

REVERSE ENGINEERING: 5 DISC DVD PLAYER

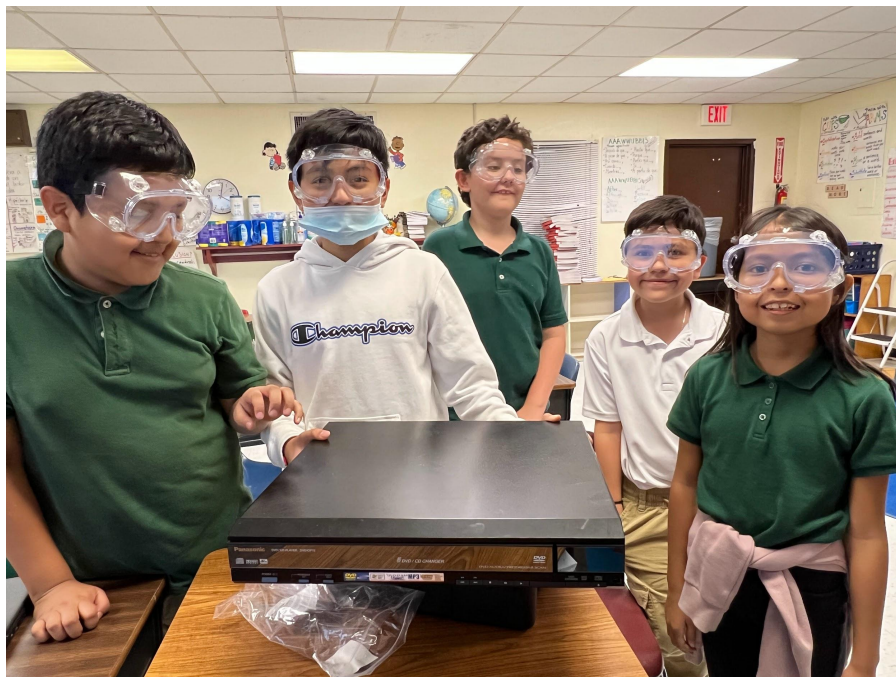
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INTRODUCTION

We have all asked ourselves how electronics work: telephones, televisions, Internet, ecc. It is very easy to find all this information online, but when it comes to really understanding technology, nothing better than taking a device apart with our own hands!

Our team chose a 5-disc DVD player. It was hard to find a device since most people don't store broken devices, but this one was donated by a person who used it in his office. He let us know it was once a high-end device but had been forgotten for over a decade (basically, as much as we have been alive!). The idea of owning a 5-disc changer was to be able to play back-to-back movies or music with the comfort of not having to change discs constantly, but the sales of these changers went down when streaming online became popular. We were very curious because those devices haven't been in use for a long time and most of us had never seen one in real life.



Our team members are ready to work!

In order to work more efficiently, we decided to split the work:

Team 1: Disassembling the DVD player, taking pictures and notes, and labeling separate pieces in plastic bags.



Team 2: Conducting online research to learn names and function of parts.



Background information: How DVDs work

To better understand what a DVD Reader must do, we researched how DVDs work.

DVDs are discs that can store a lot of information in a very small space. The information is coded in plastic by little bumps or “tracks”. There is a drive motor that spins the disc. The tracking system is in charge of moving the laser lens. The laser lens will “read” the information and turn it into images and sound. The output cables connect cables that will send images and audio to the TV.

Source: HowStuffWorks.com

Disassembling the DVD Player

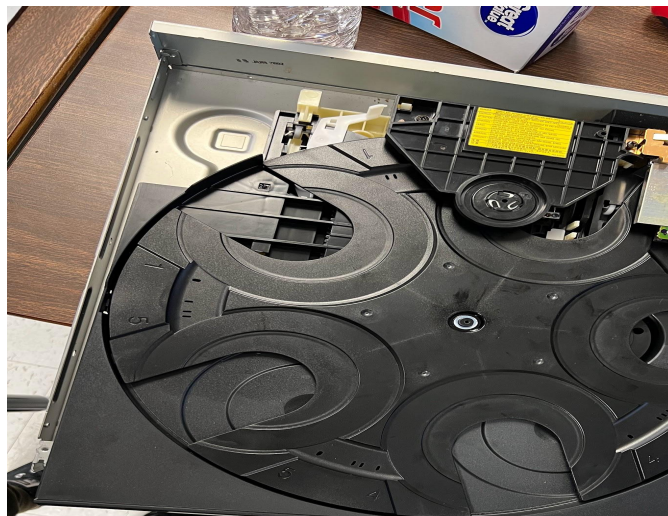
When we first opened our DVD player, we noticed there were 3 parts: mechanical components, optic readers and electronic parts. The mechanical components are the moving parts, which are necessary for changing and playing discs. The optic reader decodes information from the DVD with a laser. The electronic parts in charge of reading the information of the discs.

