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THE BRIEF

the brief

To look at how we dispose waste within the home and reduce the process in which we dispose of it.

PRODUCT DESIGN SPECIFICATION

product design specification

Design Parameter:	Description:
Performance	To store and contain general waste. It must reduce the current domestic waste disposal process. It must assist in the sealing of the bag. Once the waste has entered the product, the user will not come in contact with the waste again.
Environment	The product will not over heat, or melt with the heat of the electronics in the display or control unit. The leads and power source will be sealed away from the main container to prevent any leaks coming in contact with any wiring. The product will have sufficient contact with the floor to prevent the unit from side tipping or being knocked over.
Target Product Cost	The product cost at sale will be around £100. The production cost will be higher than the current products. The product will have many more functions than the current products.
Quantity	The product will aim to go in all stores around the country, total quantity of 20,000 to be sold over the next 3 years.
Manufacturing Properties	Lid and inner body will be will be injection moulded with a chrome finish. Manufacture of the main body will be injection moulded with a high gloss finish. The LED touch screen display will be glass, with chrome surround.
Materials Properties	Lid and interior components will be made of stainless steel with a chrome or high polished finish. Main body will be made of white high gloss ABS plastic. The LED touch screen display will be glass, with chrome surround. The feet of the unit will be made of PVC Rubber.

PRODUCT DESIGN SPECIFICATION

product design specification

Size	The single unit will be a max height of 800mm. Width of the unit will be max of 300mm. The waste access area will be of 200mm x 200mm.
Aesthetics	Main body to be ABS plastic, with high gloss finish. Lid and inner body will be with a chrome finish. LED glass touch display will be bright and clear.
Ergonomics	The bin's waste access area will be a min height of 650mm The LED glass touch display will be a max height of 800mm The controls will be simple, clear and spaced out. The user will be able to reach the lid/waste access area to insert waste.
Target Customer	The target will be home owners. Modern homes. Potential for all ages.
Time to Market	The product will aim to complete manufacture within 1-1.5 years
Standards	All electrical and mechanical components will follow British Standards parts. The bags will be the same size and allowances as current council disposal services.

EXISTING PRODUCTS

existing products

Featured here are some examples of the electric waste bins. These operate on a very low power which allows a sensor to open a catch on a spring loaded hinge to open the lid.

On reading through customer comments and reviews they find it more of a nuisance than handy. One comment read "the only time it really come in useful is when you have raw food like meats in your hand that you really don't want to spread around, the rest of the time you end up having to pause to wait a second for the sensor to pick you up."





Push Through Lids

Benifits:

- Keeps smell in

Disadvantage:

- Dirt/mess from rubbish rubs onto lid as you insert.



Peddal Lift

Benifits:

- Easy Access
- Hands free to hold rubbish

Disadvanges:

- Small extra cost
- Sometimes sticks open



Lifting lids

Benifits:

- Keeps smell in

Disadvantages:

- Requires both hands

Straight Through Hole

Benifits:

- Easy access

Disadvantages:

- Smell rise out of bin



Stackable Storage Fittings

Benifits:

- Hidden away from sight

Disadvantages:

- Requires unit space



Multi Units

Benifits:

- Recycling options

Disadvantages:

- Less space per bag inside
- Larger unit size

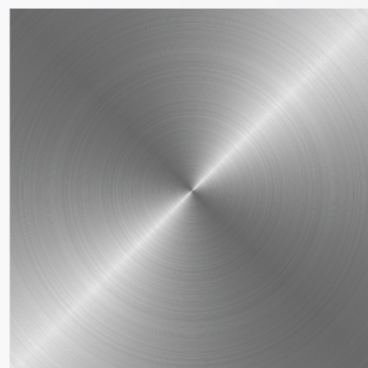


WALNUT - WHITE - CROME

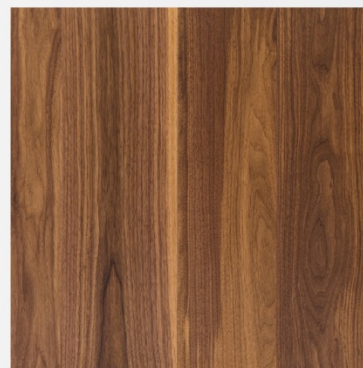
walnut - white - chrome



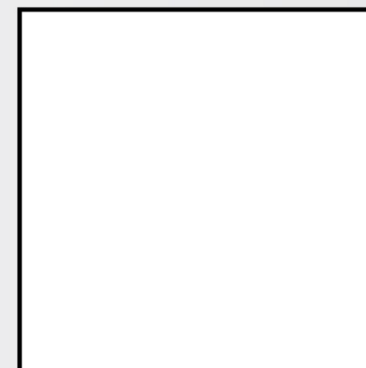
Chrome



Walnut



White / Gloss White

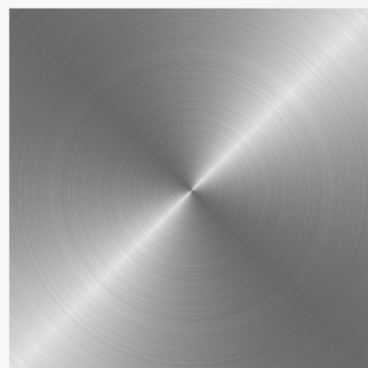


OAK - WHITE - CROME

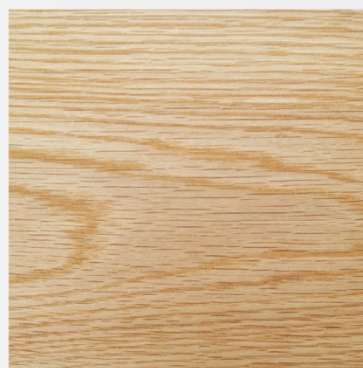
oak - white - chrome



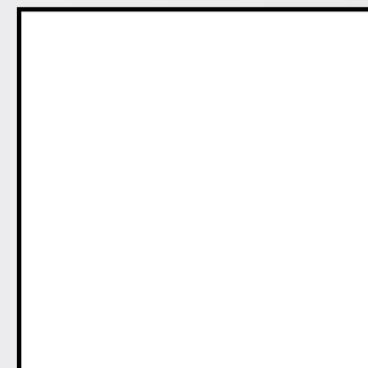
Chrome



Oak



White / Gloss White

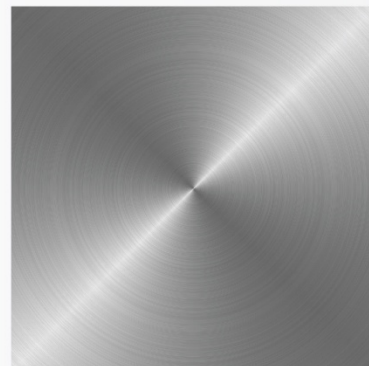


BLACK - WHITE - CROME

black - white - chrome



Chrome



Black / Gloss Black



White / Gloss White



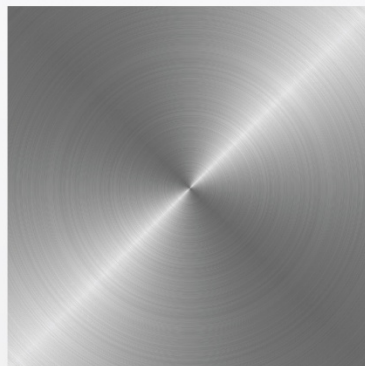
MATERIAL CHOICES

material choices

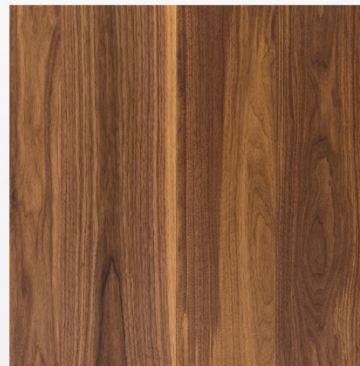
The way in which designers are choosing to design items are what is visioned to be futuristic, with many designers using white, high gloss materials, usually mixed with a finished wood, or chrome detail with soft LED lights on the digital platforms.

These happen to be my favorite materials in products designed as well. The combinations of materials that follow will be incorporated into the design outcome.

