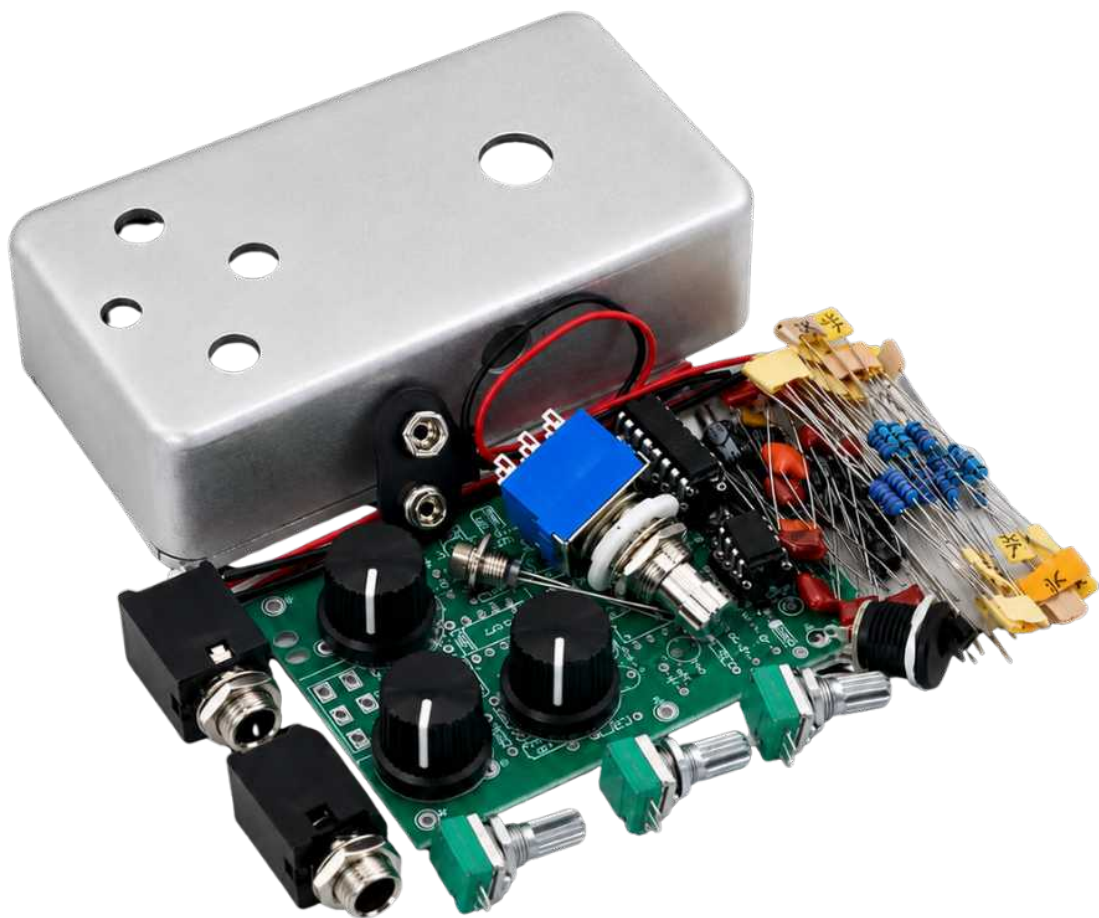


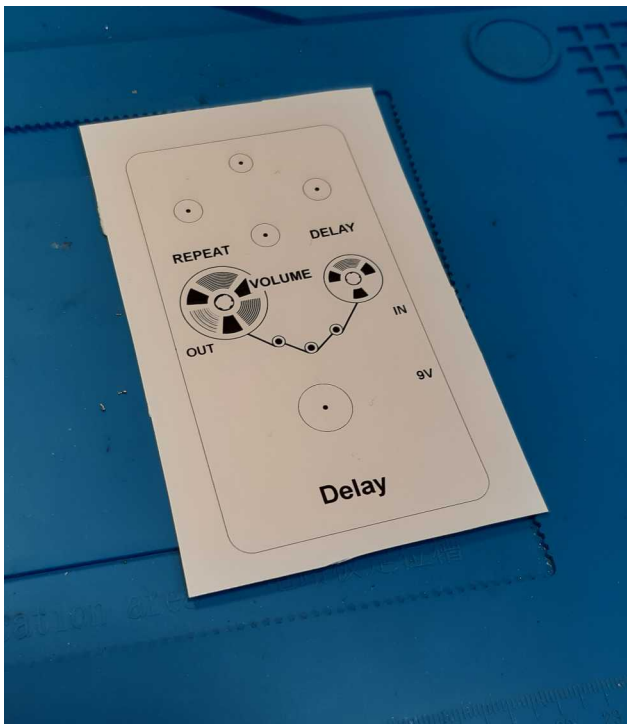
How to build the Digital Tape Delay Step-by-step



Step 1: Waterslide decal

Download and print the **Graphics-099-5460** document on a sheet of waterslide decal. Before applying the waterslide - spray the decal with a single thin coat of clear varnish (drying time 24h). This will make the decal easier to handle later.

Apply the waterslide decal to the box, then clear out air bubbles and water. Don't overdo it. The decal is quite forgiving. Let it dry for another 24 hours. Finally spray a single coat of clear varnish on the box to seal the decal.



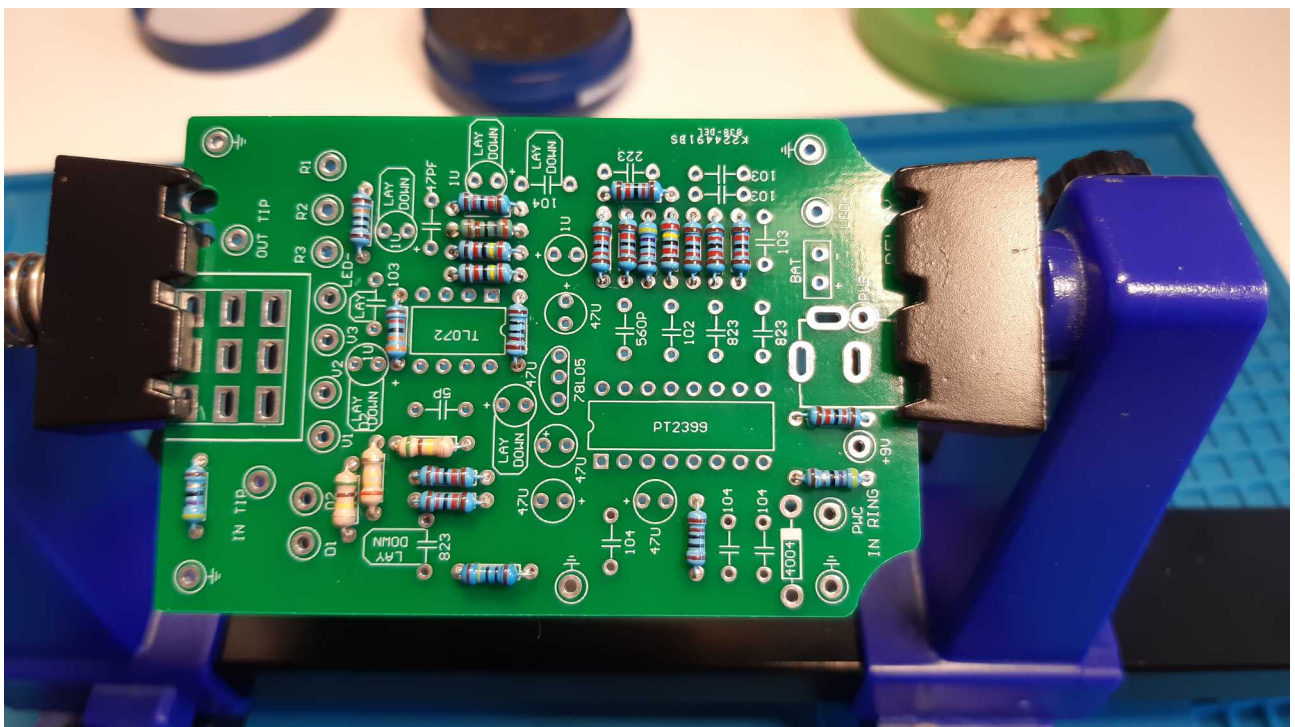
Step 2: Prepare for installation

Read the **Installation-Instructions-099-5460** document carefully. All nessesarry information can be found in this document.

