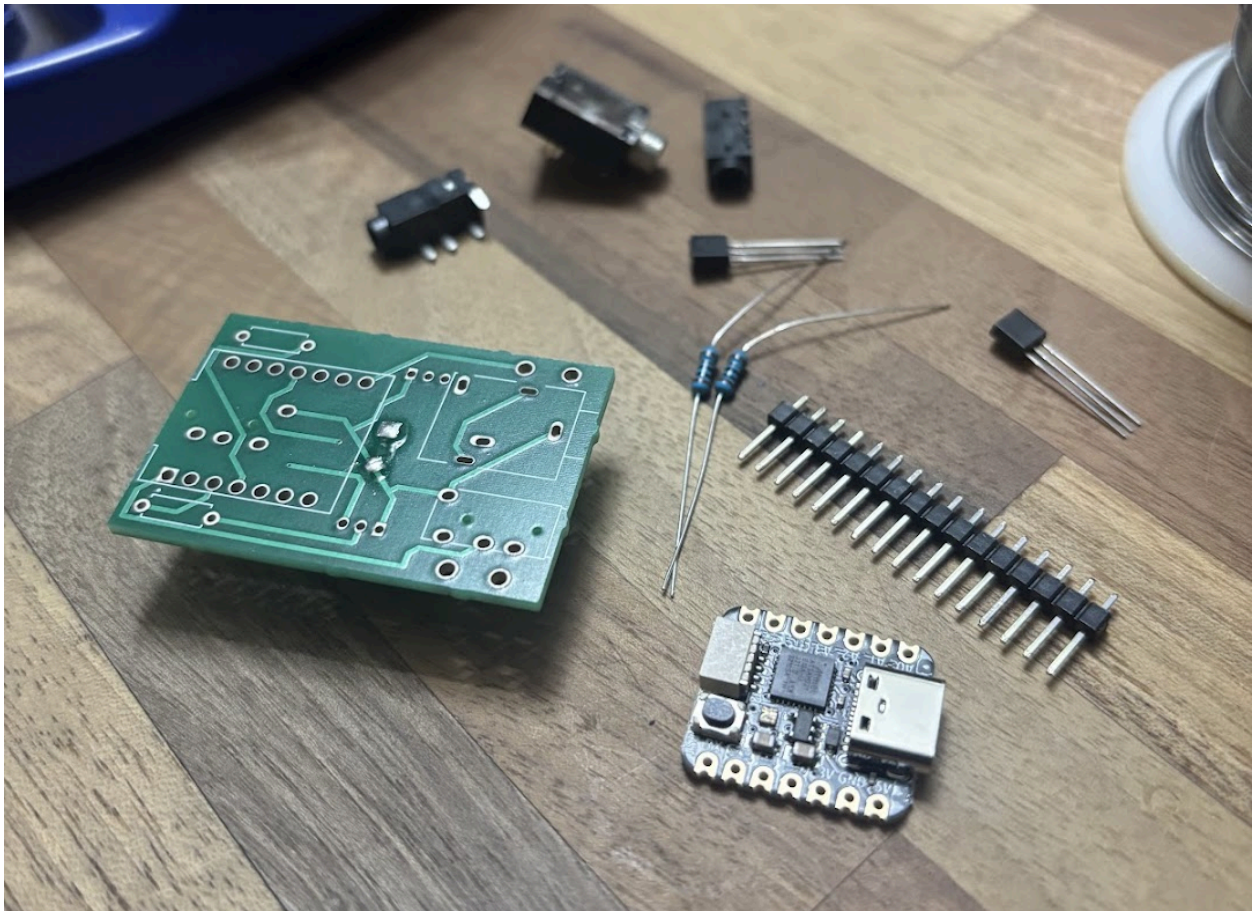
Assembly Instructions for Advanced Adapter DIY Kit purchased from www.vailadapter.com

