

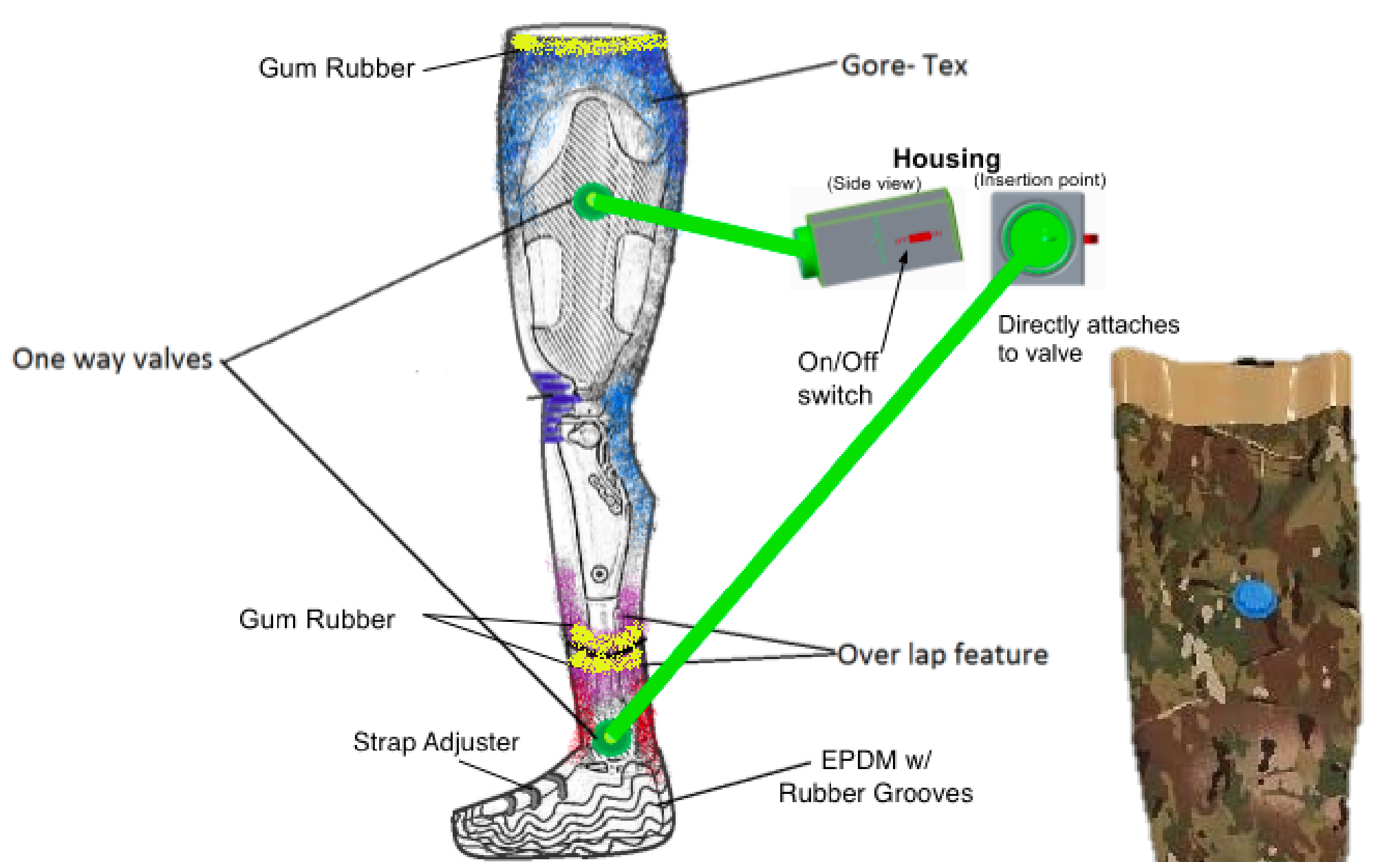
Abstract

The overall materials for the cover needed to be waterproof and highly elastic in order to prevent water from penetrating the prosthetic when the user is in contact with water. The material located at the knee region and the sole of the foot should be more durable when compared to other regions of the cover in case of falling or if the knee or sole of the foot comes in contact with a rough surface during physical activity. Since, the materials needed to have high elastic properties by not only to prevent water from penetrating but also when creating an airtight seal around the prosthetic leg, leaving limited amount of folding of the excess material. This would help the product to be more aesthetically pleasing and lower to cost material used. By saving money on the amount of material used per cover, the overall product cost would be more affordable when compared to other prosthetic covers on the market.