Chrome



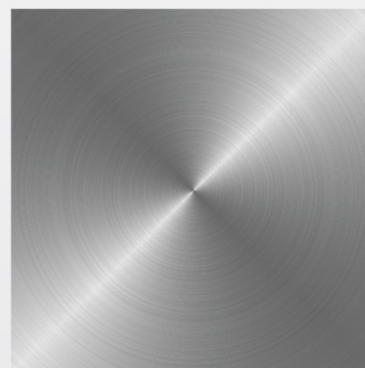
Walnut



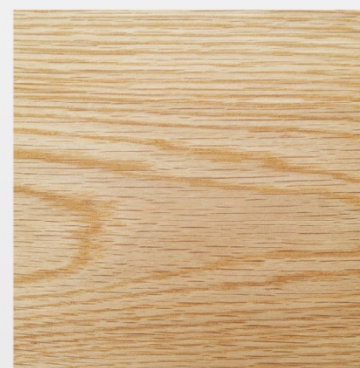
White / Gloss White



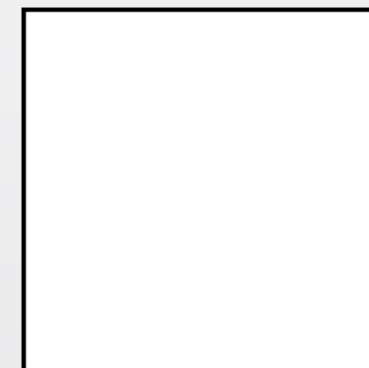
Chrome



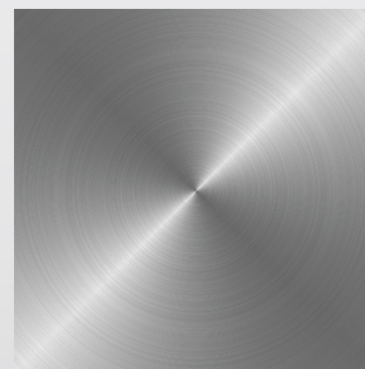
Oak



White / Gloss White



Chrome



Black / Gloss Black



White / Gloss White



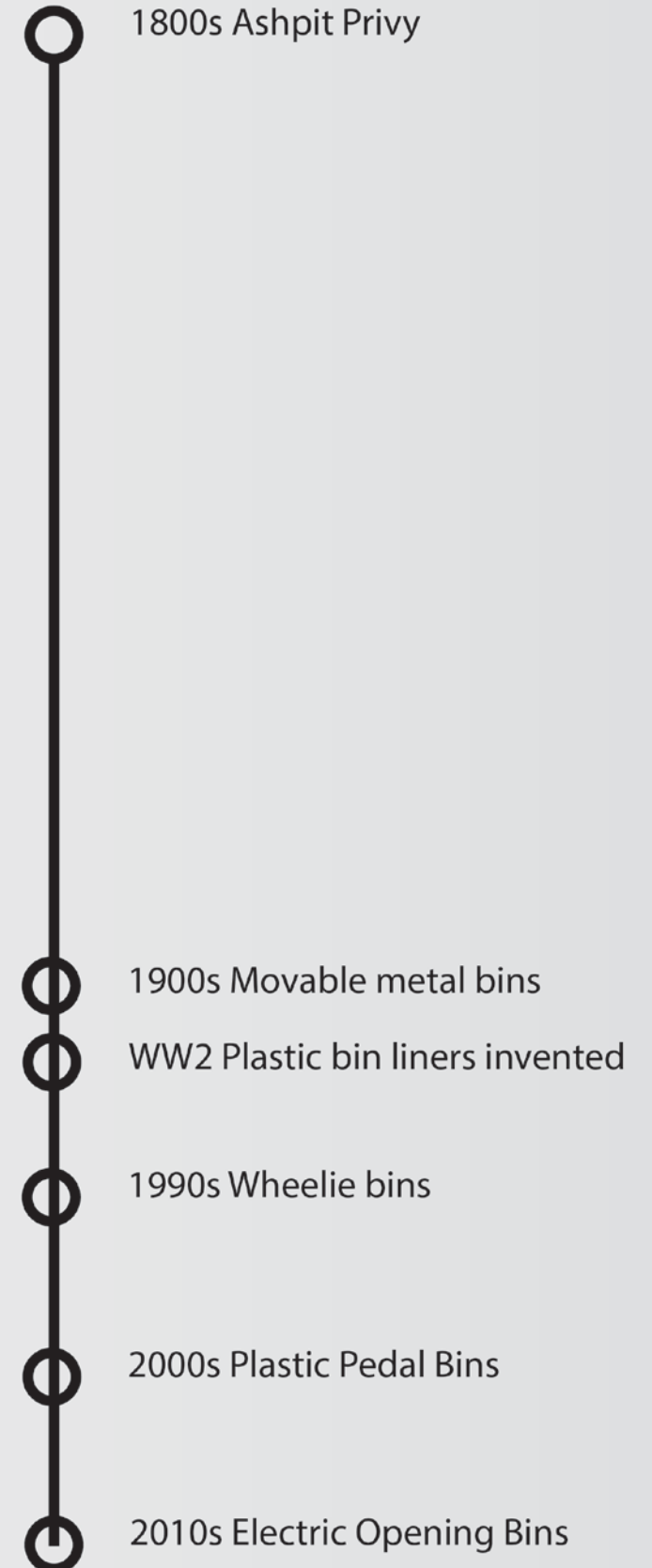
HISTORY OF THE BIN

history of the bin

I have looked at the history of the bin to see exactly what has happened over history to conter the problems they faced.

Solutions which used to exist could be the answer to current solutions but have been over looked simply 'beacuse they've been done'

I have found it quite interesting to see how much responsibility was left to the people at home compared to the government.





USER EXPERIANCE

user experiance

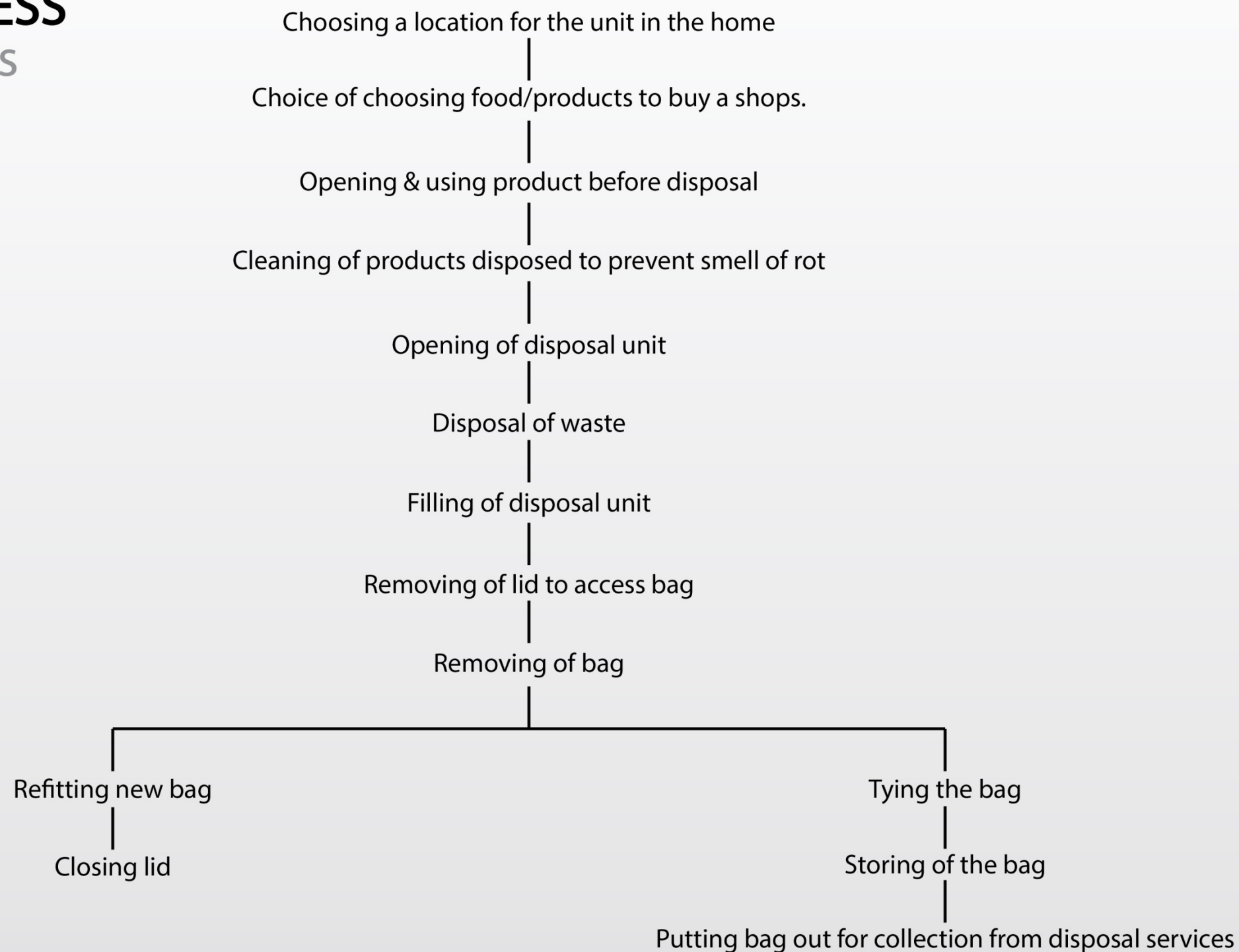
The disposal unit relies on the user in order for the unit to perform its functions. Its the actions of the user which defines how efficient the product is. And how efficient those interactions are defines the user experience.

The user experience of a bin is long process from start to finish, and the actions required to operate have different emotions with everyone. From the smell, to emptying and taking out for the disposal services there is user experience all along the way.

The full disposal process. The human choices. The amount we use these products.