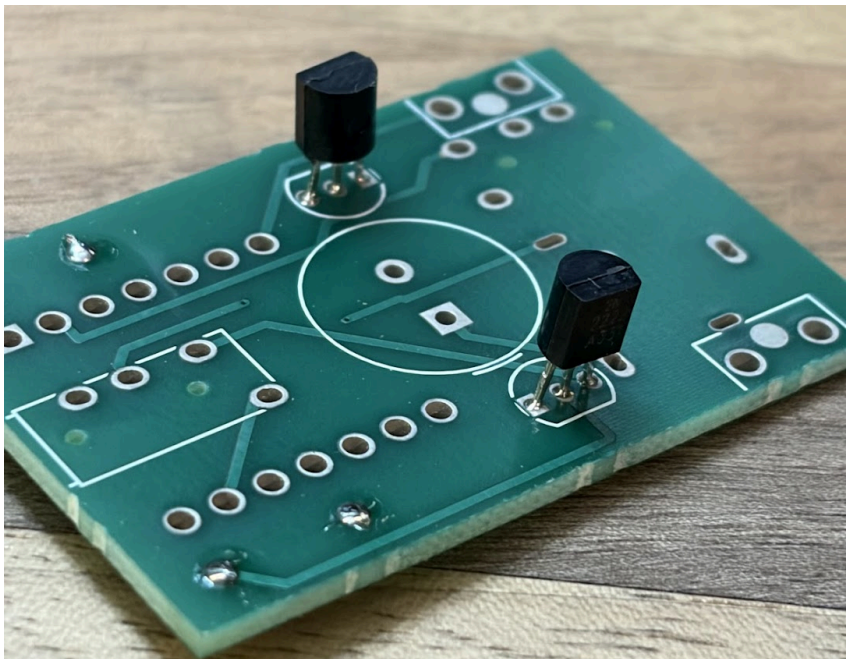
Updated:10/3/2025

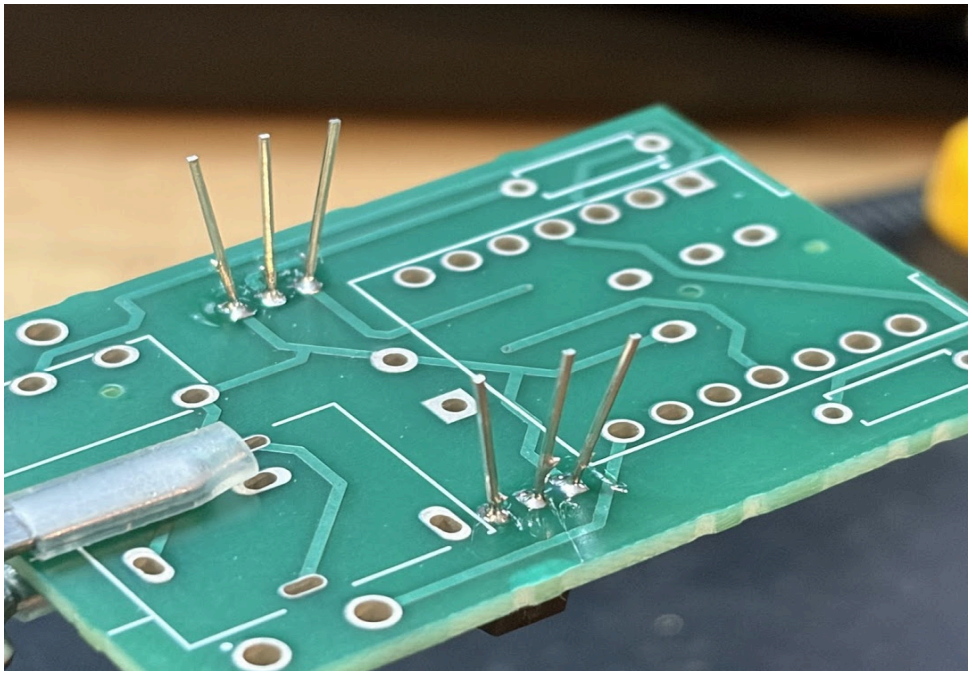
You should have the parts listed below:

1 3d printed case and case lid
1 arduino preflashed with Vail firmware
1 Advanced Vail Adapter PCB
1 buzzer speaker
1 switching aux jack
2 standard aux jacks
2 headers for the arduino
2 Transistors
2 Resistors
2 screw terminal PCB mounts

