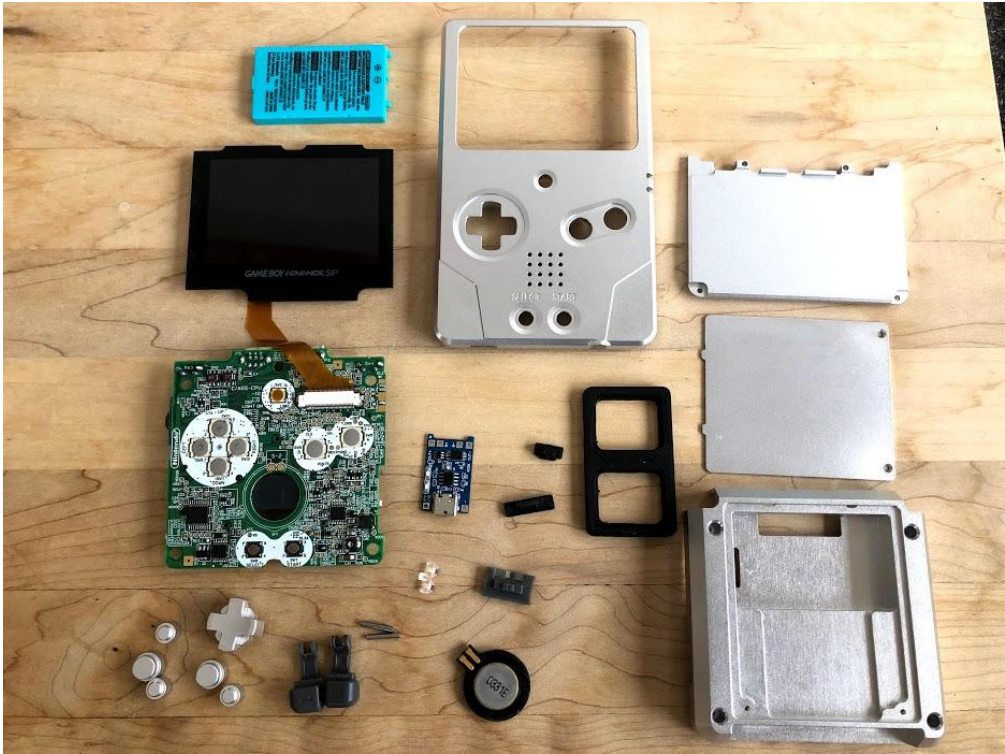


Game Boy Advance SP Assembly

This is a working document, describing the basic steps to install joycon electronics into Boxy Pixel metal housings

There are several different modification options outlined in this document. As a consequence, your assembly may differ slightly.

There exists a possibility that not all Nintendo PCB's are the same, so always ensure you check your voltage pins.



Warning!

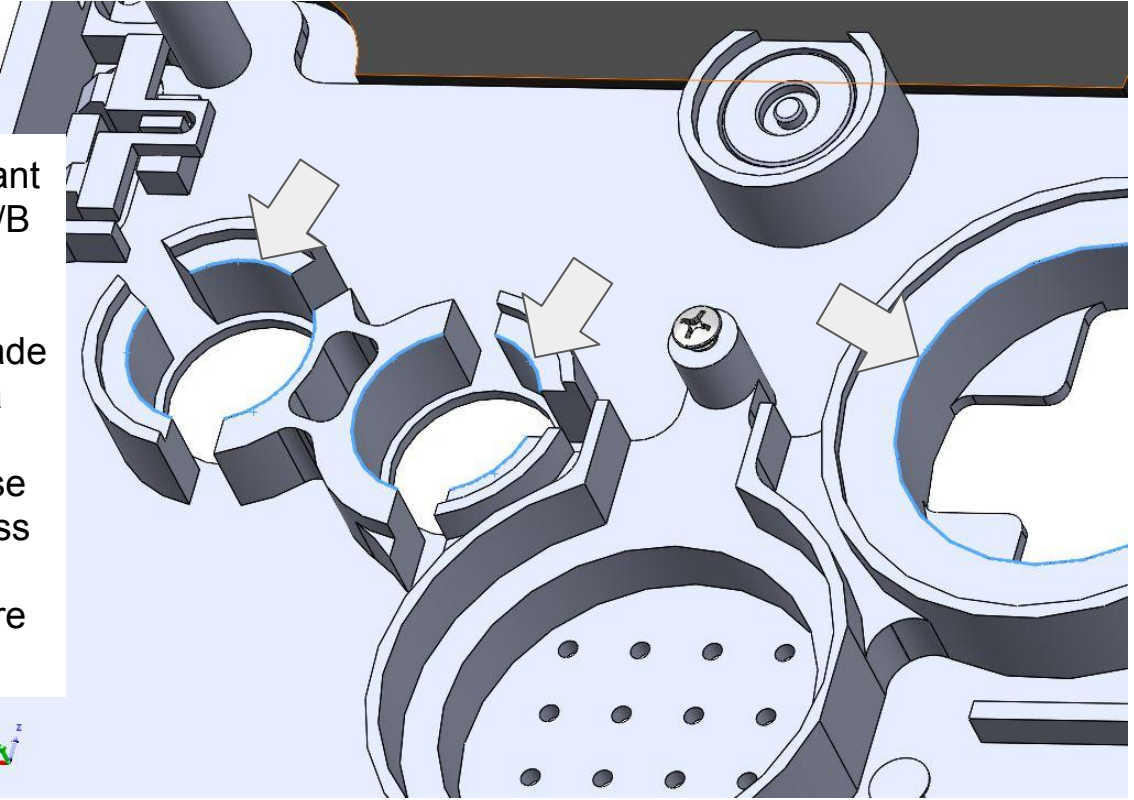
Please take extra care with the fasteners. The fastener heads and the threads are very small. The assembly process shows the fastener lengths that we have personally found to work well, however you will need to use your best judgement.

