Taking Apart a Printer

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Team 24118E
Broken Zip Ties

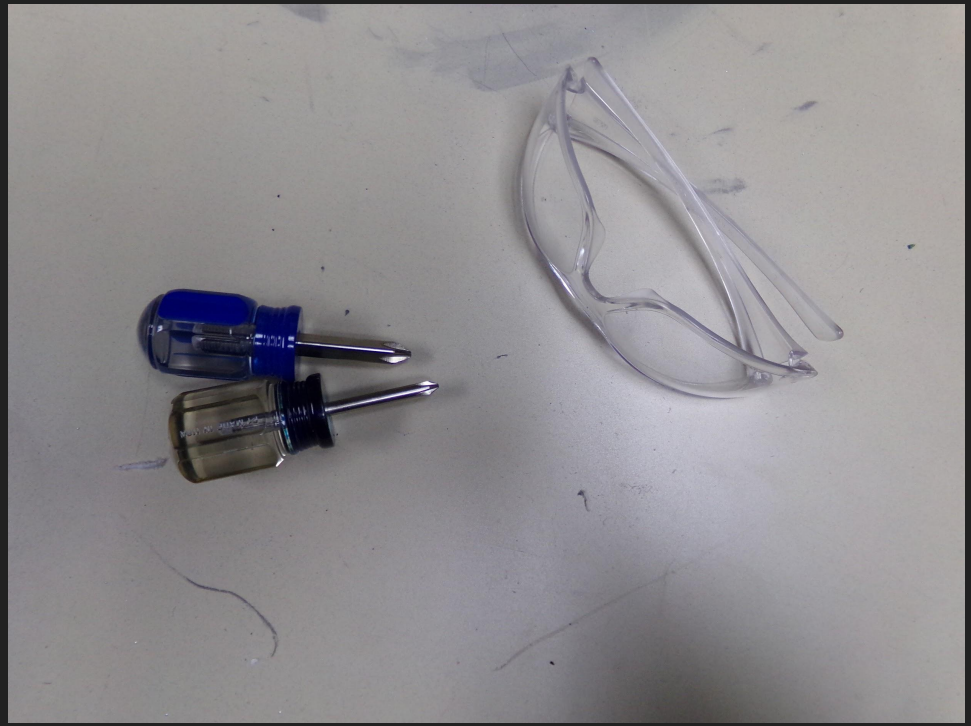
Introduction

The Robotics team consists of six (6) members, and we managed to make it to worlds last year (our first year, too!). Beginning in our new season, we decided to tackle the online challenges in order to increase our odds in going into worlds a second time, with me being in charge of the reverse engineering challenge.

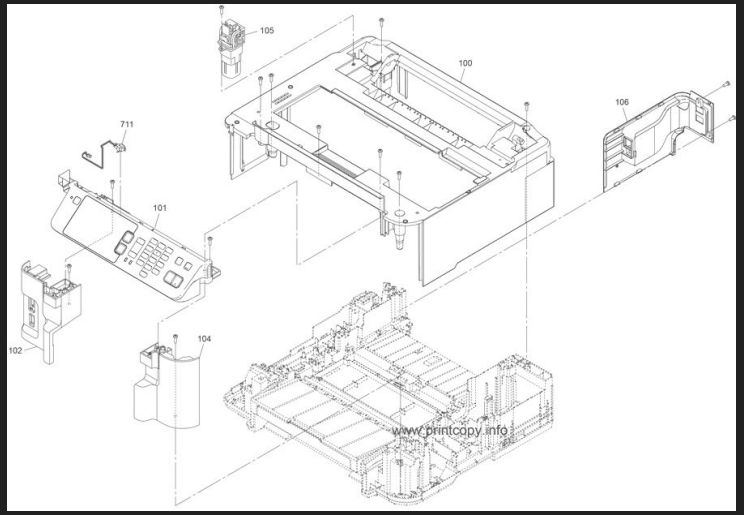
After some deliberation with other objects including a fridge or keyboard, I decided to disassemble an Epson Workforce WF-2630 Printer because I was very interested in how a machine that people seem to take for granted works the way it does.

