ADAM CARR

PORTFOLIO

PRODUCT DESIGN
ENGINEERING

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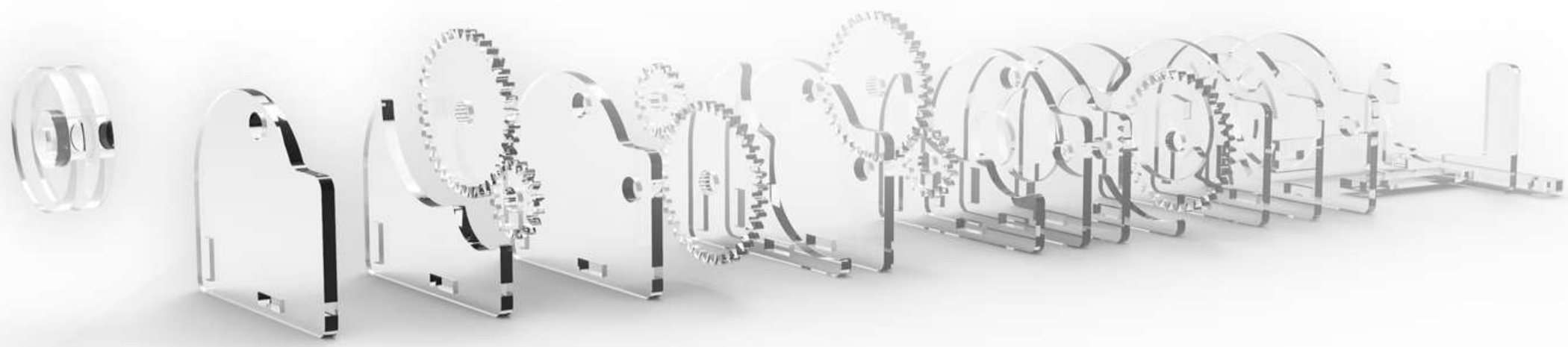


A novel approach to Intercepting stormwater plastic pollution before it enters our waterways.

A point-of-care blood rheology device. Navigating bio-tech design considerations to deliver fast results in surgegical theatres.

Luxury tapware designedin conjunction with Melbourne based company Pheonix Tapware around their patented internal cartridge.

Gearbox designed for optimising size and speed out of a single A4 sheet of acrylic.

A sit / stand counter-weighted desk designed to combat personal back pain. Constructed from pine and concrete as a lockdown project.

STORMSIEVE

Stormwater Plastic Pollution Interceptor

Our city's stormwater networks act as a concealed funnel, rinsing the urban land of its plastic pollution. This contributes to the global 275 tons of new plastic waste which enters our oceans every hour.

By targeting upstream transmission of plastic pollution via stormwater flow, the StormSieve addresses this ever-growing problem.