THE PROCESS

the process



HUMAN FACTOR

human factor

In using a bin or any other disposal unit there are human factors that come into play as well as the functions involved in the process of the unit.

|

Is there a choice made at the store when you go to buy products depending on what the packing is like?
Are you able to dispose of the packaging properly, or will you compromise to a different product?

|

Before throwing away, do you need to clean it? Is the smell from the bin that bad that you have to invest time in washing something which you are throwing away.

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Do we know when the bag is full? Do we know if it will be too heavy? Often we are lazy and therefore continue to stuff rubbish into bins in a effort to delay the inevitable time where we must change the bag.

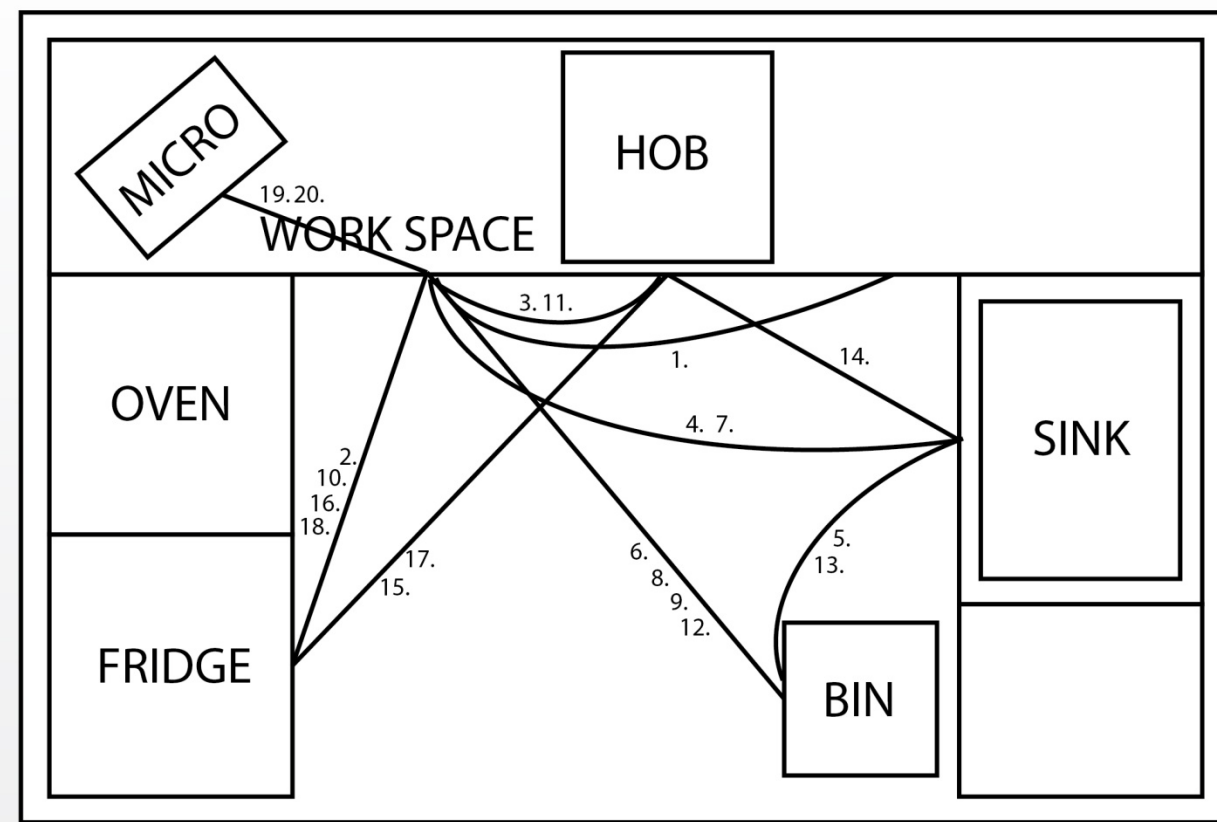
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When the time does come to remove the bag, do we remember to take the right bag out on the right day? Or do we forget and have to leave it for another fortnight.

USER FREQUENCY

user frequency

This shows just how often we use a bin in just preparing one meal. Captured are videos of us preparing a meal and showing how often we use all aspects of the kitchen as well as marking our movements and actions.