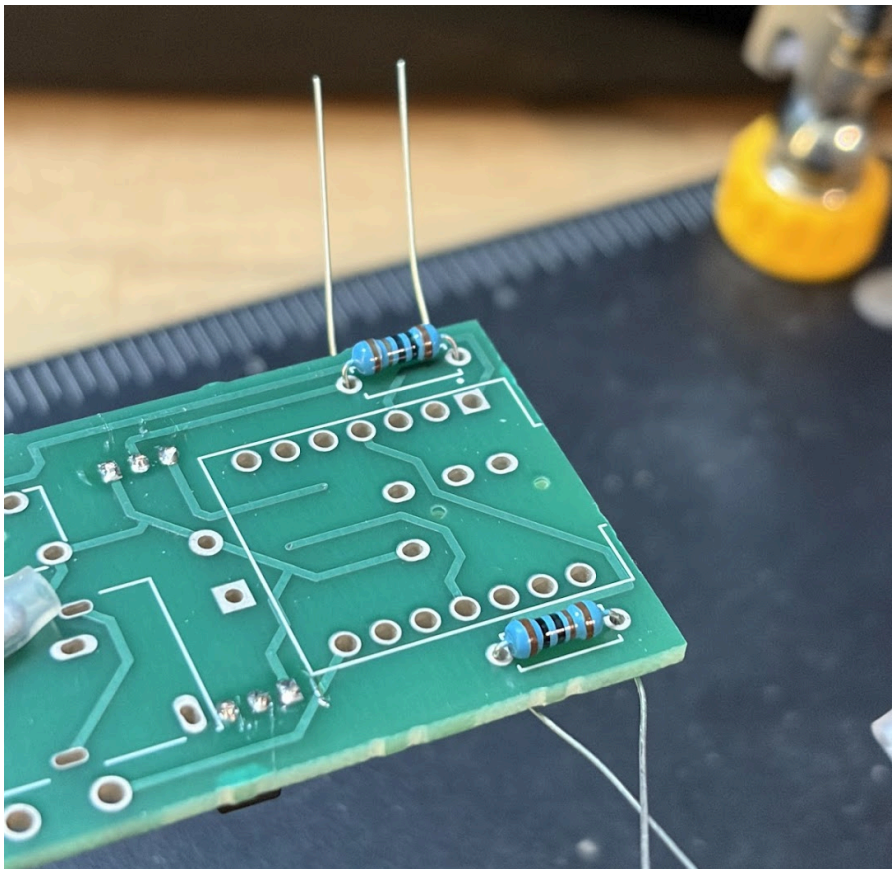


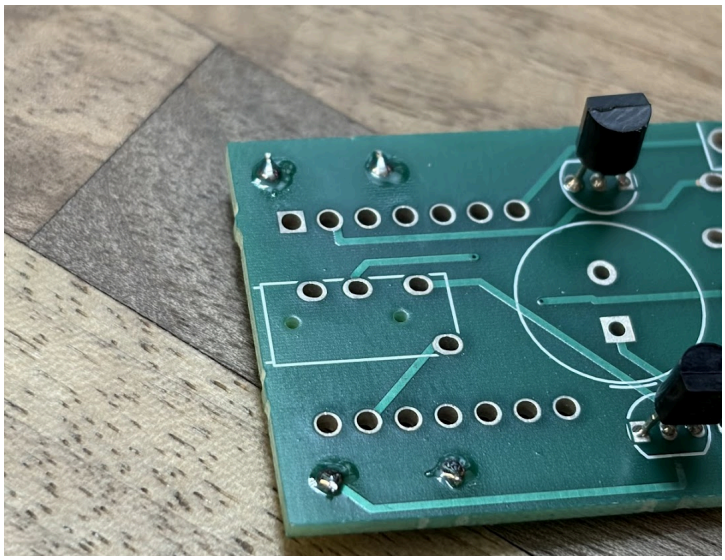
Start by soldering on the three leg transistors. Push them on, aligned at the correct orientation with the shape of the transistor matching the printing on the PCB. Do not push it all the way down flush with the PCB. It should be suspended up a little like the photos below.