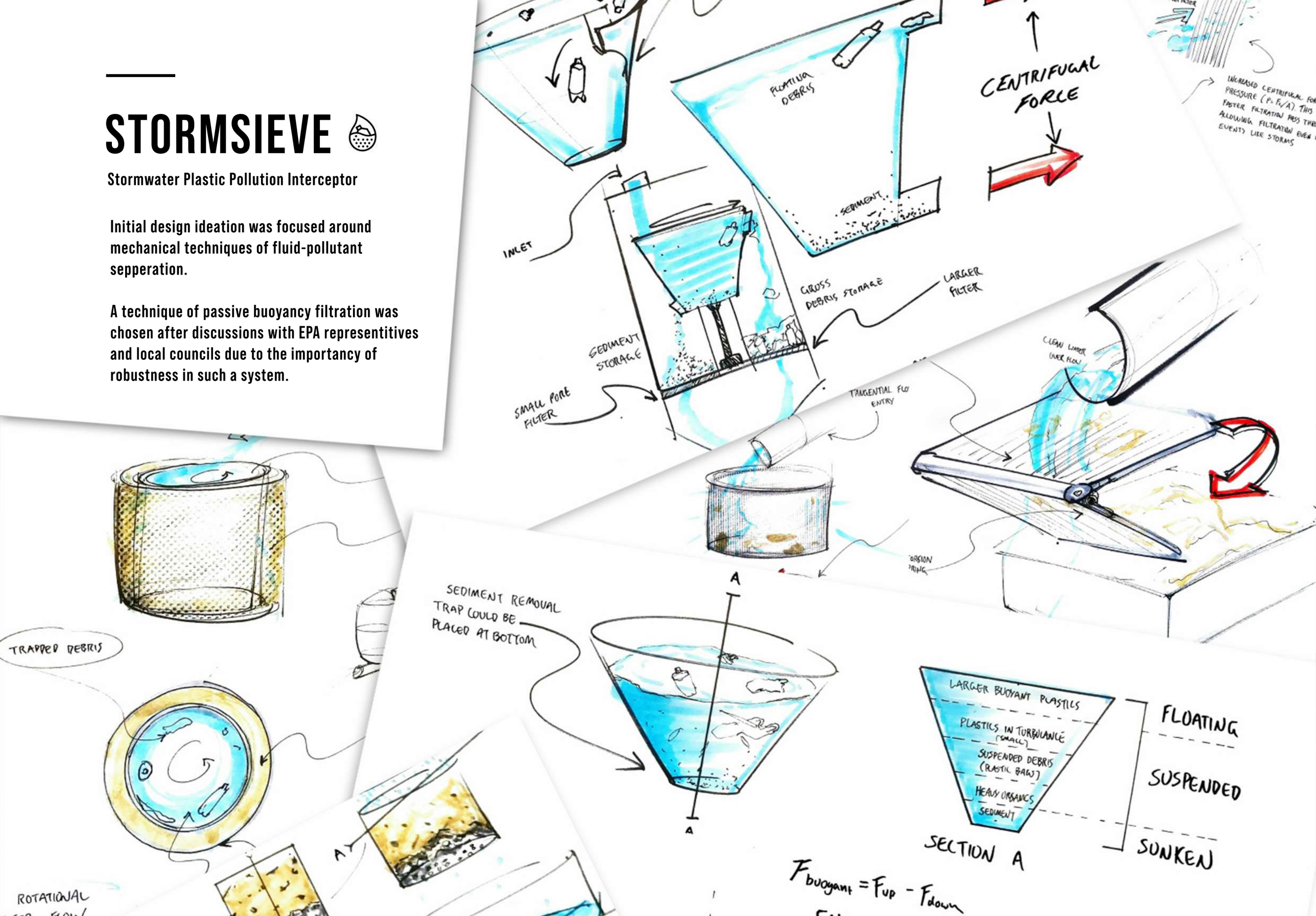
The in-ground gross debris trap filters plastic pollution by passive buoyant filtration via baffles attached to the folding doors. The device utilises existing skip bin service & transport infrastructure to reduce costs and work towards a cleaner future.

STORMSIEVE

Stormwater Plastic Pollution Interceptor

Initial design ideation was focused around mechanical techniques of fluid-pollutant sepperation.

A technique of passive buoyancy filtration was chosen after discussions with EPA representitives and local councils due to the importancy of robustness in such a system.



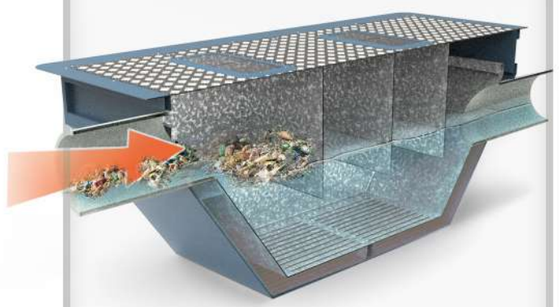
STORMSIEVE

Stormwater Plastic Pollution Interceptor

Due to existing pollution filtration infrastructure requiring costly service devices such as cranes or vacuum vehicles, a survey of local councils reported an inability to maintain existing solutions.

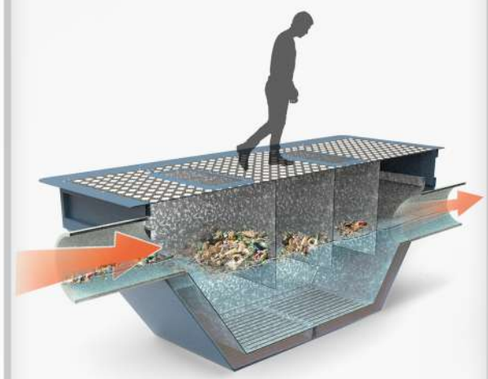
The StormSieve's unique configuration and utilisation of low-cost skip-based transfer services provides significant reductions in operation & manufacturing costs.