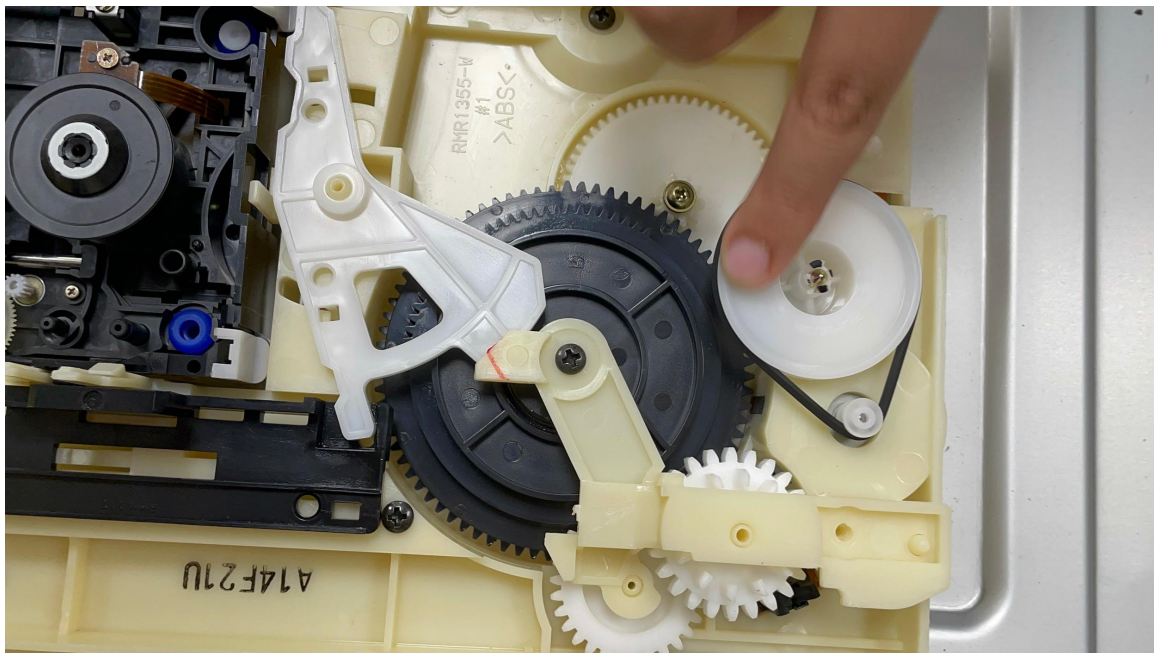
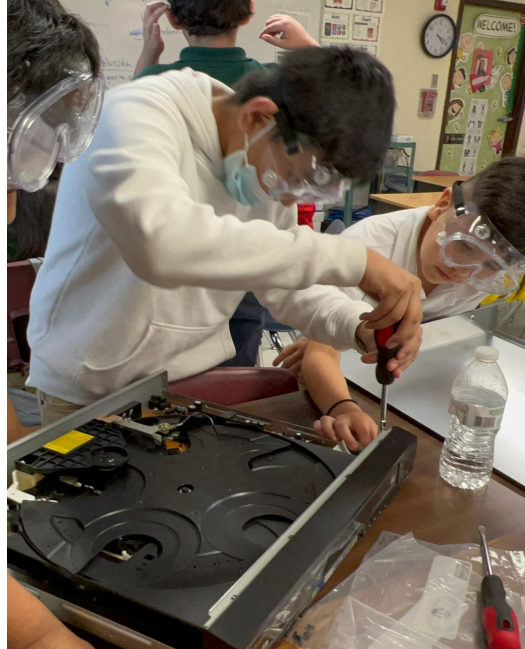
First we removed the **front display**. That is the part that helps the user communicate with the device using a remote control.





Then we removed the lid and found the **changer tray** and the **laser reader**.