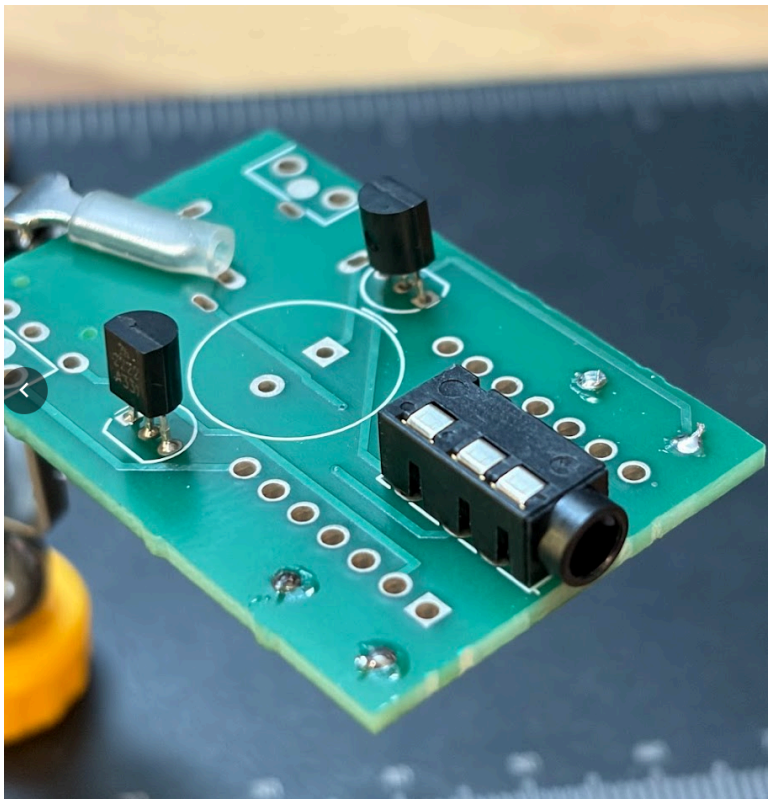


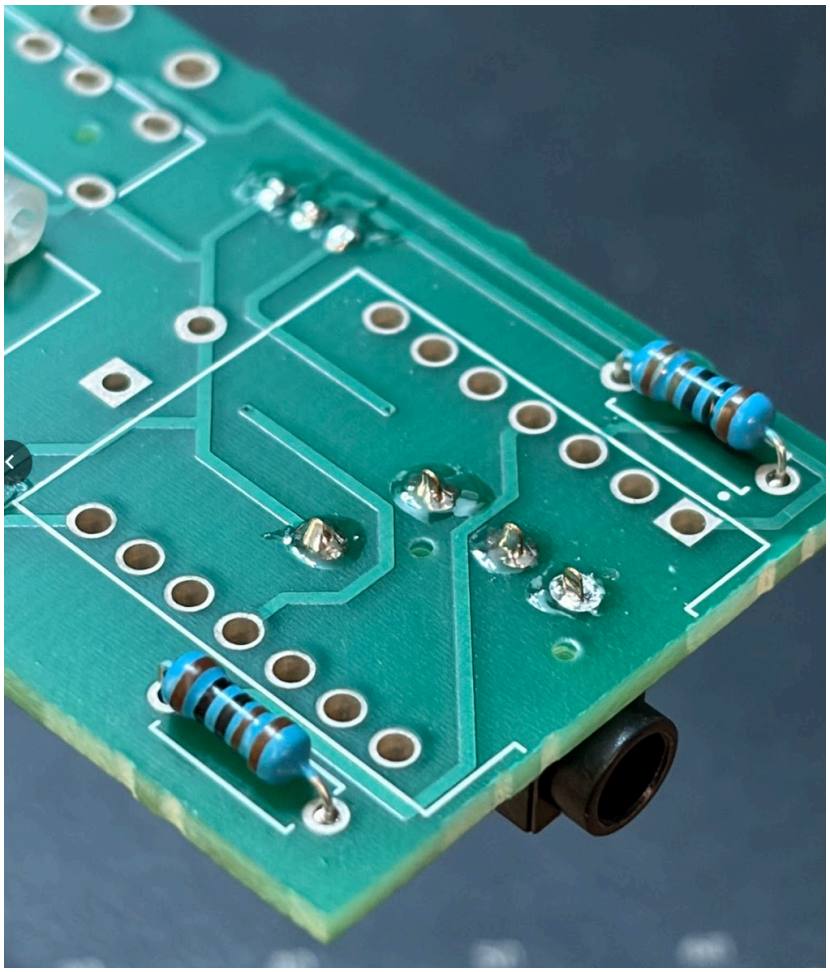
Next, solder the two resistors on. They can go in either direction, but make sure they are installed on the side of the PCB that has the white squares representing their locations.