Material list:

- Safety Glasses
- Phillips #2 Screwdriver
- Phillips #1 Screwdriver



Schematics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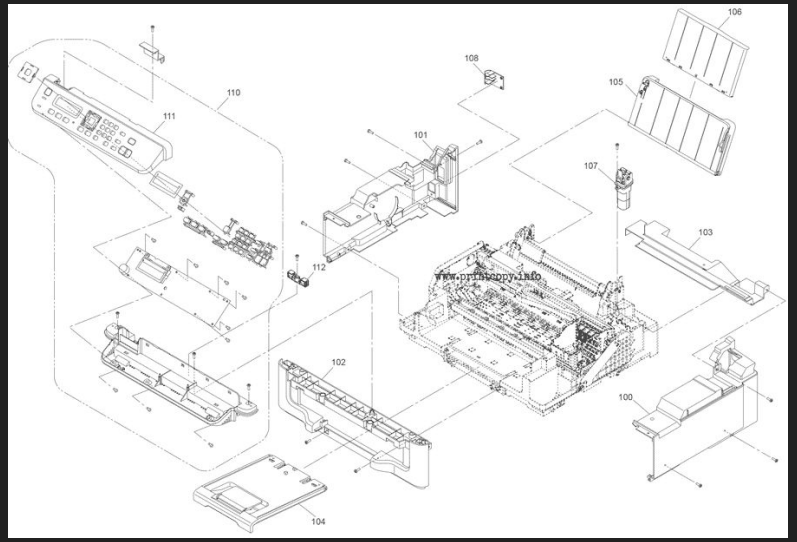
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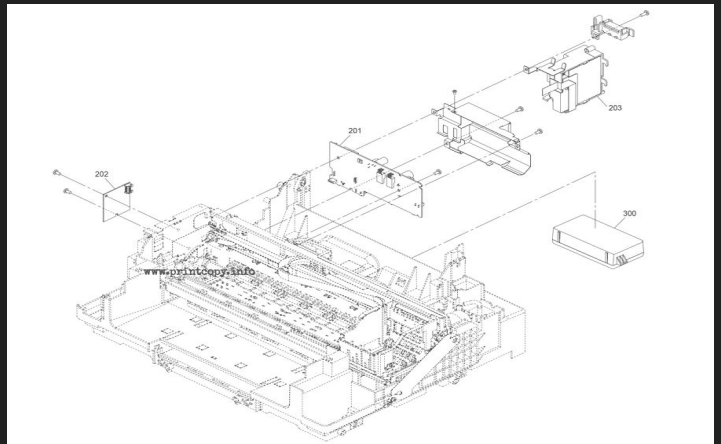
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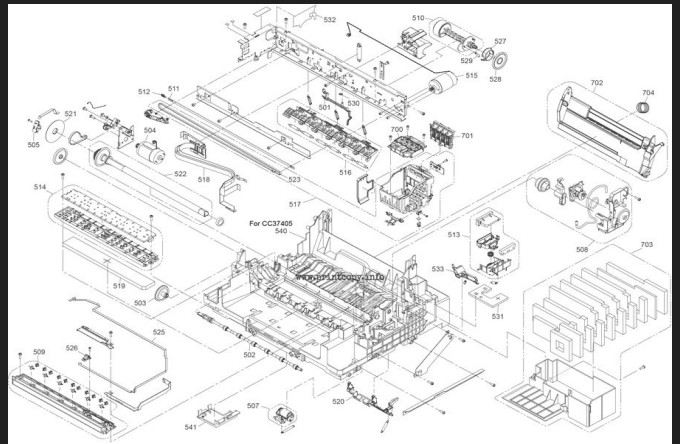
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Progress