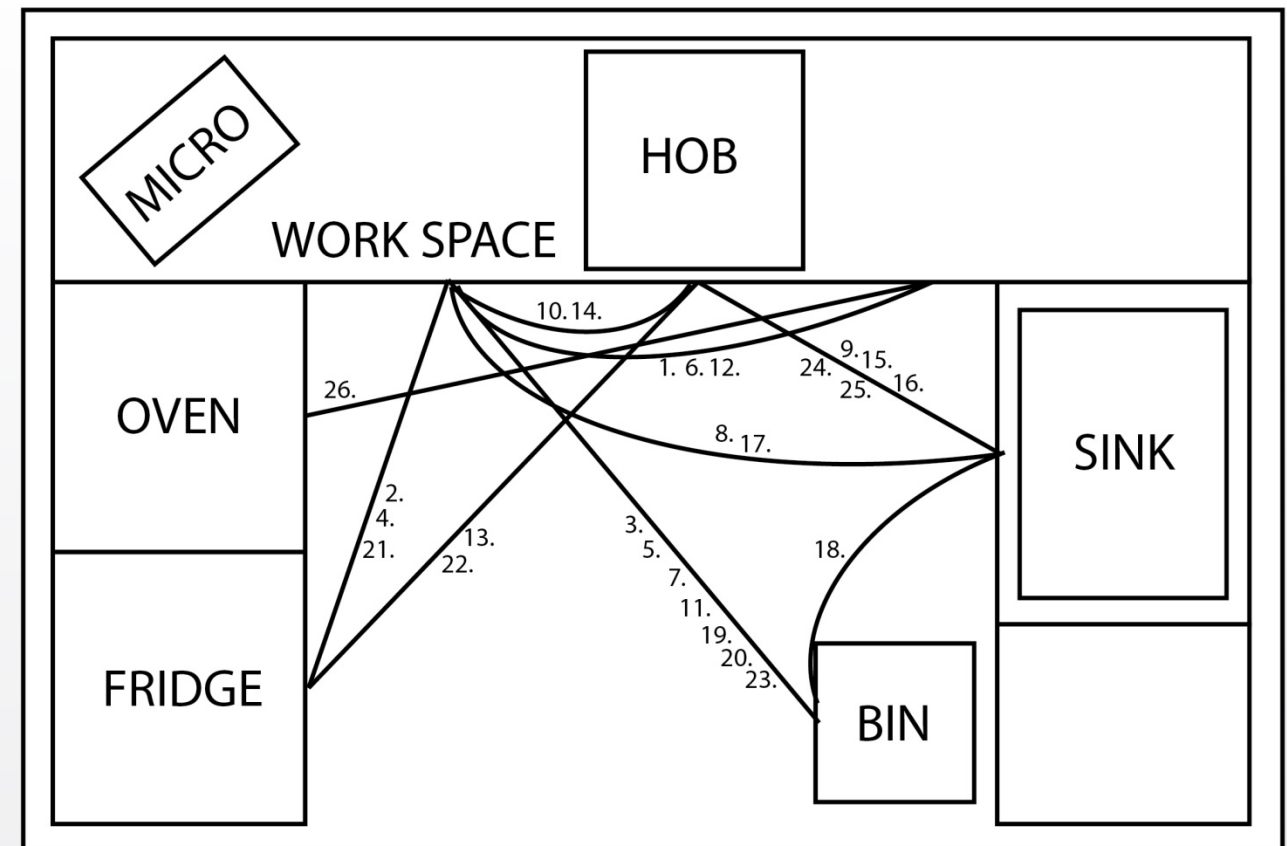


Trips:	
Bin:	5
Sink:	4
Cupboards:	15
Fridge:	4
Hob:	6
Oven:	0
Microwave:	2



USER FREQUENCY

user frequency



Trips: 7
Bin: 5
Sink: 17
Cupboards: 17
Fridge: 5
Hob: 2
Oven: 1
Microwave: 0



SURVEY QUESTIONNAIRE

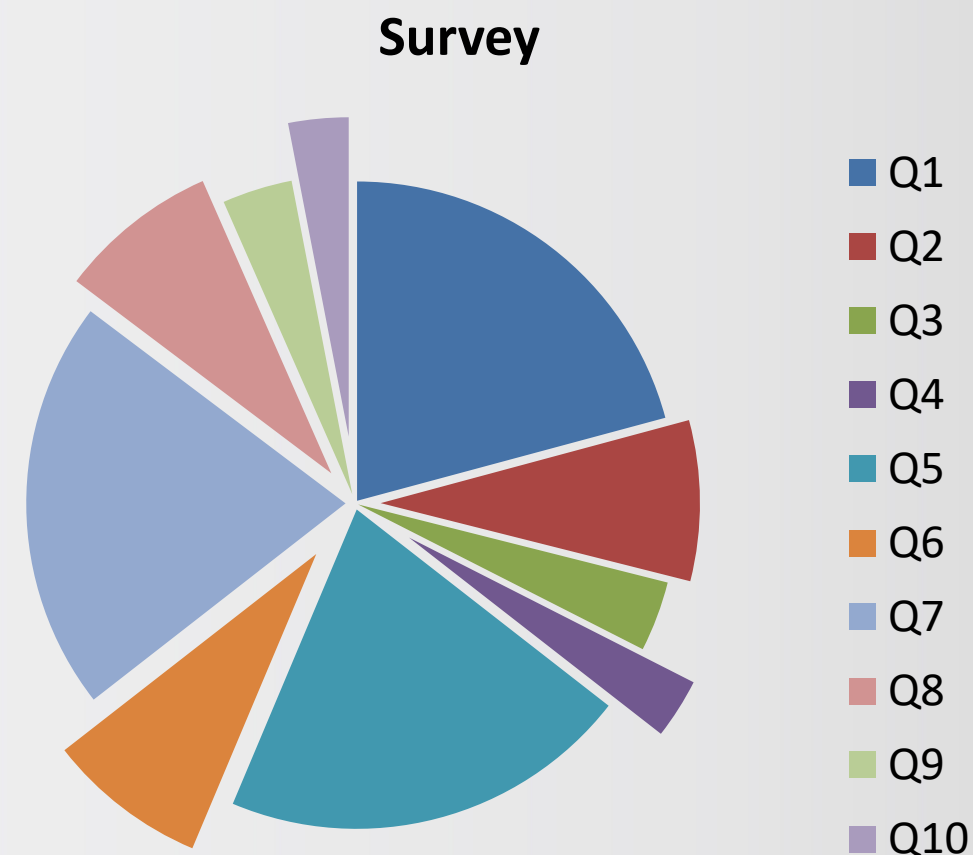
survey questionnaire

I have made a survey just to confirm my own thoughts on how the majority of people throw they're waste away.

95 people have so far answered the online survey.

This has confirmed my understanding of how the majority dispose their general waste based on the

- number of people live in one house
- how many bins they have
- where they may be located
- how many bags they dispose of
- how often they have to empty their bins
- what they put their waste in



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C1
c1

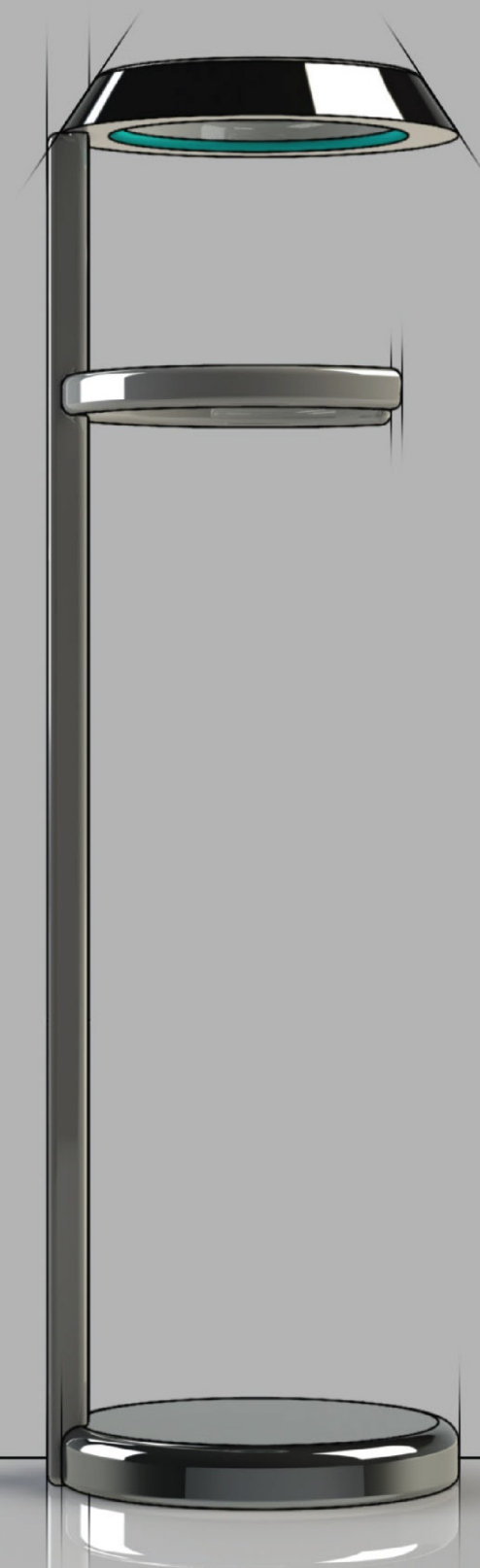
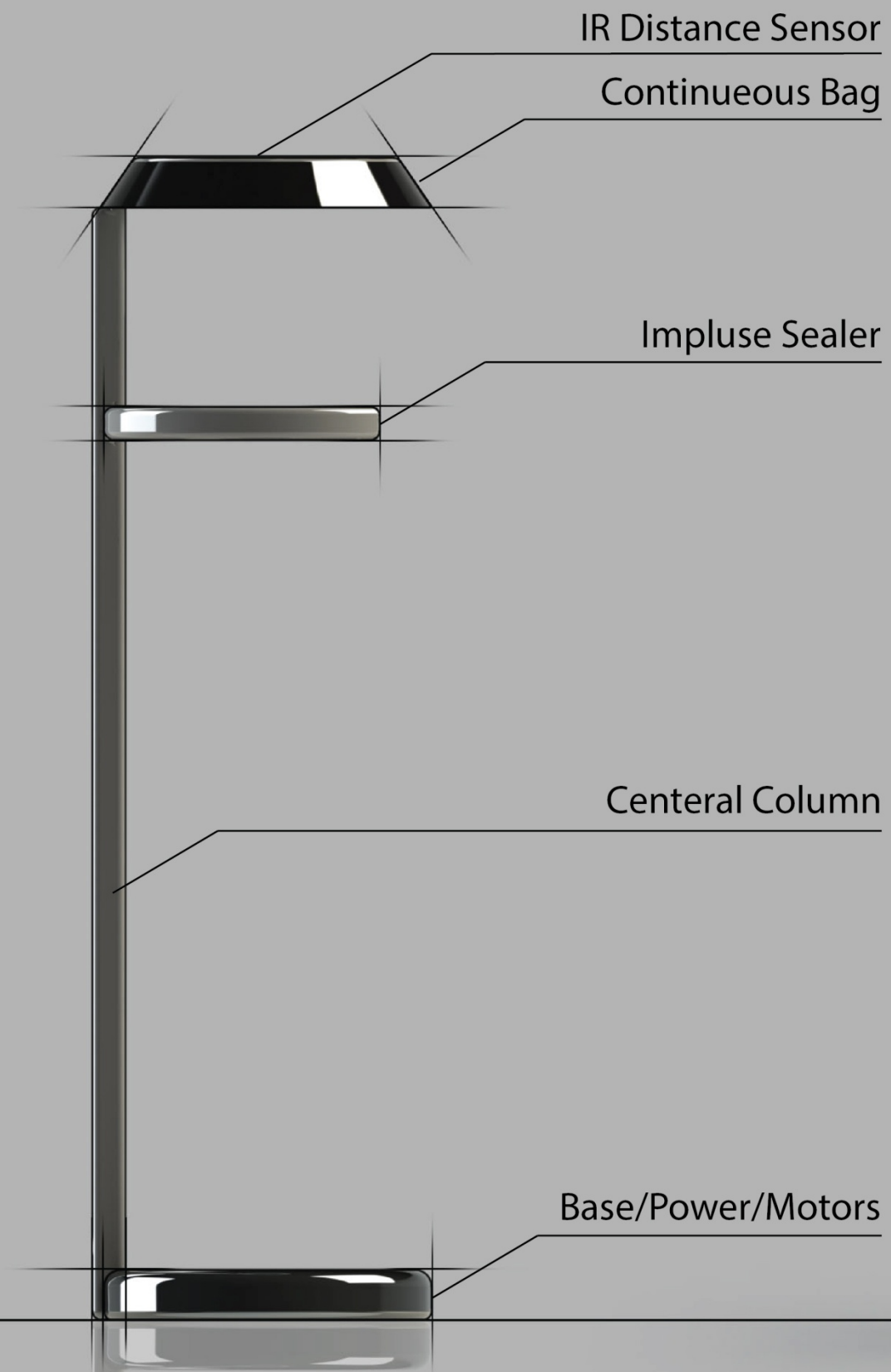
IR Distance Sensor

Continuous Bag

Impluse Sealer

Central Column

Base/Power/Motors



THE BAG mark 1

the bag mark 1

The bags will be doughnut shape, meaning they will fold/roll down in on itself. The central hole would provide the space for the rubbish to access.

The bags will be taken to the base of the bin by the weight of the rubbish.



IMPULSE SEALER

impulse sealer



An impluse sealer is the technology that I want to use to seal the bag up once full.

The sealer would slide or fold in to press together to seal the bag.

It is rather simple components consisting of a metal strip covered by heat proof material which prevents the plastic from bonding to equipment.

The internal components consist of a transformer, a circuit board, and a timer switch.



SEALING TEST

sealing test

I have tested the impulse sealer against the current bags provide by the council. These work just as well as the product is intended for plastic which is a bit thicker.

I have bunched the plastic together to see how effective the sealer would be at sealing through.