Step 3: Resistors

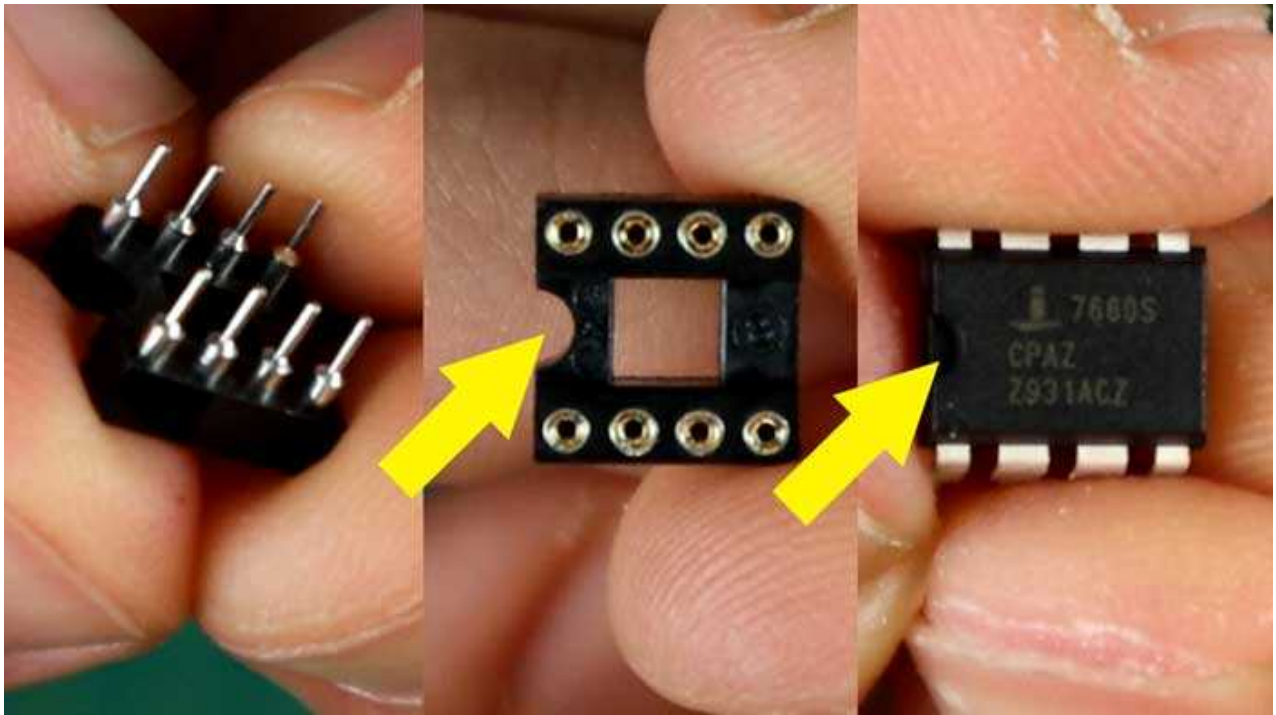
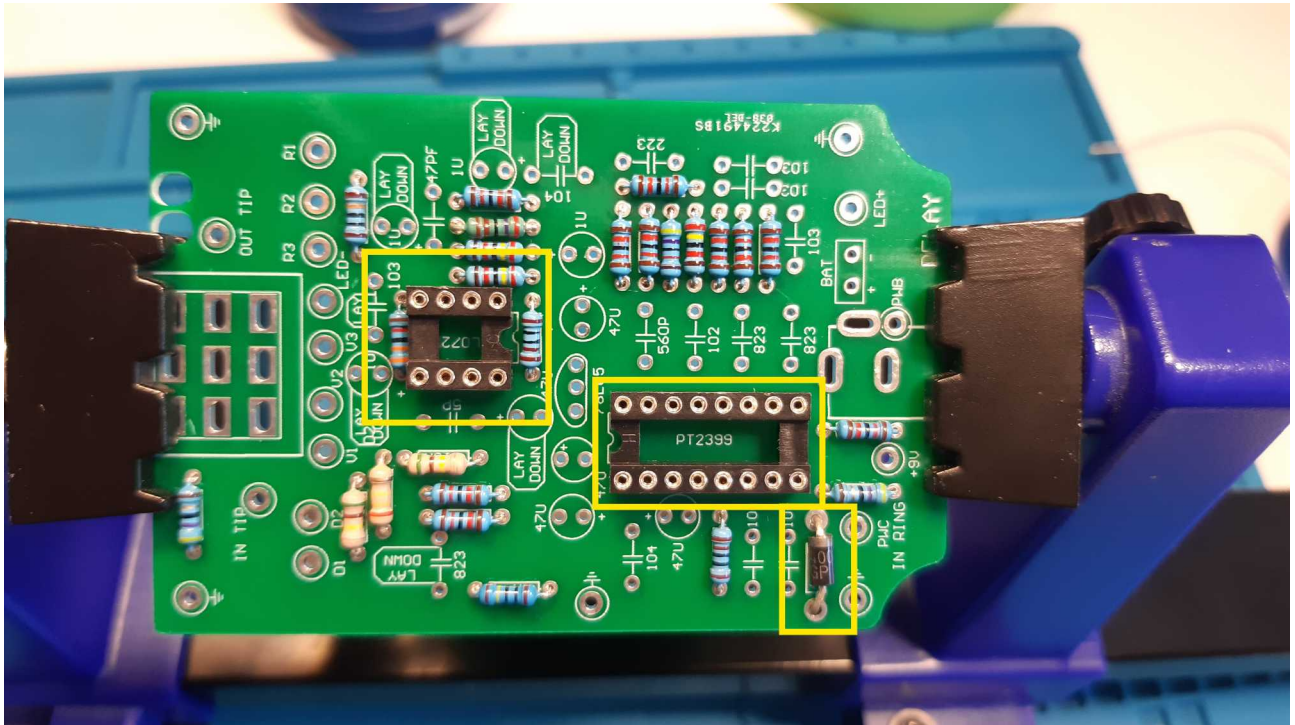
Solder all the resistors on the PCB. Be aware not to mix similar values up. (220K vs 22K or 4K7 vs 470K) Even though the resistors are labeled, it's a really good idea to check the values with a multimeter before soldering them on.