1. When assembling, do not force the fastener! If you feel too much resistance, reevaluate your fastener length or back out, clean and try again.
2. Choosing the correct fastener is a balance between having a safe amount of thread engagement and also not putting a fastener in that is too long which can risk breaking or stripping. **Take your time and reference my directions for guidance. There may be times when you need to choose a different sized fastener than the install directions if a threaded hole is too shallow!**

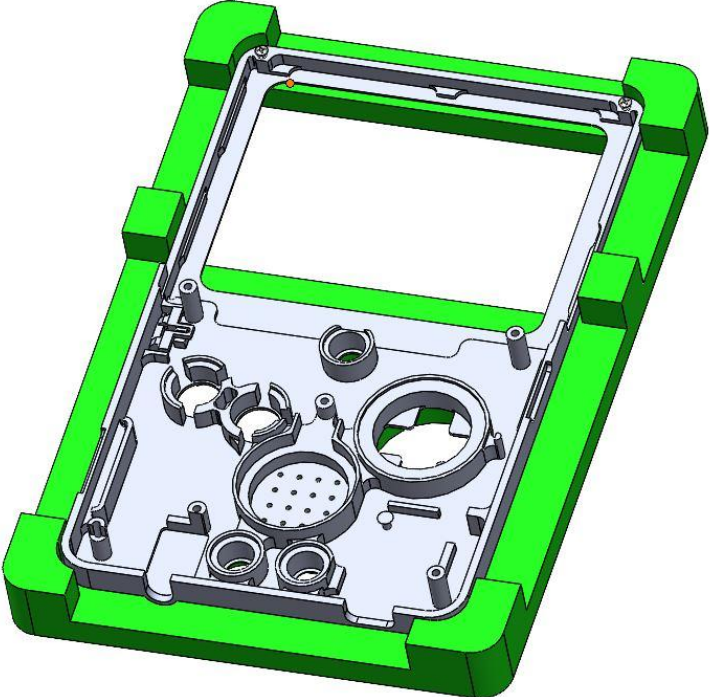
Additional fastener rules

1. Ensure you have the correctly sized phillips drive that is also not worn. It makes all the difference.
2. Use my installation guide as a starting point for recommended screws for a given hole location. You may need to deviate from this if there is not enough thread engagement.
3. For all fasteners, make sure parts are aligned before screwing together.
4. For all parts, ensure the parts are fully seated and hold the parts together when fastening. I would recommend against having the fastener pull the parts together. This is especially important when fastening the front/rear housings.
5. When starting a screw, I will often turn in counterclockwise to start. You should "feel" when the screw catches the first thread. Then, I gently turn clockwise. If you feel any resistance, stop and reevaluate. Personally, I use my fingertips to turn the screwdriver while applying enough downward pressure to keep the driver engaged. If you are stripping the screw head - you have far too much resistance and/or the incorrect driver.
6. Whenever you have more than one screw to attach two parts together - always start all screws first.
7. Keeping the above rules above in mind, I first would carefully choose your screws and then do a practice run for the 4 screws that hold the front and rear housings together.

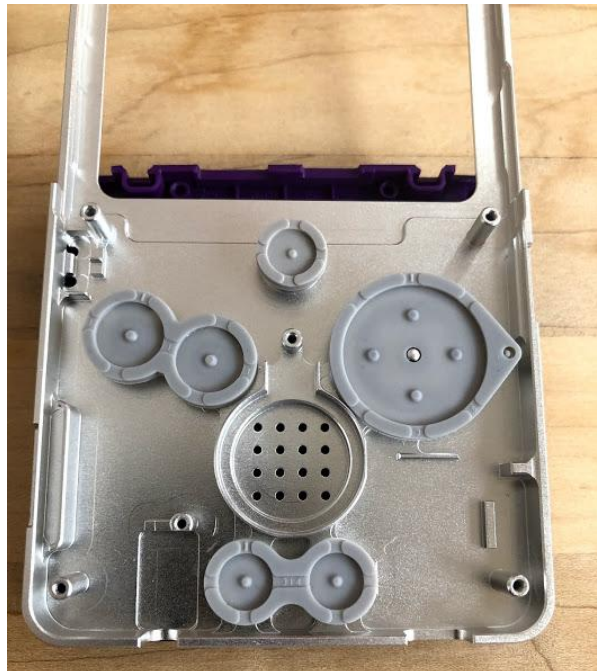
Before assembly, you may want to break the corners for the A/B and D-pad holes. Shown highlighted in a thin blue line, you can use a sharp razor blade to break the edge so it's not a sharp corner. A nail file would also work. Do not use a coarse grit sandpaper or file file unless they are very fine. This is optional but done to make sure the buttons move freely.



