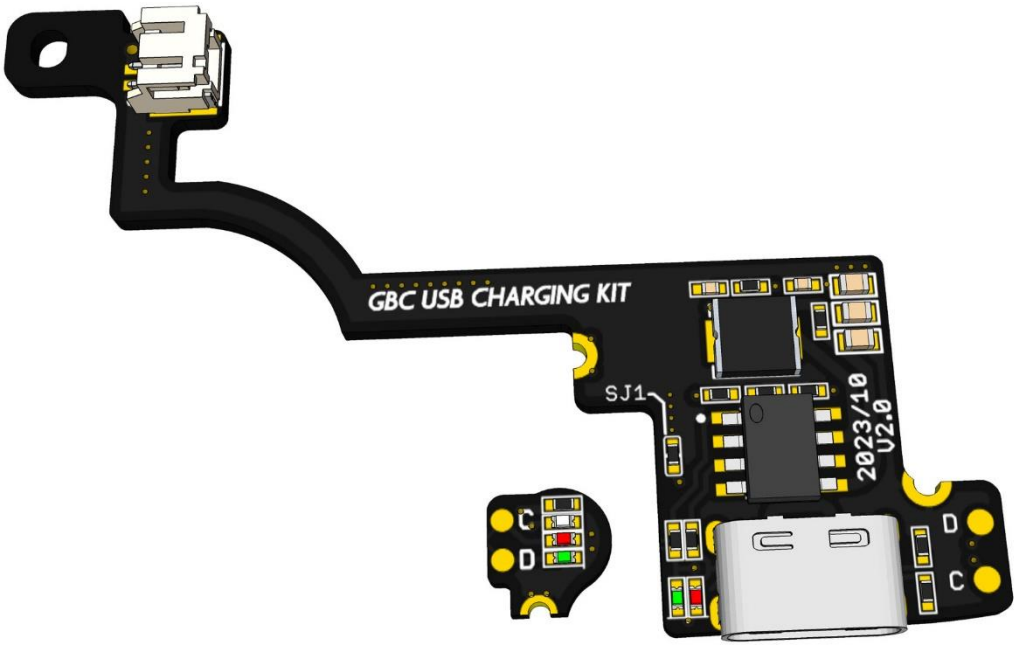
USB-C CHARGING KIT FOR GAME BOY COLOR



PRODUCT V2.0

HTTPS://SHOP.GILTESA.COM/PRODUCT/GAME-BOY-COLOR-USB-C-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.

DESCRIPTION

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

FEATURES

- Exact shape for Game Boy Color.
- 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

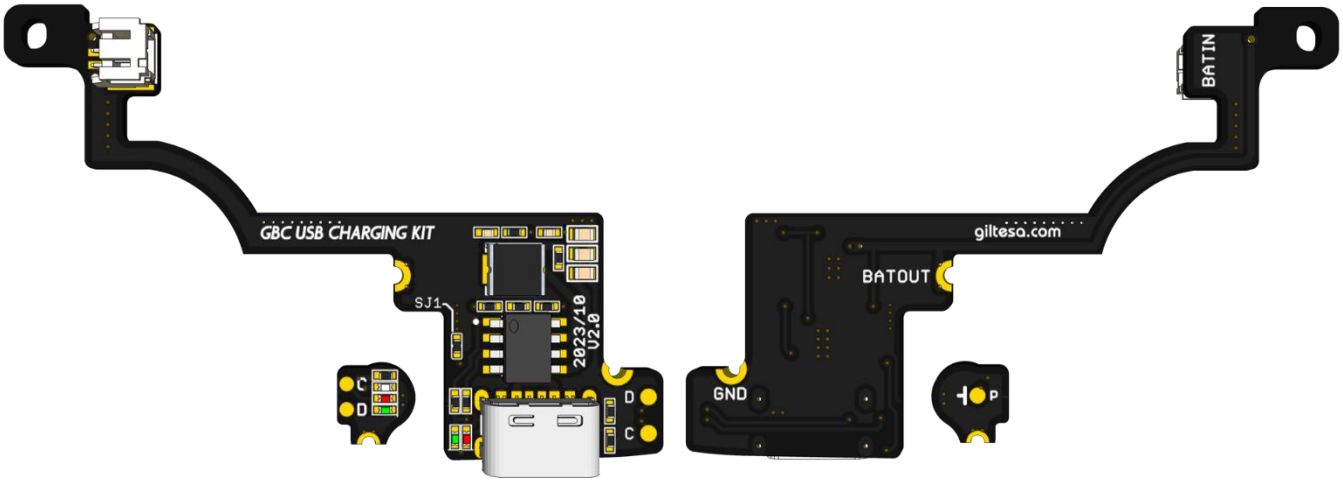
- 1 frame panel which includes the two boards:
  - Main board.
  - Light board.
- 1 Battery cable.
- 1 Cable of 2 wires for connecting the light board.
- 1 Light diffuser pipe.

RECOMMENDED / REQUIRED [NOT INCLUDED]

- 3.7V li-ion battery (for example 102050 or 123048)
- 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 GBC mainboard. The following explains what each pad is for.



Main board & USB-C board:

- BATIN: Input connector of the li-ion battery.
- BATOUT: The energy output from battery to the GBC power switch.
- GND: The ground pad.
- SJ1: Solder jumper. If you wish, it can be removed to disable the integrated LED indicators.

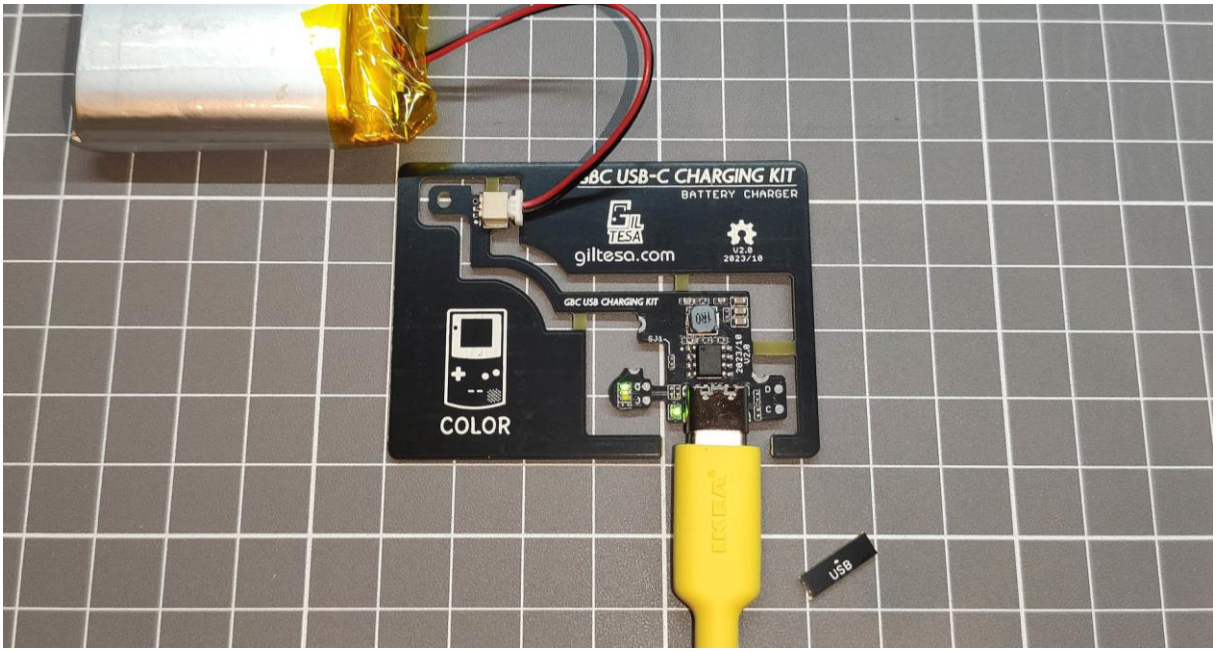
Light board (*optional*):

- 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.