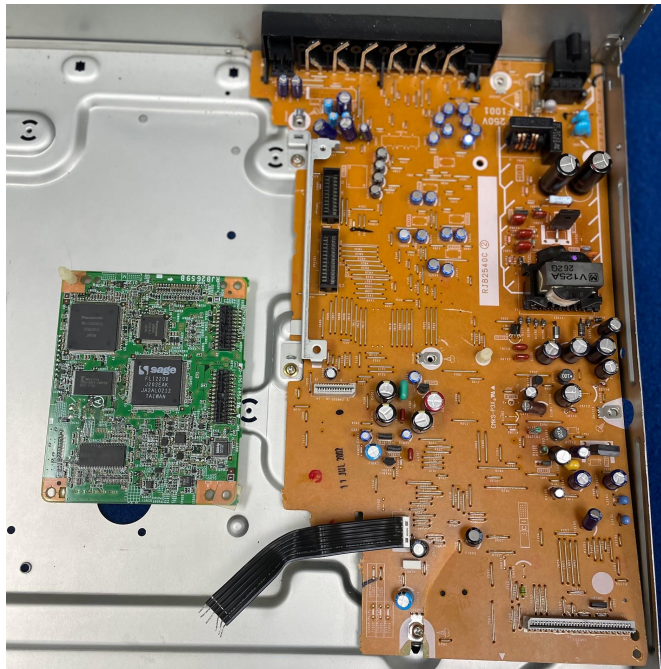
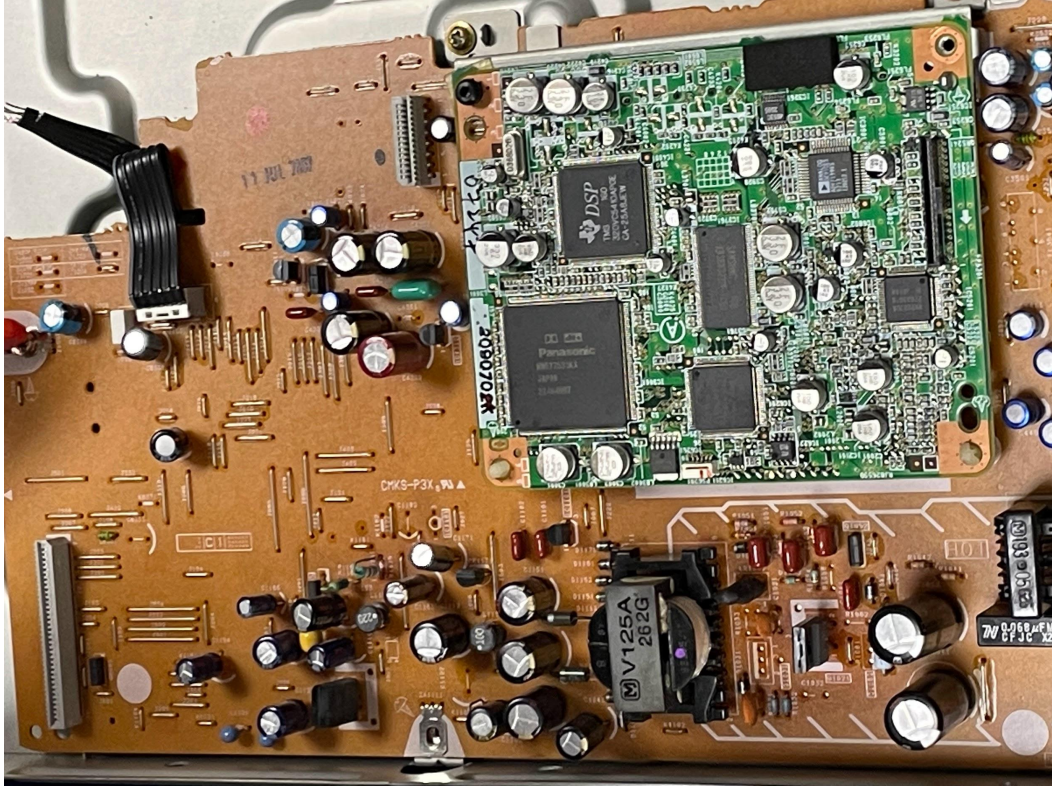
After removing the tray, we found the **motor**. This motor lifts and ejects to load discs. Then pulls retreats back in the device and lowers down while the laser moves across collecting information of the disc. **We made a video that shows how this mechanism moves:**

