Reverse Engineering Challenge

Deconstructing a Califone Dual Cassette/CD Recorder

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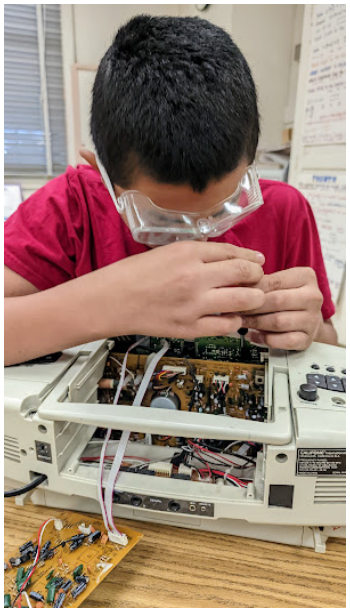
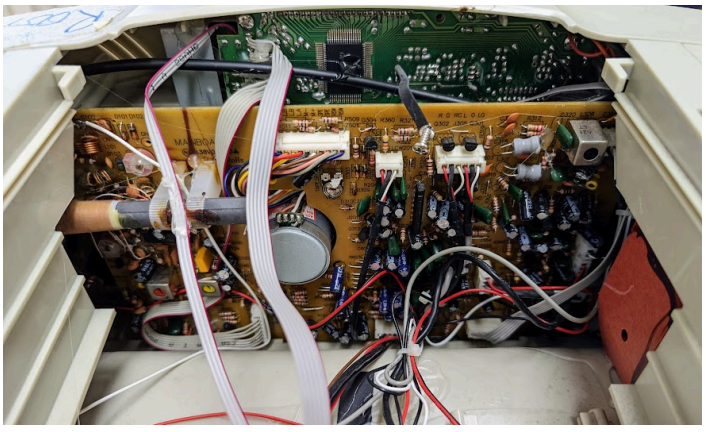
My name is Enso. I am my team's Deconstructionist.

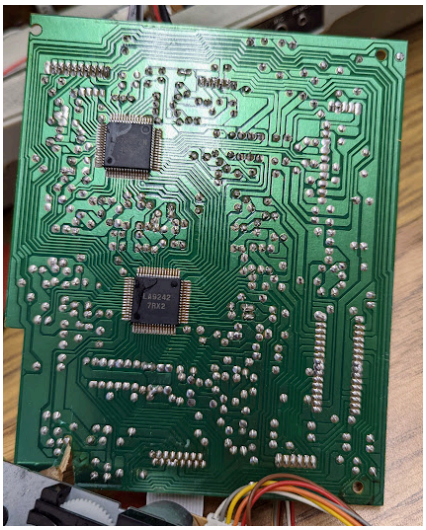


I am taking apart a Califone Dual Cassette/CD Player. I chose this item because I asked our custodian if we had anything broken at the school that I could take apart and this is what she brought me.

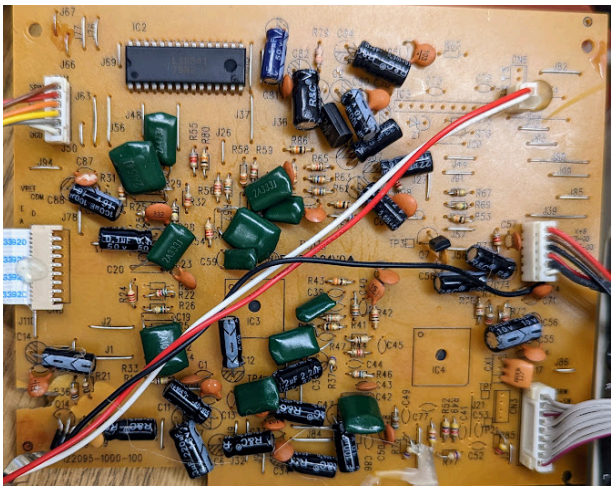


When I took the lid off, my first thought was, "Wow, that's a lot of stuff." Inside there were so many components.

