

Project Deliverable D: Conceptual Design

Team: A10

Team members: Zong Yu He, Huanyu Liu, Danny Ho

Concept Designs: By Cleaning Method

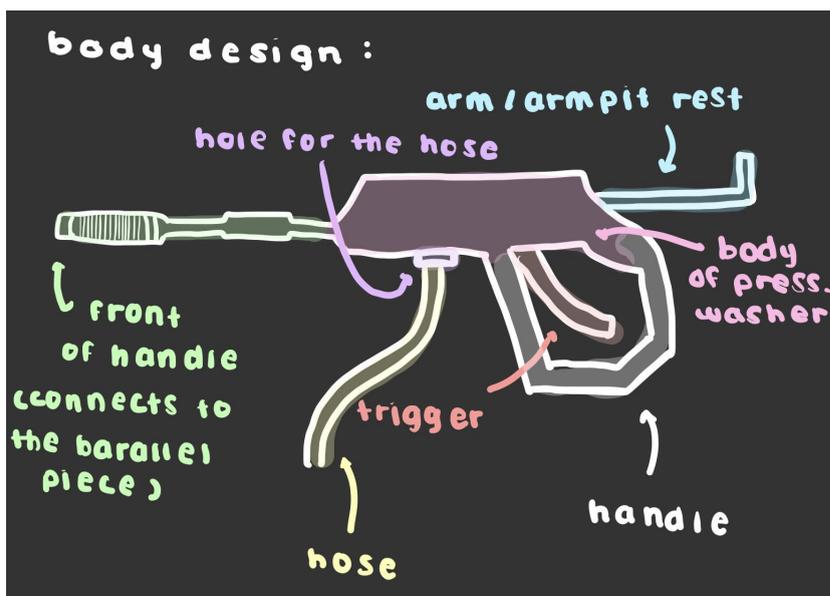
1. High pressure washer - Sun Joe SPX3000 (Amazon)
2. Electrical Scrubber - LABIGO Electric Spin Scrubber (Amazon)
3. Dishwasher - Frigidaire FFCD2413UW (Best Buy)

High Pressure Washer:

1. BODY DESIGN:

Benefits: Does not require too much space, easy for users to carry.

Drawbacks: A series of supporting large-scale equipment is required, and the remaining large-scale equipment will occupy a larger space.



2. BARREL PIECE:

a. Straight barrel:

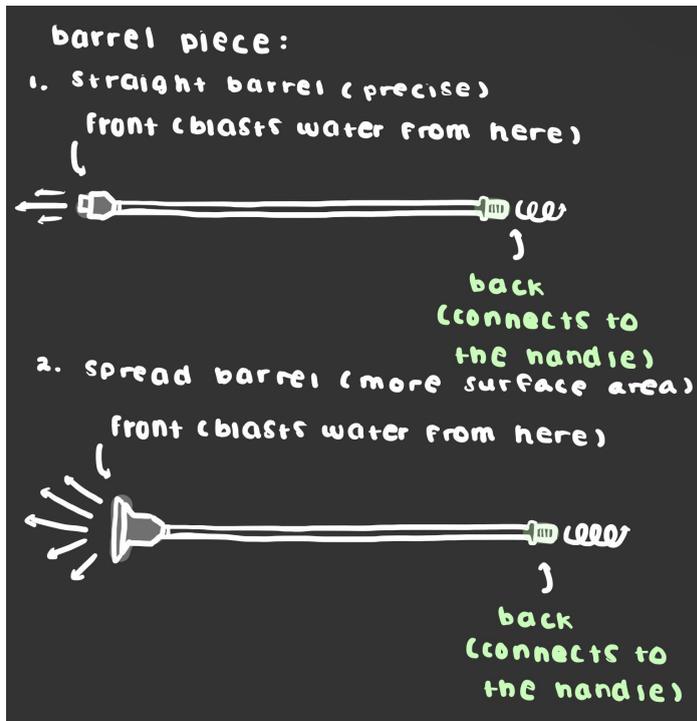
Benefits: It can provide enough pressure to make every sprayed place clean enough.

Drawbacks: Can't take care of a larger area, the user needs to make multiple moves to ensure that everything is cleaned.

b. Spread barrel:

Benefits: The cleaning area is large, and the user does not need to move so that the water can be sprayed to a large area.

Drawbacks: Due to the expansion of the spraying area of the water, it is hard to distribute the strong pressure to each place, which results in the low cleanliness.



3. PUMP:

Benefits: Can provide strong and sufficient energy for cleaning equipment.

Drawbacks: Need to occupy a large space and need to perform a periodic check whether the device can work properly.



Electrical Scrubber:

1. ATTACHABLE SCRUBS:

a. General scrub:

Benefits: Can do a large area cleaning.

