has been designed to try to cut into the shell as less as possible. However, there are some parts that need to be cut/trim.

6. INSIDE THE SHELL

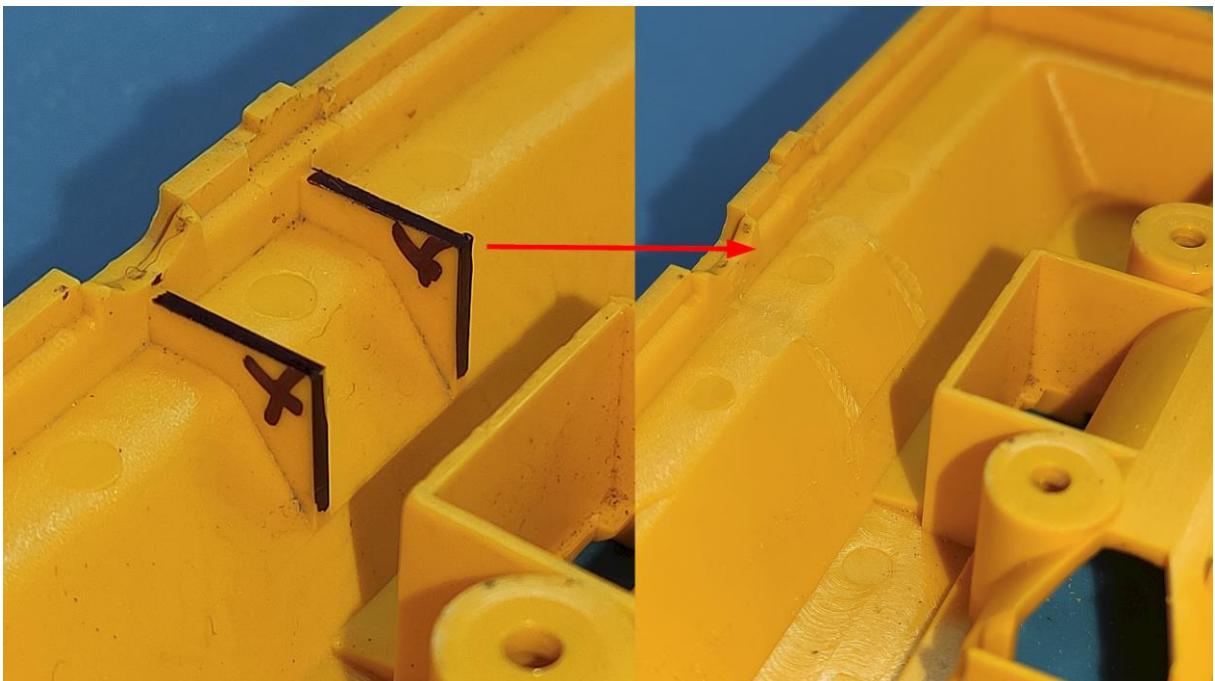
There is a plastic cylinder, where the A/B buttons rubber hold on, that touch the bottom side of the mainboard under the battery connector. Trim this part only 1mm:



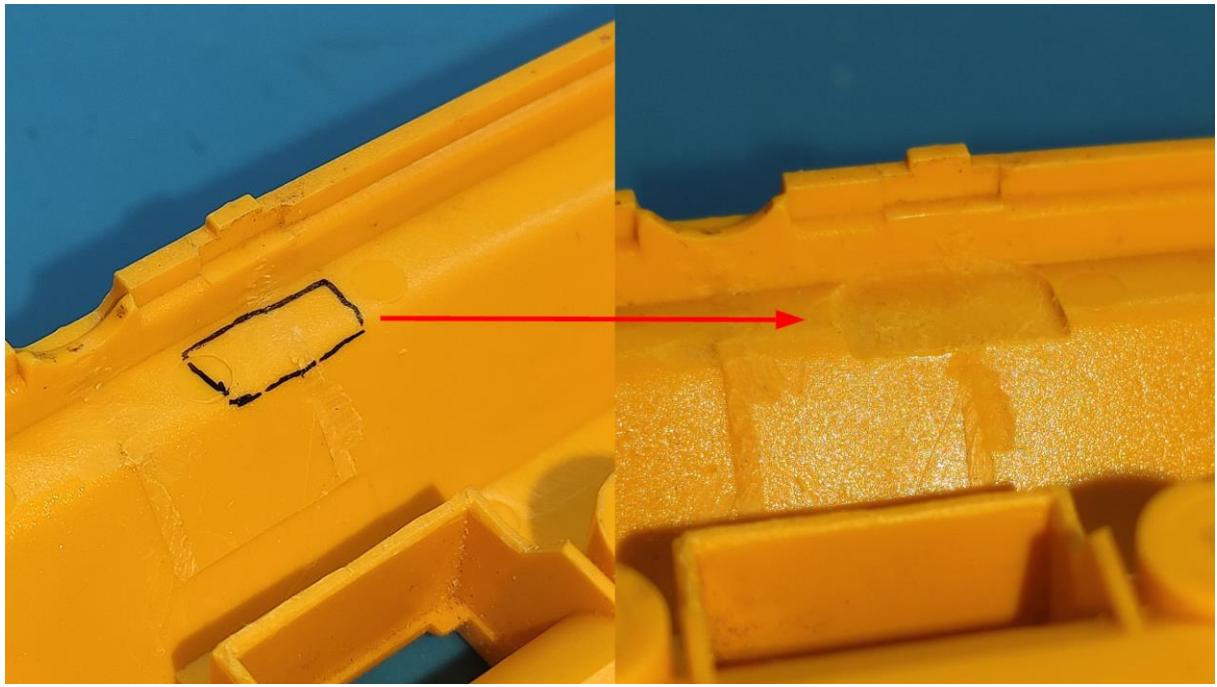
These four sticks touch the USB-C connector, remove them:



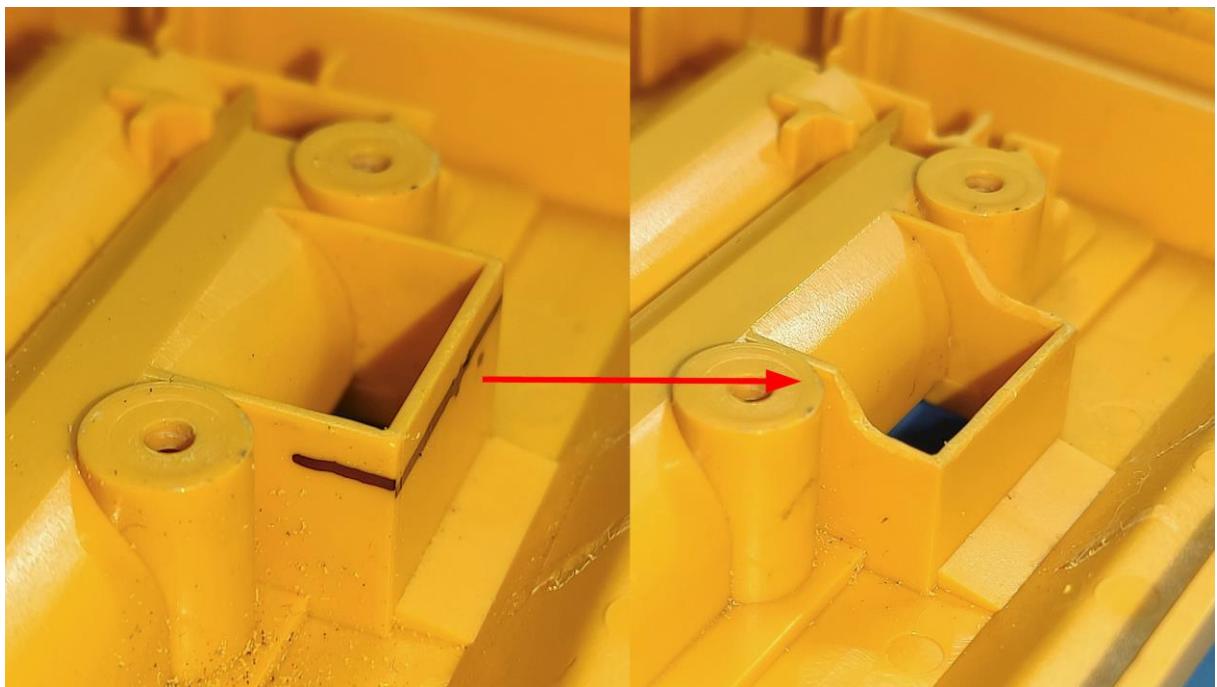
These two plastics touch the main circuit. Cut them:



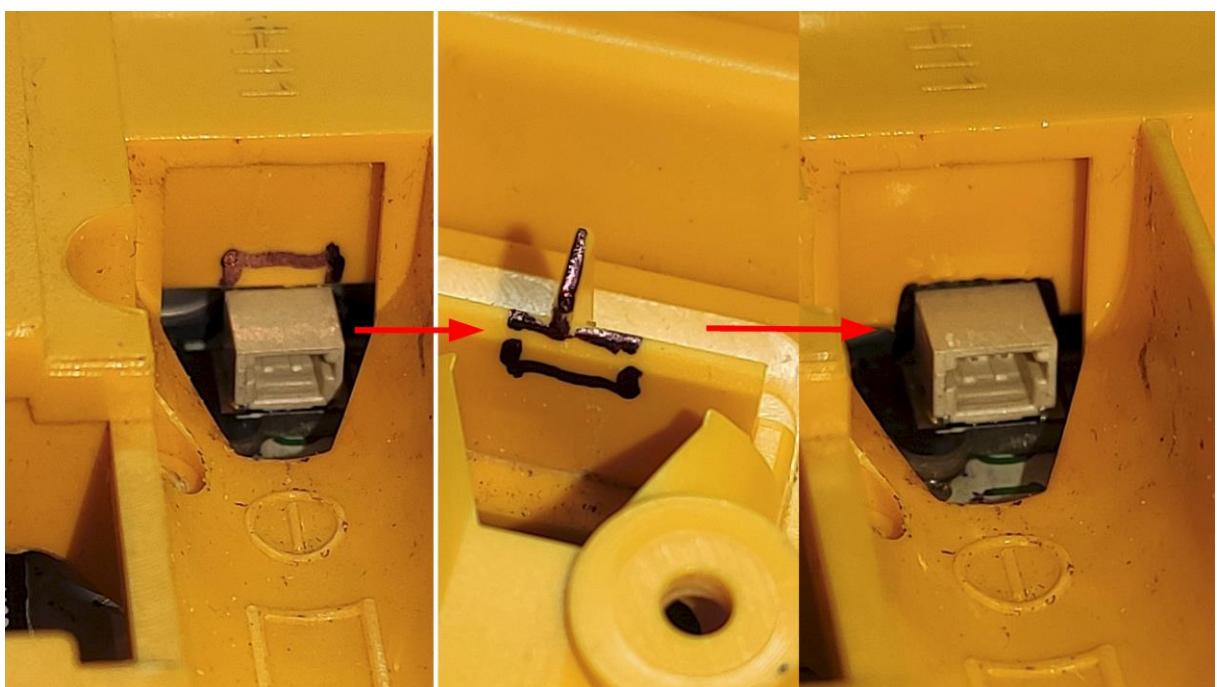
With some plastic shells, this part may be necessary to trim too, otherwise one of the board chips touches it and the shell cannot be properly closed.