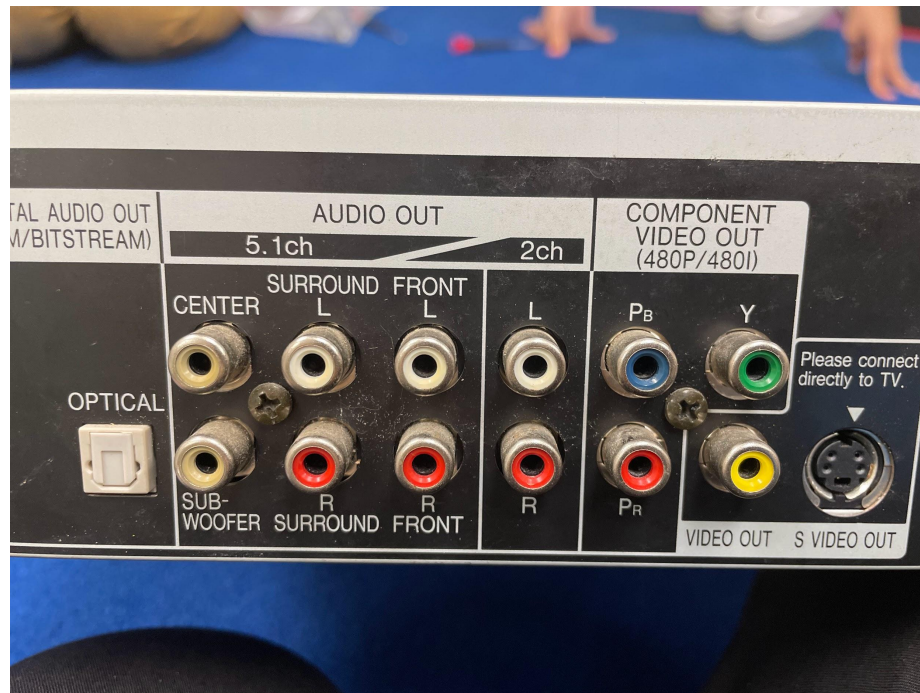


<https://youtube.com/shorts/YKKh003...>

Under the motor, we found the control board that is connected to the video/audio output. We learned that the control board is the part that turns information into images and audio and that is how we are able to watch them on TV.

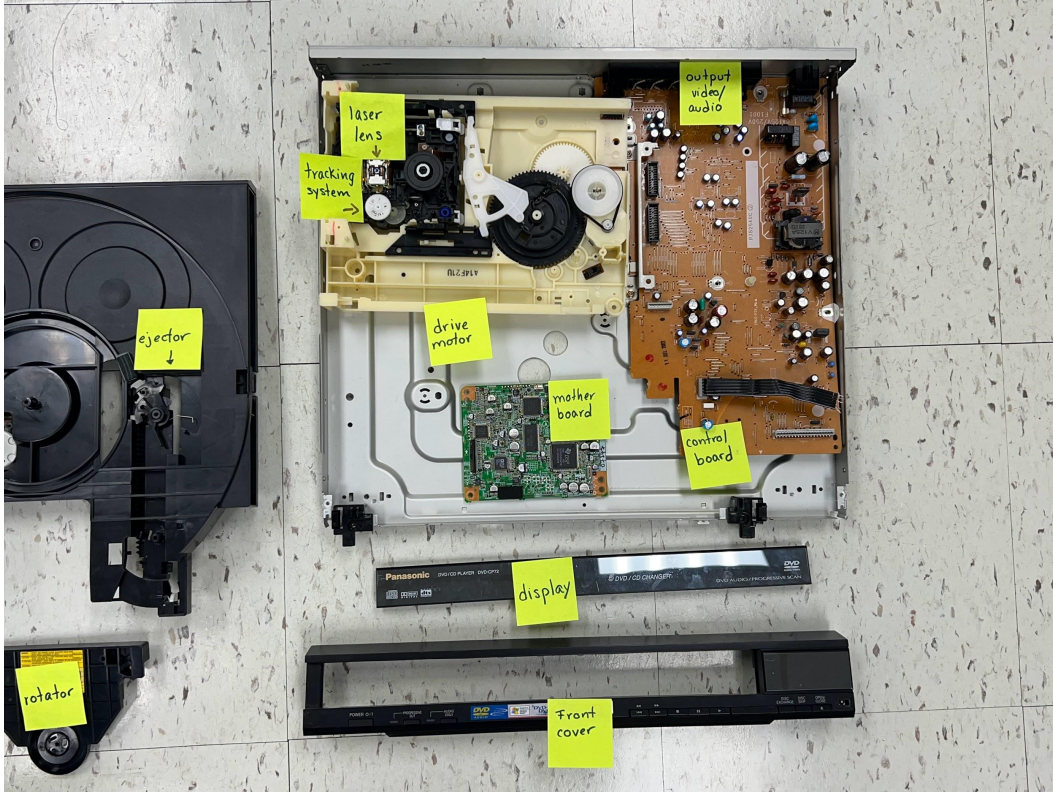






FINAL SHOT





What we learned

It was very interesting to see the combination of mechanical and electrical parts. We were able to understand the way each part was located inside the device and how they are all connected in use.

We are excited to understand how engineering design is applied in real life to create devices that make our lives easier and can't wait to apply this knowledge as we design and build our own robots.



Thank you for reading!