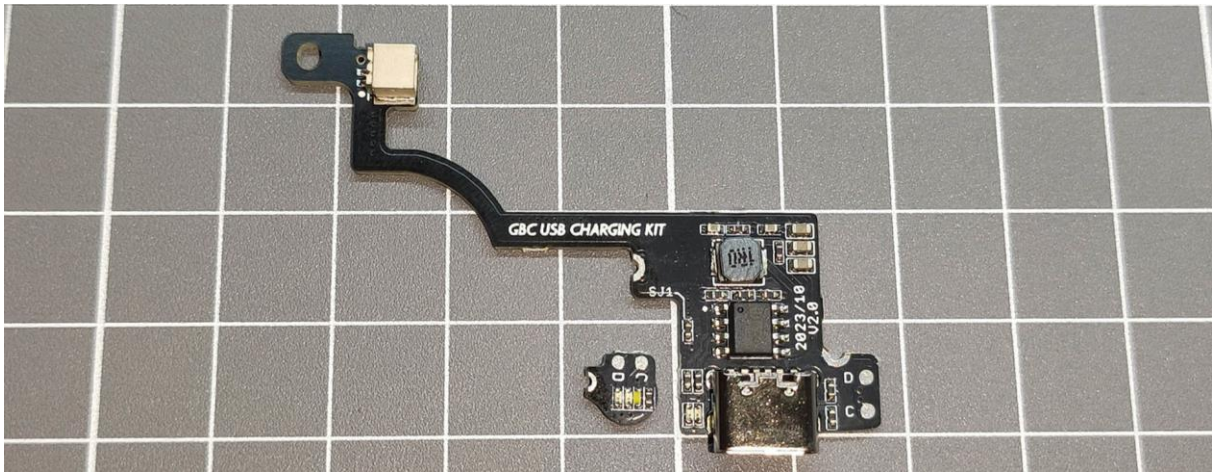
TEST THE BOARD

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 GBC 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.

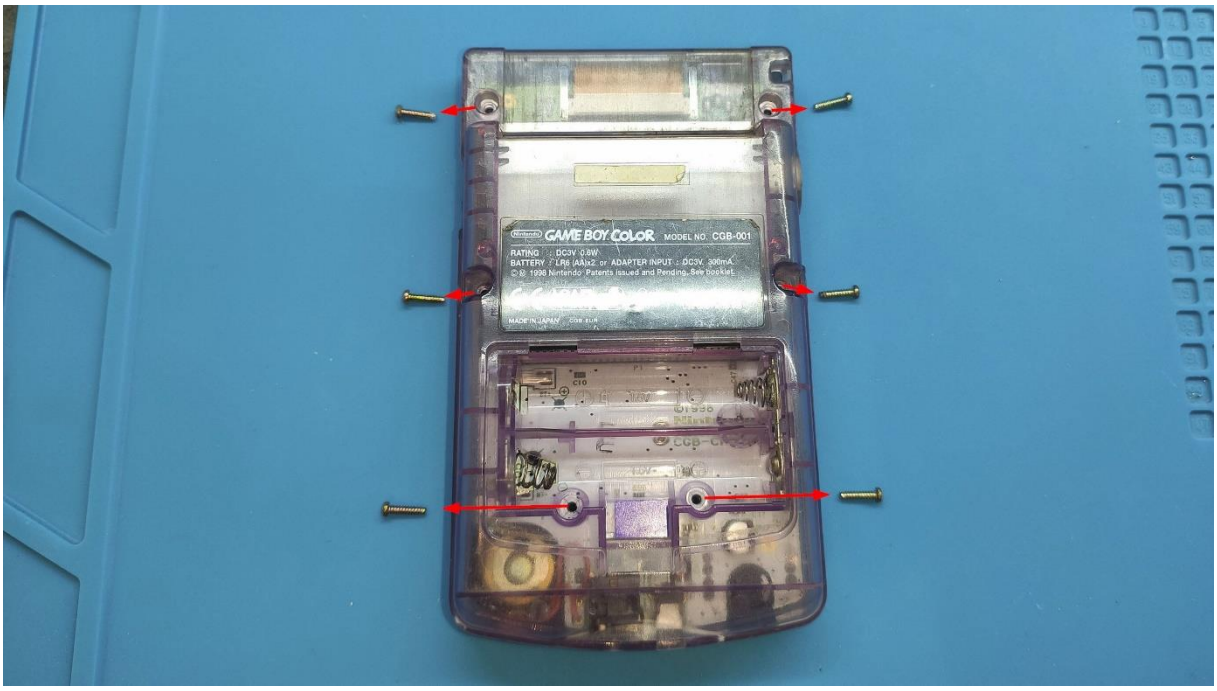
PRE INSTALLATION STEPS

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

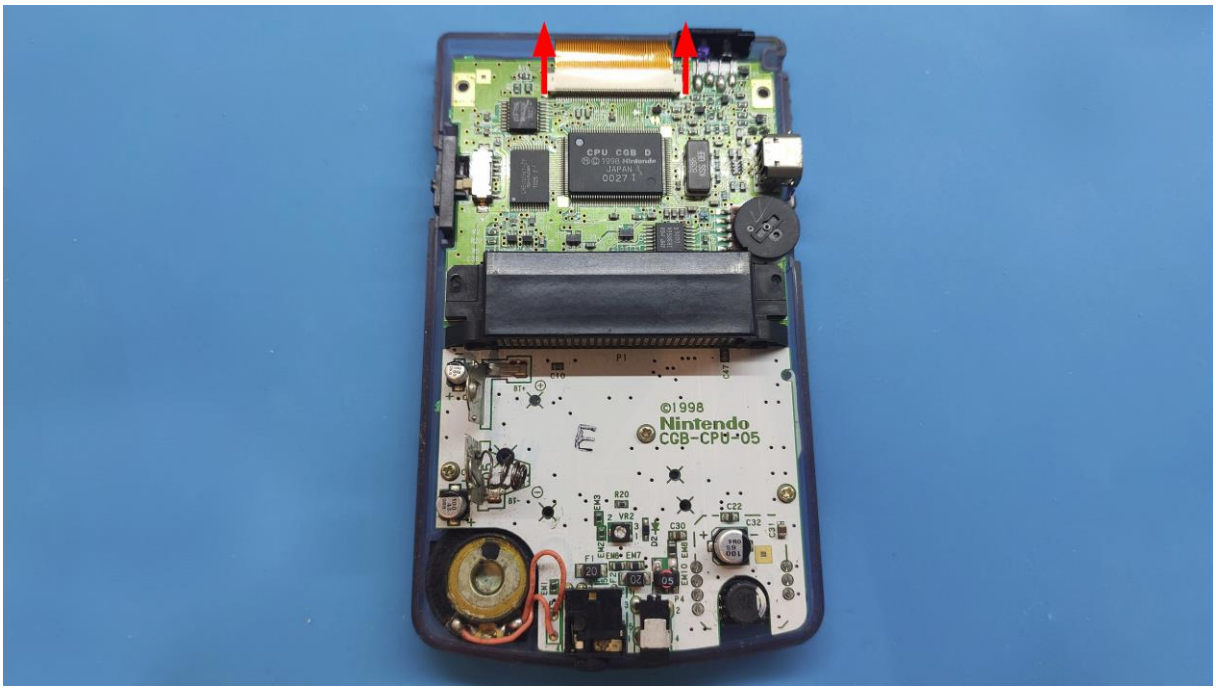
1. DISASSEMBLY THE GAME BOY COLOR

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.