This part also touches the main circuit, cut it:



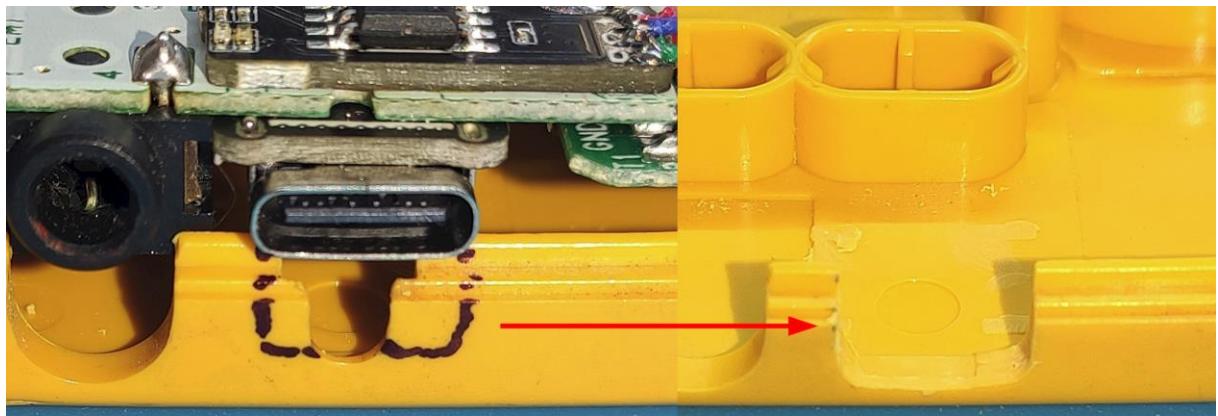
This part of the shell needs to be cut here:



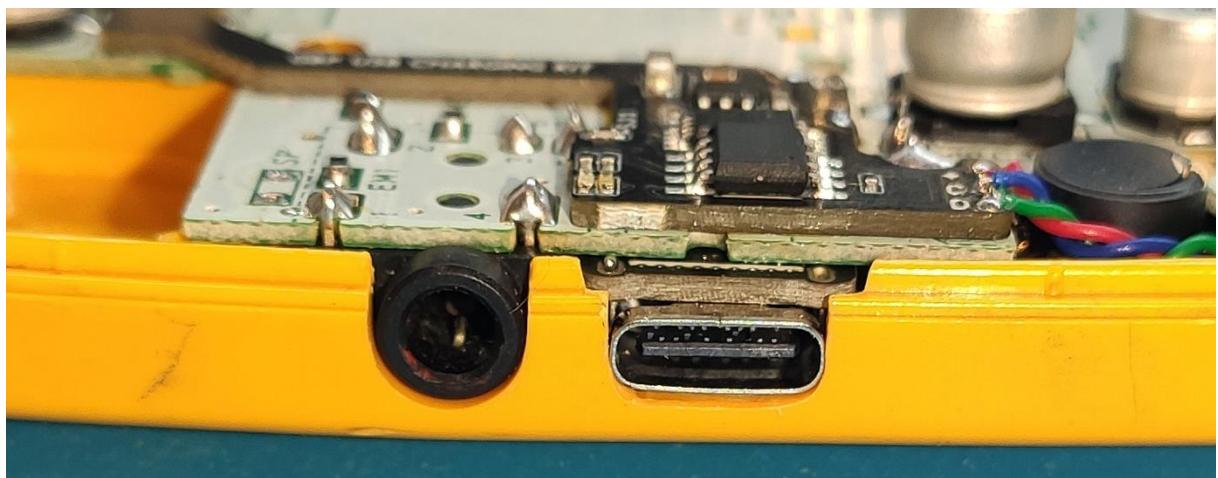
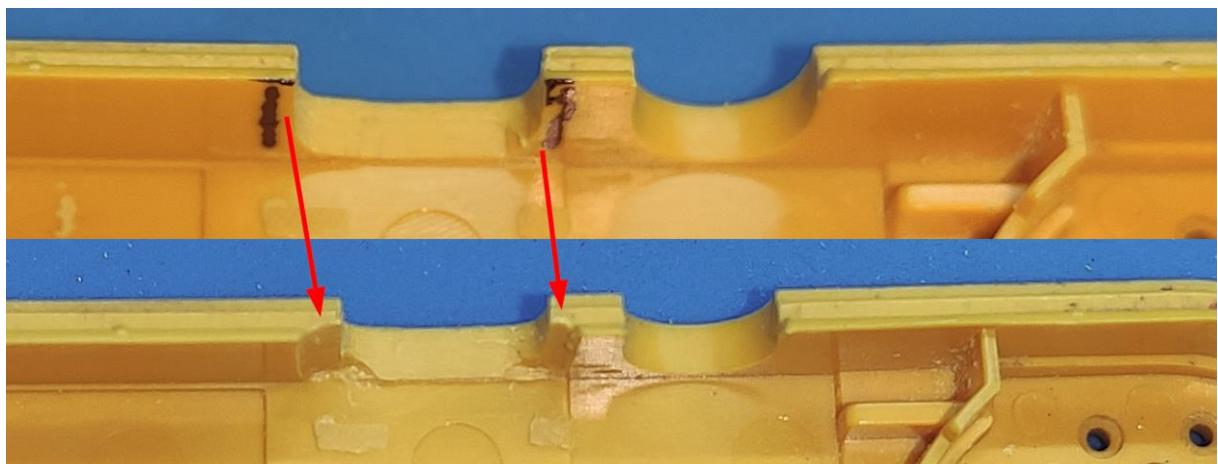
7. THE USB-C HOLE

This is the part you must do as carefully as possible since this is visible from outside.

The original power jack hole needs to be bigger for the USB-C. Cut it bit by bit until the whole of the USB-C connector can cross the shell. Take your time for a good finish.