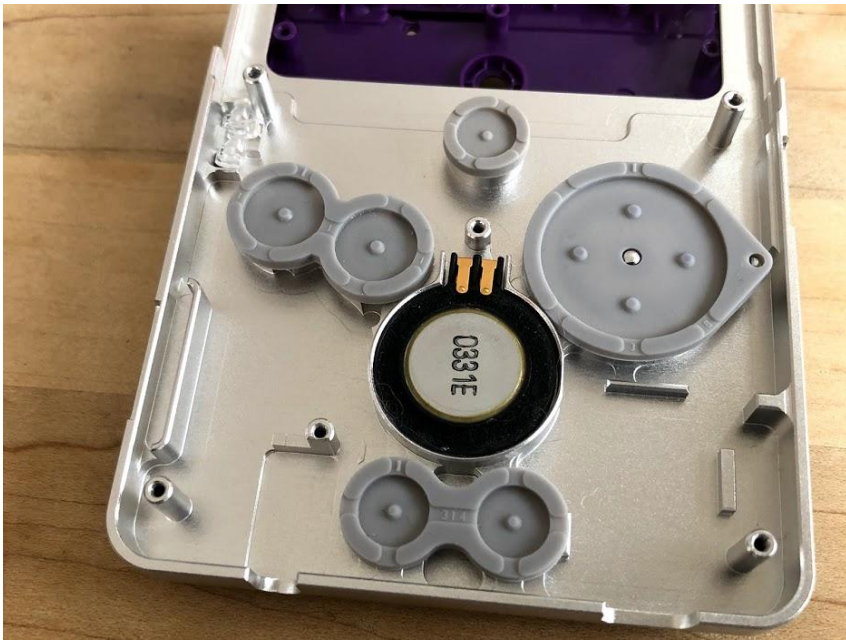
Lay the front housing face down, being careful to protect you shell front shell from scratches. Note: If you can raise the front and leave room for the buttons to drop down, it will make laser assembly easier.



Drop in the buttons



Add the silicone from you donor GBA SP



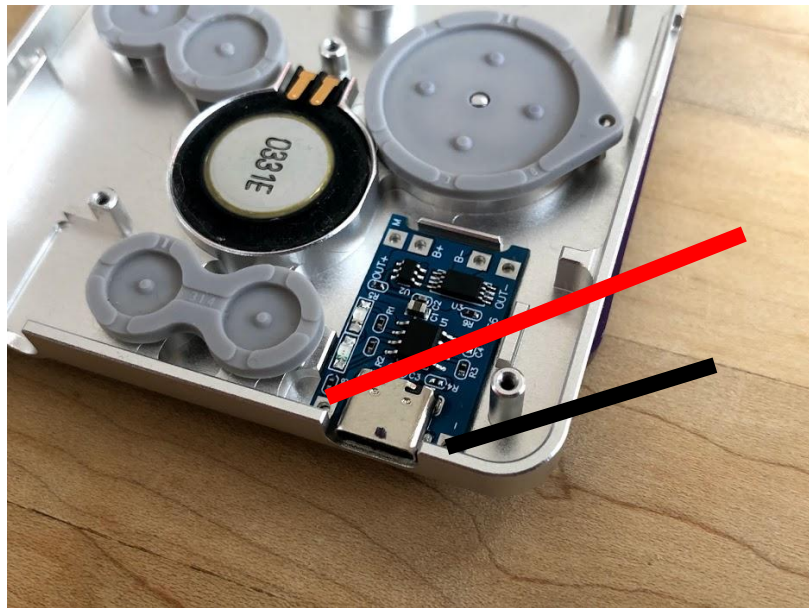
Drop in the speaker from you donor GBA SP



If you are using a type C board, it will drop in. There are features to help locate it. A strong thin foam double sided tape or hot glue will hold this in place.



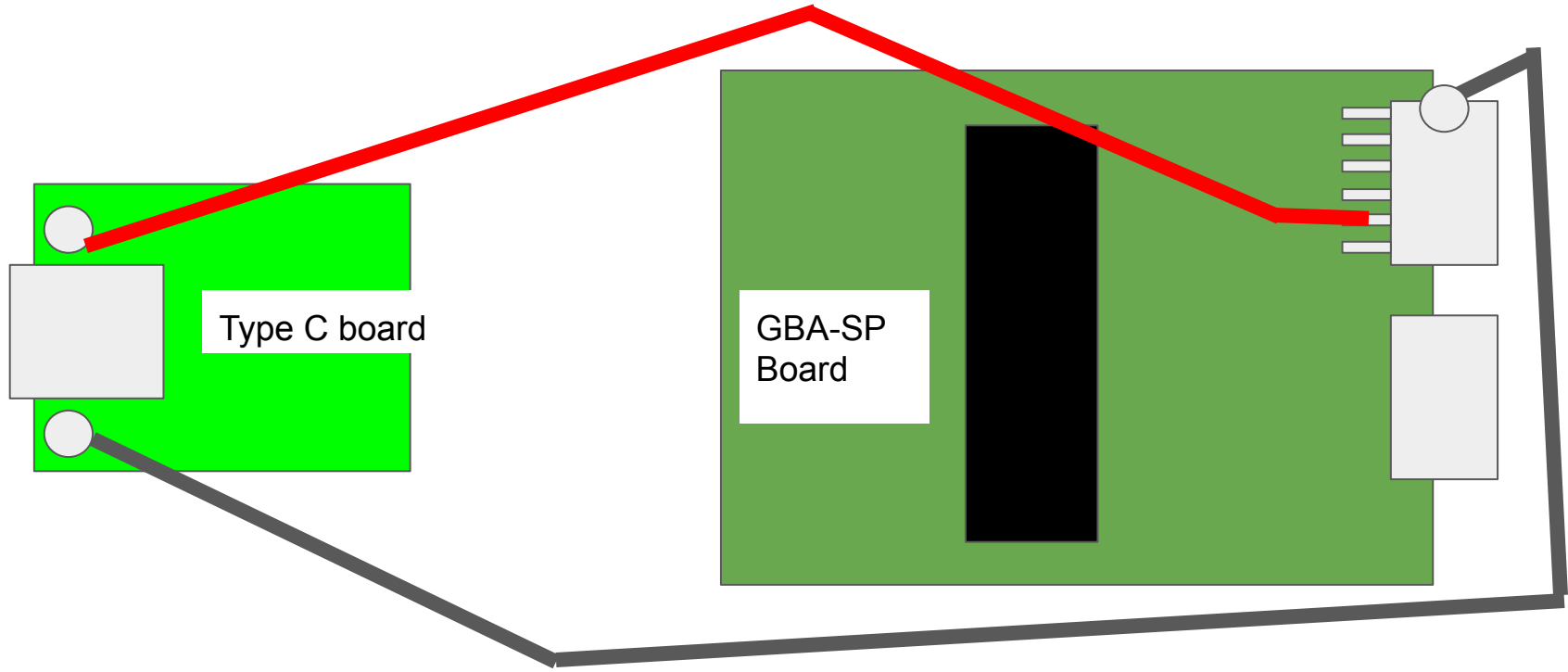
Add a plug if you are not using the type C charge board. Glue or tape in place.