The PBC should look like this:



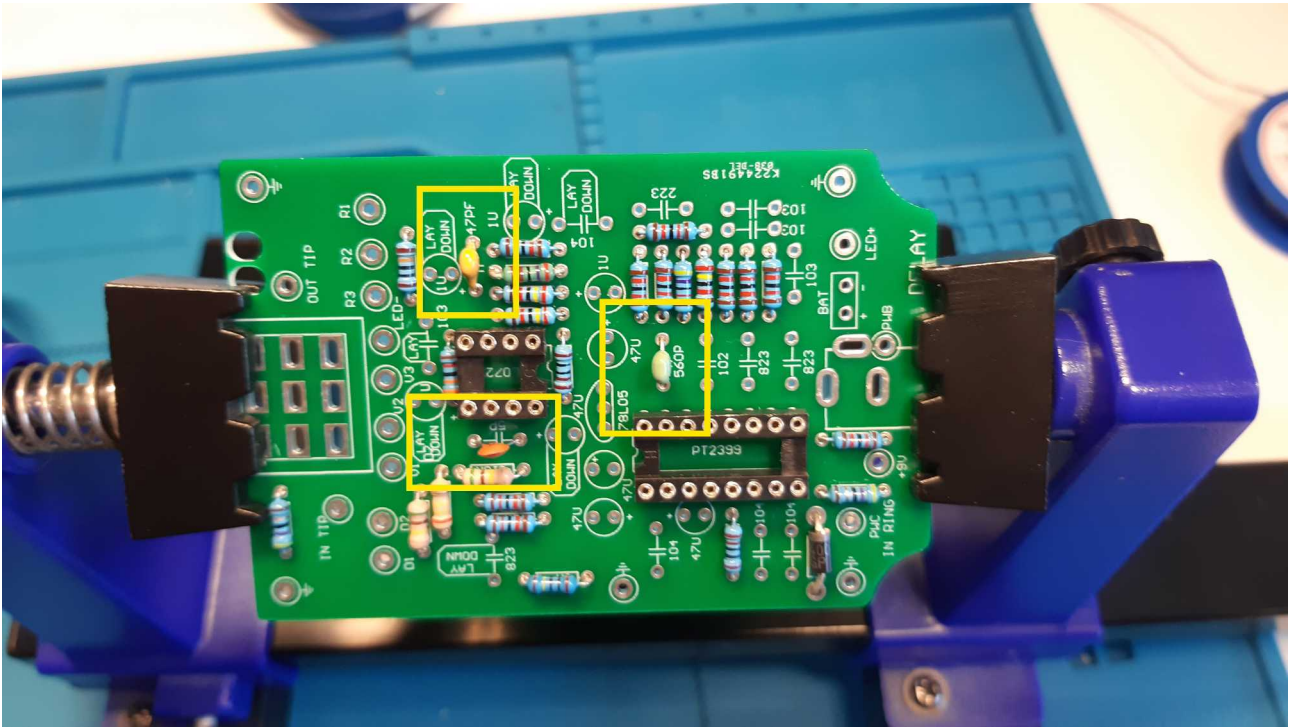
Step 4: Diode and Socket

Next solder the chip sockets and diode to the PCB. They are directional and will not work if they are facing opposite, so pay attention. You can insert the chip in the socket. But we suggest that you wait until the PCB is fully installed, to avoid any damage to the chip.

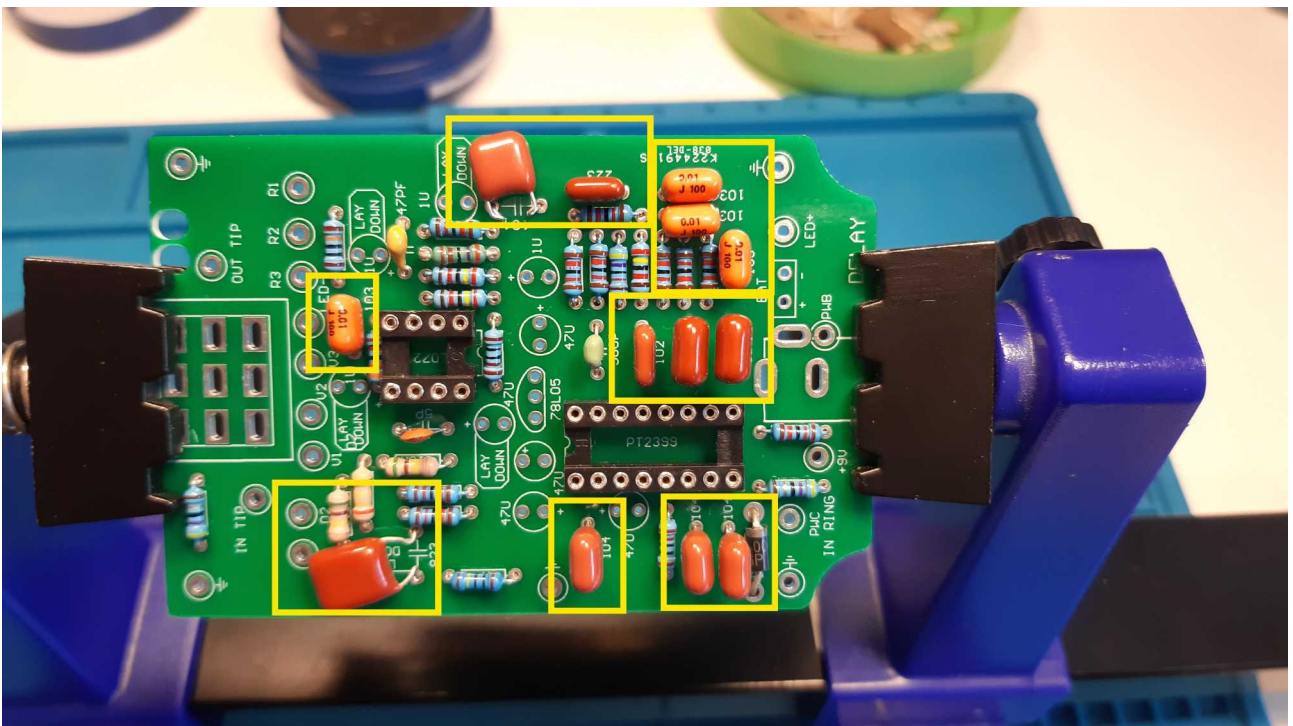


Step 5: Capacitors

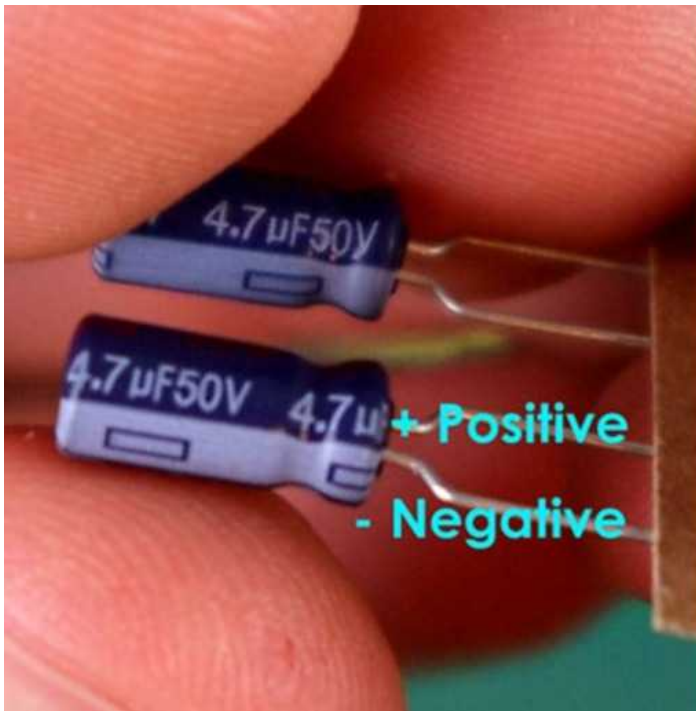
Start soldering the smallest non-directional capacitors to the PCB. You may need a magnifying glass to read the values. It should look like this:



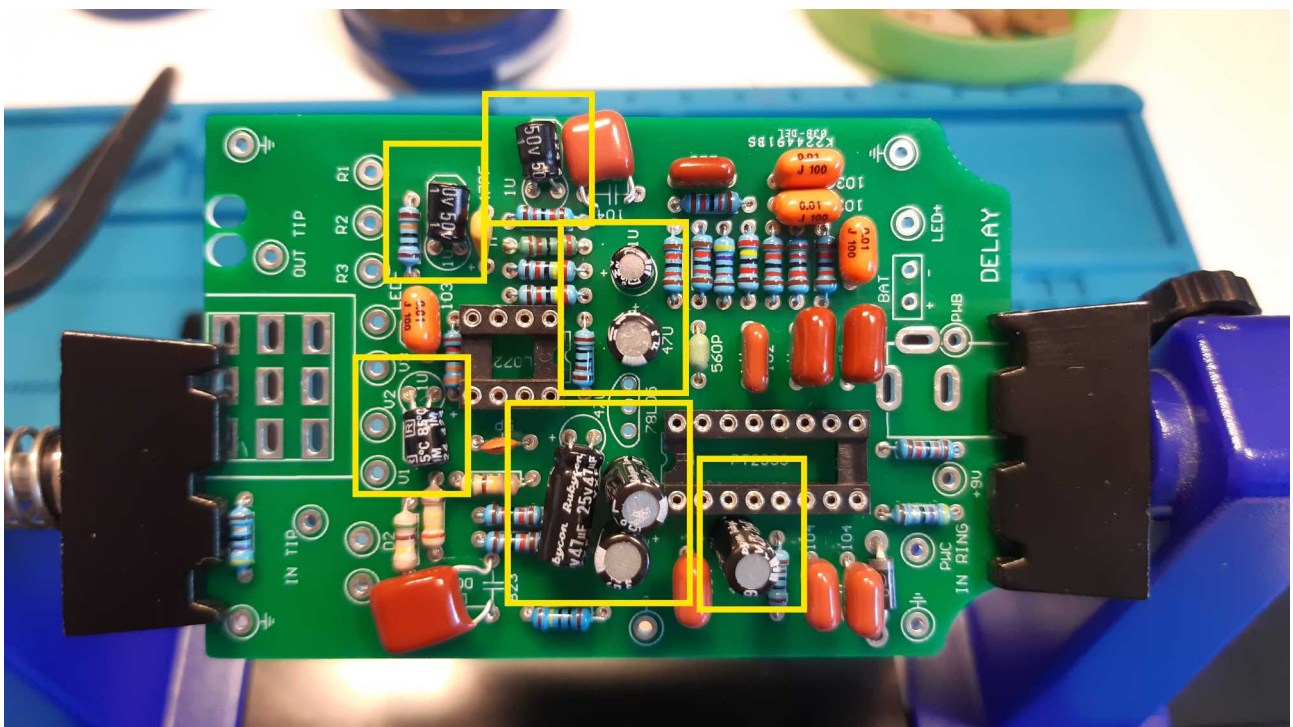
Then solder the bigger non-directional capacitors to the PBC. Some of the capacitors has to lay down as shown on the PCB. Here is a picture with the components installed:



Next install the two directional electrolytics capacitors. The below diagram shows what to look for:



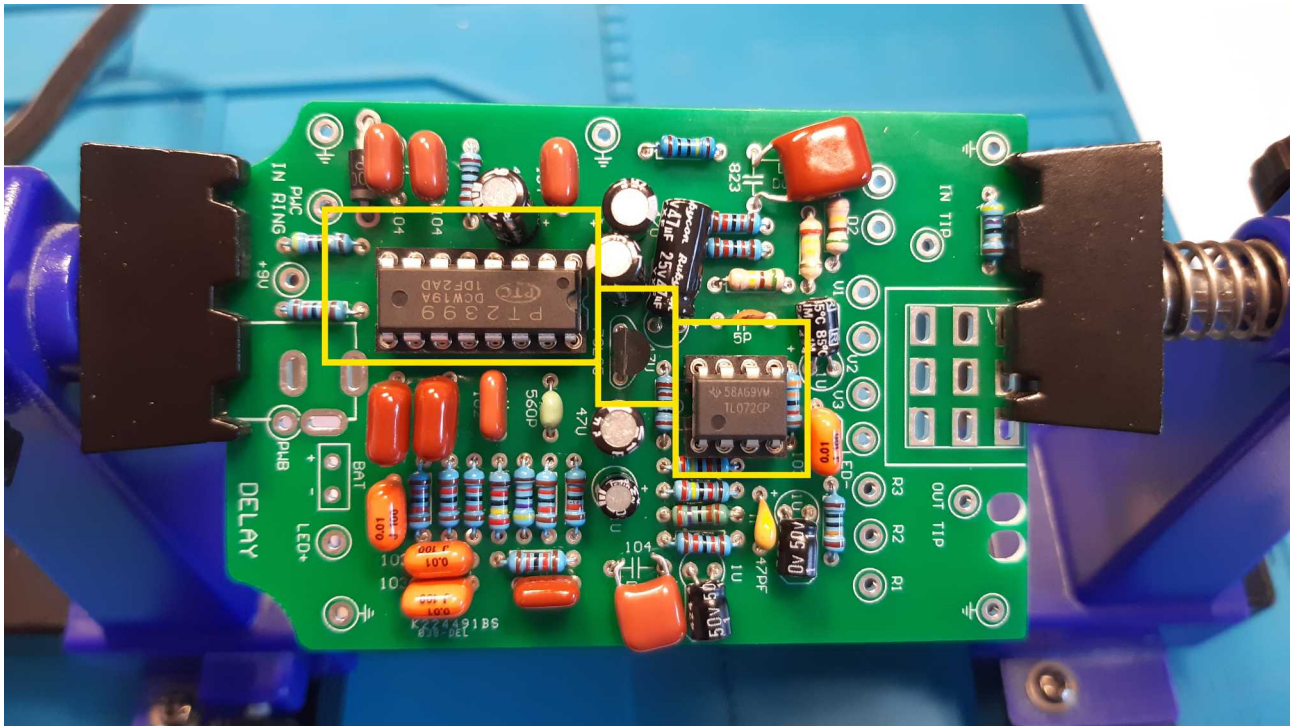
It should be obvious where to put the + side of the capacitors. Lay down some of the capacitors as shown at the PCB. This is what it should look like:



Step 6: IC and Chips

Solder the IC on the PCB. Install the chips into the chip-sockets. Be very careful. They must be able to slide into socket without any force. Now is the PCB ready for wiring and installation.