The sealer worked best when the bag was folded evenly at about 5cm across



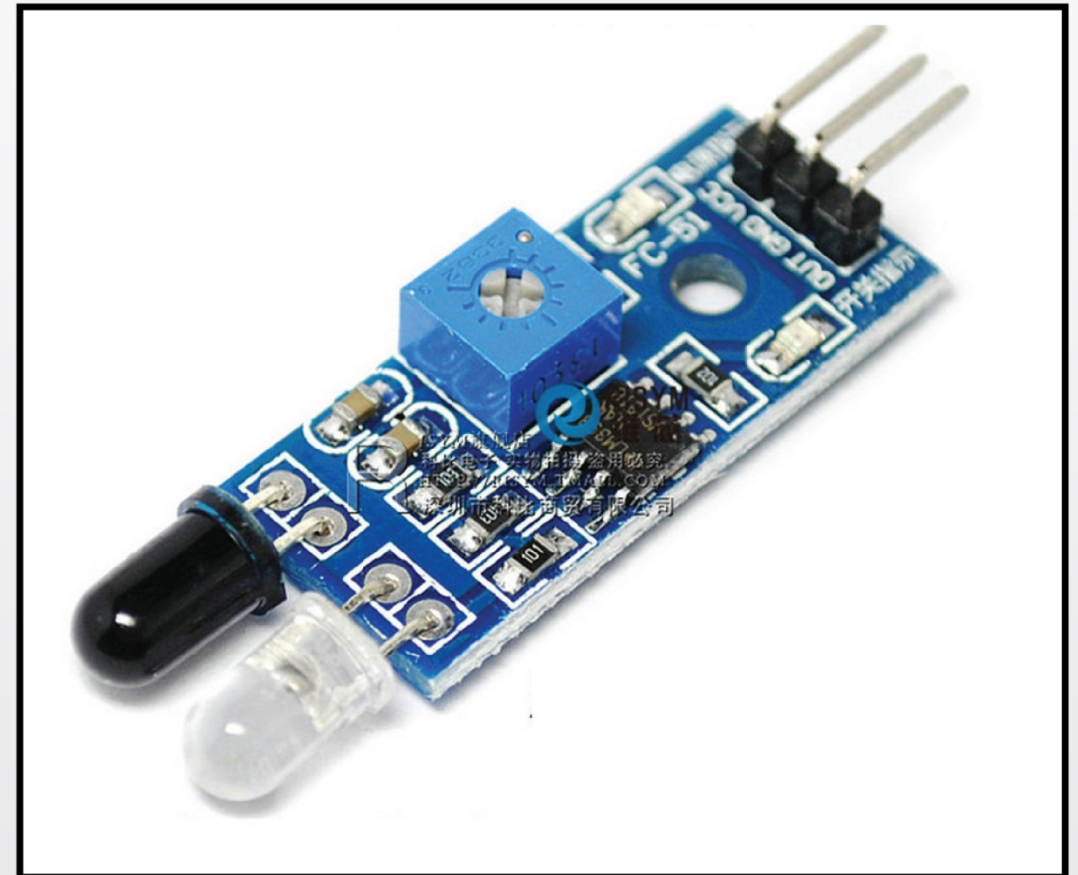
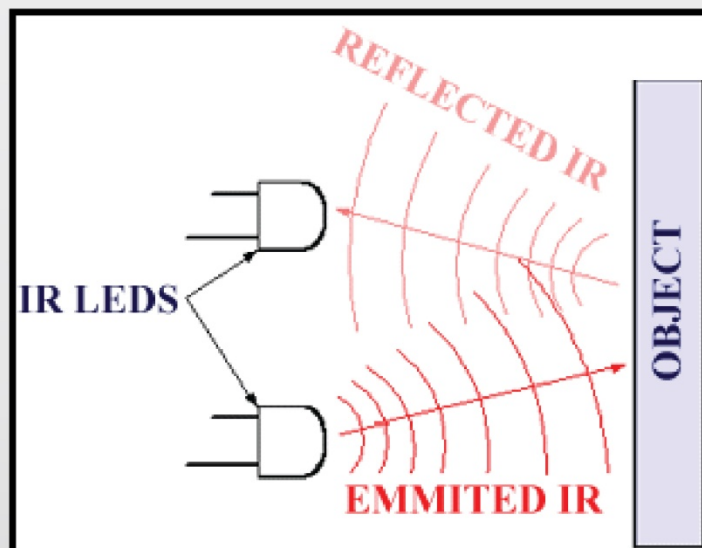
IR SENSOR

ir sensor

An Infrared sensor is a device which tests the distance of an obstacle. In the bin there will be one in the lid which tests the distance of the rubbish from the top.

Once triggered the bin will indicate it is full.

Another one will be located at the base which will tell the PLC the bag is present within the bin.

