

Deliverable G

Prototype II and Customer Feedback

March 9, 2025

Thinker Titans

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1 Feedback on prototype I

After presenting our first progress so far and specifically our first prototype, we received feedback from the client. Specifically, Scott told us that because we are not using a motor, it would be difficult to manually rotate the device and may require multiple people. He then reminded us that the blade may not hold up after multiple trials. To amend this we will add additional support to the blade to ensure its durability.

2 Prototype II

Our Prototype II is a scaled down version of our final device, with main focus on the body.



2.1 Analysis

Our first prototype was successful in giving us a good idea of how to improve our initial design specifically in the part of the actual scraper. Our tests were for the most part very successful so not much change was needed, however after consulting the client and using his feedback we found things to alter.

For prototype II we are testing the body of the device. The goal of the prototype is to make sure that our idea of how we can make it extend and shorten will work, and if it can incorporate the rest of the design while rotating and overall functioning properly. This prototype was made by

3D printing three identical tubes that have holes near the ends. These holes will be used to connect two tubes together using a flat piece of material and screws. A 90 degree elbow piece was also printed, and this piece will be the start of the handle of the product.

3 Test plan

| Test # | Test Objective (Why) | Description of Prototype used and of Basic Test Method (what) | Description of Results to be Recorded and how these results will be used (How) | Test Duration (When) | Results |
|--------|---------------------------------------|---|--|----------------------|---------|
| 1 | Size/fitting | Measure the prototype to a scale | If the Prototype is within the proper size range it is valid | 1-2 minutes | |
| 2 | Proper Rotation | Using the prototype handle Rotate the prototype by the handle | If the prototype can rotate properly from the handle and with the subsystems it is valid | 5-10 minutes | |
| 3 | Can properly contain other subsystems | Check dimensions to see if other subsystems would theoretically fit | If it can hold the other prototypes in it and they can function properly | 5-10 minutes | |

4 Prototyping Test Plan for Prototype III

| Test # | Test Objective (Why) | Description of Prototype used and of Basic Test Method (what) | Description of Results to be Recorded and how these results will be used (How) | Test Duration (When) | Results |
|--------|----------------------|--|--|----------------------|---------|
| 1 | Do all parts fit | Putting all parts together and seeing if it all functions and fits | If all the parts can fit together and individually function it is valid | 2 mins | |

| | | | | | |
|----------|-------------------------------|---|---|---------|--|
| 2 | Does it work | See how all parts function when put together and rotated | If all parts of the prototype work with it all the parts put together it is Valid | 5 mins | |
| 3 | Does it function at all sizes | Using the whole prototype and setting it to all potential lengths | If the prototype is valid at all lengths it is valid | 10 mins | |

4 Updated BOM

Below is the link to our updated BOM.

 **Group 10 BOM**