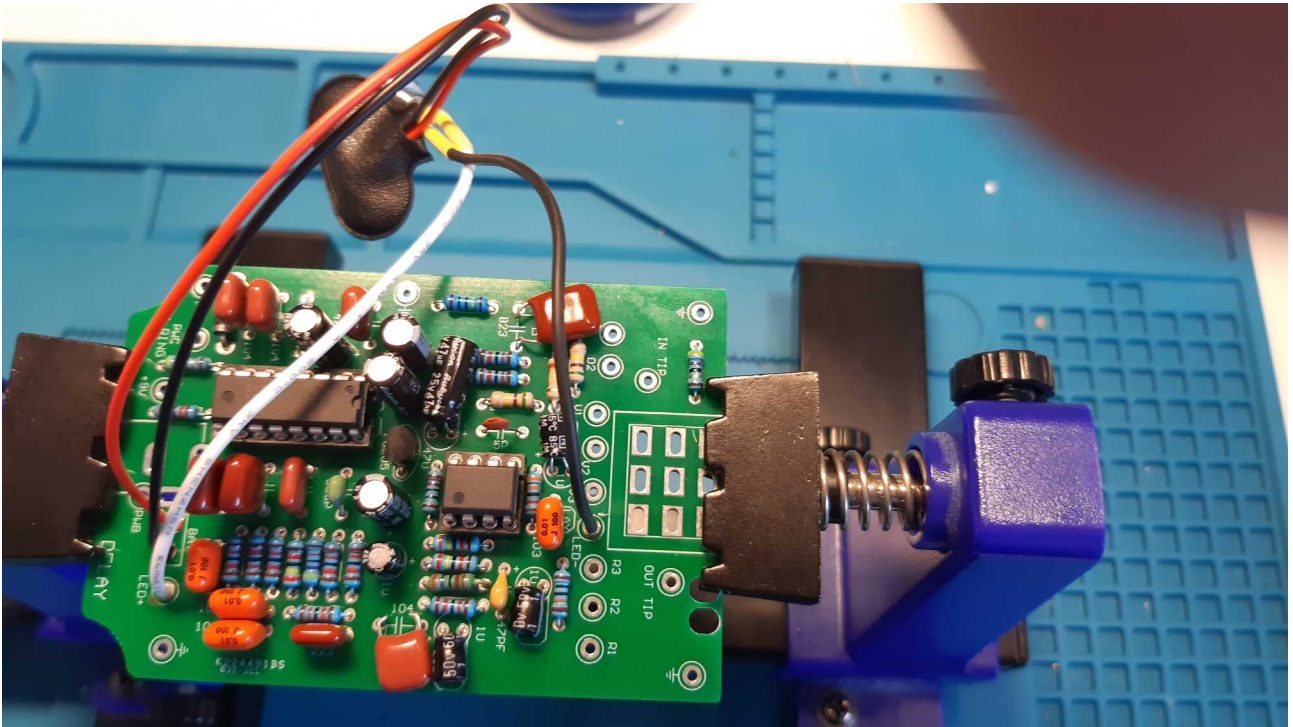
Here is a picture showing, what it should look like:



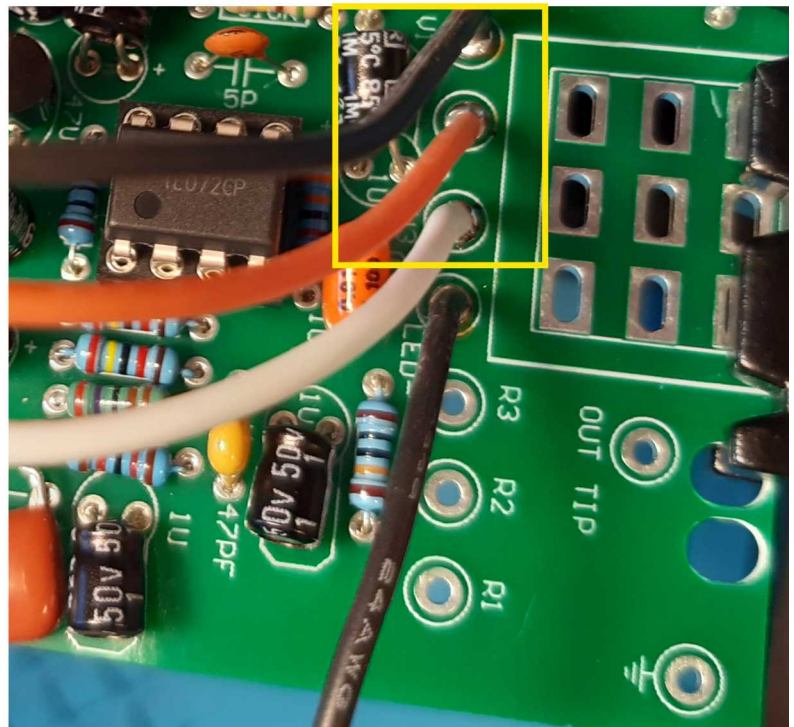
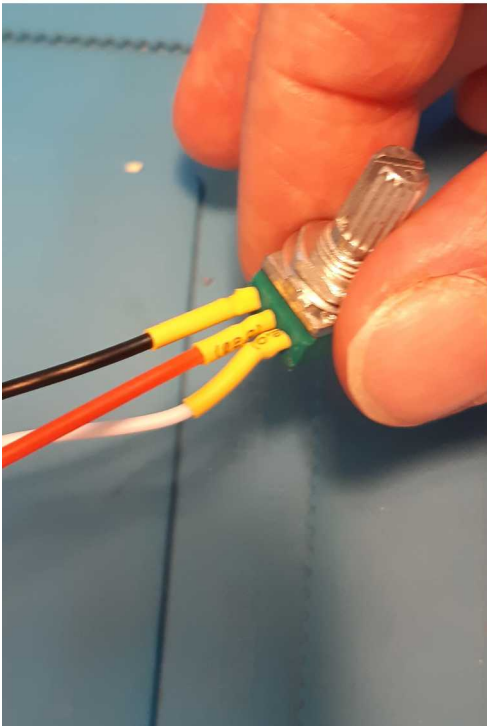
Step 7: Wiring

Next is the wiring between hardware parts and PCB. It should be straight forward, if you follow the **Installation-Instructions-099-5460** document.

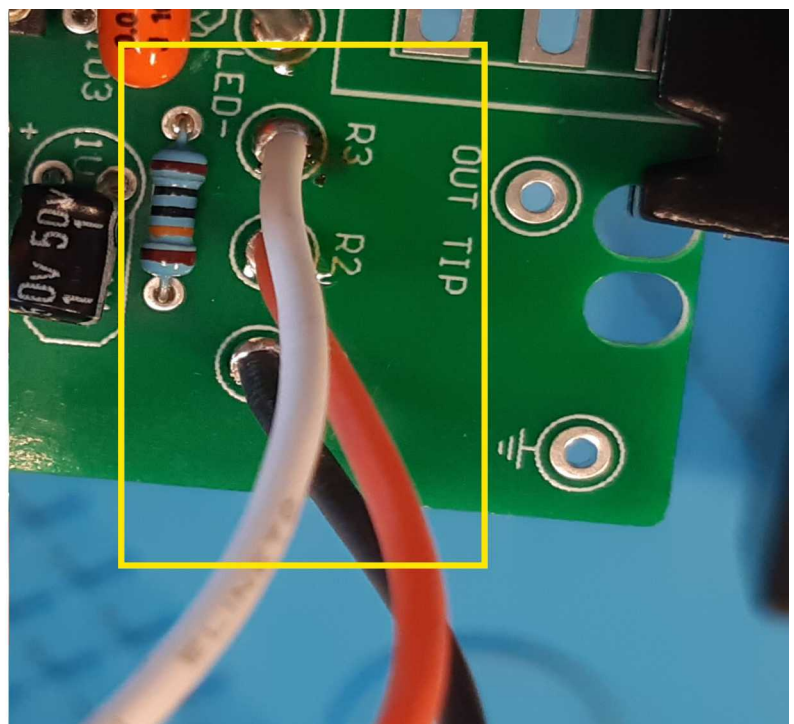
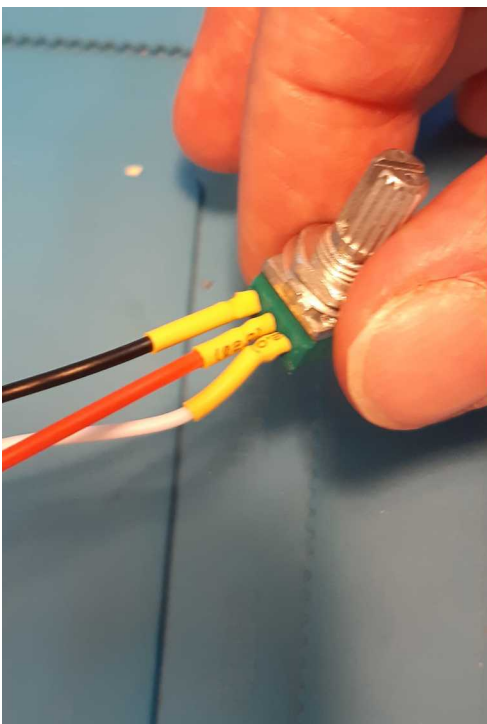
We highly remommed to use Heat shring tubing on every connection points to avoid any short circuits. Here is a picture of the **LED** and **Battery Snap**:



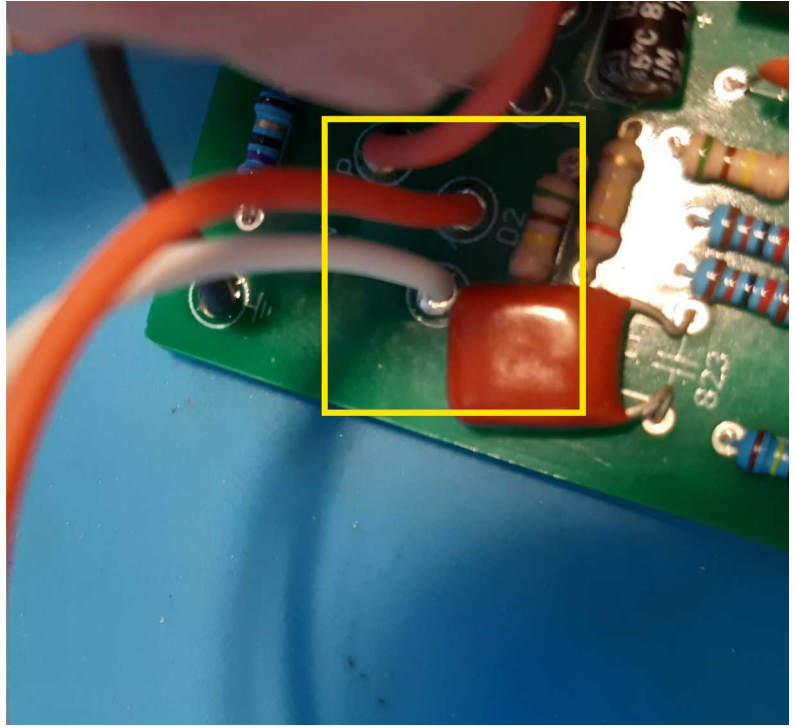
The **potmeters** should be wired like this:



B100K V (volume)

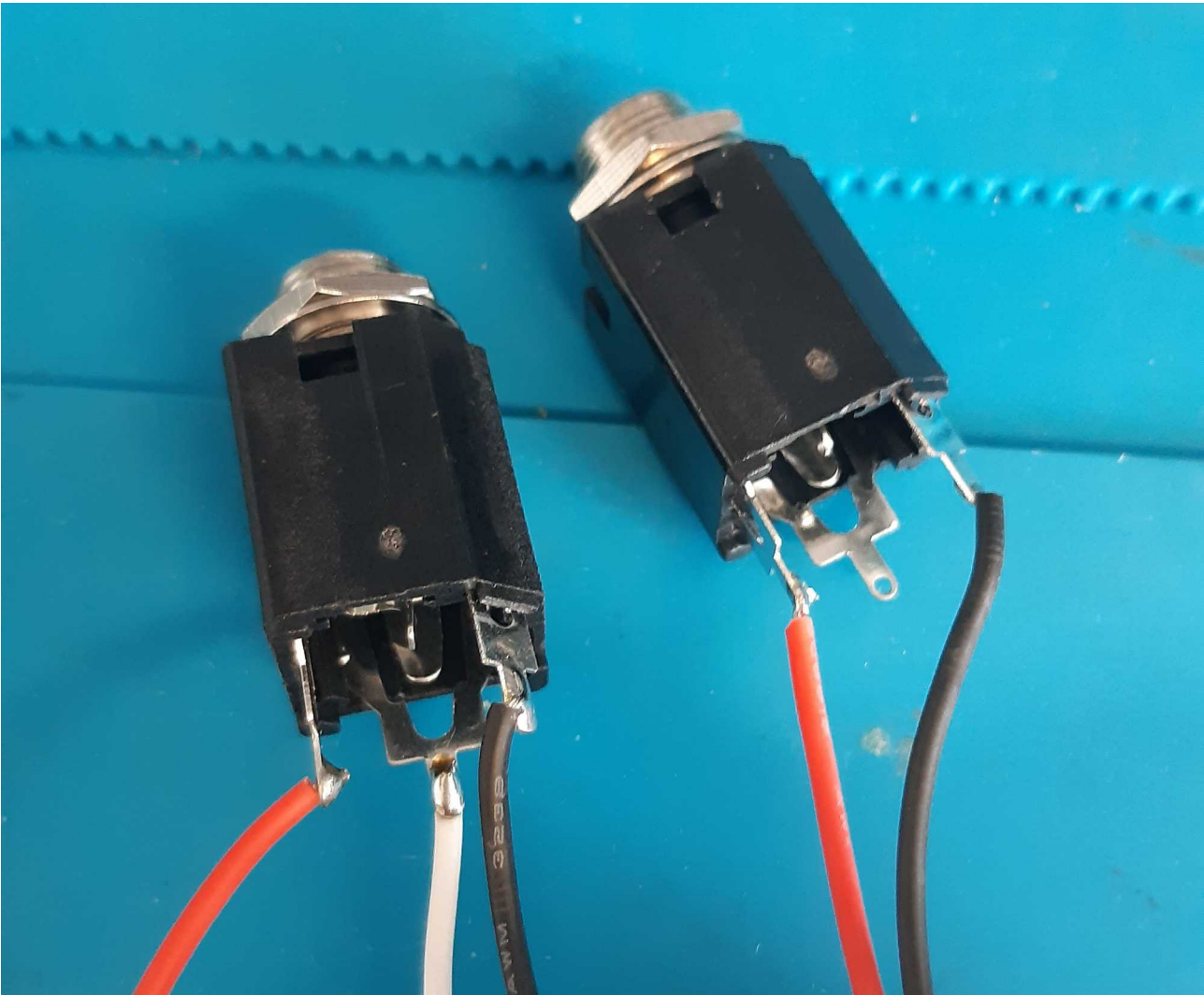


B20K R (repeat)



B50K D (delay)

The **input-** and **output-jack sockets** should be wire like this:



OUTPUT

INPUT

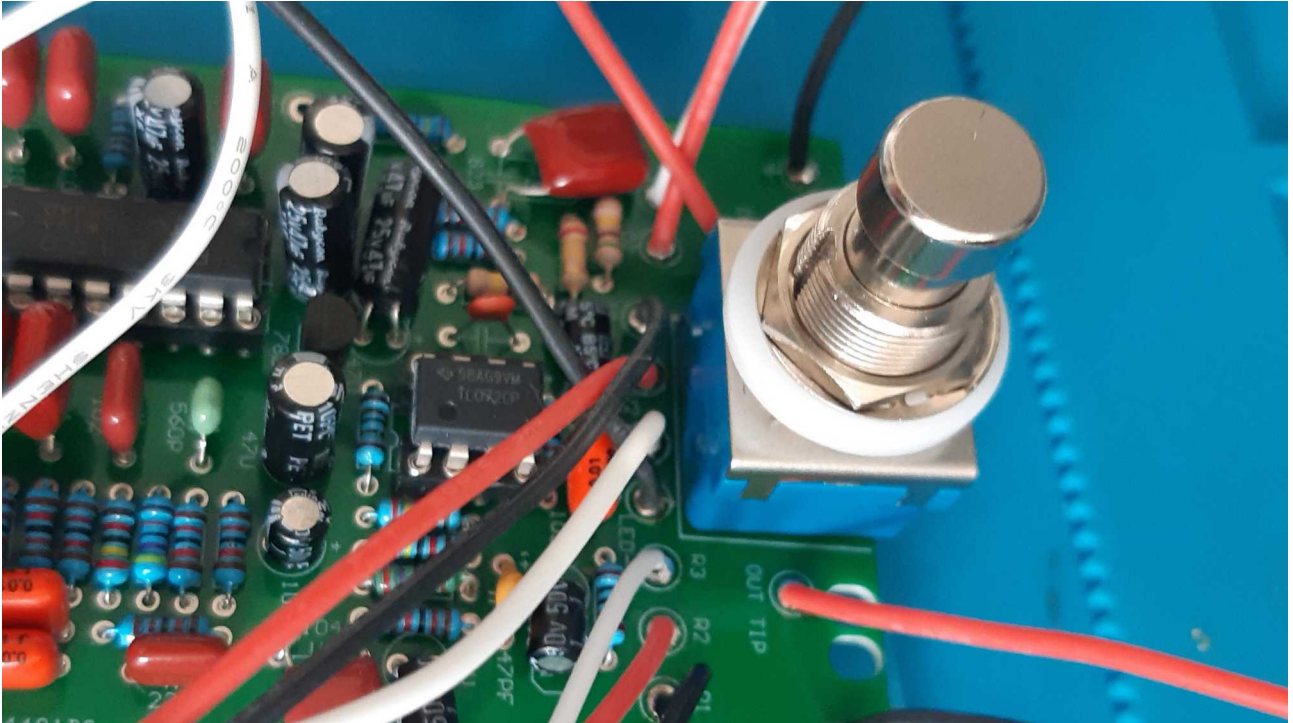
Output:

Jack	Wire	Pbc point
Tip	Red	OUT TIP
Ring		
Ground	Black	GND

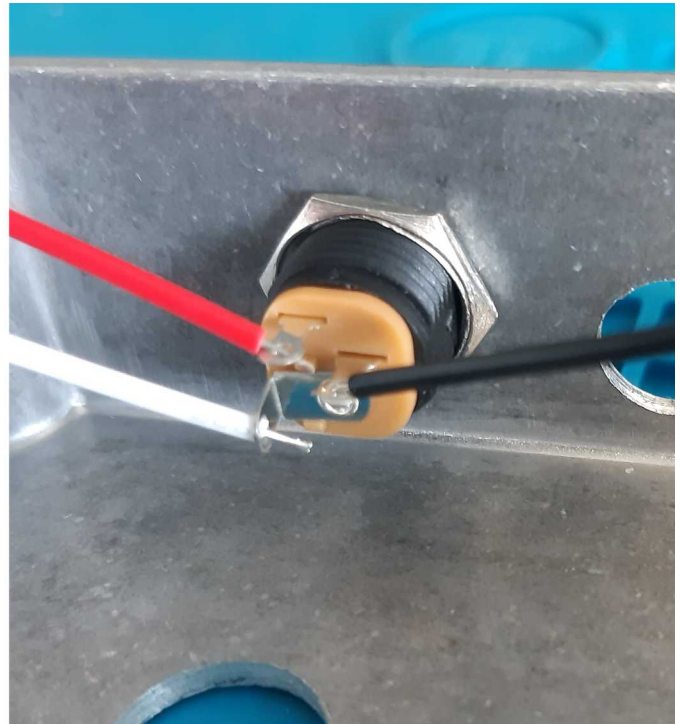
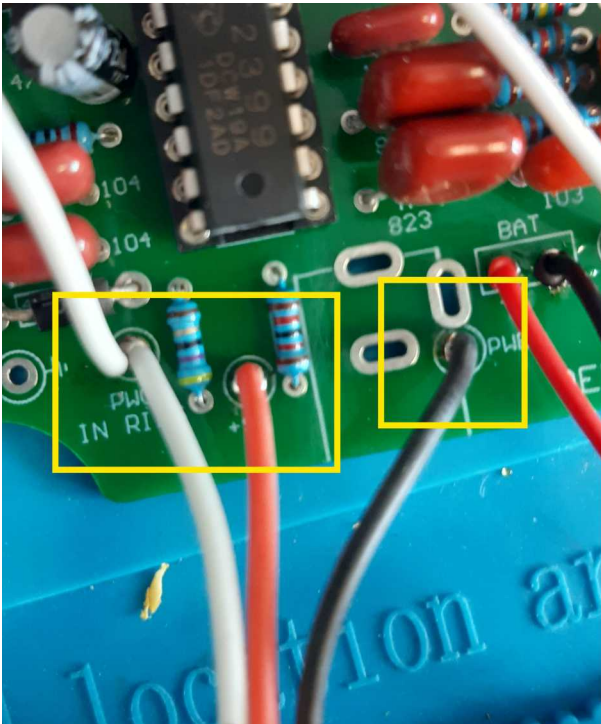
Input:

Jack	Wire	Pbc point
Tip	Red	IN TIP
Ring	White	IN RING
Ground	Black	GND

Now solder the **3PDT footswitch** to the PCB.
It can only fit one way so it should be easy. Be sure to solder it in a nice tight and straight position as it will hold the rest of the PCB in place in the enclosure.



You have to install the **power socket** to the enclosure before wiring. You can not do this part the other way around. It should look like this:



Power socket:

Wire	Pbc point
Red	9V
White	PWC
Black	PWB

Step 8: Quick power-test and Mounting

Before you hook everything up, try a quick power test by connecting the battery and a cable to the output jack (the cable doesn't need to be plugged in your amp yet).

If both the output cable and battery are connected, the LED should immediately light up or after pressing the footswitch once.

If the LED lights up, congratulations! At least it means power is flowing through your pedal. Unplug the battery and connect an external power source to the pedal if you have one. If your power jack is wired up properly, you should also see the LED light up.

If these quick power tests work, you can move on to testing your pedal out.

Complete the build

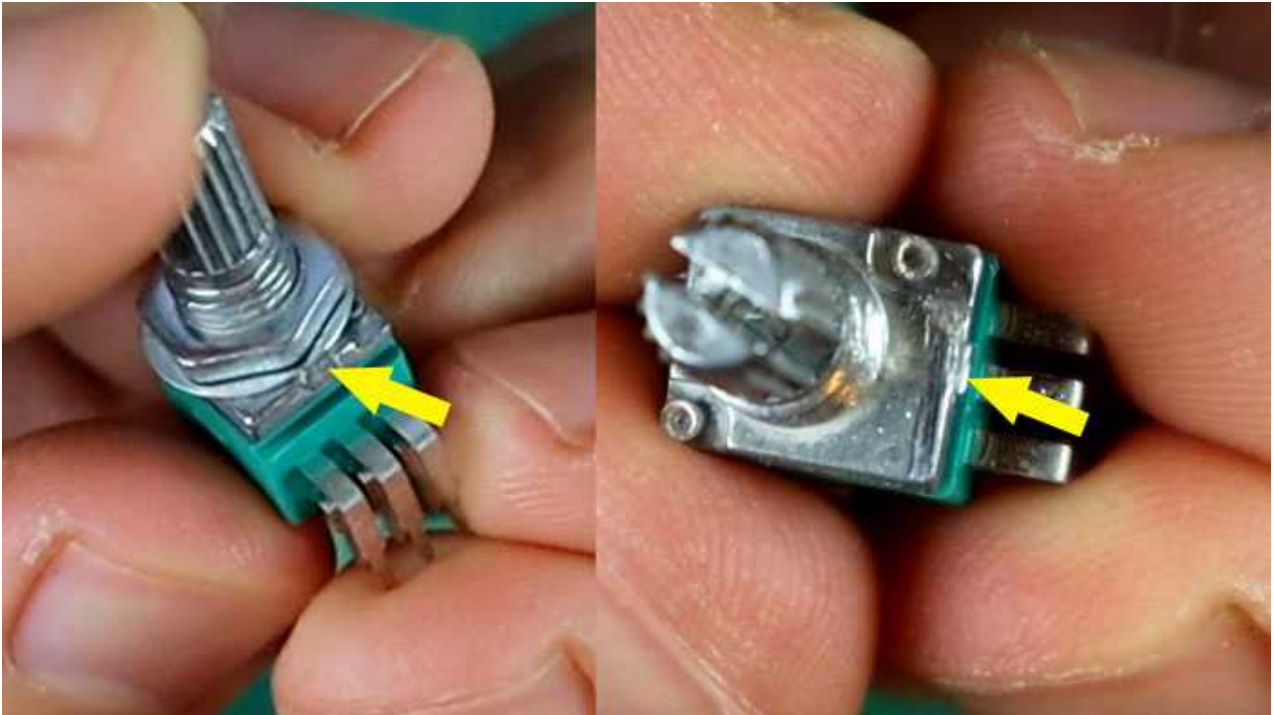
If you test out your pedal and everything works, congratulations!