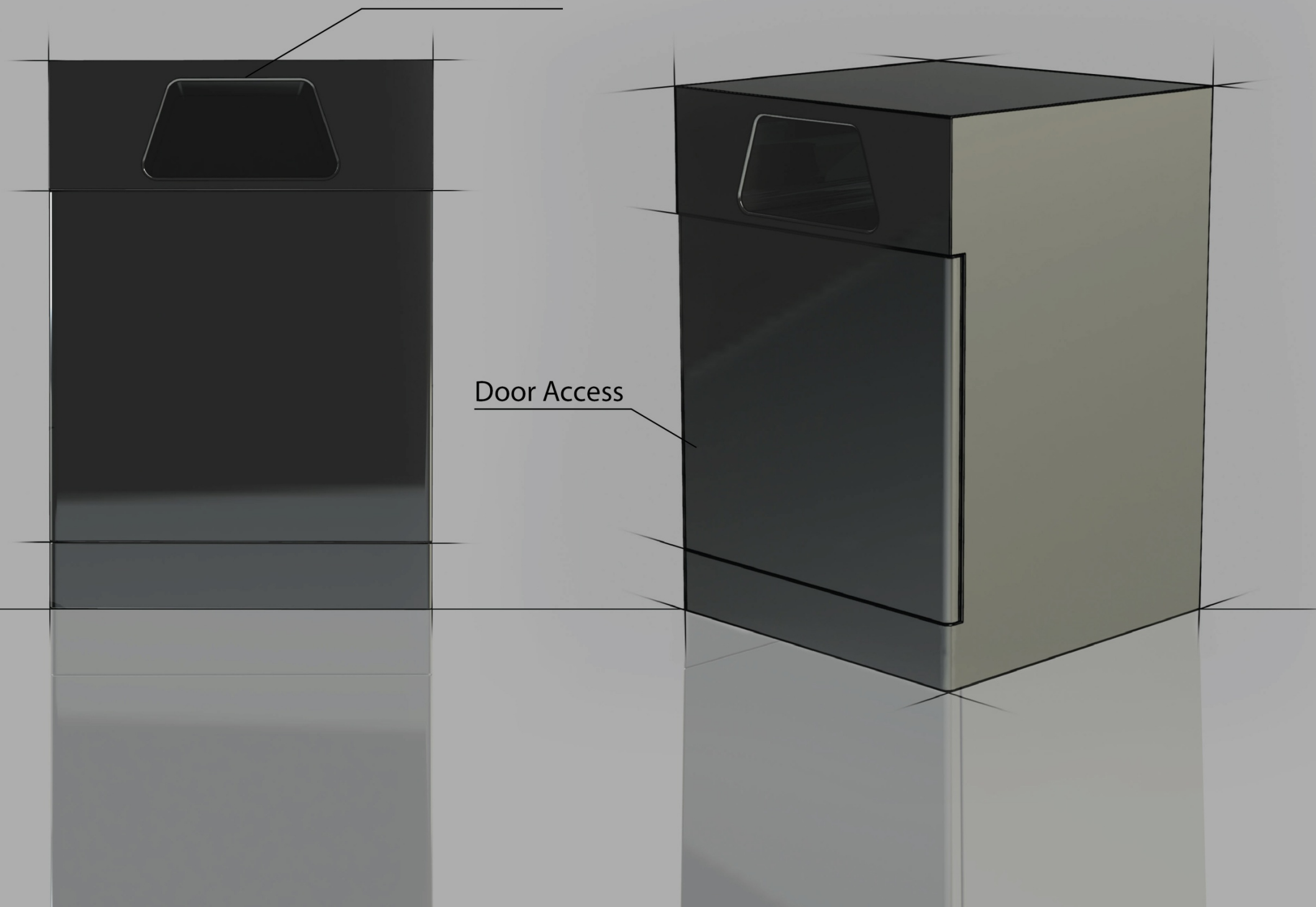


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C2
c2

Rubbish Access

Door Access

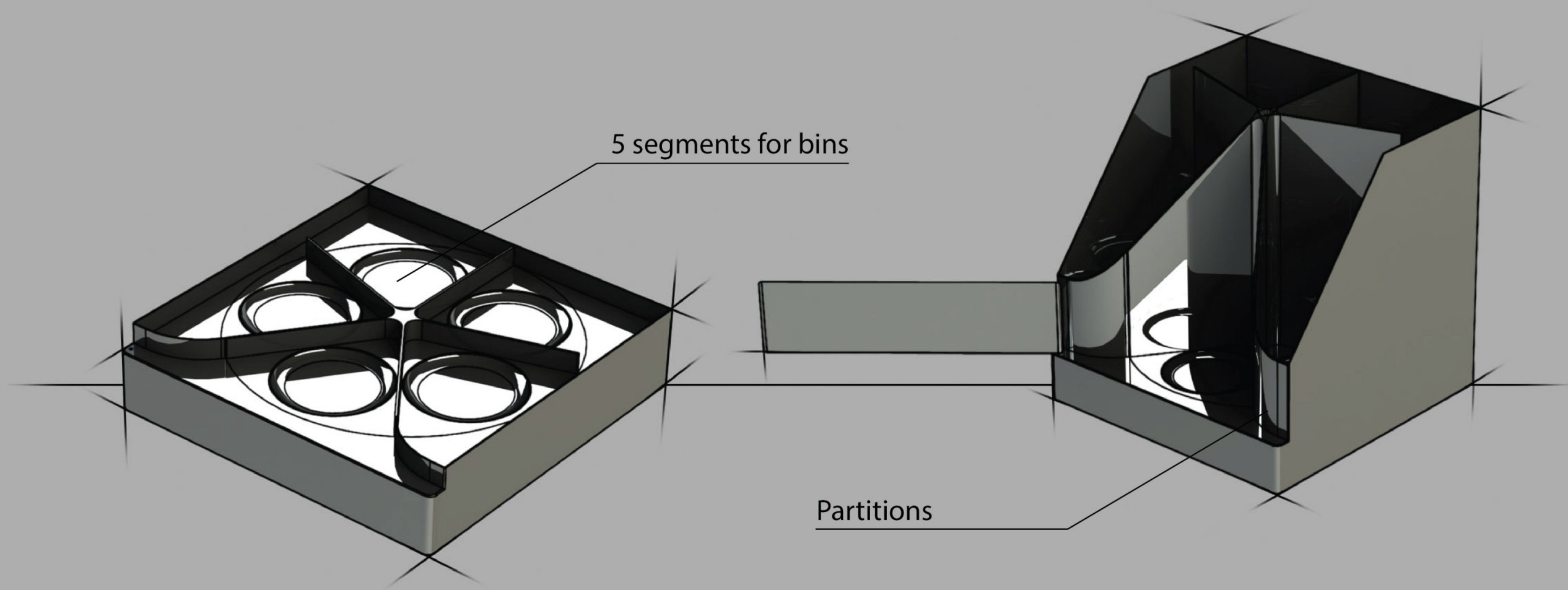


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C2
c2

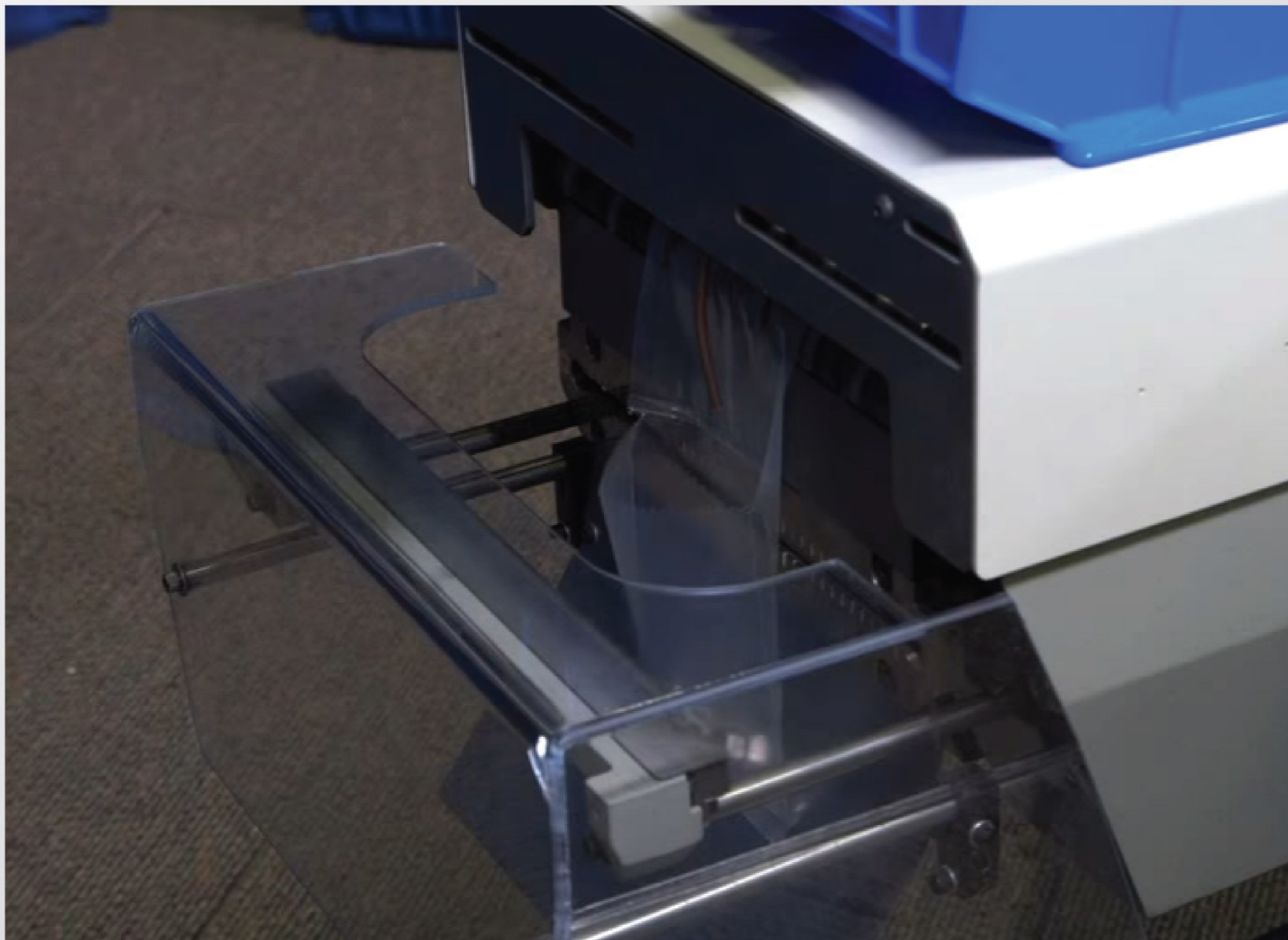
5 segments for bins

Partitions



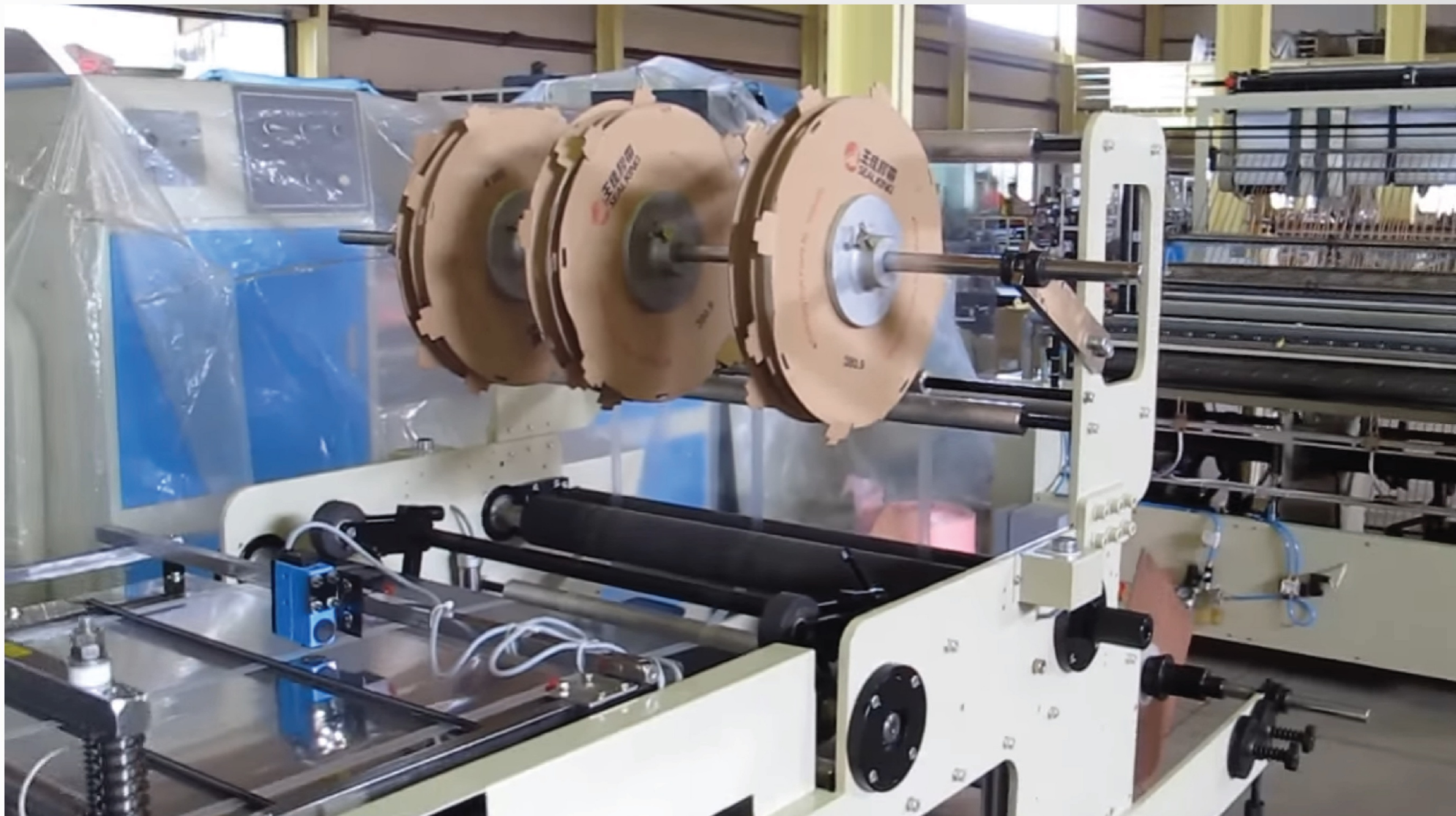
BAG SEALING