A reduction of on-going costs allows for increased servicing hence boosting filtration efficiencies. The StormSieve system aids servicing whilst reducing plastic transmission to move us one step closer to a pollution free world.



Debris flows in to device with stormwater. Buoyant plastic debris is halted at first baffle as water flows under.

1.



As device fills, succesive baffles catch remaining debris. Inspection of baffles is possible via polycarbonate window.

2.

Standard marell style skip truck can open doors via keyway attachment and replace inner mesh-bottom skip once full. Debris is then disposed of thoughtfully.

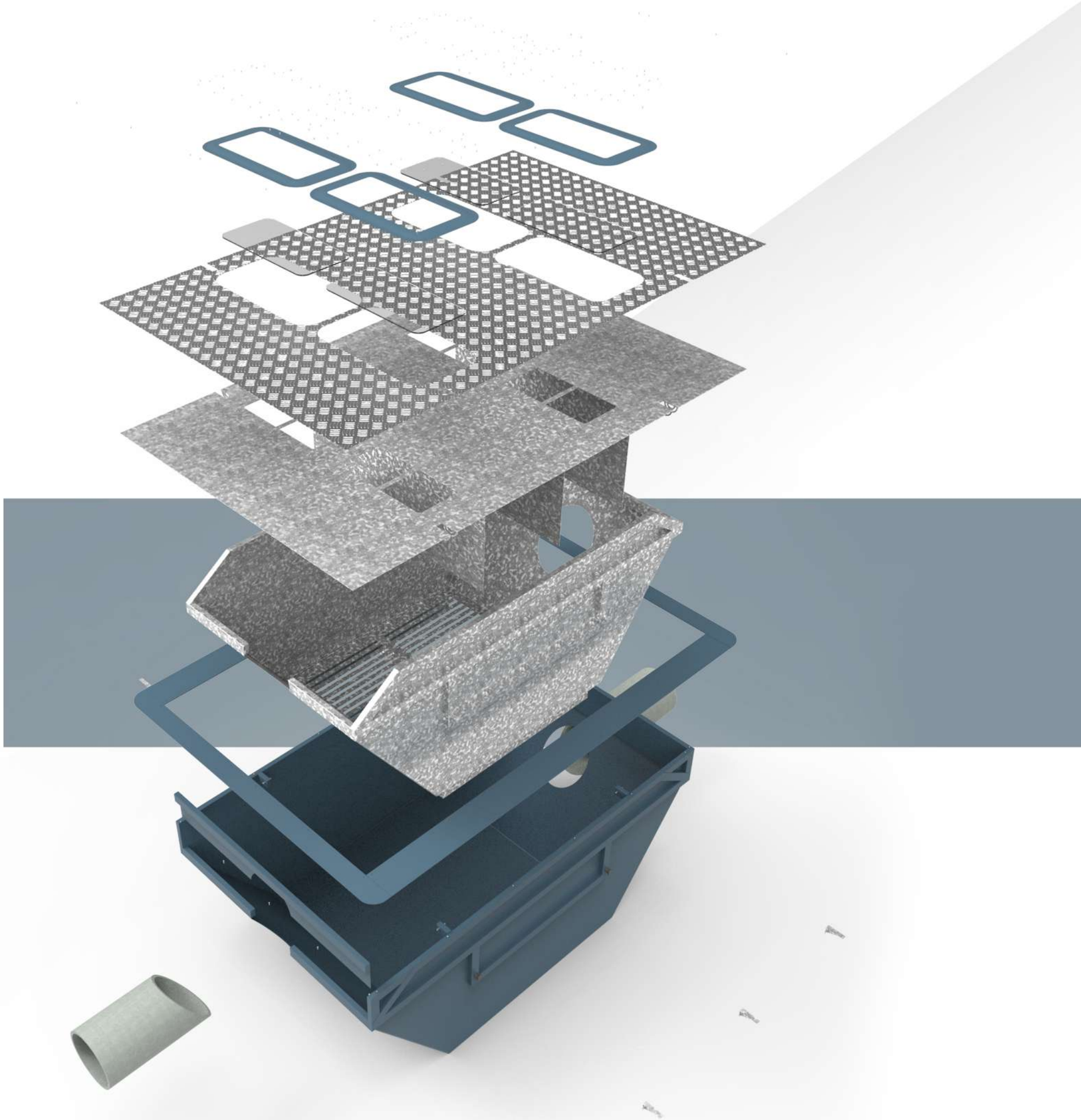
3.