Customer Needs

- | | |
|-------------------------|-----------------------|
| Fully Waterproof | Longer Wear Time |
| Tight seal at opening | Light weight |
| Foot sole grip | Easy to put on |
| Vacuuming Timing | Price < \$ 50 |
| Failsafe of vacuum pump | One size fits all |
| Reusable | Automatic Vacuum Pump |

Design Concept

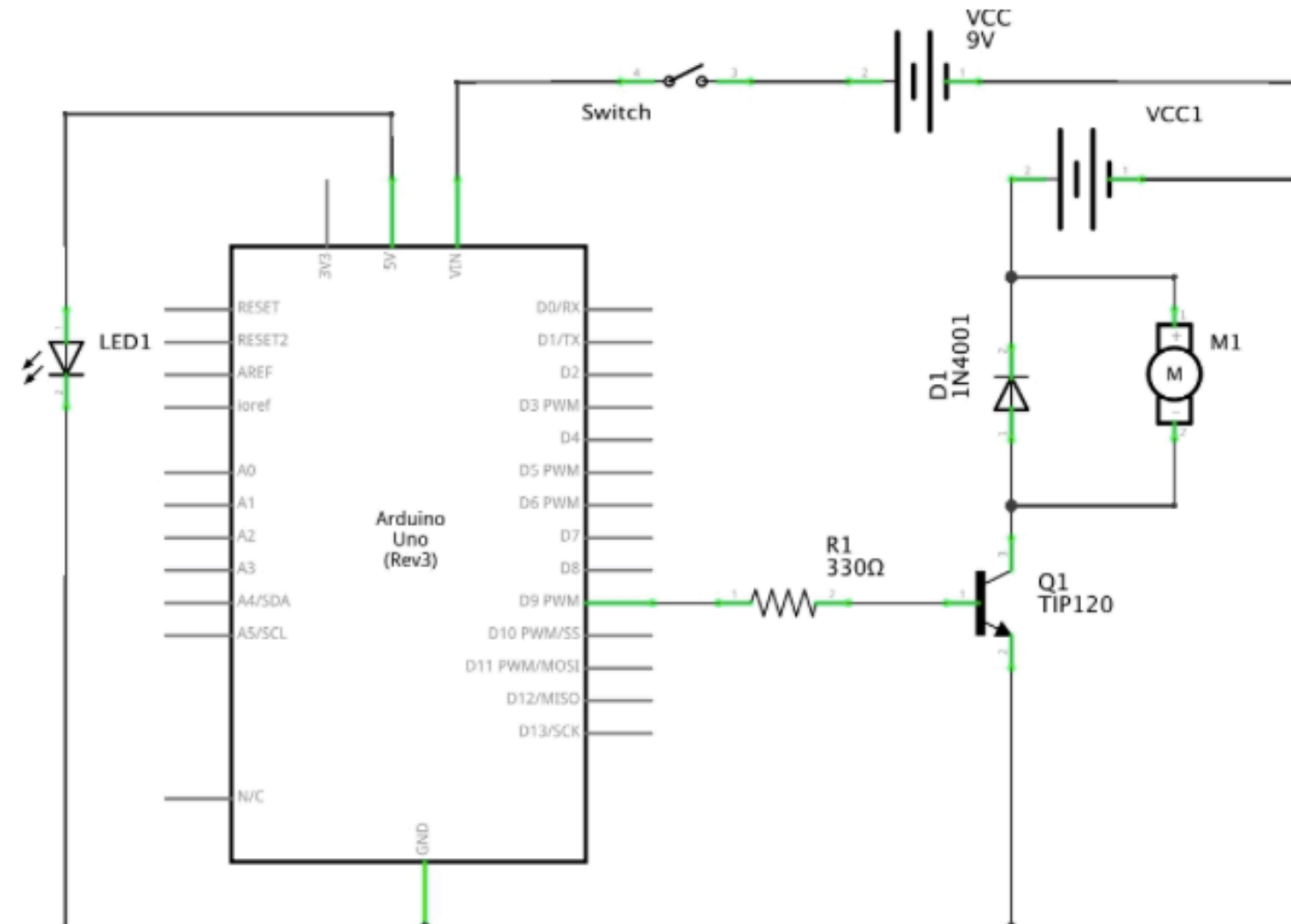