Solder your two positive and negative wires to the type C board. There should be a tiny + and - on the type C board near the locations highlighted in the image.

These two power wires will be soldered to the SP PCB. The positive wire will go to the SP power connector, second pin from the right. The ground can go to the SP connector metal itself. See next slide for wiring diagram.

Type C to Advance SP power connection

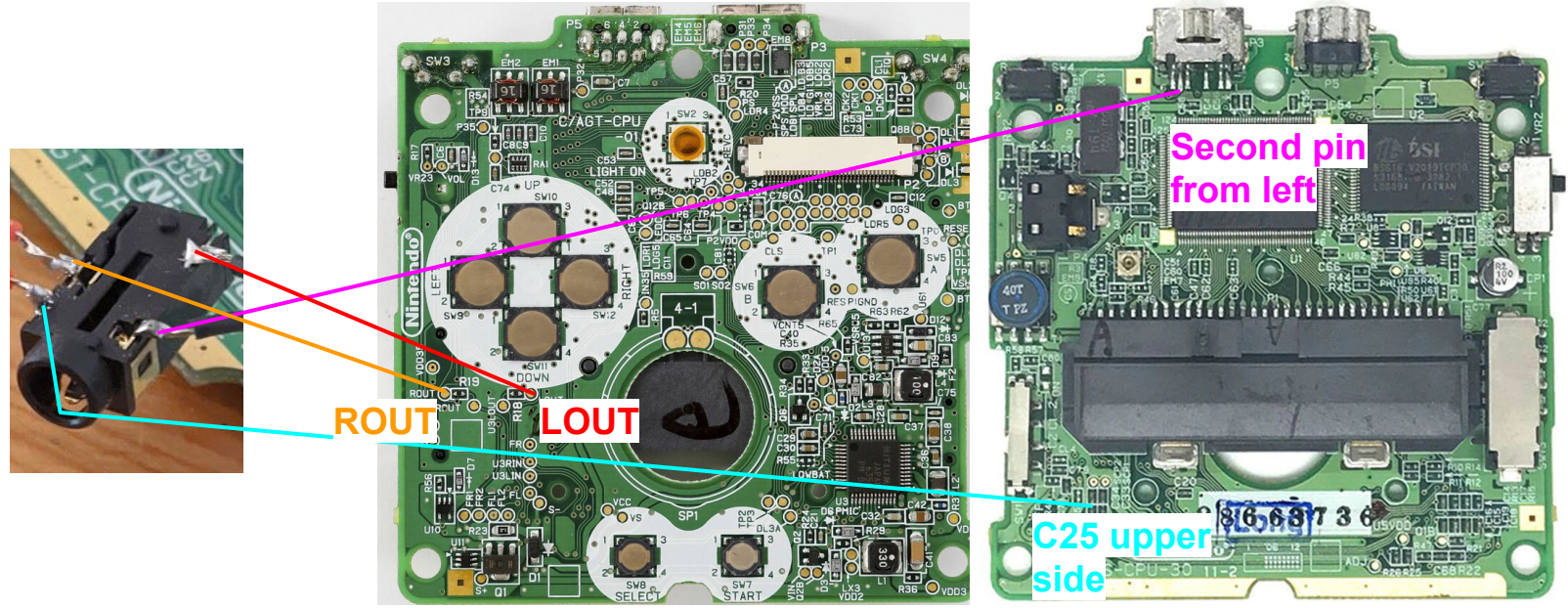




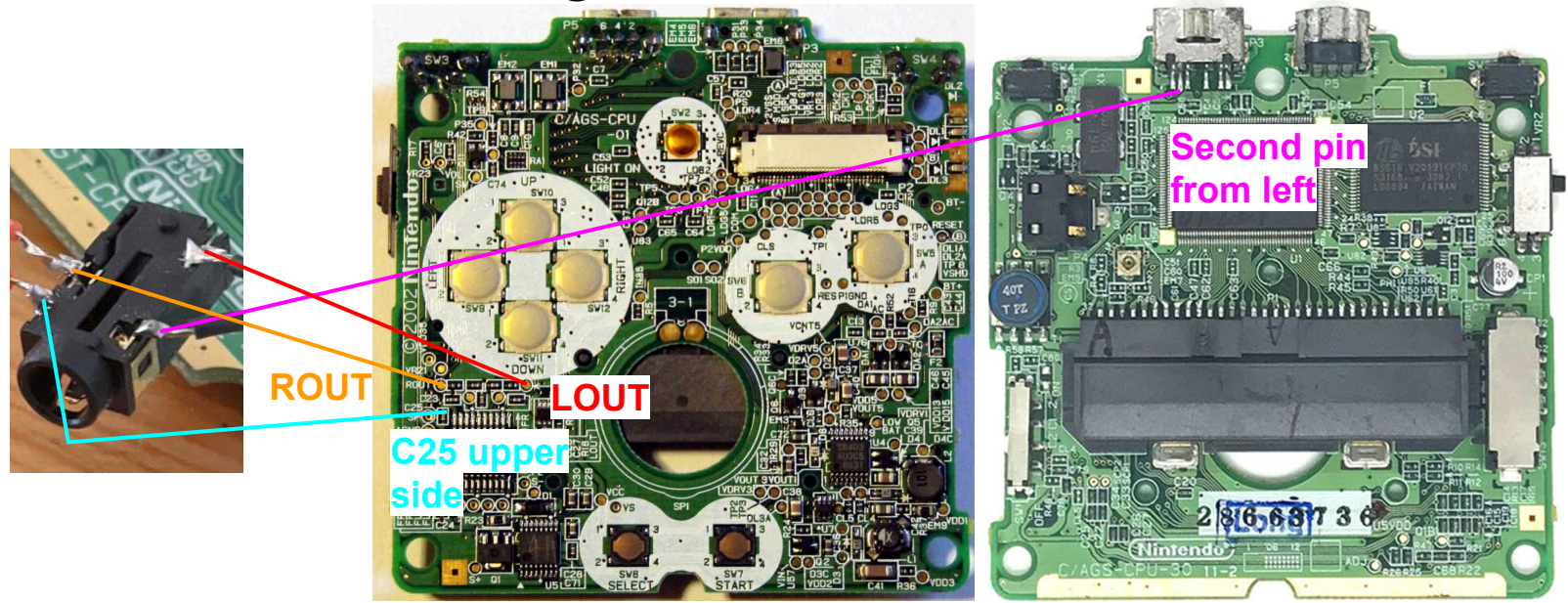
If you are adding a 3.5mm headphone jack, it will require some extensive wiring. I recommend using magnet wire or 28ga wire and be very mindful of wire routing. Wire diagram in next slide. You'll also need to glue the 3.5mm in place.