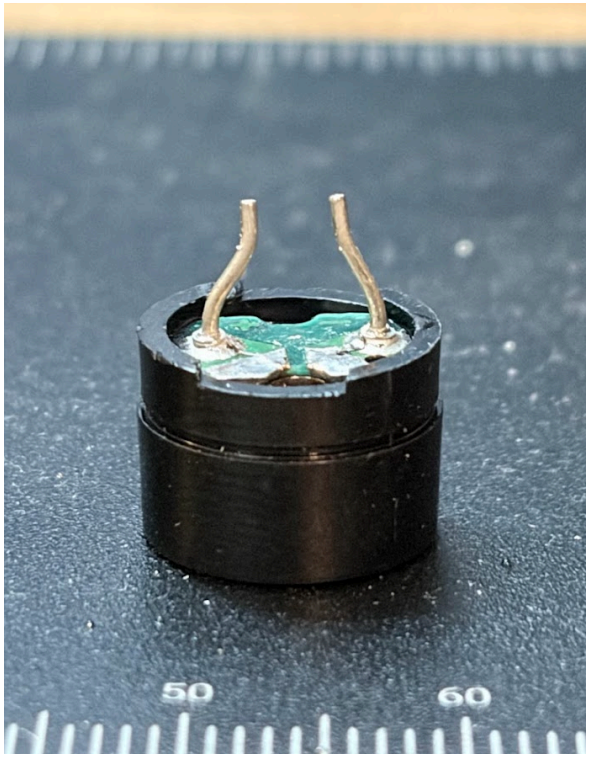


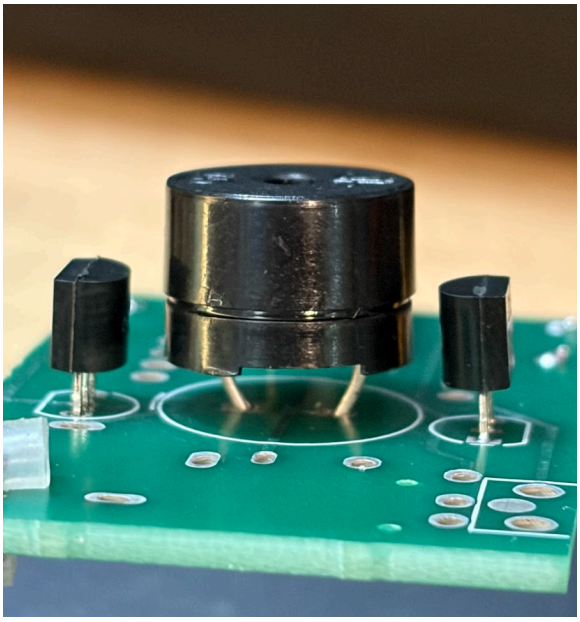
Then you can solder one of the narrow 3.5mm PCB jacks on. Put it on the white square location centered at the end of one side, as pictured below.