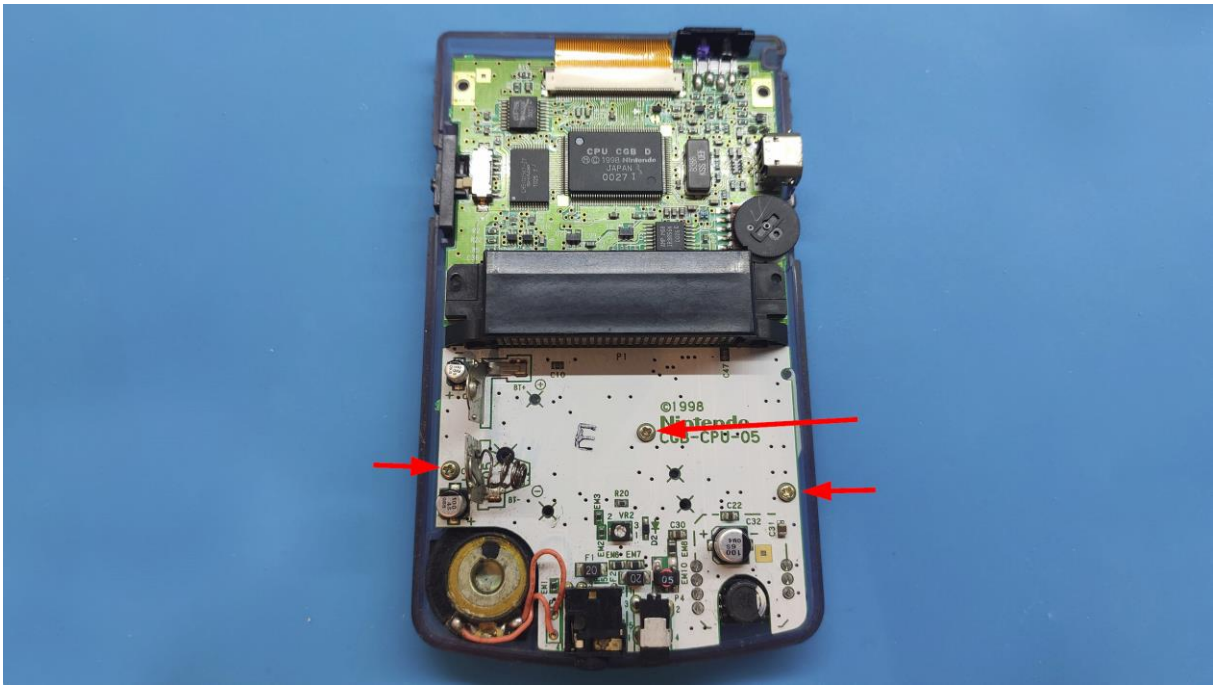
Use the **tri-wing** screwdriver to open the shell and remove the 6 **tri-wing** screws.



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 1998, the board may be full of dust or with the flux from the factory (yellow spots). All this dirt can be cleaned with alcohol.

3. CLEANING THE POWER SWITCH

Depending on how the GBC has been stored, the switch can be also full of dust inside and prevent a good electrical connection. **If you see when your turn on the GBC, 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.

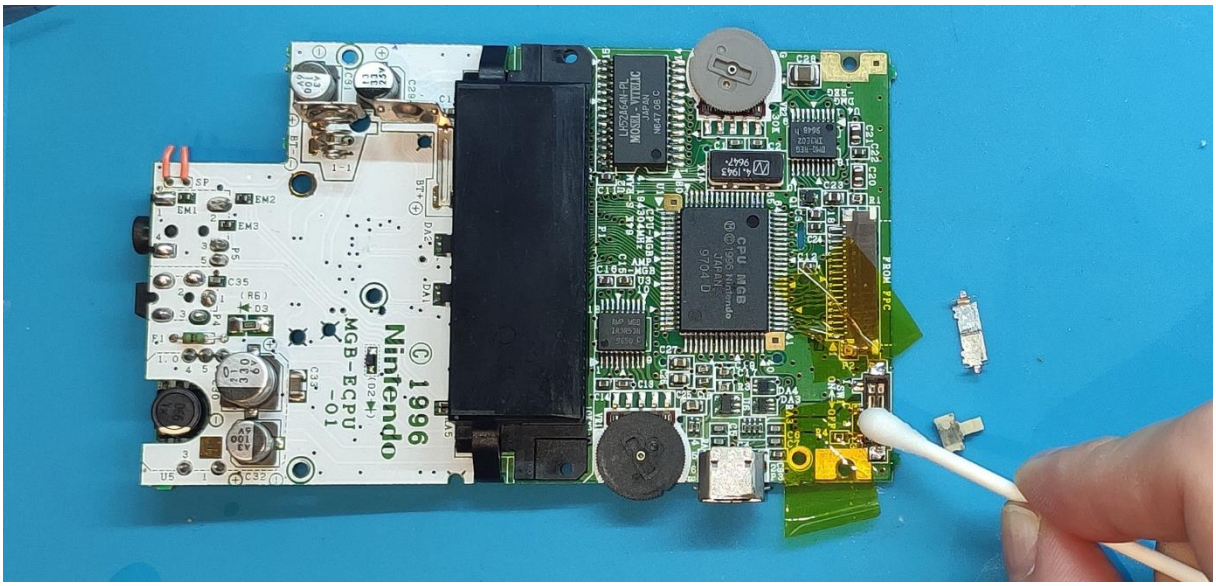
First, protect the nearby parts with kapton tape to avoid burning them with the soldering iron.