If you are not adding a headphone jack, simply add a plug to fill the bottom hole if you are not using a 3.5mm headphone jack. Recommendations for headphone jacks will follow in the coming weeks. Glue or tape in place.

Wiring Diagram using headphone: Digikey SJ2-35954A-SMT-TR



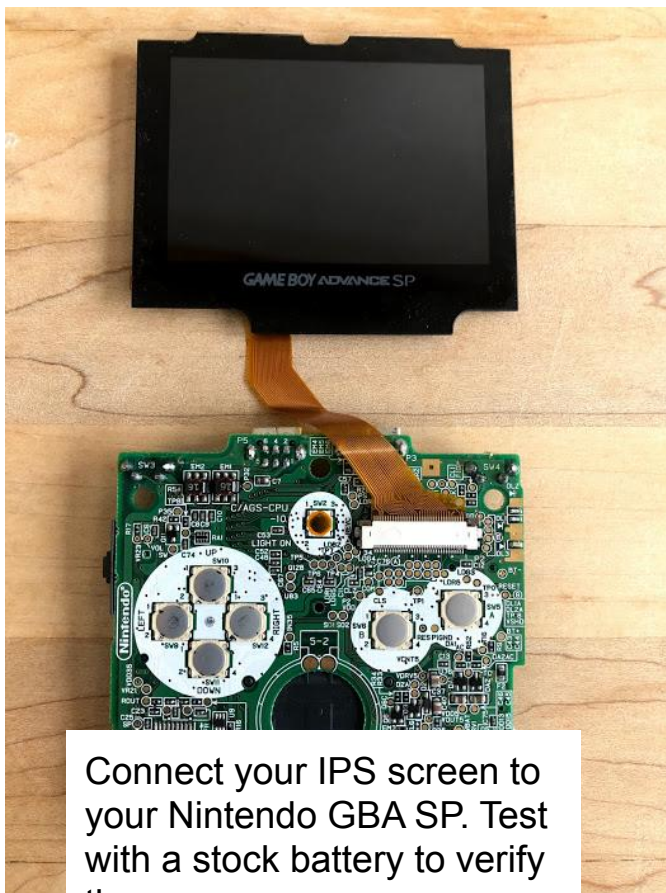
There is another version of the GBA-SP board, here is the alternative wiring for this version:



Depending on which backlit screen you are using, if you would like to adjust the brightness, solder in the wire per screen manufacturer's instructions. Funnyplaying.com has theirs on their site.

At right is an example wiring. After completion, I would recommend testing the headphone jack and/or Type C functionality before proceeding.





Connect your IPS screen to your Nintendo GBA SP. Test with a stock battery to verify the screen powers up.