It's rare for a DIY pedal to work perfectly on the very first attempt, so well done if you actually get a signal and the effect works as it should. You can finish your pedal off by mounting all the parts, tightening all of the nuts, attaching the backplate, put on the rubber feets, then add the knobs.

Step 9: Installation in the enclosure

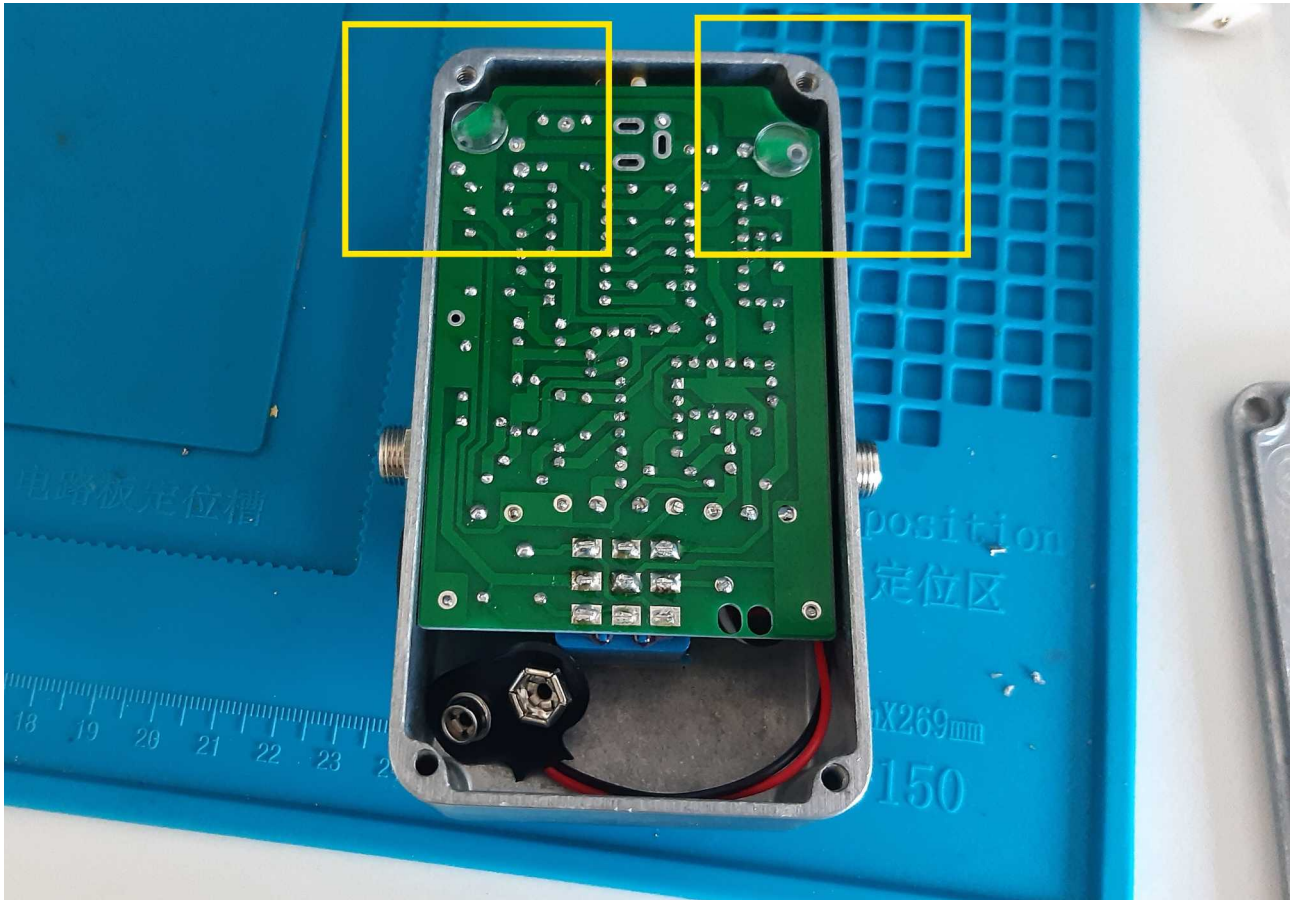
Its time for the final installation in the enclosure. The wiring is a bit messy, so be patient and take the time to adjust all the hardware before mounting them. You also need to make sure that the PCB does not touch the enclosure which can cause short circuits.

Before you mount your potentiometers, there's a little positioning nub you need to file or grind off. These nubs prevent the potentiometers from sitting flush against the pedal enclosure. So if you don't file them off, you'll end up with crooked knobs.



TIP: Another tip is to drill the jack socket holes with a 11mm drill. The jack sockets will fit better and give more space inside the box.

This picture shows, how self-adhesive rubber feet have been attached to protect against short circuits from the lid of the box.



Troubleshooting Problems With Your Kit

If you followed the instructions in this guide perfectly, you should have avoided a lot of issues other people experienced due to incorrect wiring. It can be really frustrating to plug in a DIY pedal and it not work properly (or at all). So if your pedal doesn't work straight away, don't panic or get frustrated. You will solve the issues. It will just take some time to locate the problem.

Here is a step-by-step list of what we recommend to try and find problems with your pedal:

1. Make sure the cables are plugged in the correct way and your amp and guitar are properly connected with appropriate volume levels (this might seem obvious, but this is often the cause of problems)
2. Check the pedal's power is turned on (or battery connected)
3. Look through your pedal's wiring and compare them to the diagrams in this guide
4. Look for any possible shorts or bridges between solder joints
5. Check voltage and continuity throughout your circuit using a multimeter
6. Build an audio probe and use it to test your entire circuit one component at a time

Here are some things you can check with your multimeter to try and find any problems:

- Voltage level of battery used
- Voltage throughout your circuit
- Continuity between all ground connections

Here are some other tips based on the type of problem you're having:

- If you get no signal at all, check the wiring on your input and output jacks. The signal isn't reaching the output jack, so find where the connection fails
- If you're getting a loud humming sound but no signal (pedal on or off), the wiring on the input/output jack may be reversed (this was the problem I encountered)

Almost all issues in general with building pedals comes down to problems with wiring something incorrectly or bad solder joints. Focus on those areas to identify the problem.