Day 1 - take off lid, take apart back, expose inner workings

Day 2 - Document

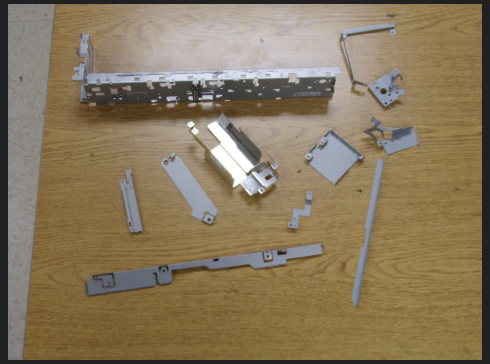
Day 3 - Continue Disassembly

Day 4 - Finish Disassembly, take pictures of subjects

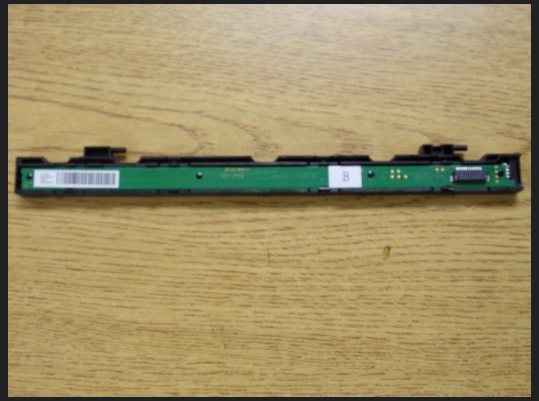
Day 5+ - Continue Documenting

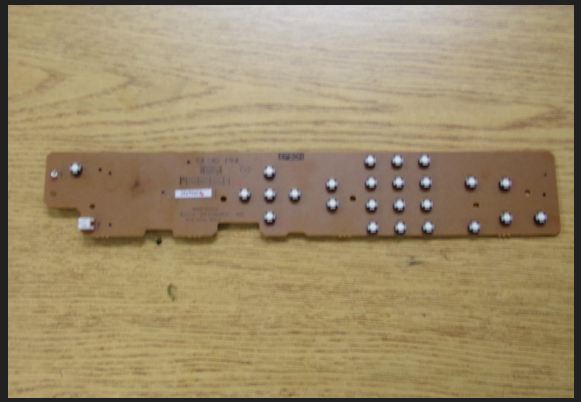
Some Pictures of Disassembly

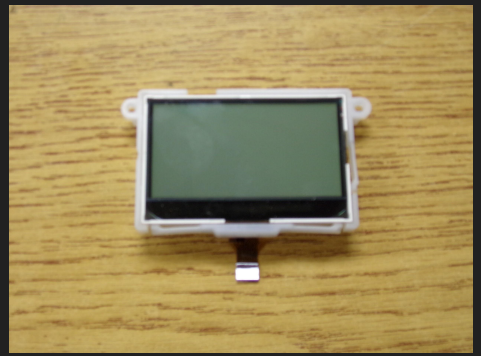
Non Electrical Parts

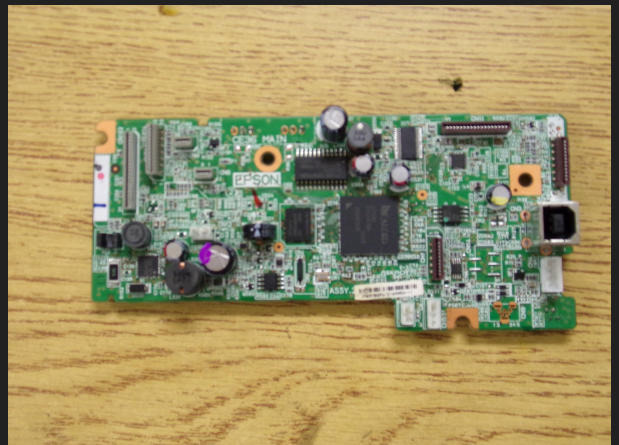


Electrical Parts (General View)









