

Reverse Engineering B70 Keurig Coffee Maker

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Table of Contents:

Table of Contents	1
Introduction	1
Disassembly of the Keurig	1
Steps:	1-4
Parts:	5-8
Summary	8

Introduction:

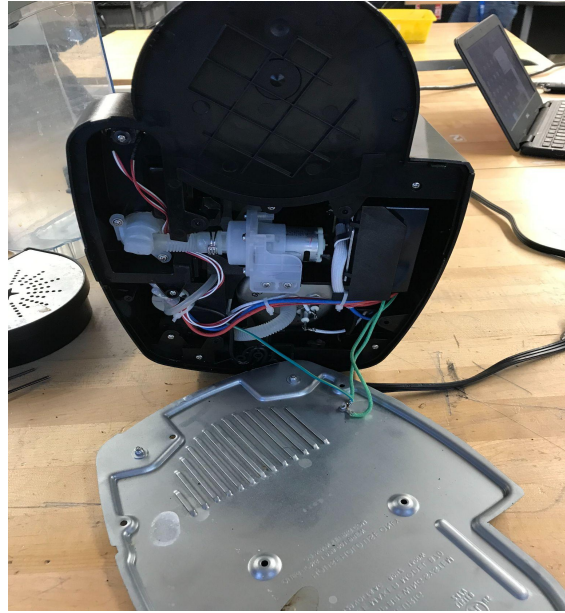
For our reverse engineering project we chose to deconstruct and research the different parts of a Keurig b70 coffee brewer. A Keurig coffee brewer is a system through which the water is automatically poured into a heating tube. Once the water is heated, it is dripped on the ground coffee beans, then strained through to output fresh coffee into a coffee pot. We chose to deconstruct and reverse engineer a Keurig coffee machine because the one in our classroom was malfunctioning and no longer working, so we decided to take it apart in an attempt to fix it because it provided a boost to our teacher's day when she was tired.

Disassembly of the Keurig:

These are pictures of the Keurig before we disassembled it.



Step 1: First, we took off the bottom metal piece of the Keurig to get to the inside.



Step 2: We took off the next bottom panel to further reveal the inside components.



Step 3: Next we took off the top pieces so we could pull out the pieces from the top.



Step 4: After that, we just kept disassembling the coffee maker piece by piece until we had completely taken it apart. These are all the pieces of the Keurig.



These are the tubes that water goes through. These help transport the water from the reservoir to the heater to the coffee grounds.



This is a transformer. A transformer is a device that transfers electric energy from one alternating-current circuit to another circuit, either increasing or reducing the voltage. These are important because they limit or increase the amount of voltage going into a circuit so that it does not short circuit.



This is the volt/variable regulator. It is used to maintain a constant voltage coming from an input and sends the voltage to the motherboard.



This is the LCD or liquid crystal display. The LCD screen works by using liquid crystals to produce an image. The liquid crystals are embedded into the display screen, and there's some form of backlight used to illuminate them. The actual liquid crystal display is made of several layers, including a polarizing filter and electrodes. This was the screen that showed you what size cup you would like to choose.

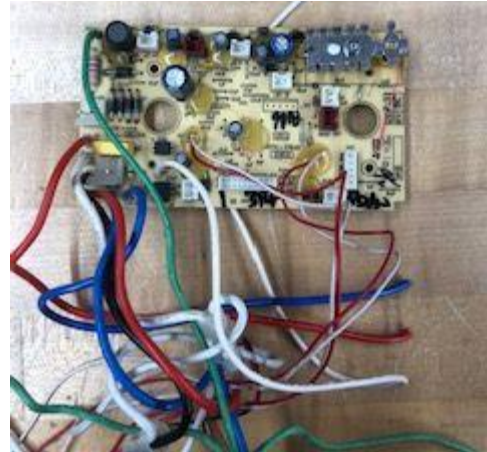


Back



Front

This is the motherboard. The motherboard is the backbone that ties the computer's components together at one spot and allows them to talk to each other. Without the motherboard functionality, the whole machine wouldn't be able to work well.



Summary

After deconstructing the Keurig coffee machine, we now understand its individual components and how they all work together to create an effective and functional coffee brewer. Some of the important components we found were the motherboard, volt regulator, transformer, LCD screen, and reservoir. The motherboard is a central component that connects all of the electronics and controls them so that they do the task that they need to do. Without the motherboard, the components would not be able to work in unison. The volt regulator maintains a constant voltage and sends the voltage to the motherboard where it can be distributed. The transformer is responsible for changing the voltage to the correct amount for certain components. This assures that no components get too much voltage and short out. The LCD screen is used to choose what size cup you want and tells you when your coffee is finished. The reservoir holds water that has been taken in from a water input and holds it, where it is heated up and then pumped through coffee grounds, then finally strained into a coffee pot so you get fresh coffee. Together, these components function together to brew a fresh pot of coffee with very little effort. Unfortunately, in the end, we were unable to reconstruct it, because a plate that held it together had snapped off when we were trying to take it apart.