You may need to trim the plastic down a bit as shown in the photo below, but this depends on how much of the USB-C board is left out when you soldered it:

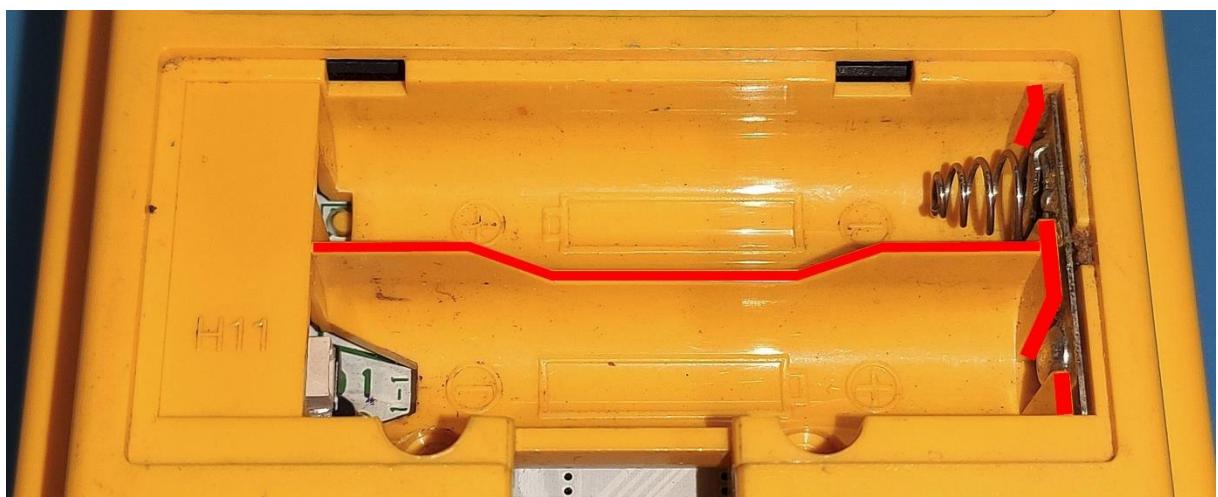


8. BATTERY COMPARTMENT

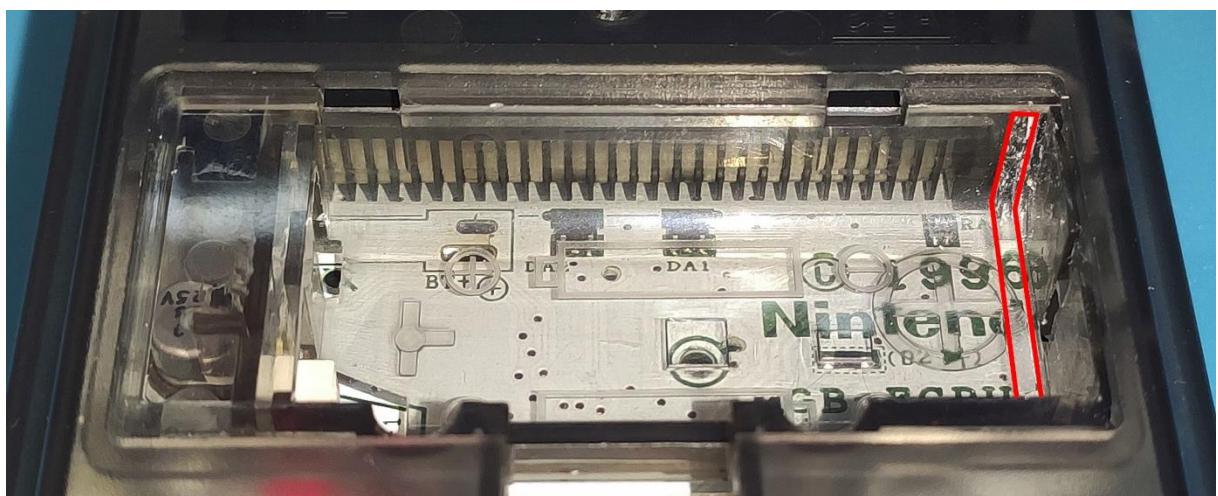
Depending on the shell you have, you may need to trim or not the shell. These two pictures show you the original case and the special case with a special battery compartment from the factory.



The first one requires to remove the plastic in the centre as much as possible:



The second one doesn't need, but if you trim it a bit, you will be able to install a longer battery.



11. FINISHING THE INSTALLATION

Once the shell is ready, you can install back the GBP mainboard, before **don't forget to install the light diffuser pipe** if you installed the light board.

Or solder the power cable of the IPS screen, if you have one and it requires the mentioned cable:



12. LIGHT STATUS

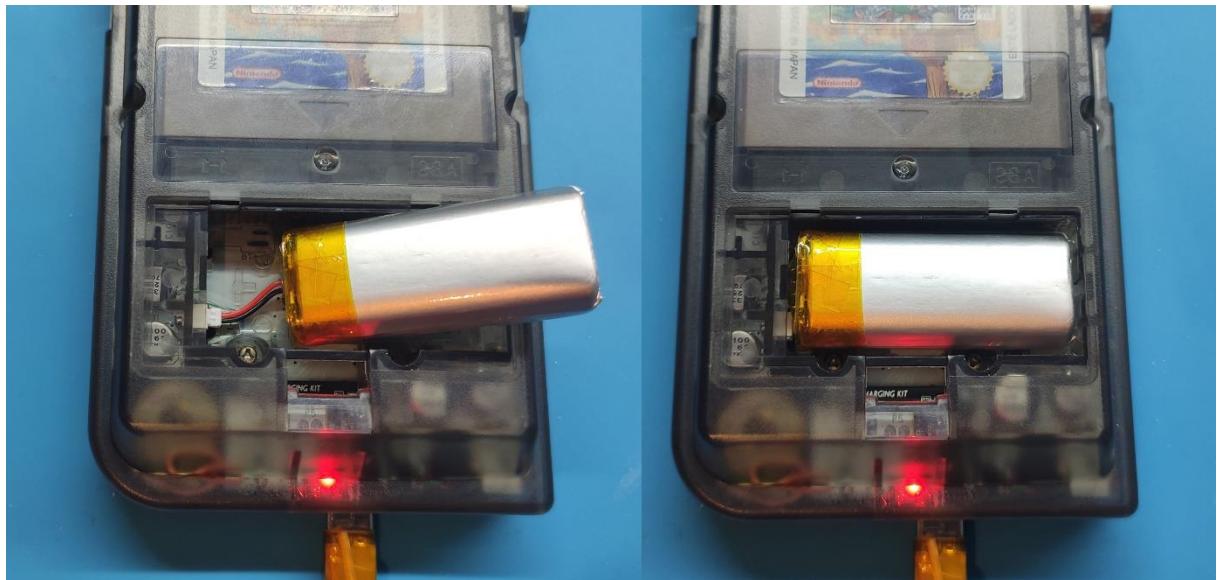
The board has 3 lights, **white** when the GBP is turn on (if you have installed the light board), **red** when is charging, and **green** when the battery is full.