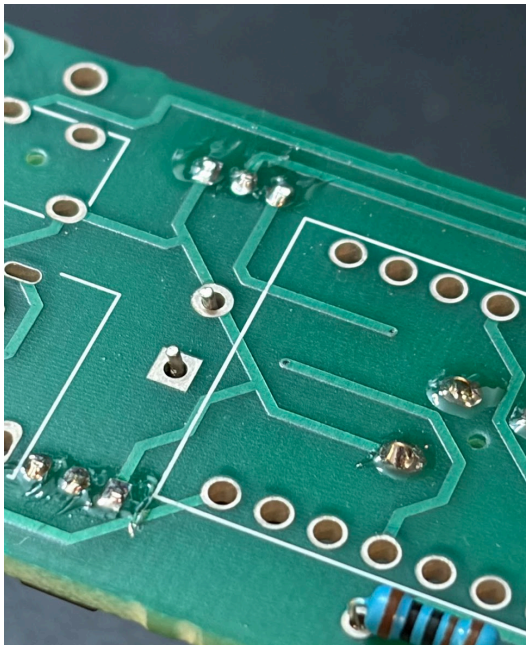




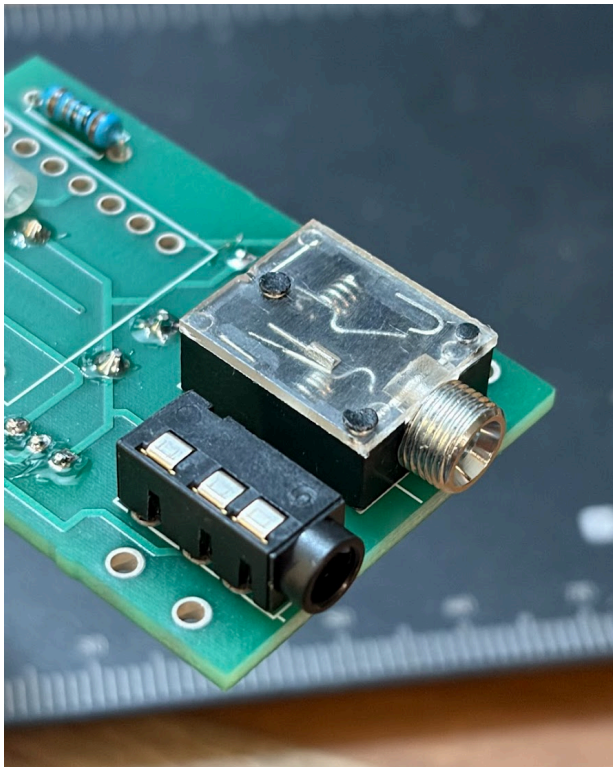
Now it is time to install the buzzer speaker. Depending on the buzzer you have, it may have legs spaced too wide to fit in the PCB. If you bought the DIY kit from KE9BOS aka vailadapter.com, I apologize as it is very hard to get the correct buzzer sizes sometimes based on stock availability. If you do need to bend the legs, it is pretty easy to do with tweezers or pliers. Bend the legs as pictured below, then install the buzzer in the PCB on the side where the white circle is. The round hole is negative, the square hole is positive. There is a positive symbol on the buzzer for the positive leg. Do not try to push the speaker down flush with the pcb. Leave it suspended a little bit. It fits nicer in the case this way and is easier to hear if suspended.