STORMSIEVE

Stormwater Plastic Pollution Interceptor

By framing the broader issue of plastic pollution in the context of stormwater interception, the StormSieve has found a niche to effectively contribute to the systematic reduction of plastic pollution.

Interviews with Boorondara, Manningham & Stonington councils revealed users cannot afford to service current solutions as required. Hence by focusing on cost reduction via the implementation of skip based infrastructure, the StormSieve gives power back to our communities to reduce plastic that would otherwise make it's way out in to our natural landscape.



VISCOSPEC

Point of care blood rheology device

Blood testing durng surgery is a common necesity, however often takes up to 1 hour for samples to be sent and results received. By this time the blood's properties have already changed and the opportunity for effective testing may have passed.

Incorporating propietry technology by Haemograph, the Viscospec provides blood testing results in the operating theatre in real-time.

Being a medical device, reliability, cleanability and ease of use were at the forefront of the design process.

VISCOSPEC

Point of care blood rheology device

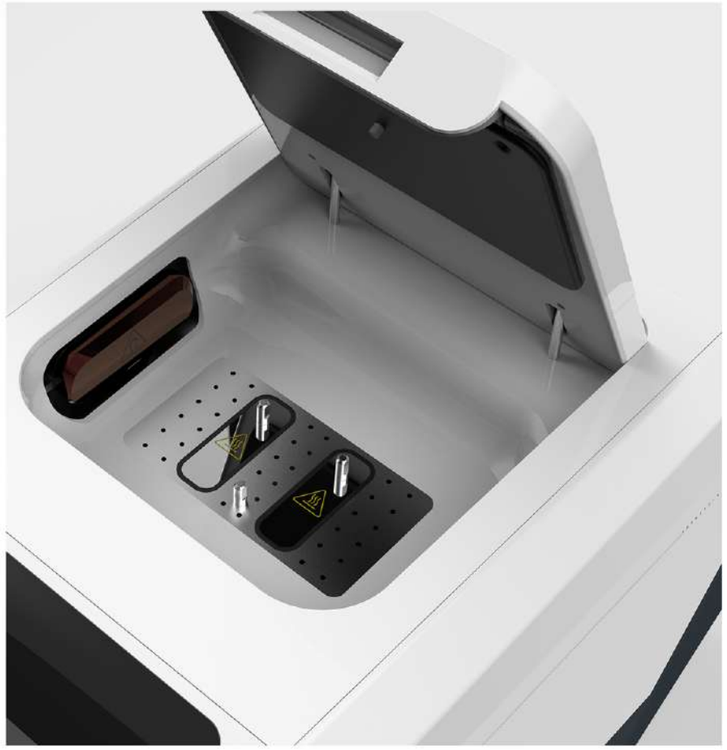
Substantial research in the field of blood rheology, combined with on-going discussions with the client provided the basis for this product's innovation.

An understanding of this products context was essential to allow it to smoothly integrate in to the critical context in which it exists.

The products minimal footprint and aesthetic allow it to be out-of-sight out-of-mind in the highly demanding atmospheres of operating theatres.

Smooth exterior paneling and part design minimise crevices and allow for easy sterilisation of the unit.

The ViscoSpec blood rheology device is designed with robustness, usability and safety in mind to perform in high-pressure contexts.