13. BATTERY CABLE

If your battery includes the appropriate battery connector, you just need to connect it to the GBP, otherwise you will need to replace the battery cable for the provided one with the kit.

There is not too much space available for the battery, try to keep the cable as short as possible. The below photos show a 102050 battery of 1500mAh in the GBP battery compartment.



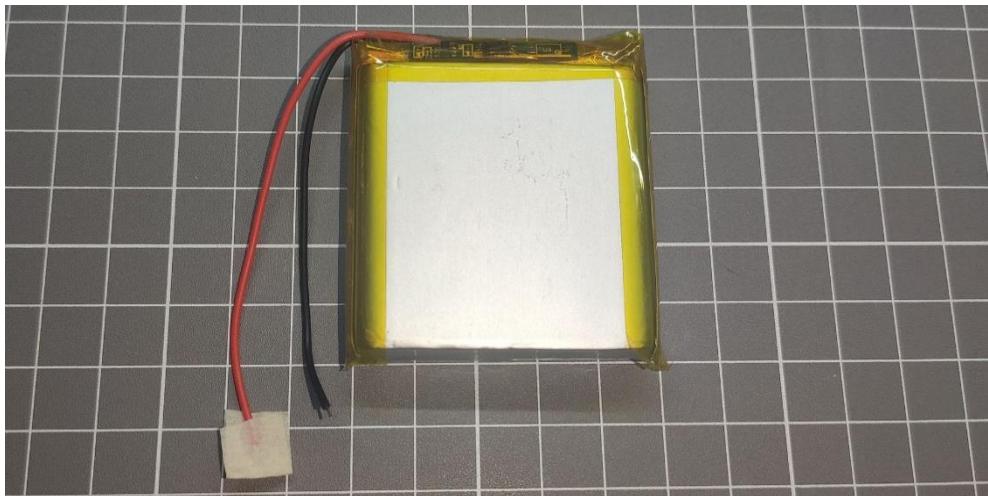
If you are comfortable soldering, you can replace the whole old cable and solder the new one directly to the battery.

The following explains step-by-step how to do it for the Game Boy DMG battery. The steps are the same for the GBP, only the battery size changes.

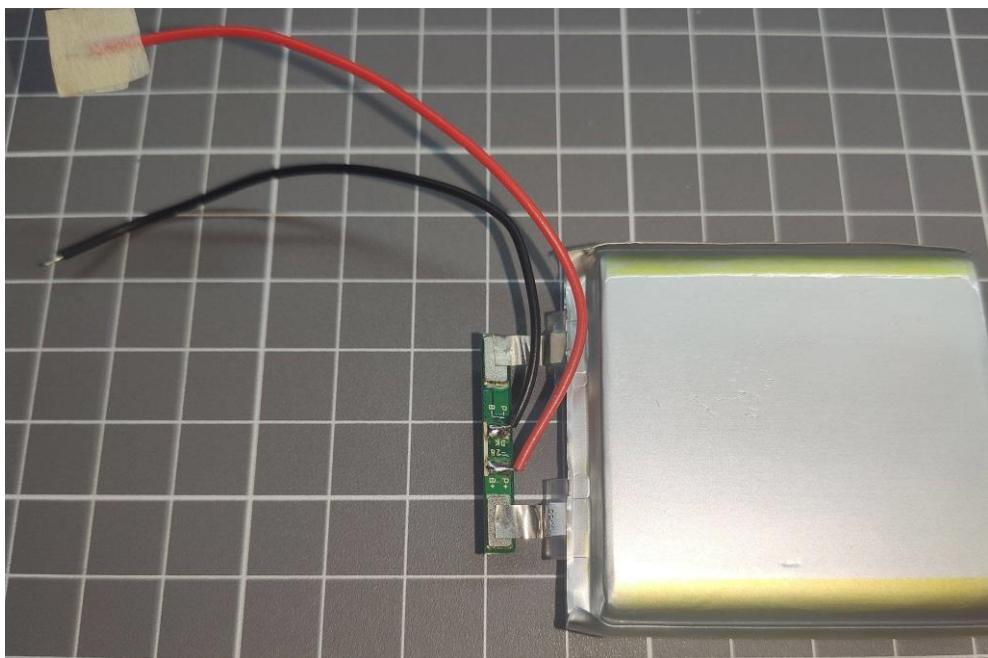
The supplied cable will allow you to use your battery in case it does not come with the correct connector by default.