Drawbacks: It is hard to do a thorough cleaning of all contaminants (Ex: pollutants in a hole).

b. Skinny scrub:

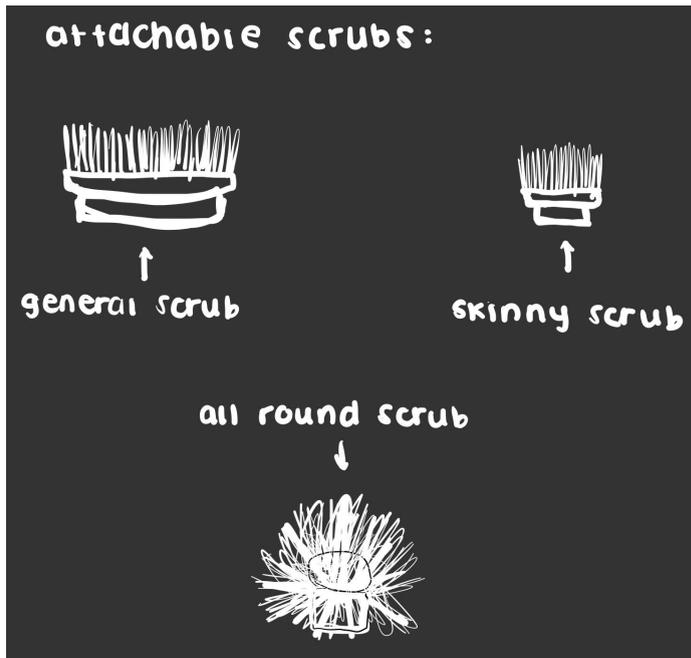
Benefits: Under certain circumstances, a deep cleaning can be performed.

Drawbacks: Some large pollutants will be cumbersome and inefficient to use this equipment.

c. All round scrub:

Benefits: A general cleaning is possible for all angles.

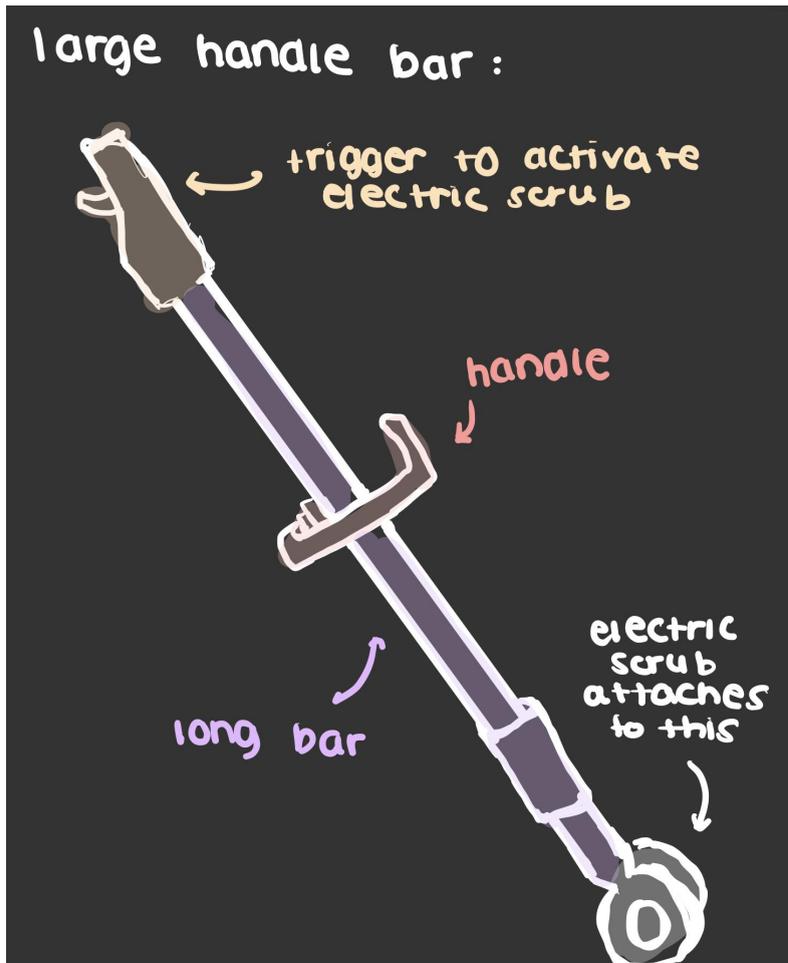
Drawbacks: Cannot do large-surface-plane cleaning.



2. LONG HANDLE BAR:

Benefits: It can help the user to clean some places that the user can't touch, such as in the corner, or the bottom layer of the sofa.

Drawbacks: Not as easy to operate as the short handle.