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-4KlOvaQ2M

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



This is a GB Pocket, but it's the same for GB Color

INSTALLATION STEPS

1. PROTECT THE BUTTON PADS

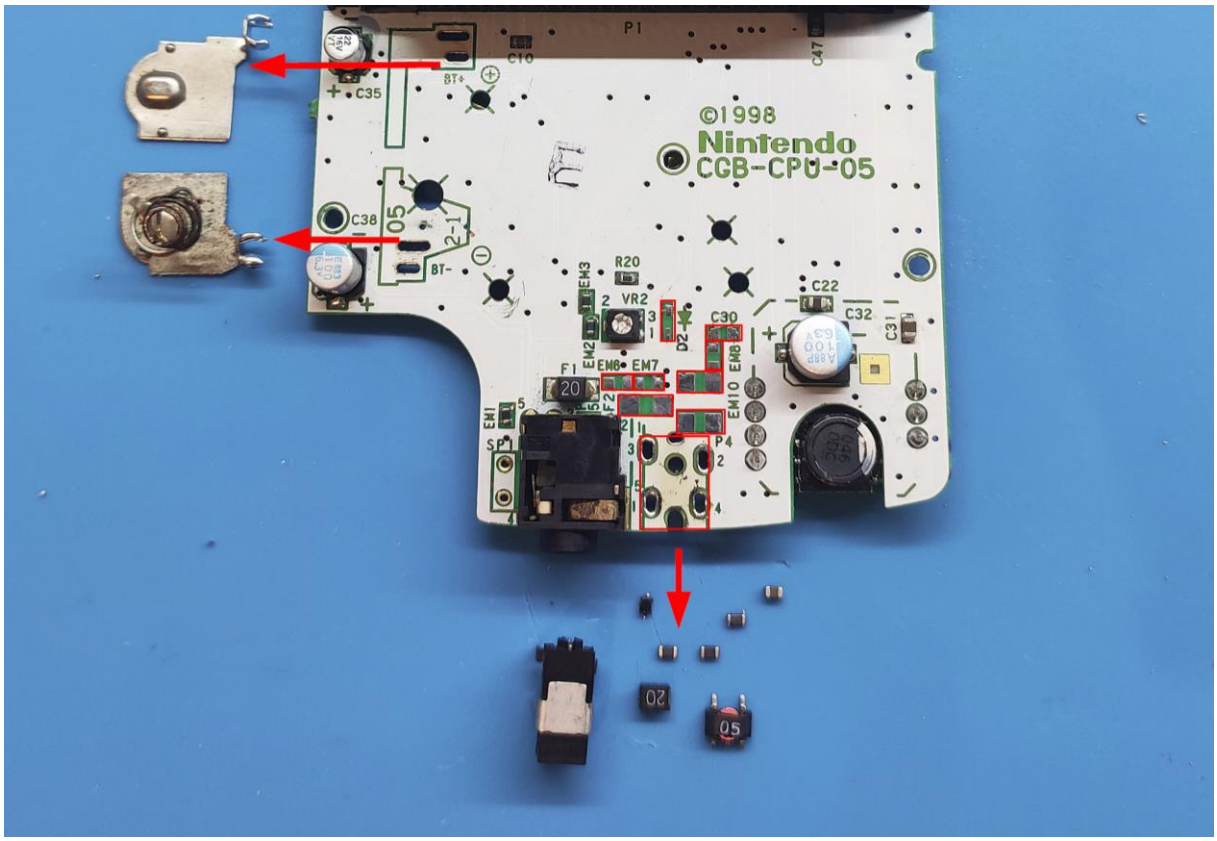
Because many pads need to be soldered and they are next to the button pads. This can cause the buttons pads get dirty with tin and interfere with proper operation. To avoid that, **protect them with kapton tape until the installation is completed.**

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:**

- Diodes: **D2**
- Capacitors: **C30**
- Coil filter: **EM8**, **EM7**, **EM6**
- Fuses: **F2**
- Coil filter: **EM10**
- **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 since it is very annoying. It can be soldered again at the end or better, be replaced for a new one.

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 GBC 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 with isopropyl alcohol.

5. 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 GBC.**

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

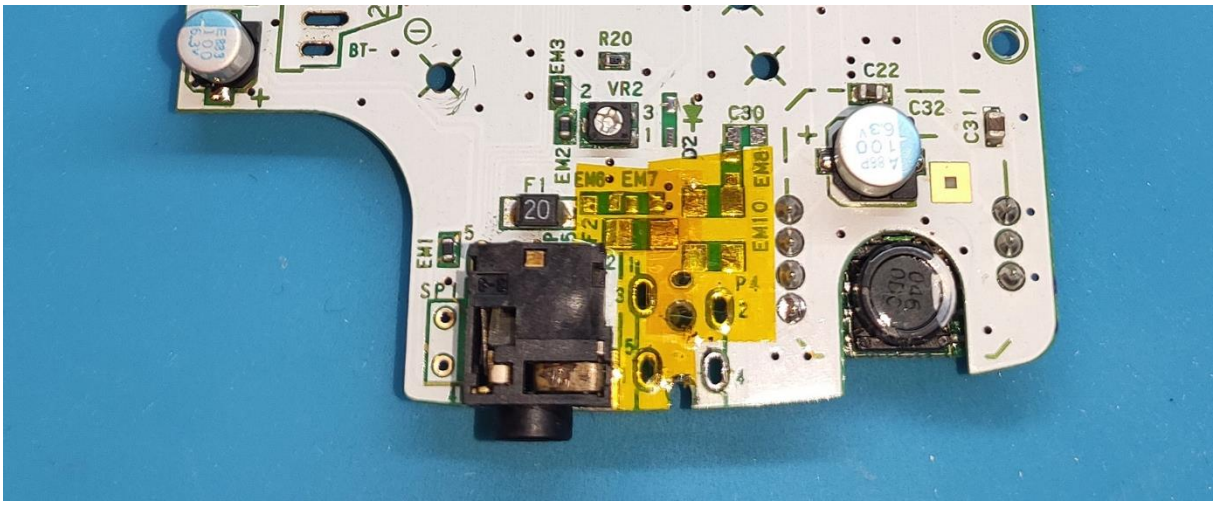


Photo of a version prior to the current one.

Then, put the board over the main board and solder these 2 pads:

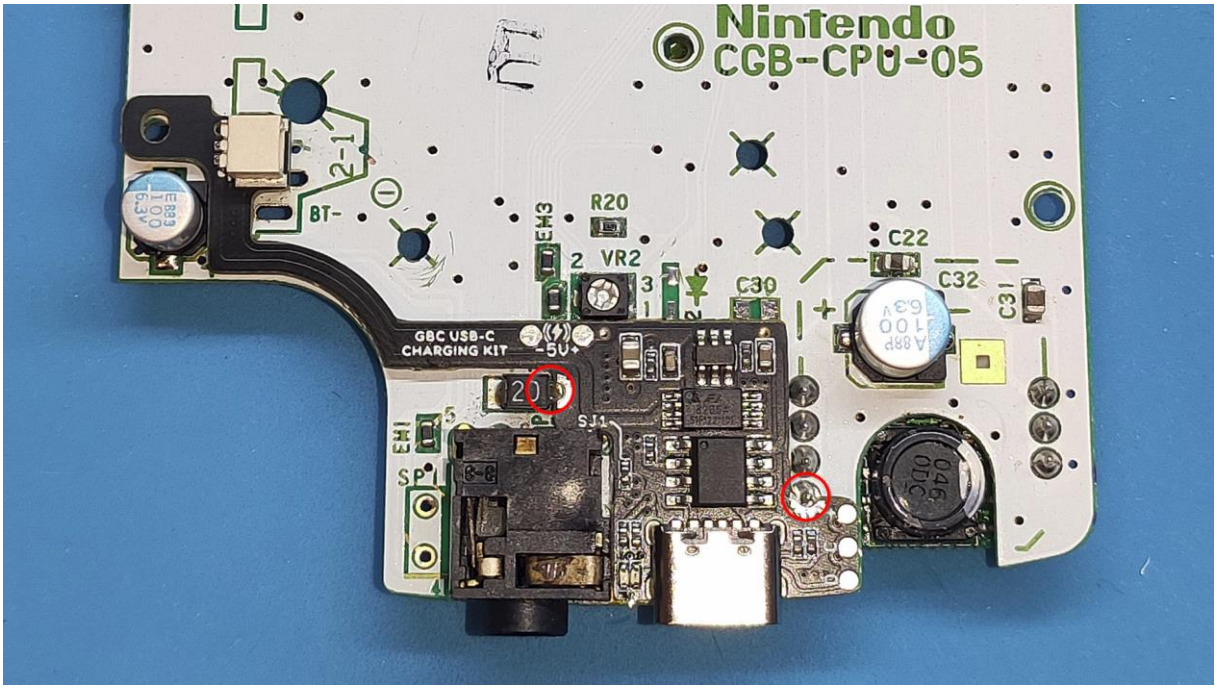
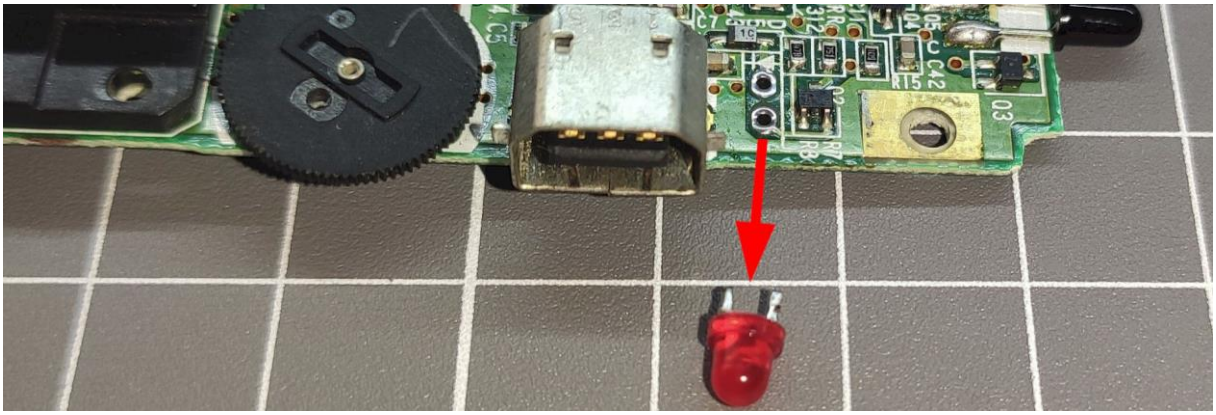


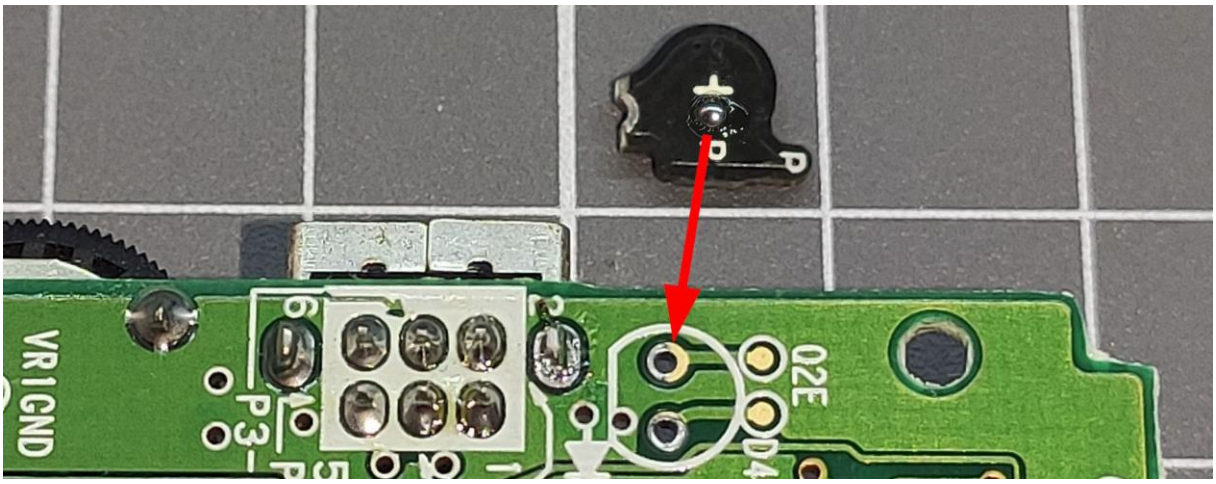
Photo of a version prior to the current one.

6. INSTALLATION OF THE LIGHT BOARD [OPTIONAL]

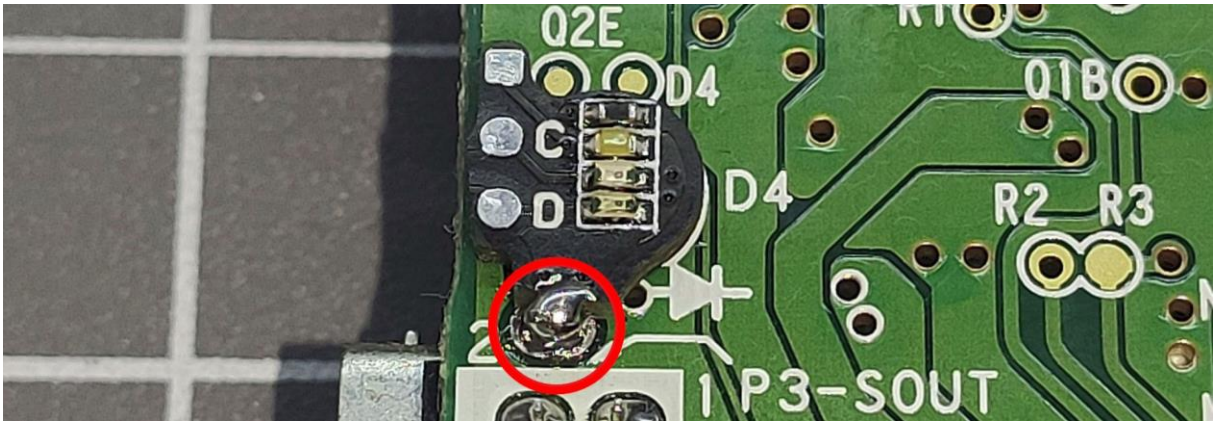
First you need to remove it. Heat both legs at the same time and then remove it from the mainboard.