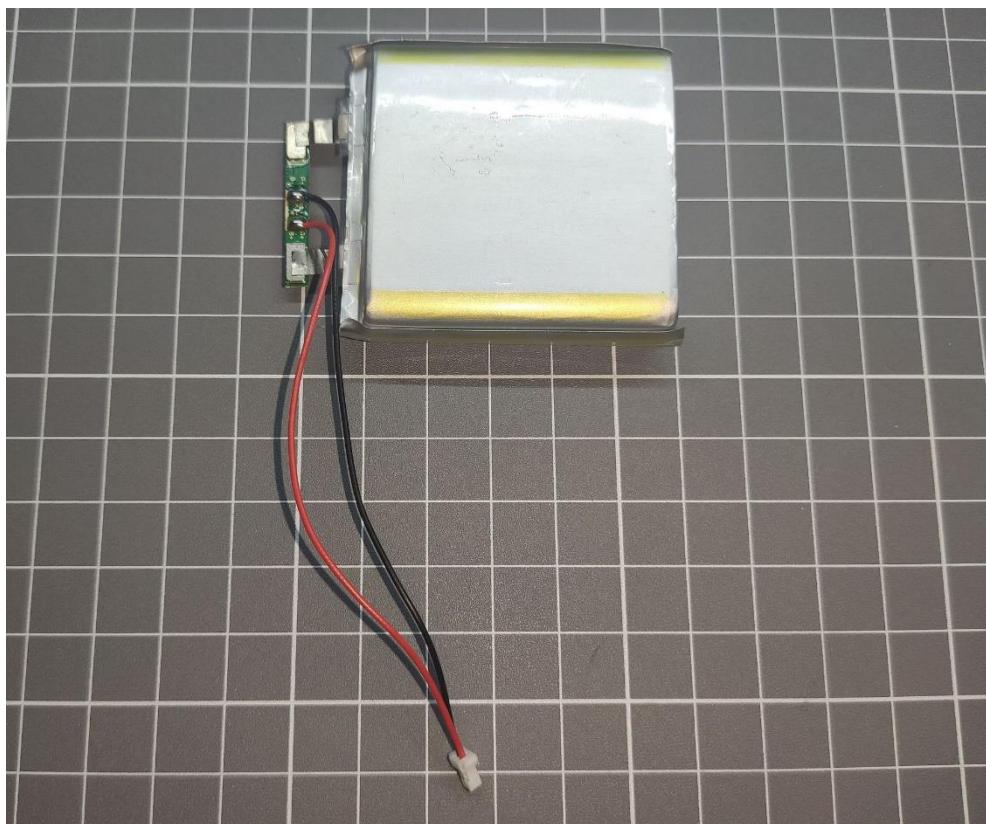
The original cable of this battery will be replaced.



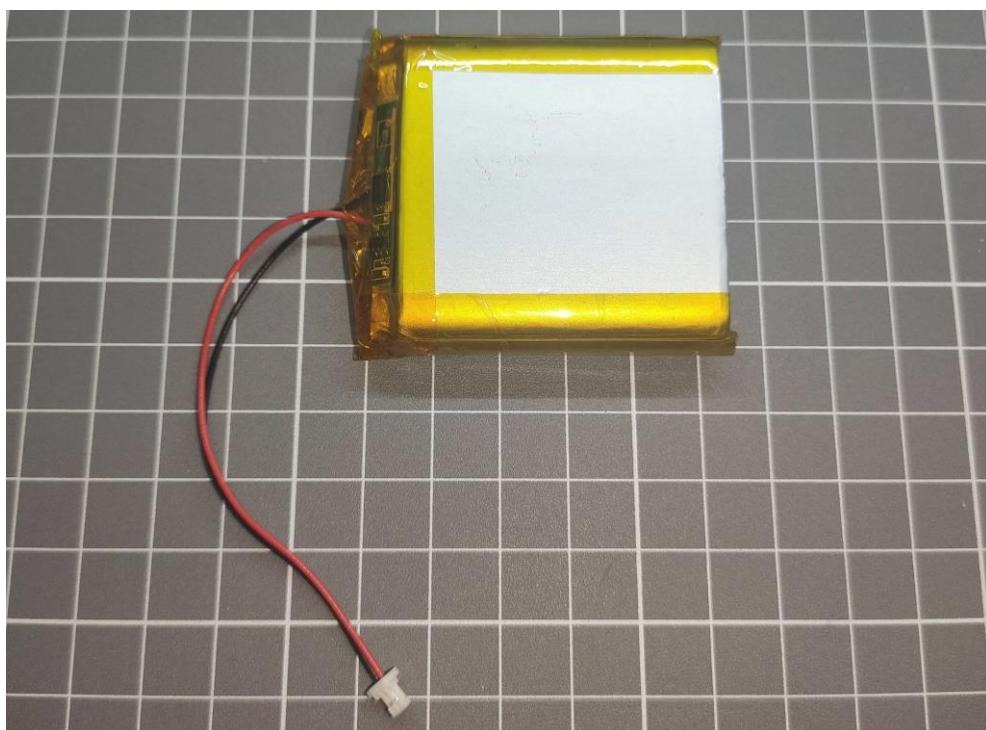
First, you need to remove the kapton tape that protects the internal battery protection circuit:



Remove the cables using a soldering iron and solder the new ones following the same polarity. In other words, where the red cable was soldered, solder the new red cable, and do the same for the black cable.



Reprotect and secure the cable again with Kapton tape as it was originally:



14. DONE!

Here we are, it's time to enjoy it!



FREQUENTLY ASKED QUESTIONS - FAQ

WHAT CHARGER CAN BE USED?

You can use any standard charger for mobile phones, computers, etc., with 5V 1A. It doesn't need to be a Power Delivery charger since this feature is not used. Of course, if you want to use a Power Delivery charger, there's no problem or risk.

Technical data for curious minds:

Power Delivery chargers can supply a wide range of voltages: 5V, 9V, 12V, 15V, and 20V. However, for this to happen, the device must communicate with the charger to explicitly request the desired voltage. Without this communication, the charger will never supply more than 5V. That's one of the advantages of USB-C, as it can be used with both old and modern devices.

THE GREEN LIGHT DOES NOT TURN ON. HOW DO THE LIGHTS WORK?

The white light turns on and off when you turn the console on and off, indicating the battery status. Its brightness will decrease as the battery drains. Therefore, it serves the function of the original red light.