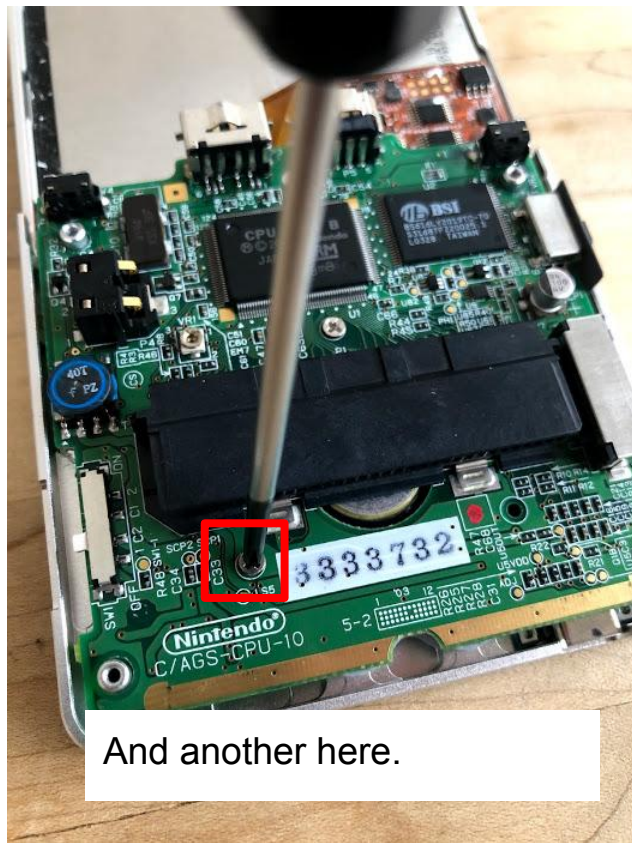


Carefully place the IPS screen/glass face down into the Boxy Pixel front housing



Roll the Nintendo PCB back down over the buttons. Take care with the flex cable. If you have extensive wiring, your assembly process may differ slightly.

Be mindful of where all your wires are routed so they do not get pinched between parts during assembly.



Now is a good time to test to see if your buttons move freely. If you have wiring installed, it can move the silicone parts and affect the movement.



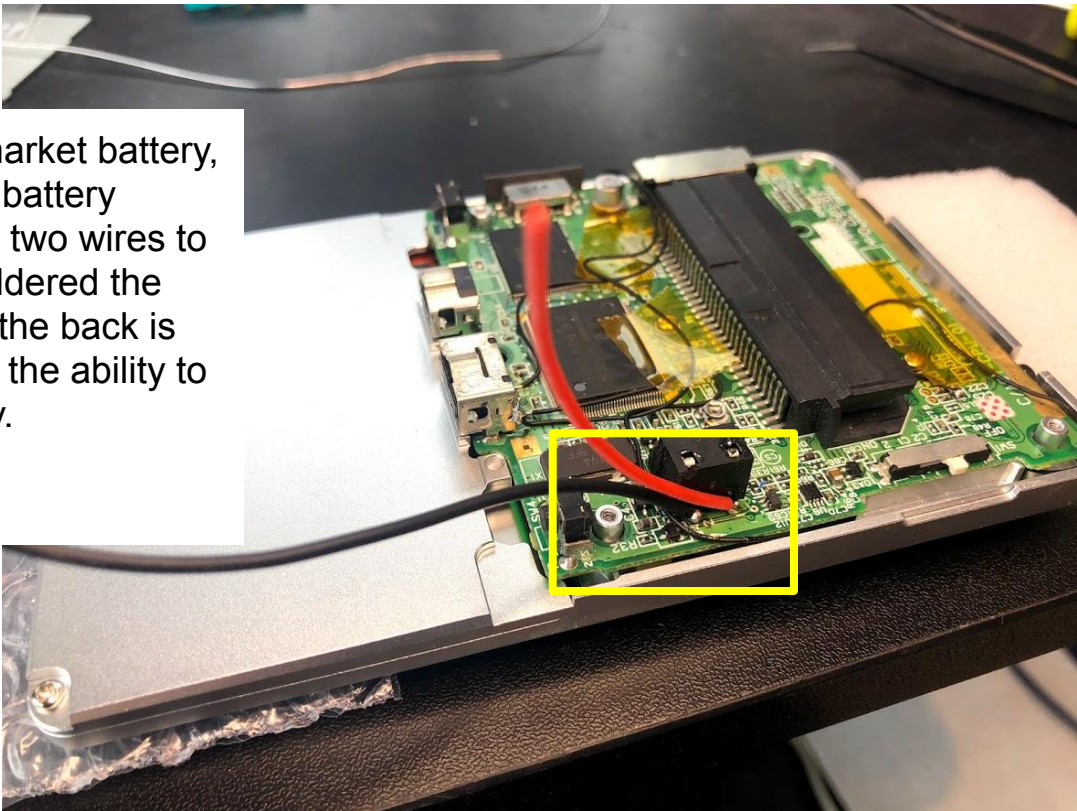
Slide the boxy pixel rear housing into position and start the two fasteners at the corners. Do not tighten yet. These are usually the pan head fasteners



Add the L and R plastic shoulder buttons and the metal posts. Use the parts from your donor advance SP.