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



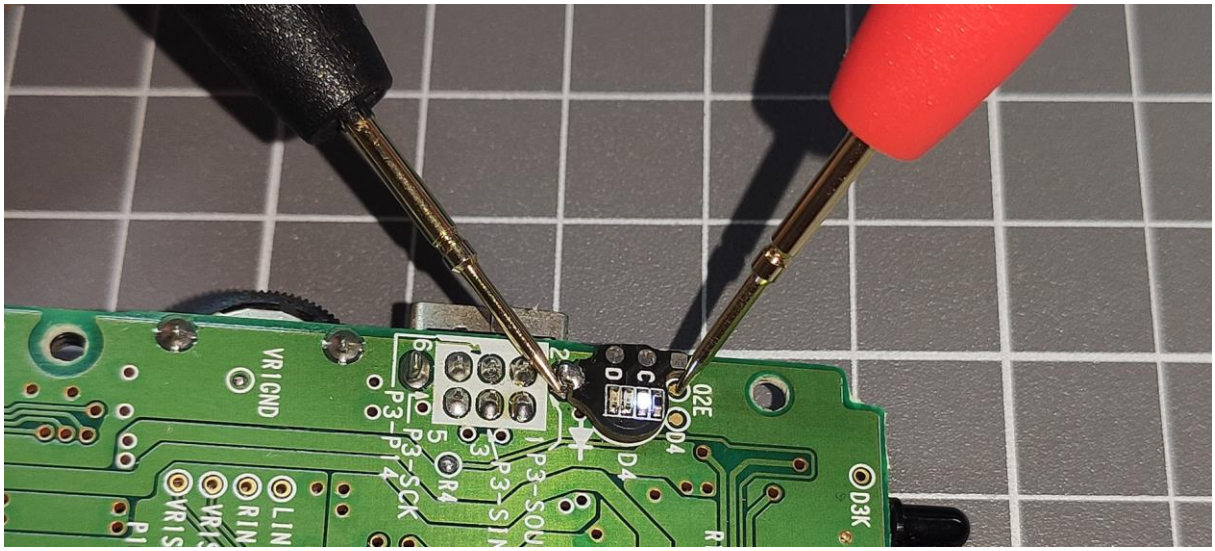
Now solder the pad on the bottom of the board. You need to connect it to one of the legs of the Link connector.



This photo corresponds to a GBP; it's the same for the GBC.

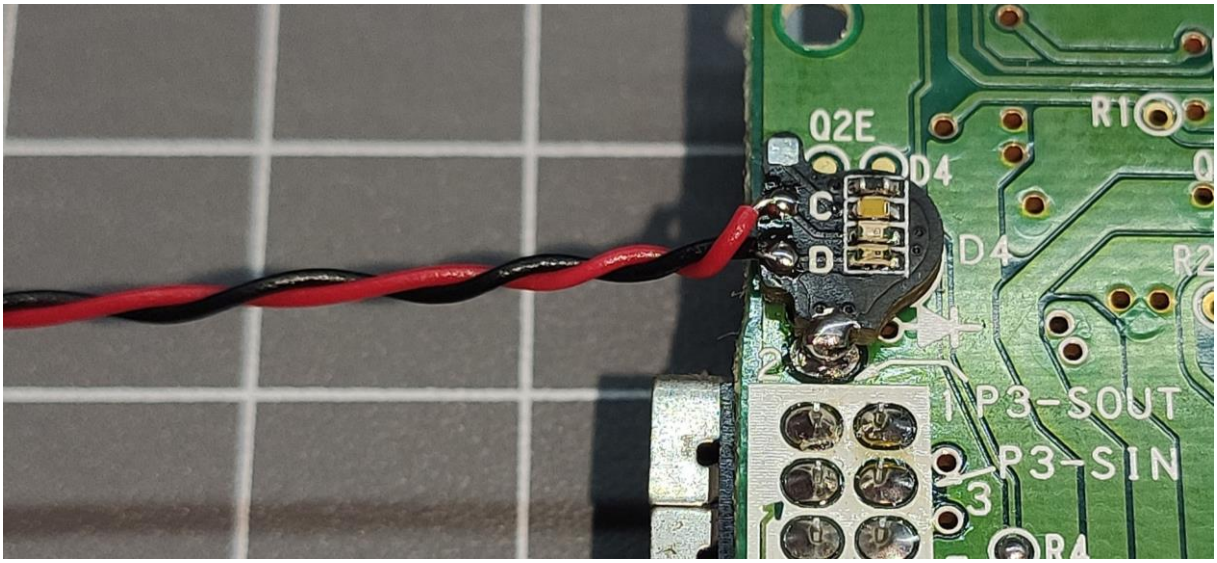
If you wish, you can now verify that the white light of the light board is functioning correctly and that both soldering joints are well done.

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



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:



This photo corresponds to a GBP; it's the same for the GBC.

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

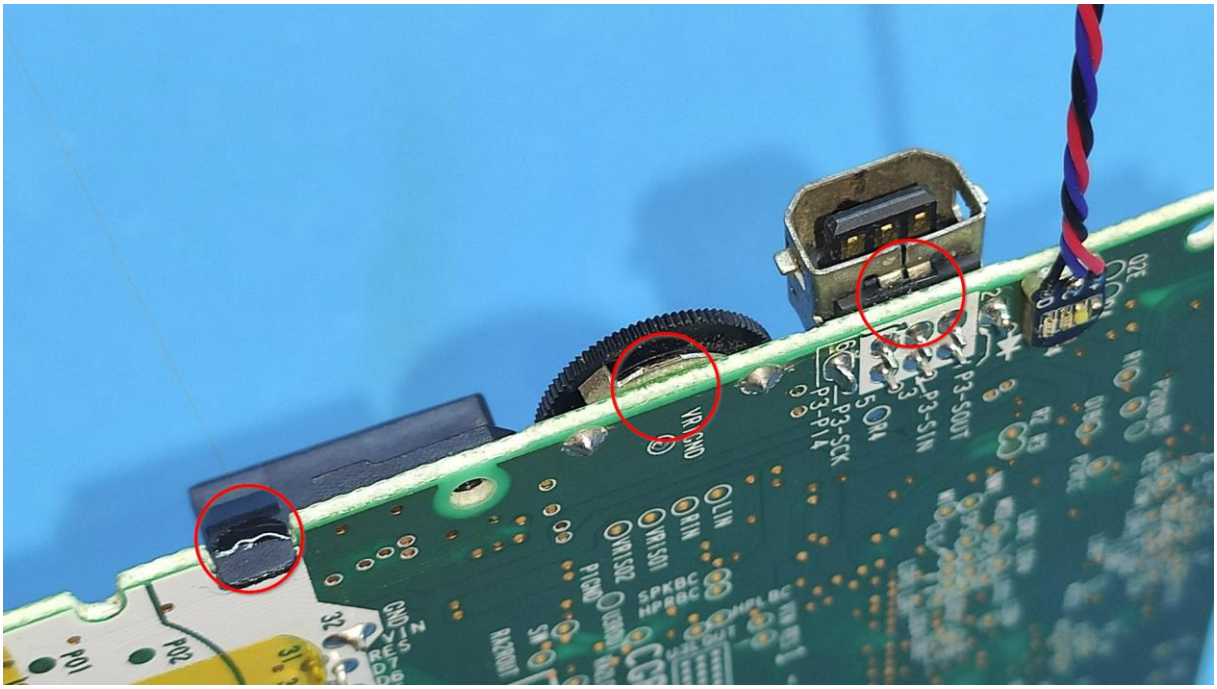


Photo of a version prior to the current one.

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:

This is a GB Pocket, but it's the same for GB Color

Once at this point, you can assembly everything except the bottom shell than need to be trimmed in the next step.