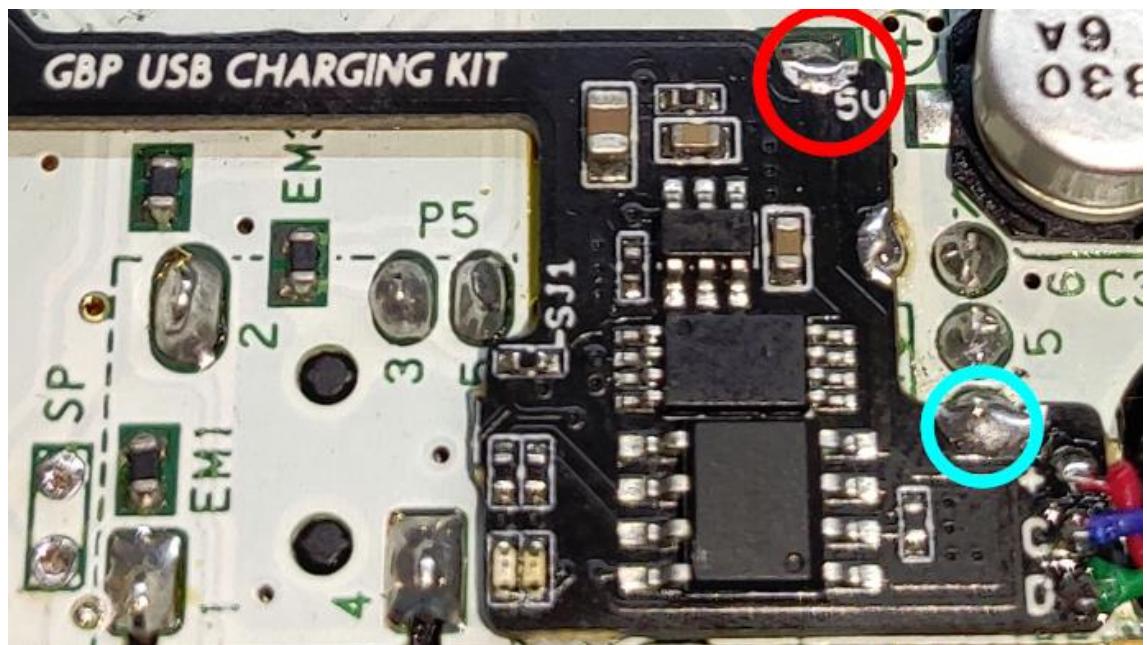
The new red light, along with the green light, indicates the battery's charging status. When the light is red, it means the battery is charging. Once the battery is fully charged, the light will change to green.

If the battery is already charged and you reconnect it via USB, the circuit will check the charge, and after a few minutes, perhaps up to 10 minutes, it will indicate again with the green light that the battery is charged.

If the green light never turns on, try doing several charge and discharge cycles with the battery. This involves fully discharging the battery until the console turns off, then charging it until the light turns green (or for several hours), and repeating the process once more. Let's say that calibrates the battery.

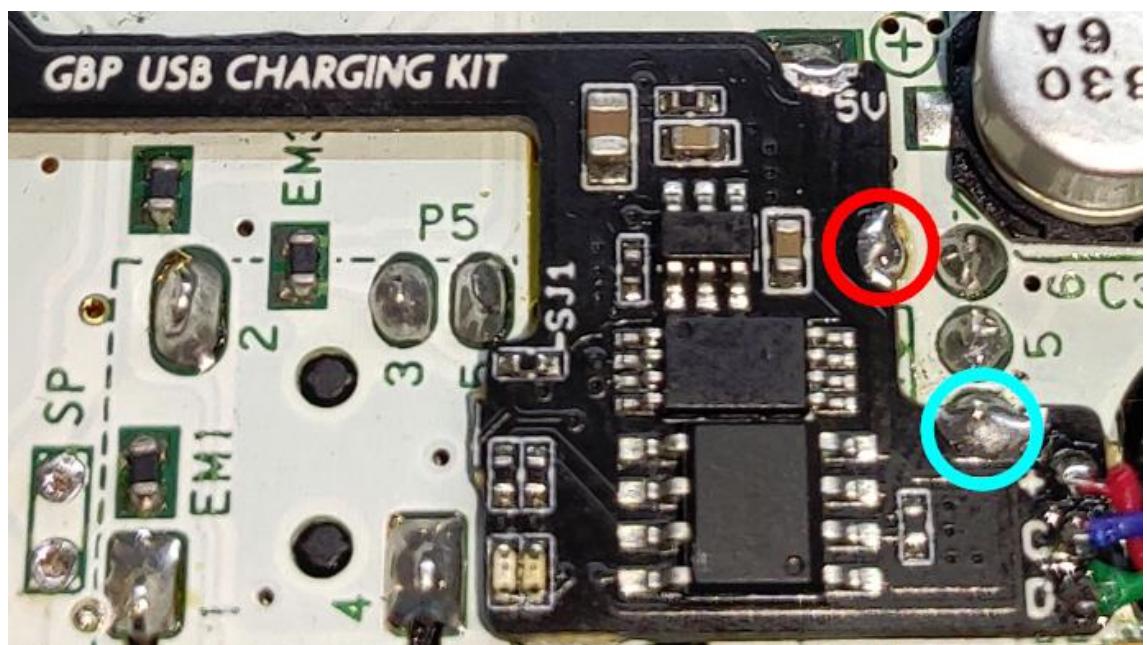
THE CONSOLE DOESN'T POWER ON

Connect the USB-C cable and, using a multimeter set to voltage measurement mode, verify that you get a **5V** reading at these two points.