3. SHORT HANDLE BAR:

Benefits: Easy to operate. Users can check the cleaning status of the cleaning objects in real-time, and they clean again for unsatisfactory places.

Drawbacks: Can not clean some untouchable places, like sofa bottom



4. DETERGENT HOLDER:

Benefits: Due to the addition of detergent, it can carry out a deeper and more efficient cleaning of contaminants.

Drawbacks: There are some certain items (those made of materials that cannot touch the detergent) that cannot be cleaned with this device due to the detergent.

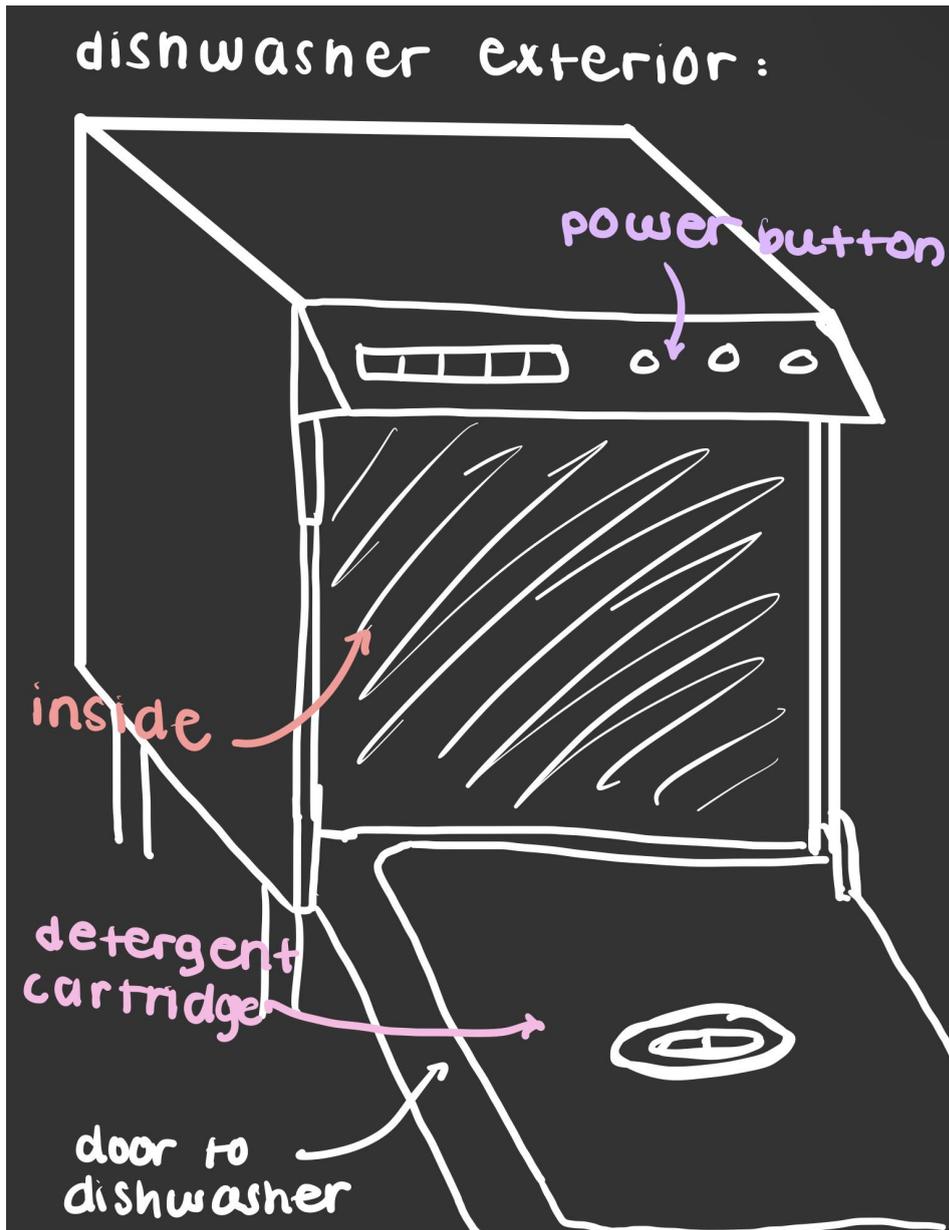


Dishwasher:

1. FIXED BODY:

Benefits: Efficient, the user only needs to put the clothes in the machine, and only need to wait for the machine to wash the clothes

Drawbacks: Need to occupy a larger space.



2. DISHWASHER RACKET:

Benefits: Items to be cleaned can be fixed.

Drawbacks: Items cannot be placed randomly, and everything has a fixed position. The shape of the items is limited.