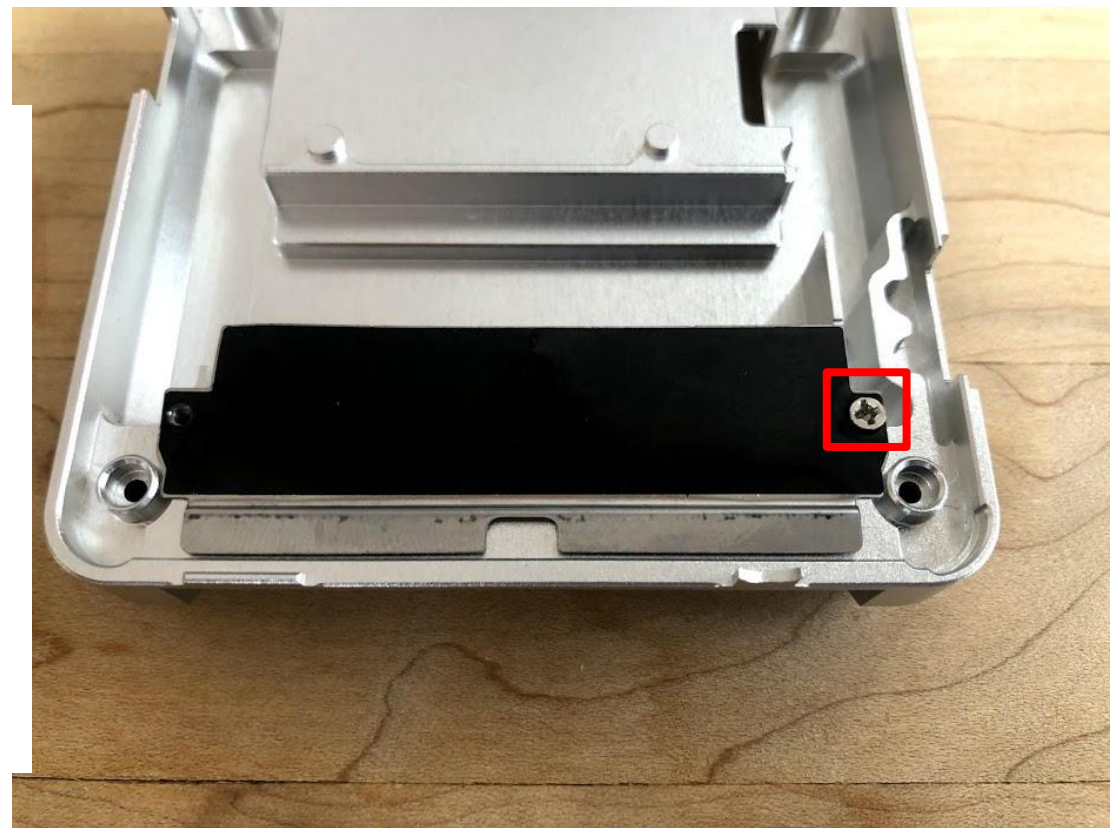


If you are using an aftermarket battery, you need to solder to the battery terminal. I have soldered two wires to the backside and then soldered the wires to the battery once the back is attached so I could retain the ability to go back to a stock battery.

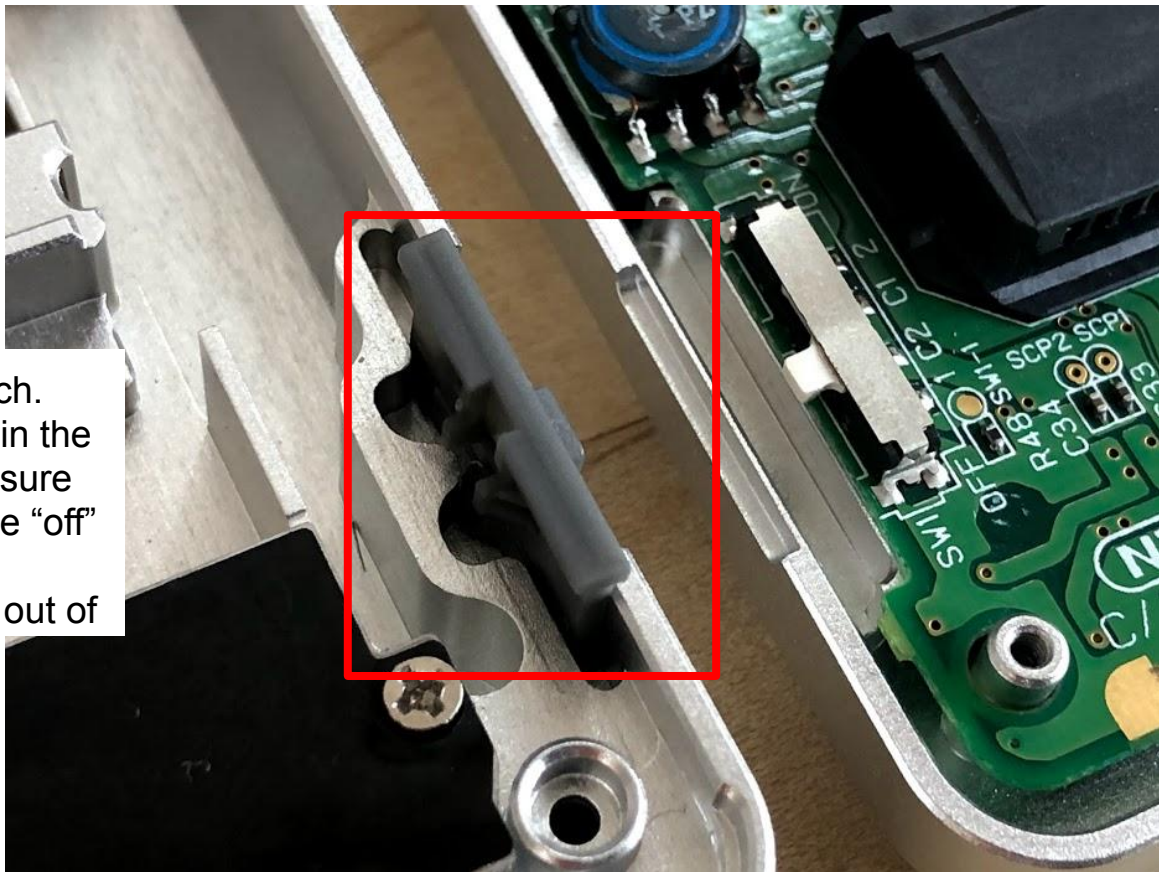


Place the cart guide into the Boxy Pixel rear housing as shown.