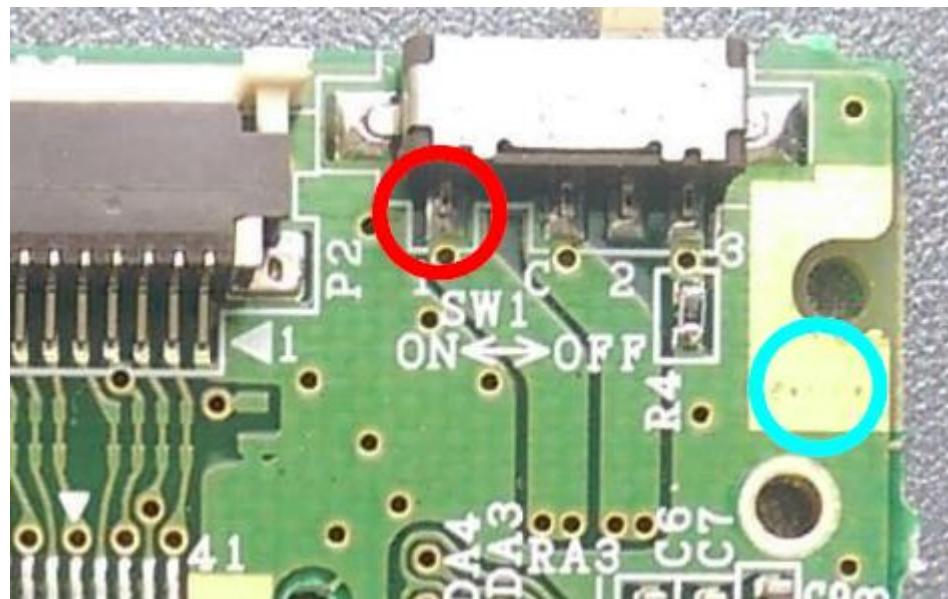


Disconnect the USB-C.

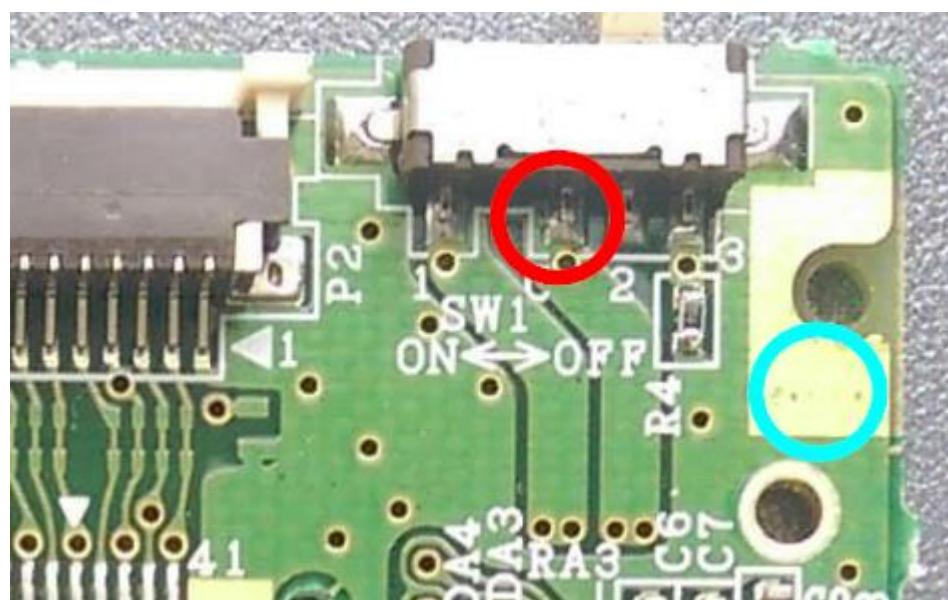
Connect the **battery** to the battery connector and verify that you get a reading between **3.2** and **4.2V**.



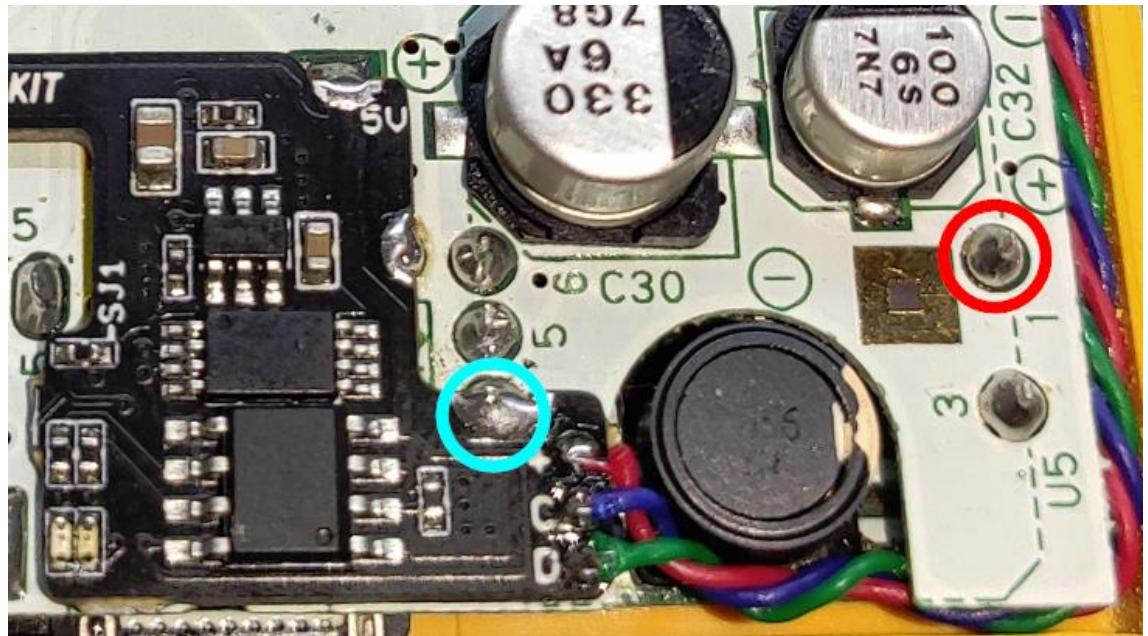
Verify that the battery voltage reaches the console's power switch.



Set the power switch to the ON position. Now check that the battery voltage reaches these two points.



Keep the power switch in the ON position. Check that the battery voltage reaches these two points.



Finally, verify that the DC-DC converter in your console is working properly and that you get a 5V reading.