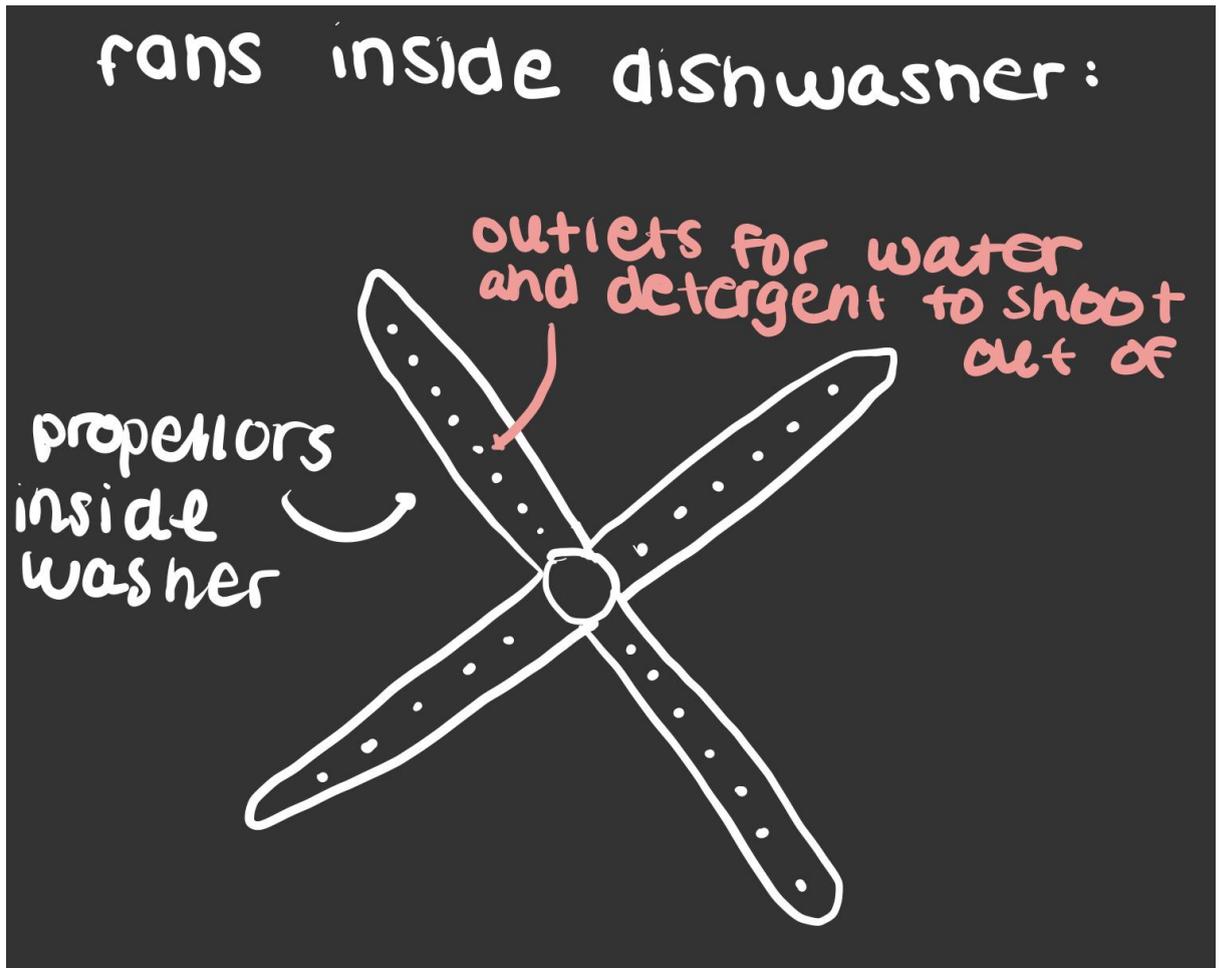
dishwasher racket :



3. SPINNERS INSIDE DISHWASHER:

Benefits: The item can be rotated continuously to wash away the contaminants attached to the item..

Drawbacks: For those pollutants that require continuous flushing, can not achieved a good cleaning effect.



Selection matrix:

High pressure washer	Movable Body	Barrel tube	Pump
Electrical Scrubber	Handle bar	Attacheable Scrubs	Detergent Holder
Dishwasher	Fixed Body	Racket	Spinners

Final functional solution

We decided to take the spread barrel and the pump from the high pressure washer. The pump offers high pressure and helps farmers to clean the stubborn algae. The spread barrel helps farmers to clean the algae of the holes on the board. Also, we decided to take the general scrub to clean the board effectively. The all round scrub is good for cleaning the holes, but we do not focus on cleaning the holes of the board because the client does not require that much. Finally, we chose the fixed body because the space in the container is limited. If we use the movable body, users may get injured by tripping over pipes in the ground.