SAVOR ROBOTICS

Automating the rest so humans can be their best.

Ingredient Dispensing System

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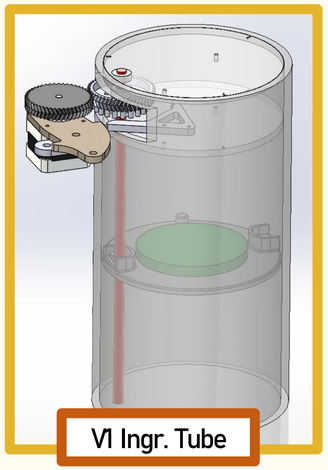
Introduction

Savor robotics is developing an ingredient dispensing system as a subsystem in a larger project. The dispensing system must meet requirements such as: operate at super-human speeds, prevent cross contamination, and store a large quantity of ingredients.

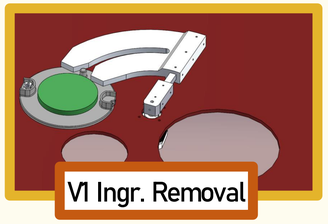
The First Prototype

The initial design was 5 cylindrical towers that were quick release mounted to a large ingredient selection disk. This solution only required three motors and had some interesting aesthetics. However, there were many improvements to be made. The prototype was difficult to build, and the expected throughput was unsatisfactory.

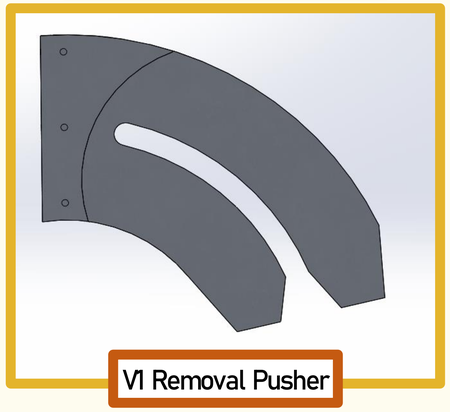


V1 Ingr. Tube

V1 Ingr. Dispensing System



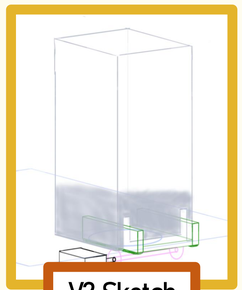
V1 Ingr. Removal



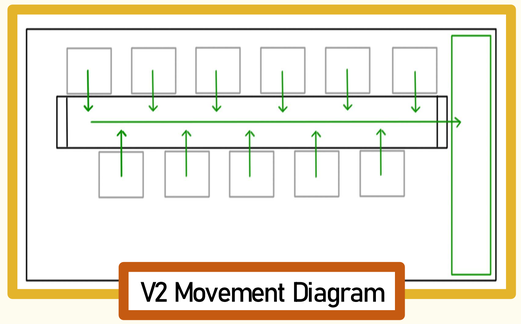
V1 Removal Pusher

Learning from the Prototype

The first design had enough issues that it was back to the drawing board, only carrying a few ideas from the first attempt. Version 2 had to be: quicker, easier to build, easier to clean, more compact, and parallelizable. Many drawings and brainstorming sessions later.



V2 Sketch



V2 Movement Diagram

V2 Ingr. Dispensing System

Switching from Tubes to Towers

The switch solved many problems, but it brought to light the issue of where we would store the trays once the ingredients had been dispensed. This was an issue with the first prototype and had not really been addressed.

V1 Prototype

V2 Prototype

Second Prototype Results

- Easily variable tray height for various ingredients
- Higher ingredient tray density
- Ability to fit > 2X ingredient towers in the same footprint
- Faster loading of ingredient trays into towers
- Can operate > 2X faster (will not bottleneck the larger system)
- Each tower can operate completely independently
- Every food contacting surface can be removed and washed
- No cross contamination
- Able to handle shredded ingredients
- Simpler and cheaper to build/manufacture