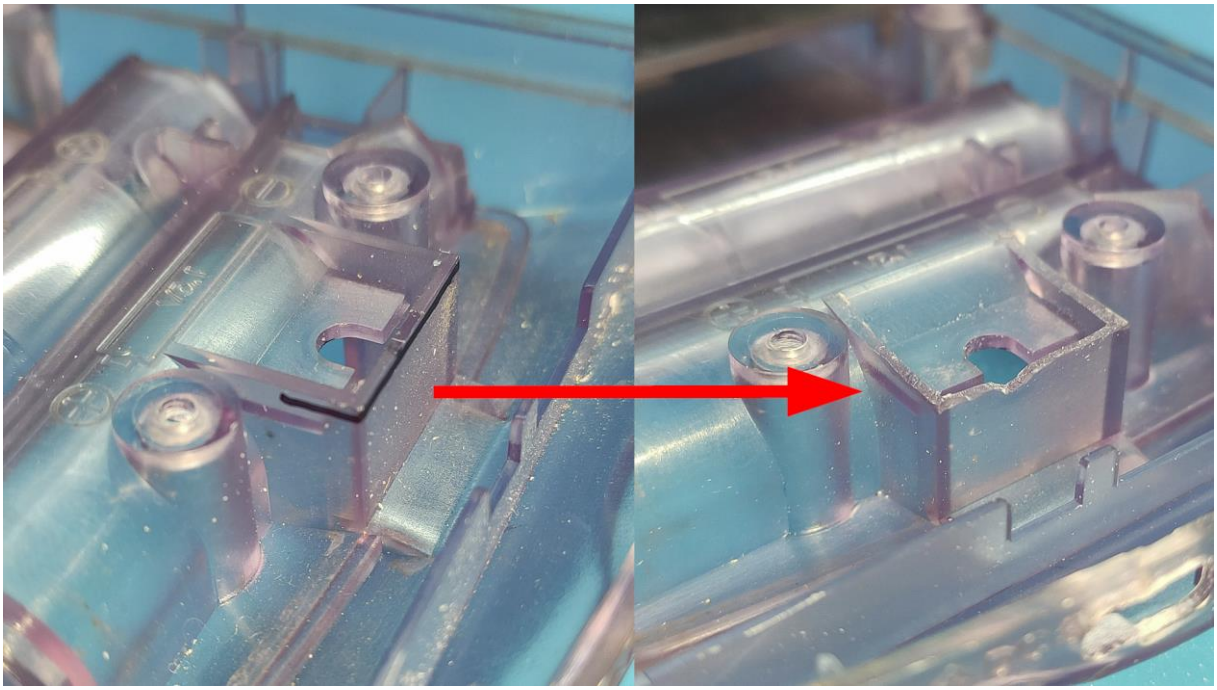
So, install the screen, light diffuser included with the kit, bottoms, and mainboard. You can also test the board with USB-C cable and the battery, check the lights works well.

7. CUTTING THE PLASTIC SHELL

The GBC 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.

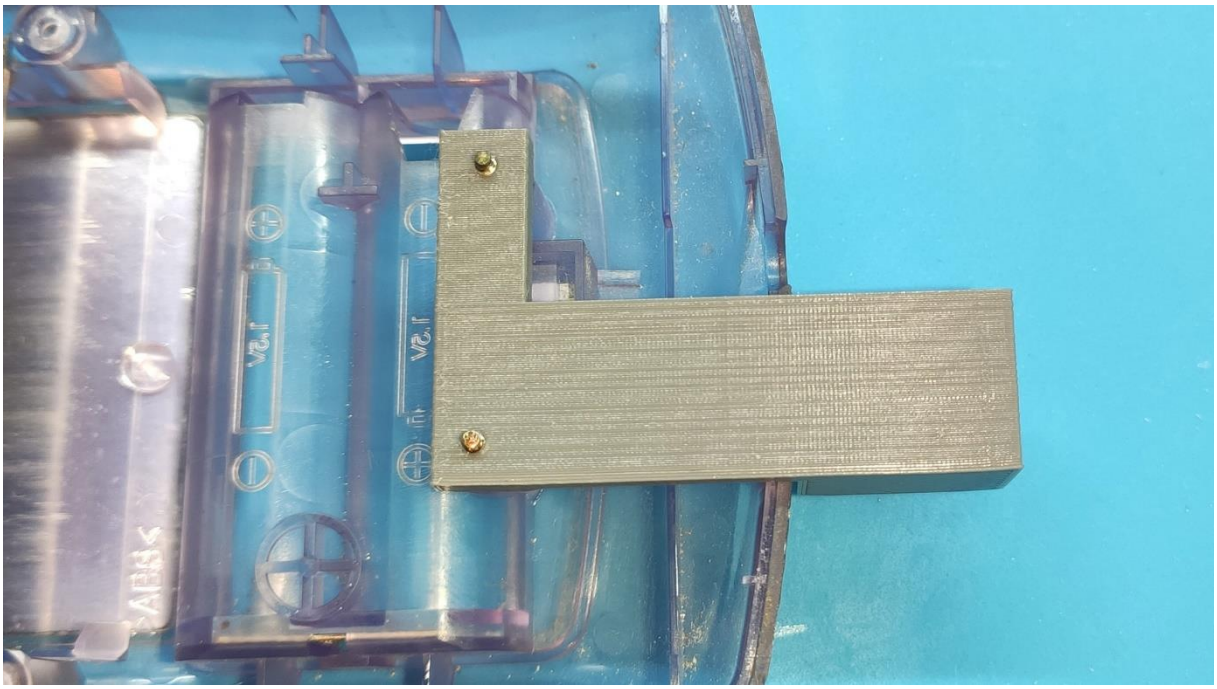
INSIDE THE SHELL

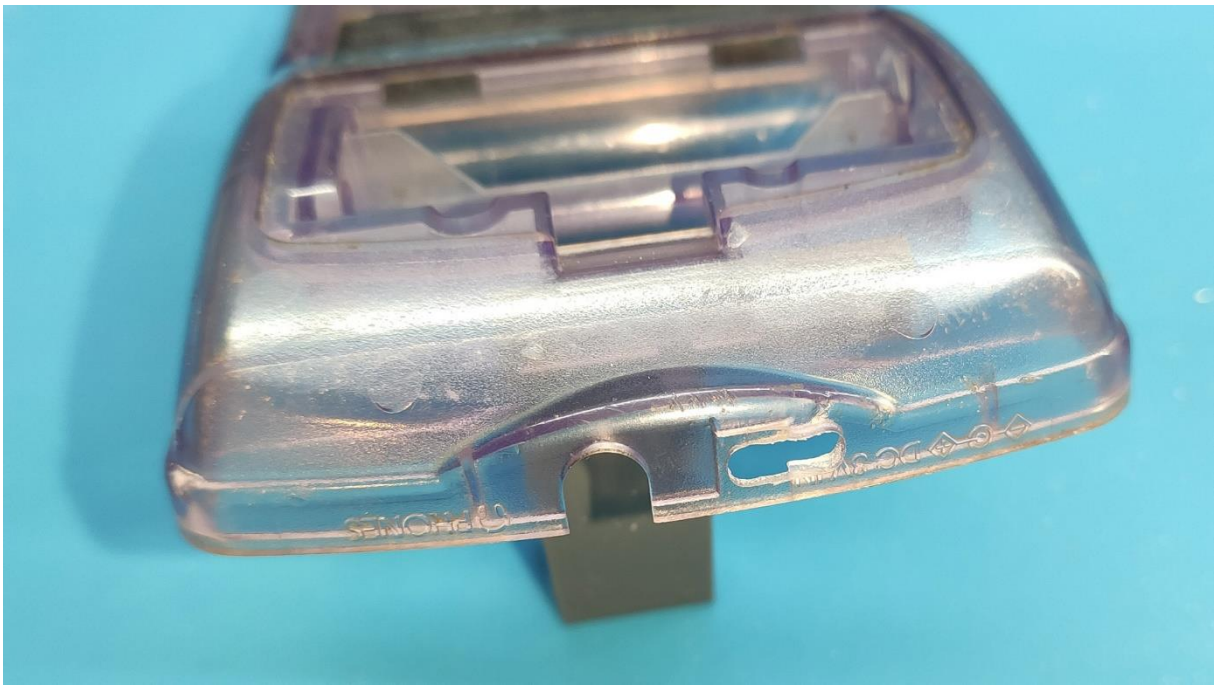
This part touches the main circuit, trim it:



THE USB-C HOLE

This is the part you must do as carefully as possible since this is visible from outside. Use the GBC cutting tool if you have it, or you can print it yourself.

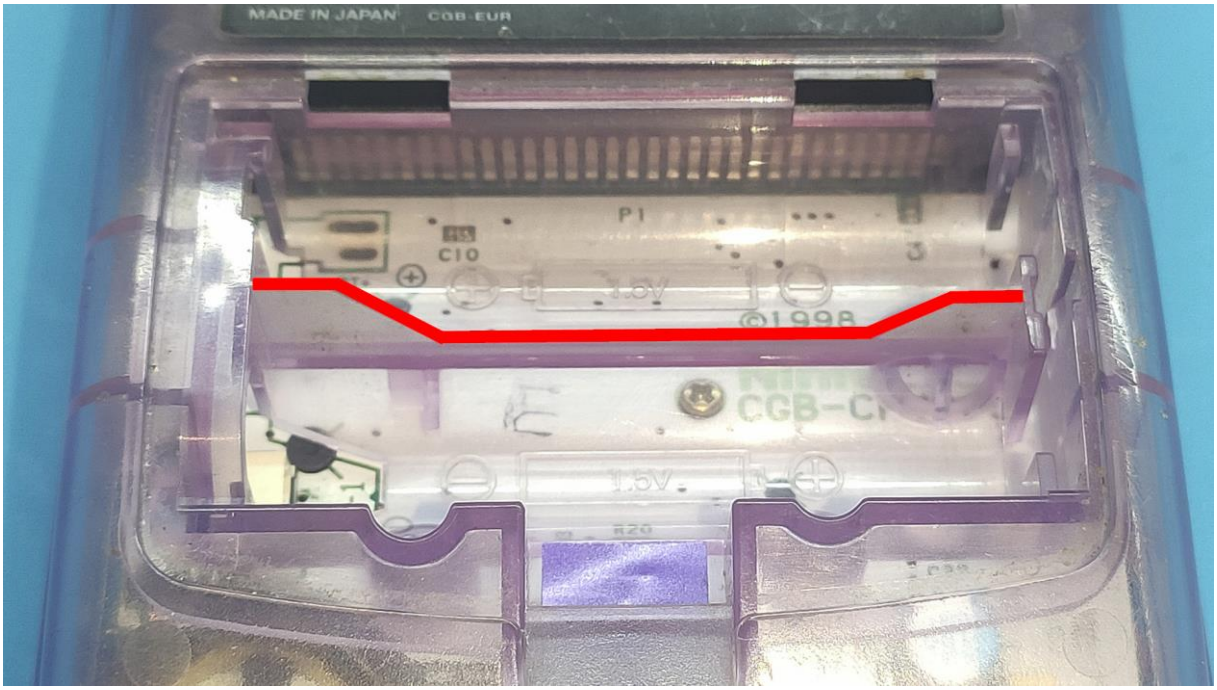




BATTERY COMPARTMENT

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:

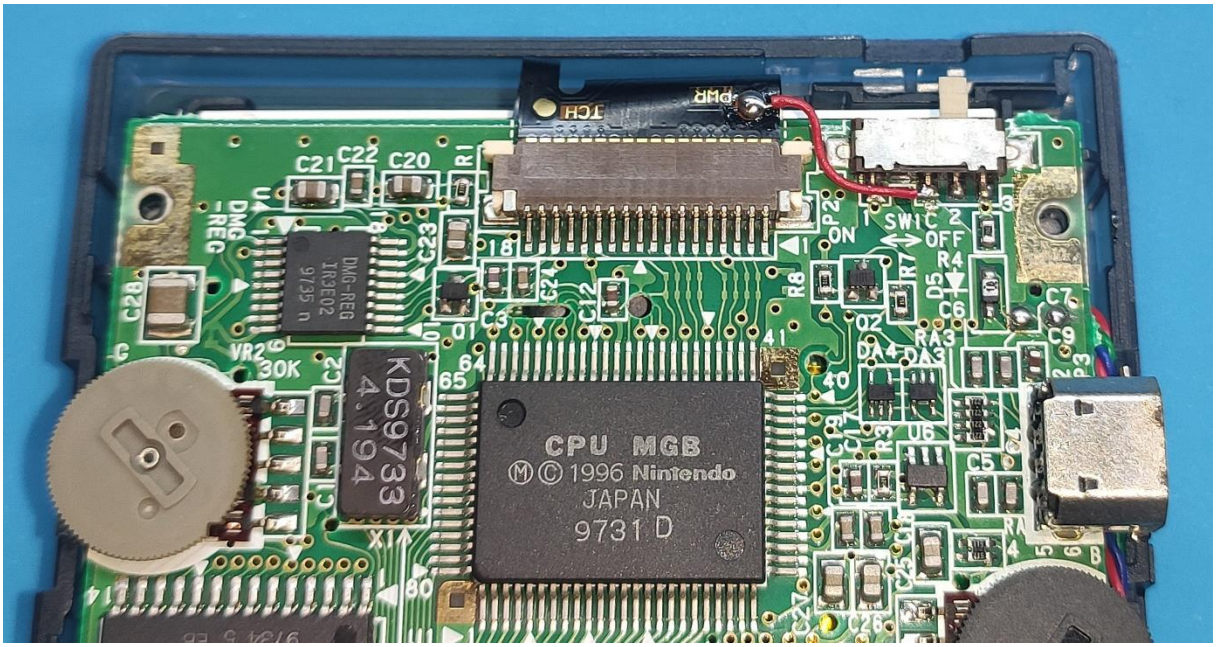


The second one doesn’t need any cut :)

8. FINISHING THE INSTALLATION

Once the shell is ready, you can install it back.

But, **if your IPS screen requires to solder a power cable, please don't forget it**!



This is a GB Pocket, but it's the same for GB Color

9. LIGHT STATUS

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

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10. BATTERY CABLE

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

11. DONE!

Here we are, it’s time to enjoy it!