Use one fastener as shown The other is intentionally left out.



Add your plastic power switch. You should be able to put it in the Boxy Pixel rear housing. Ensure you line your switch up in the “off” position. Hold onto it during assembly so it doesn’t drop out of position.



Place the rear housing into position and secure with 4 fasteners using the rules outlined at the beginning of this assembly document. Be very mindful of these. Typically, the pan head fasteners are used, **HOWEVER in certain instances you may need to substitute a flat head if you feel the fastener getting tight.**



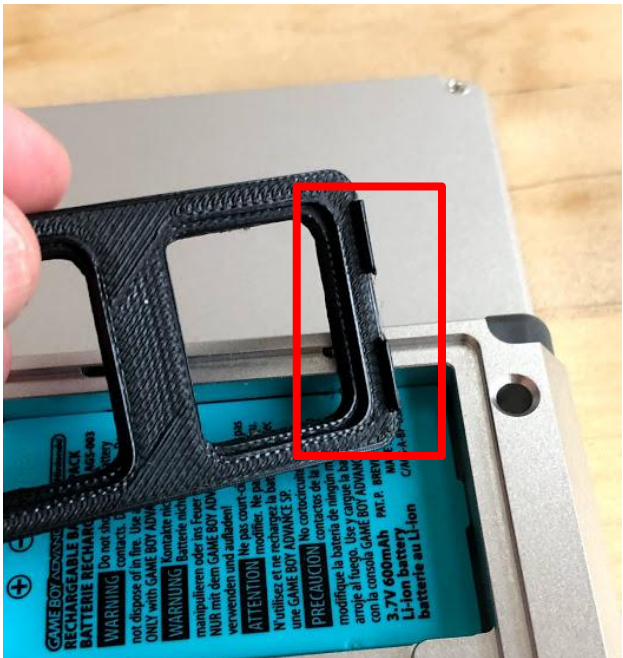


Now tighten the two top fasteners- **do not overtorque** or you risk stripping the heads or threads.

Add a battery and test the unit for functionality.

If soldering in your own battery, do this step now.



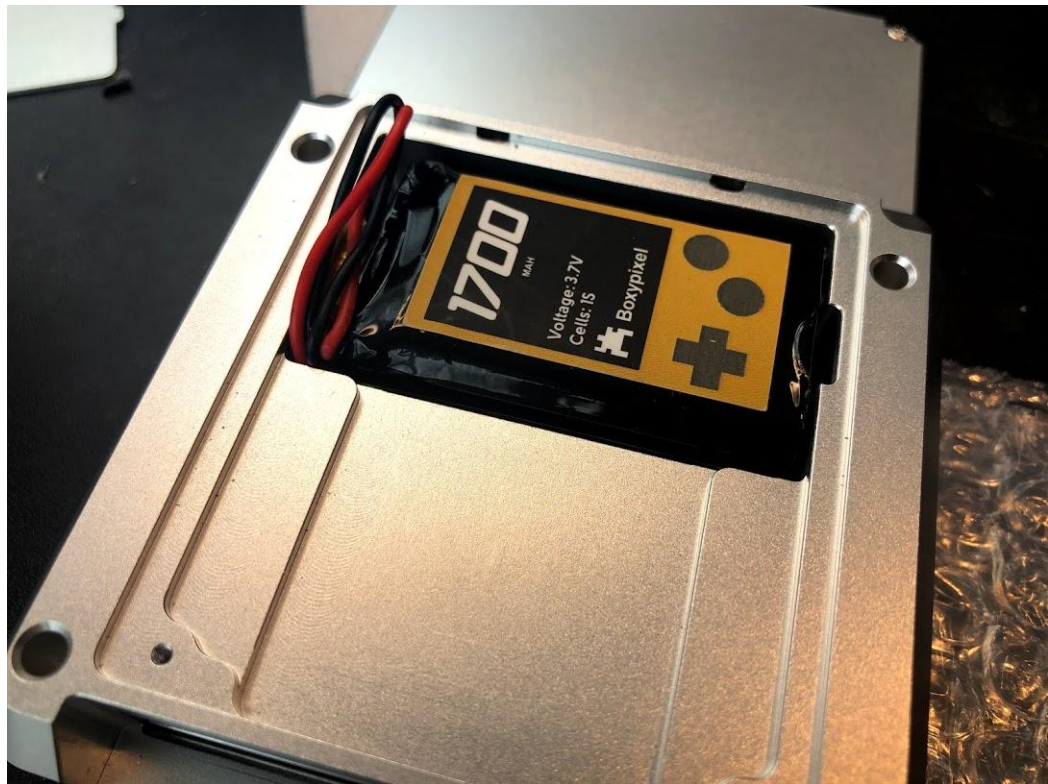


If you are using your stock sized battery, you may want to use our optional battery retainer. Notice the two protrusions. These wedge and push the battery toward the connector —



Place the 3d printed part in place. Ensure it's full down.

If installing a larger battery, manage the wires neatly.





Align the rear sheet metal cover.



Install and secure with two flathead fasteners. Alternatively, you can flip over and use the pan head screws.

Test and enjoy!