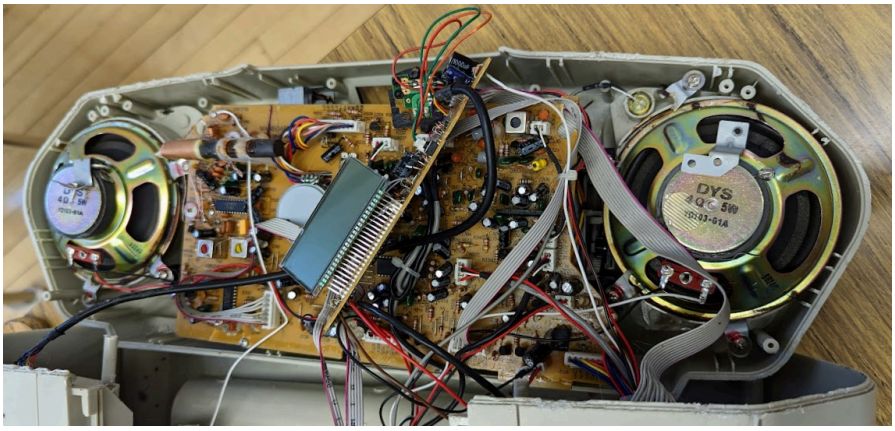
The lid lifts by a gear. The gear has an end, first with teeth than smooth. This keeps it from going too far back and breaking. On the other side of the lid is a spring. The spring holds the lid in place to keep it from falling back down.



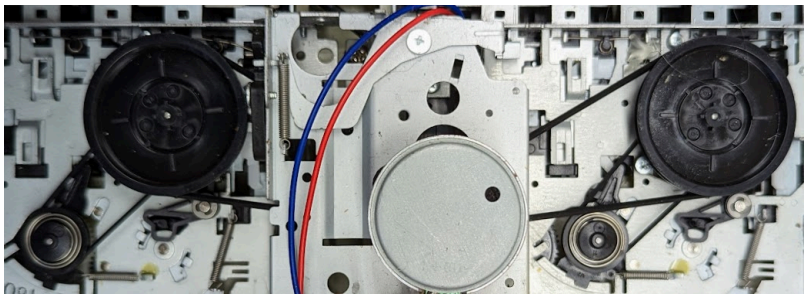
I saw a lot of silver spiky things on the circuit board. I found out that they were solder. My coach said you pronounce this like ‘sodder’. This keeps the wires from the other side in place. Solder is an alloy that’s melted to join metal objects.



This cassette player has six circuit boards. Each board has pathways called traces. The traces keep the flow of energy going. Batteries power the circuit board. The things that look like little green pillows are capacitors. Capacitors temporarily hold electrical charges and release them when more power is needed. The small striped objects are resisters. Resistors control how much electricity flows.

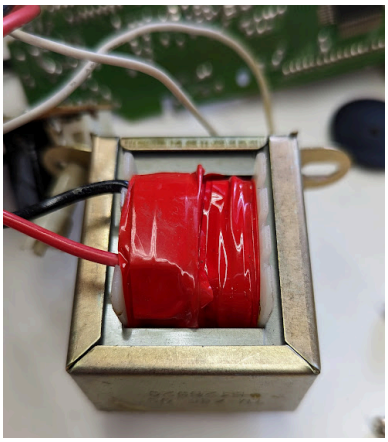


There are a lot of wires that connect to the circuit board. The wires help the pieces communicate with each other.



I found a skinny rubber belt called a pulley. The pulley runs between rotators, the black circles. It runs from the motor to a flywheel. It's the flywheel that moves and pulls the pulley. A clutch, which looks like a circle, keeps the correct tension when the tape cassette plays. There is a thin long needle, a capstan, that comes out from the flywheel. The capstan turns to pull the tape across the head at the right speed.

I discovered the speakers were magnetic when my screwdriver got stuck to one. Magnets make the speakers move which creates vibrations. The vibrations create the sounds we hear when we hear the music.



I was surprised to find this heavy piece. The electrical cord was attached to it. It is a plug-in transformer. Transformers transfer electrical energy to the circuits. They convert voltage from high to low so the circuits can operate on low-voltage.

I learned that technology has a lot of running parts. They are filled with hundreds of components that make them work. Each part has its own job to do.
I have never done something like this before. It was fun seeing how many things were inside just to make this cassette player work. I'm thinking maybe all technology has many components in them.
Thank you.

Resources:

https://www.circuitbasics.com/what-is-a-transformer/

https://www.cse.iitk.ac.in/users/amit/courses/371/adarsh/contents.html

https://www.pcbonline.com/blog/how-to-read-circuit-boards-and-identify-components.html

https://www.seeedstudio.com/blog/2019/06/12/12-commonly-used-components-on-pcbs-for-beginners/

https://www.youtube.com/results?search_query=taking+apart+a+dual+cassette+player