bag sealing



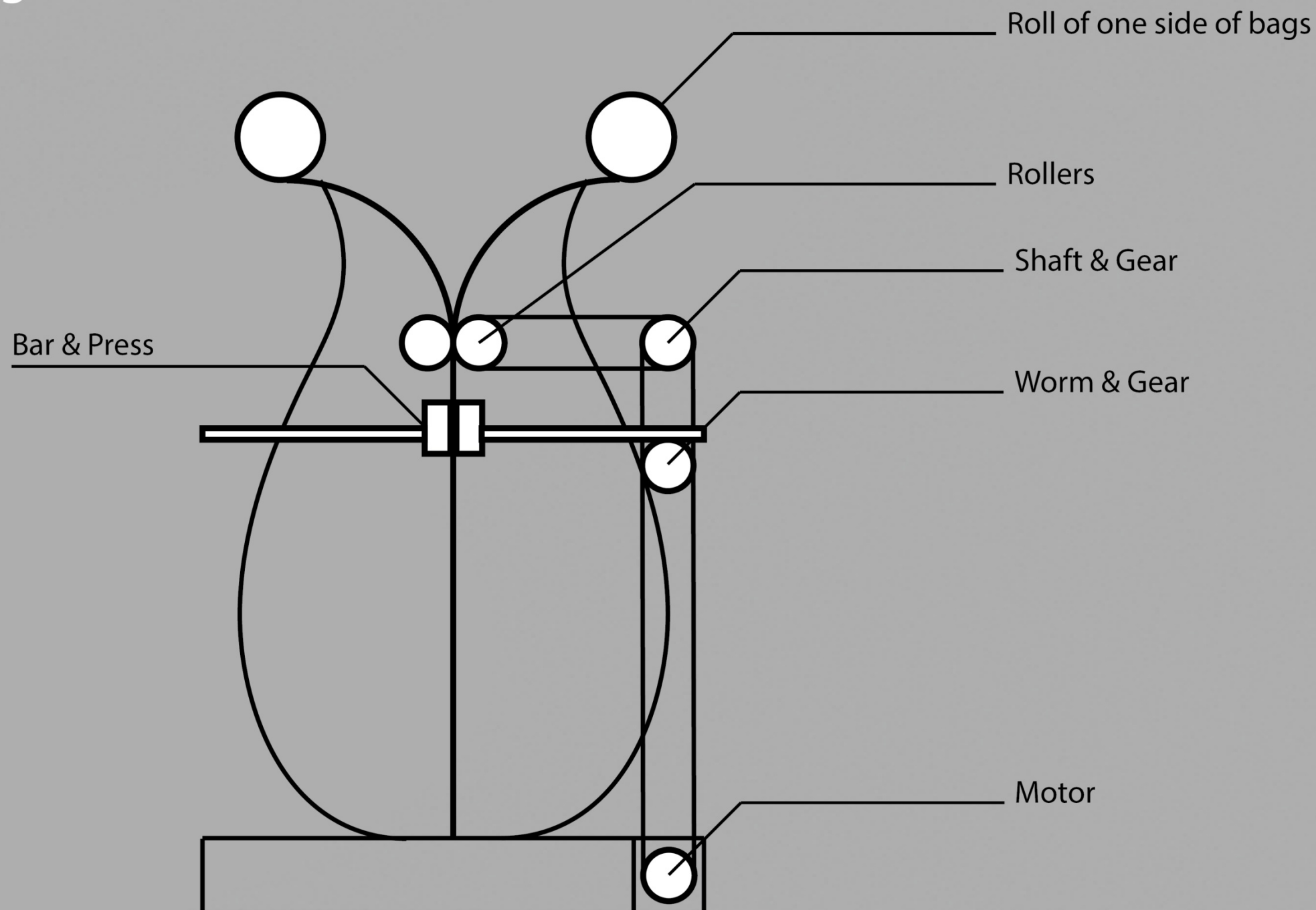
BAG SEALING

bag sealing



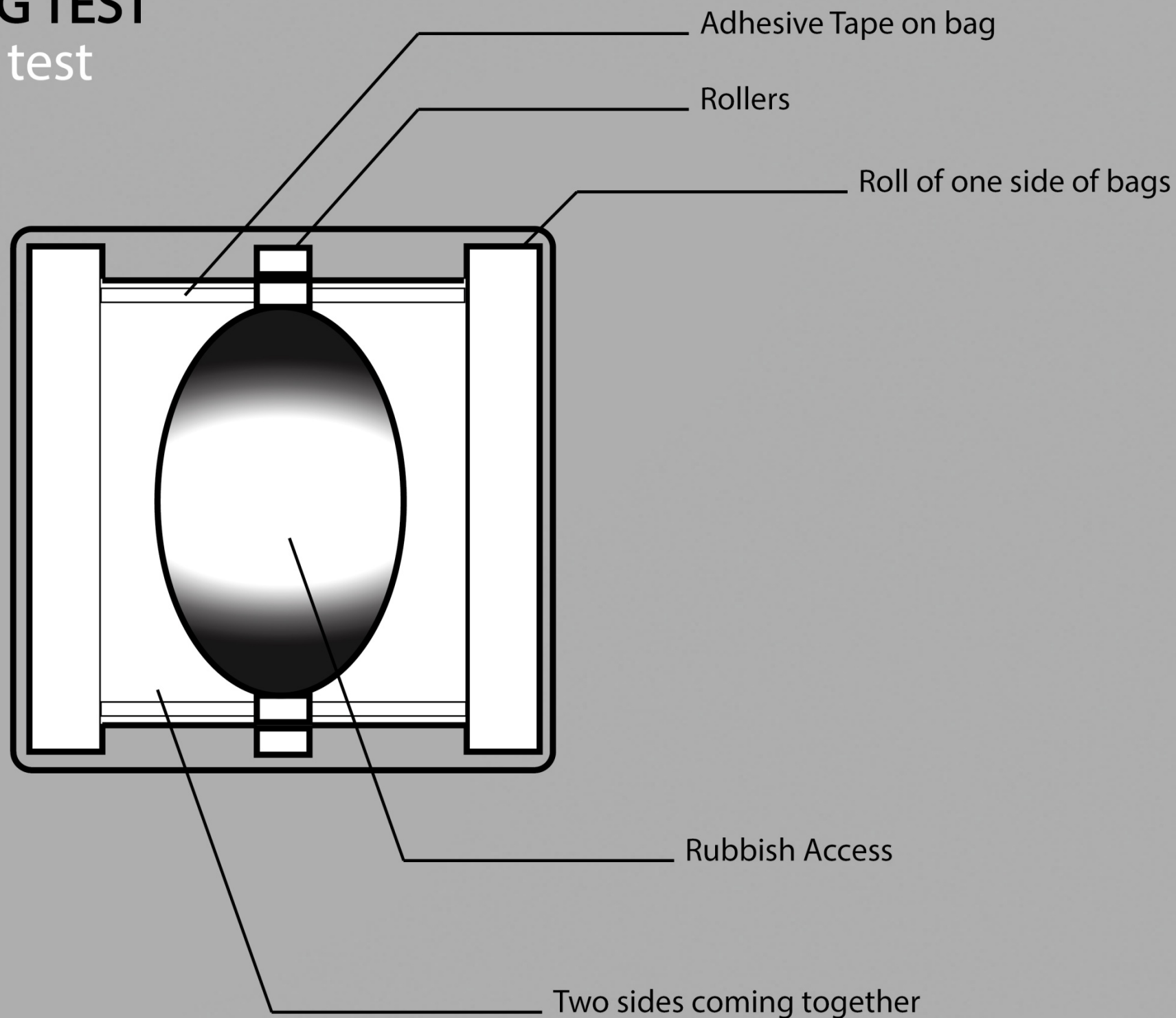
SEALING TEST

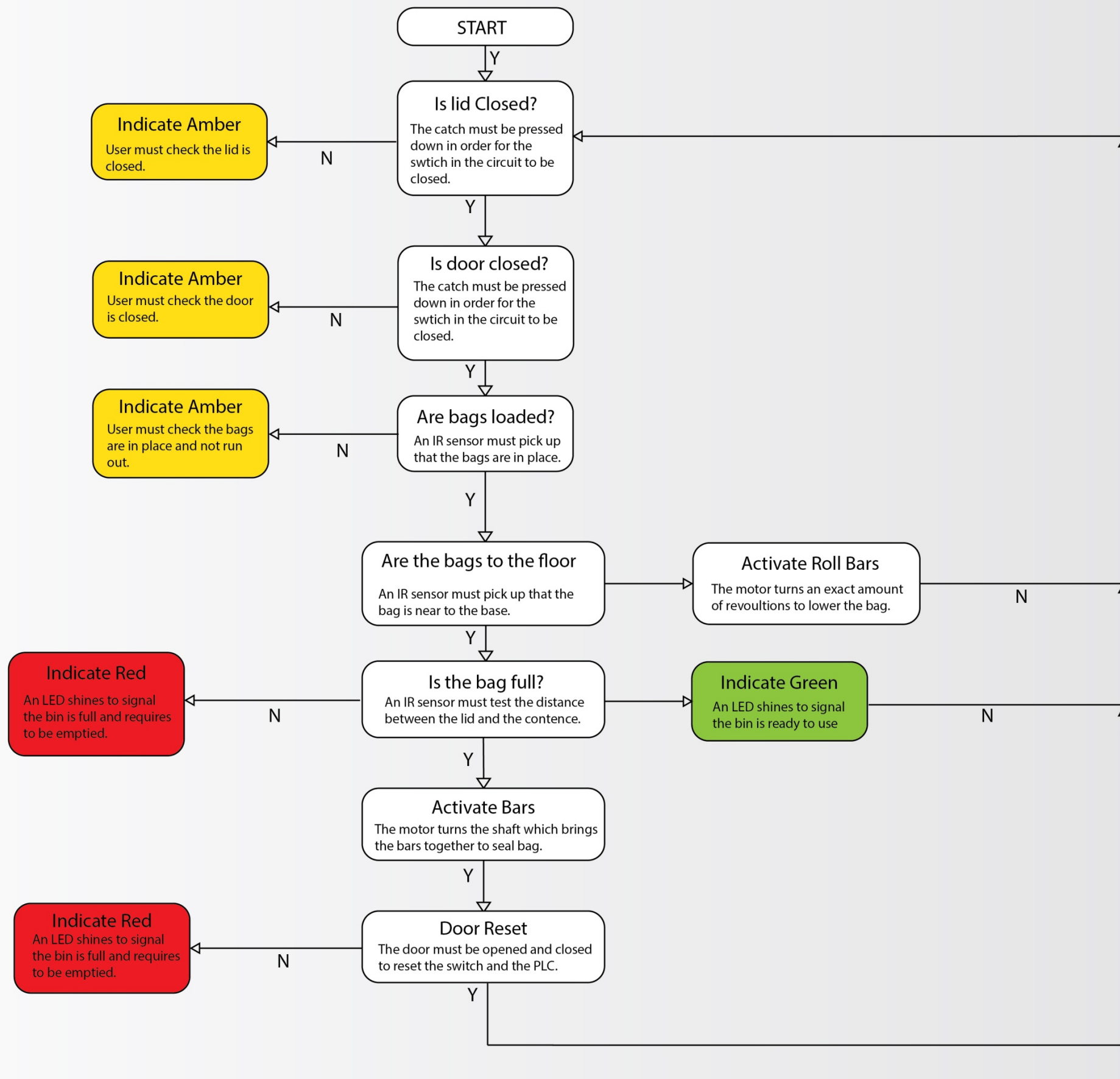
sealing test



SEALING TEST

sealing test





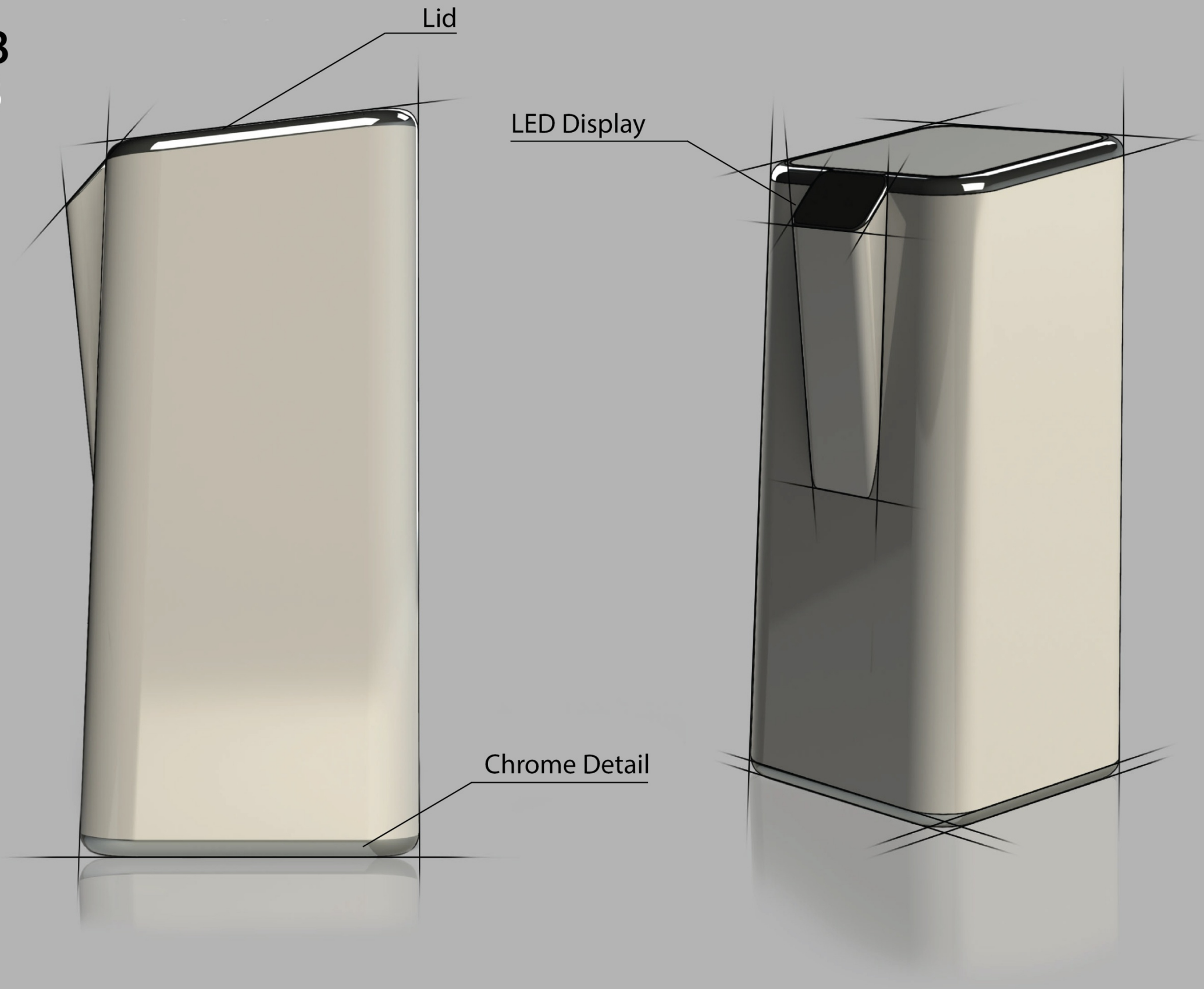
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C3
c3

Lid

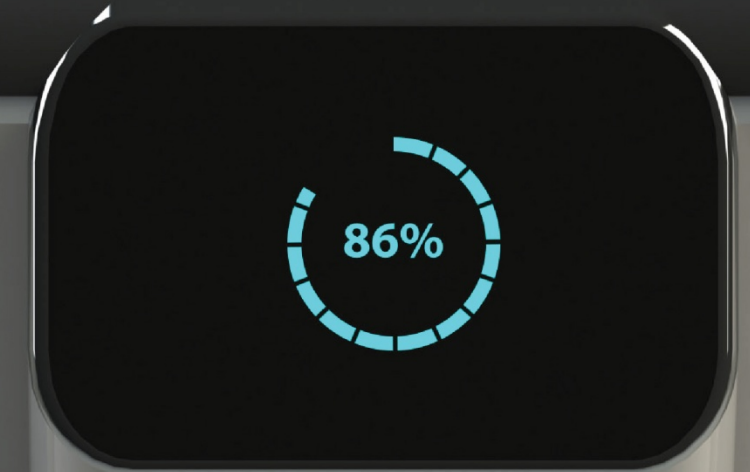
LED Display

Chrome Detail



Display Screen

- Displays percentage of how full the bin bag is. Shows either by weight or distance till full, whichever is greater.
- Press and hold screen to personalise settings



Personalise your limitations

- Limit the weight of the bag to never be surprised how heavy it is again.



HORSEPOWER-TO-TORQUE CONVERSION

