

# DVD Player Teardown



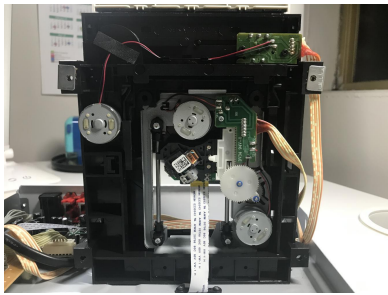
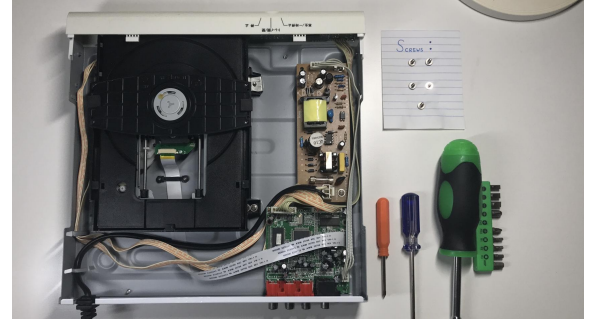
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# DVD Teardown

Since the beginning of the worldwide pandemic, most people have chosen to spend their lives in quarantine watching television. Society is gradually replacing their DVD consoles with the internet, as they don't require DVDs or have issues with digital compression. Although they might be outdated, I was curious about how the DVD player could interpret the information from a disk and convert it into a movie. The technology of the DVD player is still a mystery to me, and I was hoping I could uncover its secrets by disassembling it. I also chose to take apart the DVD player because I wanted to understand how much video machinery has developed over the past years. I am Yuma Nagayoshi, and I have reverse engineered a DVD player.



When I opened the housing, I noticed that the DVD player was divided into three main parts; drive motor, laser and lens system, and tracking system. Let's now talk about how each of these components functions. The objective of the DVD Player is to read the data stored in the DVDs and this is done using a drive motor. The motor spins at a controlled rate of 200 rpm for the laser to understand the information. But the speed of the motors can change depending on factors like differences in tracks, the difference in generations, and data storage. The data is stored using a layer filled with microscopic pits and flat areas. The laser is pointed directly towards the disc as it spins, and when the

light hits a flat area, it reflects towards a photoelectric cell that detects the light. But when the laser hits a pit, the light isn't reflected, and so the photoelectric cell can interpret the laser's light as binary data. A tracking system is used to move the laser assembly so that the laser can follow the spiral track. When played, this system has to continually move the laser outwards from the center of the disc. The linear speed is equal to the radius multiplied by the speed at which the disc is revolving, making the pits move at an increasing speed. This is necessary for the pits to travel at a constant speed, and for the data to come at a constant rate. Although the tracking system may seem small, it plays a critical role in the DVD console.



From this project, I've understood the inner workings of the DVD player. Even if the machine might seem "old", the technology behind is beyond my comprehension. The engineering that went through the development must have been outstanding, as my DVD player was functioning for over 30 years. Nowadays, people aim for Blu-ray disks and the internet, because they can deliver much more accurate results than DVDs. But, I now understand that it is still important to recognize the development and the starting point, as I've learned so many things from this project. No matter how "old" something is, they might be hiding something impressive inside.