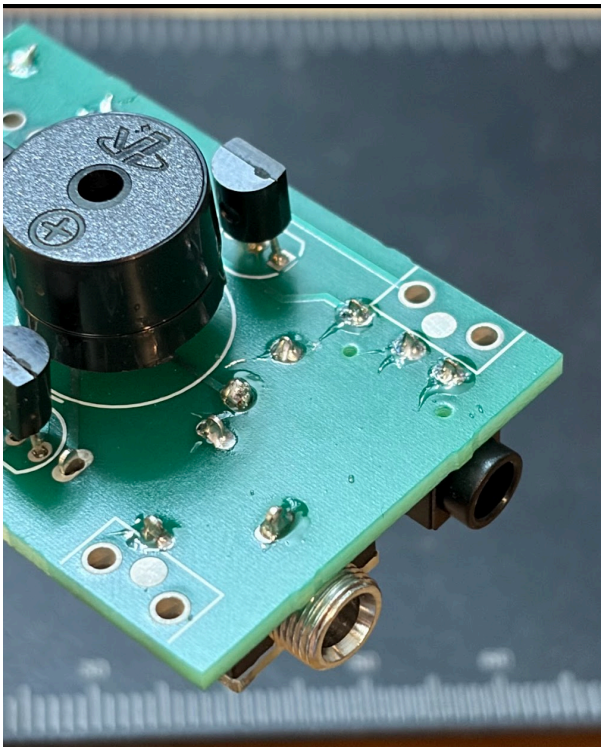






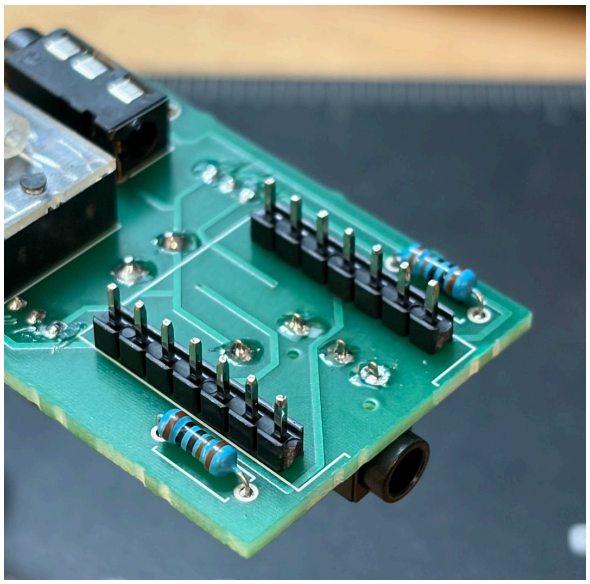
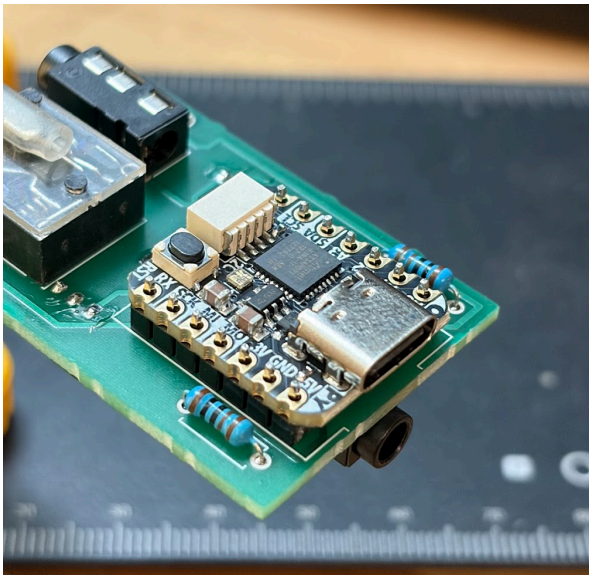
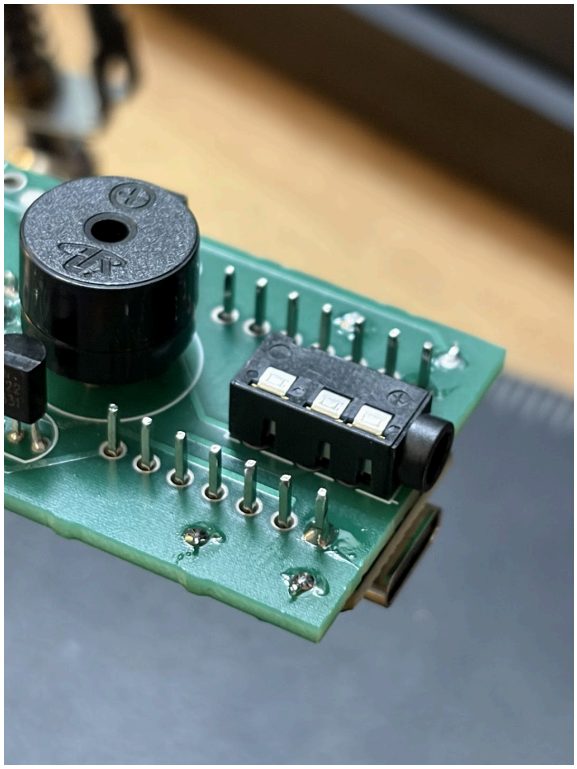
Now you can install the other narrow 3.5mm jack and the wider switching 3.5mm jack, as pictured below. Be careful, a couple of the solder points for the jacks are close the capacitive touch point solder pads so don't bridge them.