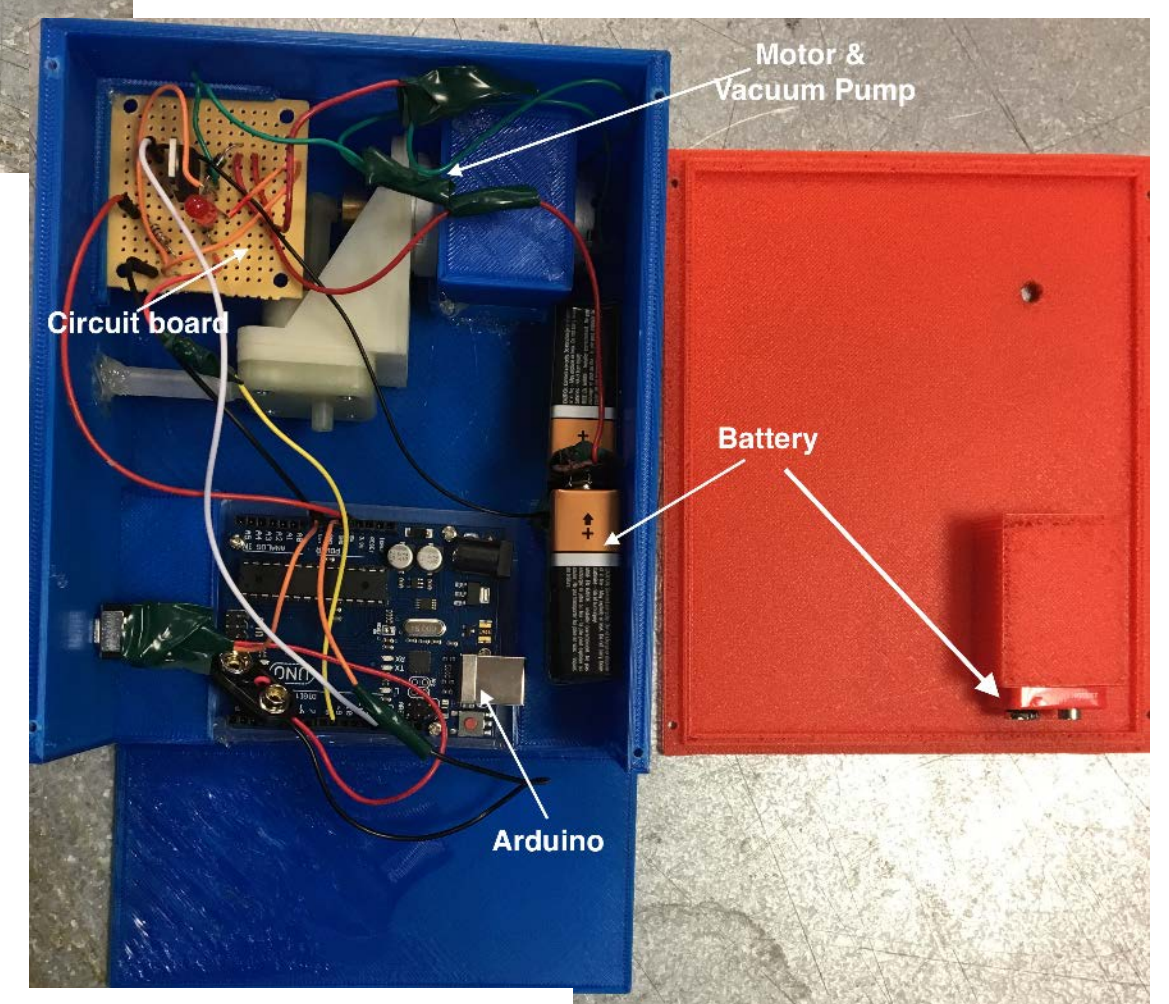
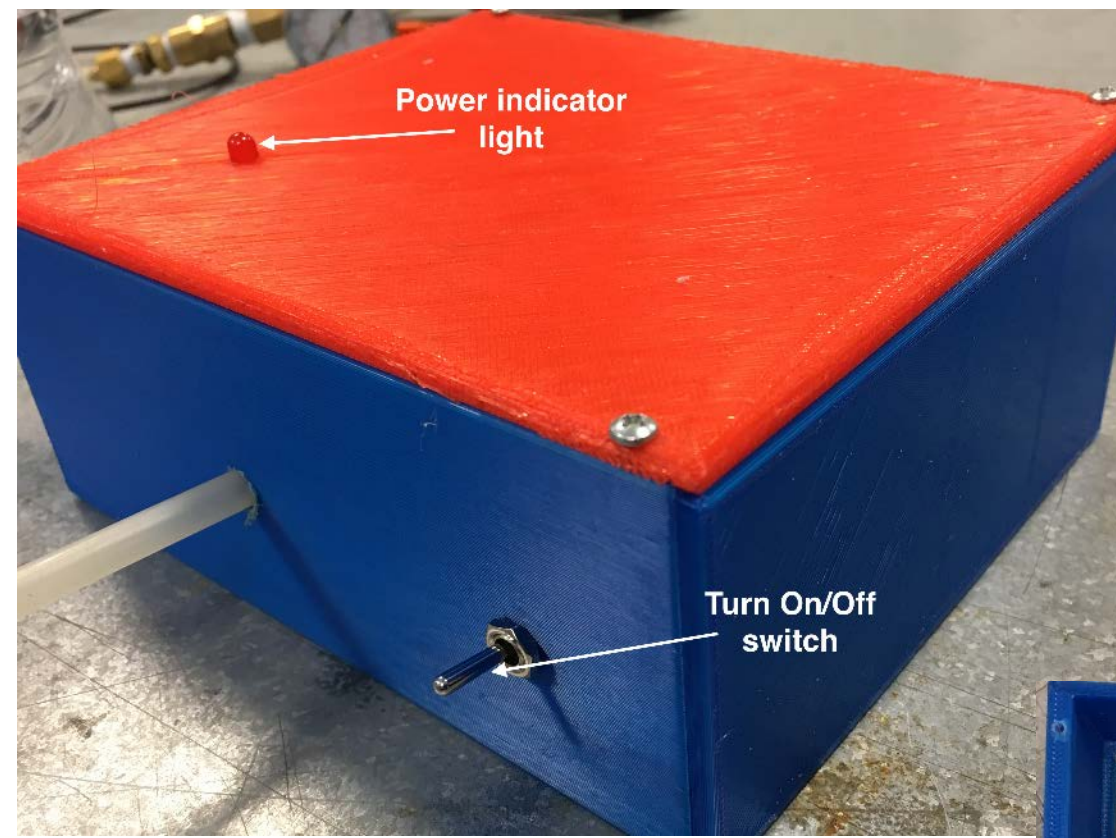


Design

- Leg Component
- Boot Component
- Vacuum Pump System

Final Leg and Boot Component

The Vacuum Pump Component



Test Plan

Customer Needs	Requirement	Test Case	Pass/Fail
Failsafe of Vacuum Pump	280: Automatically turn off after 2 minutes	300: Functionality of Vacuum Pump	Pass
Fully waterproof	310 : able to withstand rain and snow	400 : System Testing	Fail But Water resistant
Tight seal at opening	310 : Deflated cover	500: System Testing	Pass
Vacuuming Timing	340 : Deflate cover in 2 minutes	300: Functionality of Vacuum Pump	Pass
Reusable	340, 410,420: usable for minimum of 50 uses	500 : Weather Condition Testing	Pass

Acknowledgement

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