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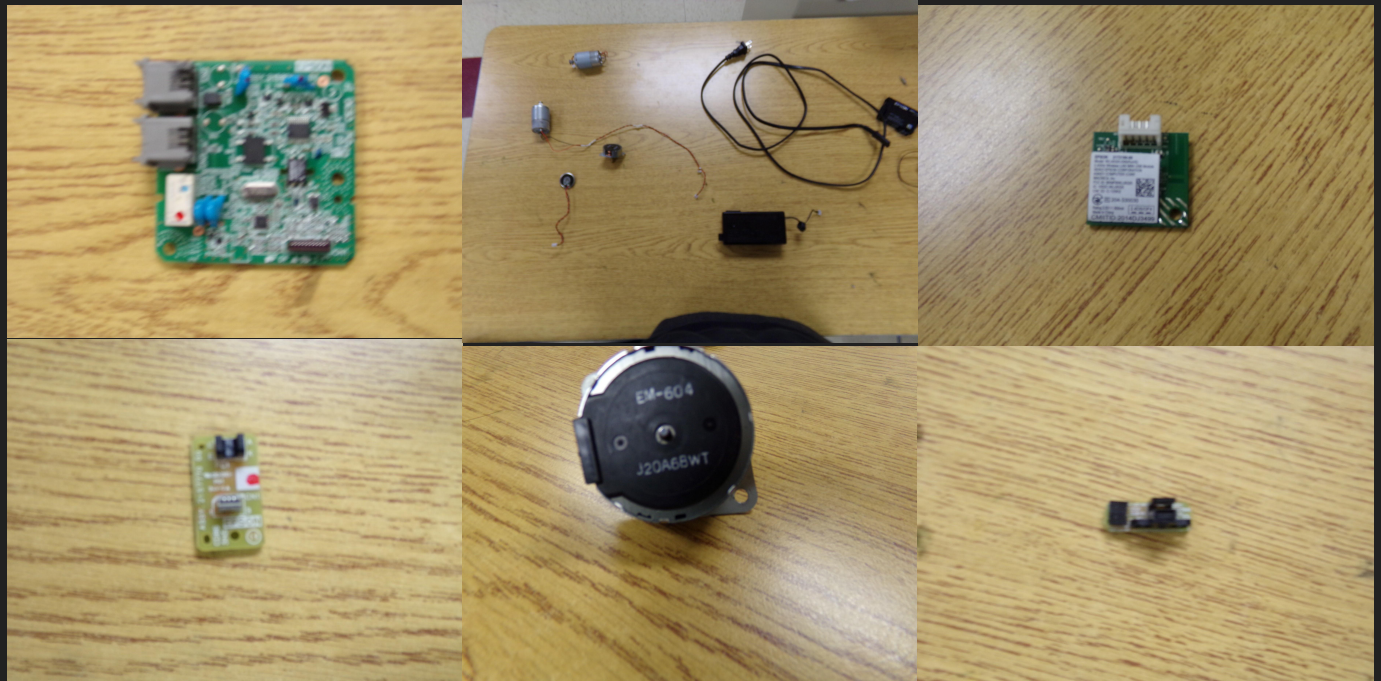
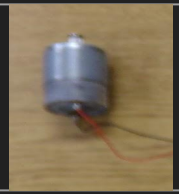
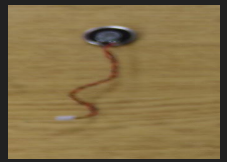


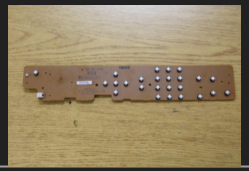
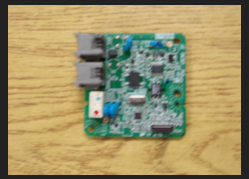
Electronic Parts

Part	Purpose	Picture
Printer DC Motor	Runs belts that controls ink cartridges.	
Speaker	Makes confirmation sounds inside of printer.	
Contact Image Sensor	Allows printer to scan papers	

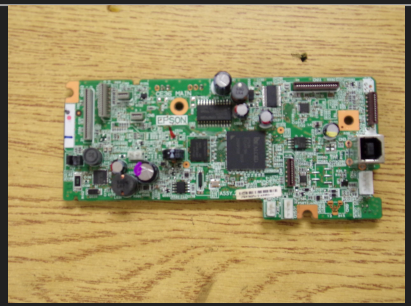
Electronic Parts

Part	Purpose	Picture
2.4GHz Wireless LAN Mini USB module	Allows printer to connect online for updates	
Assembly Sensor	Determines placement of parts (likely ink)	
Stepper Motor	Another Motor that moves precisely	

Electronic Parts

Part	Purpose	Picture
Control Display Board	Controls buttons that would appear on LCD screen	
Fax Board	Allows printer to send and receive fax	
LCD Screen	Shows UI of printer (show prints, receive fax, etc.)	

Electronic Parts

Part	Purpose	Picture
Motherboard	Provides main functionality of printer; tells motors where to go, etc.	

What I Have Learned

I have learned a variety of things from this experience. I have learned about how some things that appear simple on the surface is very complex when you go in depth. I also learned how to stay safe and organized during the disassembly of the printer.