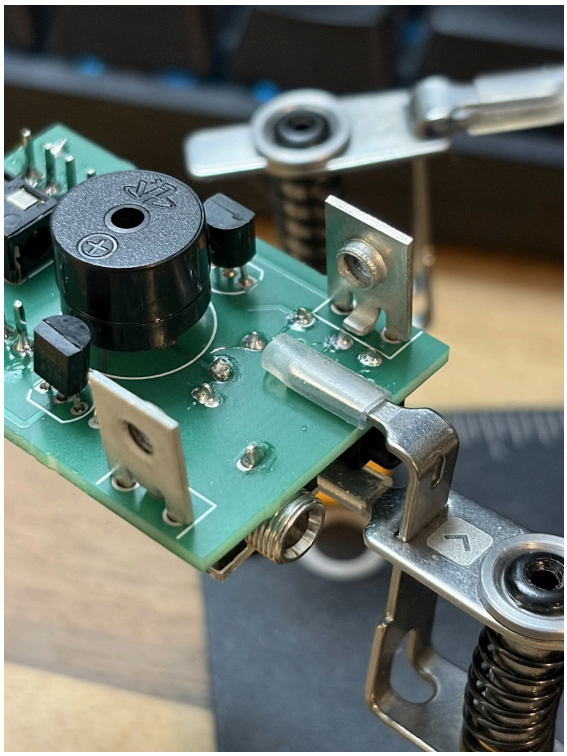


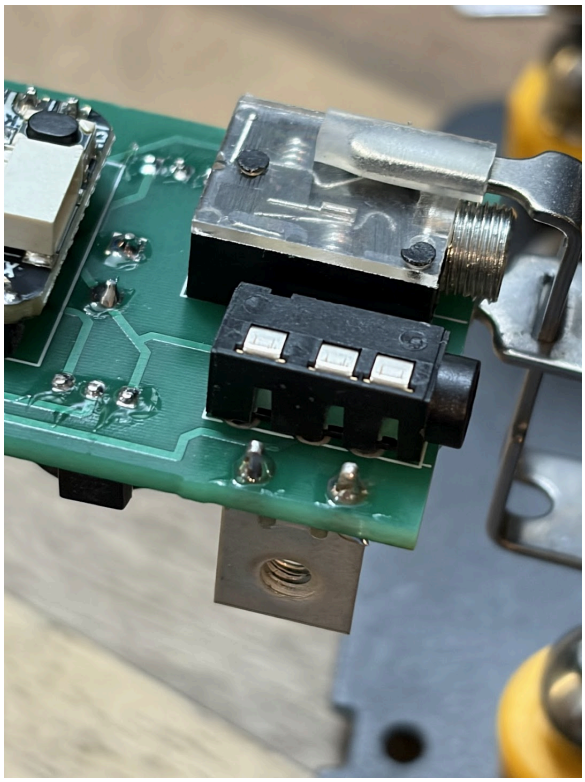
Now it is time to install the Arduino. Take the header pins and place them into the PCB from the opposite side of the PCB from the buzzer speaker, where the white square is printed on it for the arduino placement. The longer end of the header pin legs should go through the holes to the speaker side of the pcb. The arduino will then sit on the shorter end of the header pin legs. If you install the header pins the other direction it won't work with the case most likely.

The easiest way is to put the header pins in the arduino, then sit the arduino on the header pins. Solder a few corners of the header pins to the arduino pins to hold the arduino and the headers together. This keeps them aligned well. Then flip it over and solder the a few pins from the headers to the pcb to tie it all together. Then once you know it's all attached to each other and flush to the PCB, go back and solder both sides of the headers to the pcb and the arduino for every pin.


Now you can install the capacitive touch screw terminal mounts as pictured below. There is a third flat pad on the pcb for each terminal you can put some solder on to give the terminals more stability but it is not necessary. You can just solder the two legs for each and it is more than strong enough. Try and keep them as straight as possible but they can be a little crooked and still fit in the case just fine.





Before you put the Vail Adapter in the 3D printed case, make sure it works by powering it on. If it doesn't already have firmware flashed to it, go to https://update.vailadapter.com/ and download the right firmware and install it to the arduino following the instructions on that site.

Once the adapter is confirmed to work, slide it into the 3d printed case, taking care to use the slots in the middle inside to keep it aligned and to put it in the right orientation for the USB to align with the USB hole on the case.

Then slip the lid on, with the two ears lined up with the capacitive touch terminals. The little ear pieces on the lid should fit between the inside wall of the adapter case and the screw terminal mounts and line up perfectly when fully seated to install the screws to the external holes to hold it all together and allow the screw heads to be the capacitive touch points.