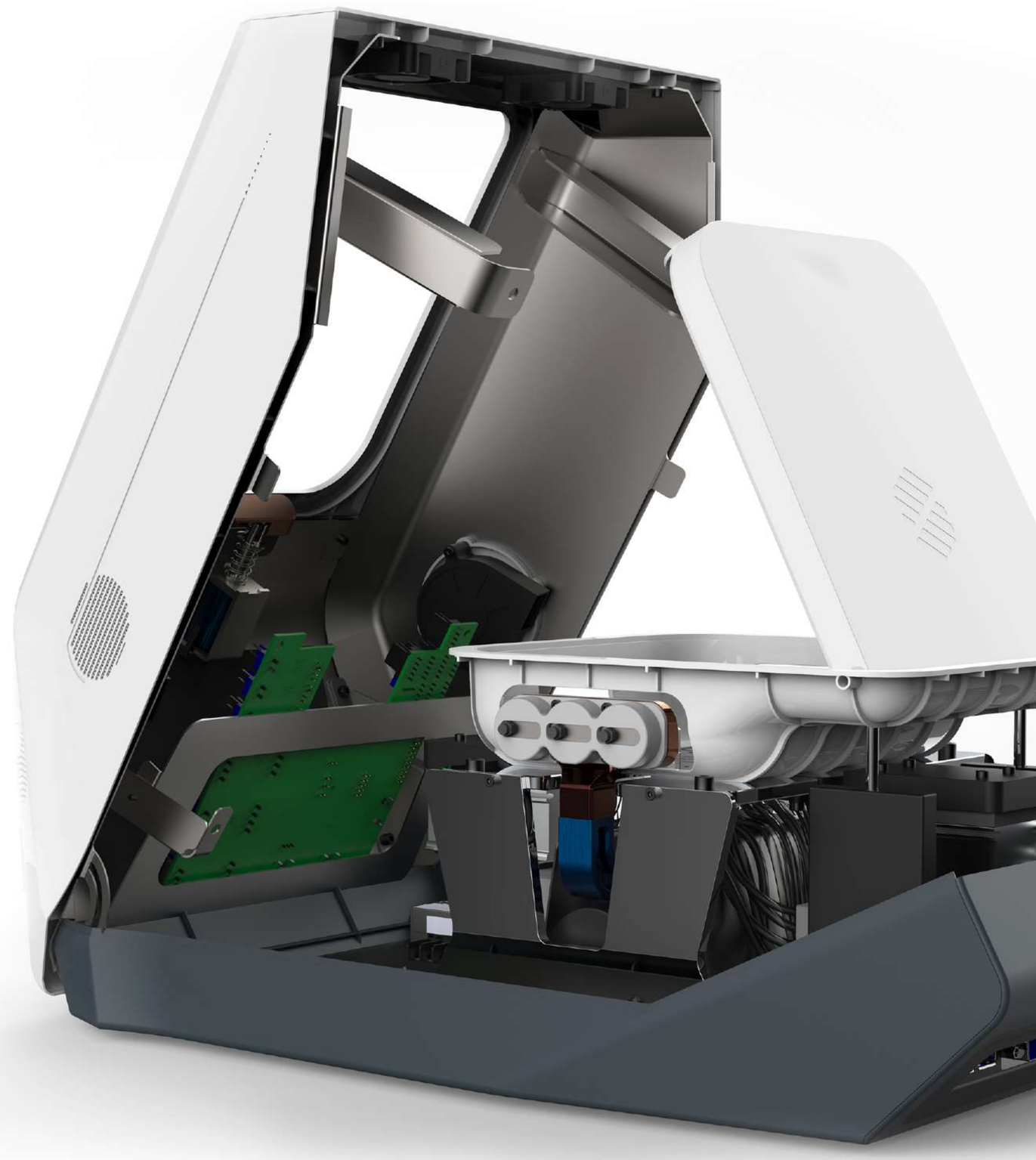


VISCOSPEC

Point of care blood rheology device

DEVICE PROCESS

1. DISPOSABLE CARTRIDGE IS INSERTED
2. ELECTROMAGNETS RETAIN INTERNAL PISTONS TO OSCILATING ARM
3. DYNAMIC ARM CONNECTS VIA COLLAR TO LEAD SCREW
4. MOVEMENT IS CONTROLLED BY STEPPER MOTOR
5. PRESSURE IS MEASURED VIA SENSOR ARRAY IN CARTRIDGE RECESS BASE
6. DATA IS FED TO CONTROL BOARD & PARAMATERS CALCULATED



MORASU

Luxary bathroom tap created in
collobration with Phoenix Tapware

The Morasu tap conceals the handle when not in use, resulting in a sleek, modern and clean design.

By lifting the handle, the user reveals the flow path while also controlling flow from the cartridge, creating a unique user experience.

MORASU

Luxary bathroom tap created in
collaboration with Phoenix Tapware

The sleek body intergrates in to the contemporary bathroom seamlessly with it's minimalistic design.

The design integrates standard water mixing cartridges and provides all necesary interfaces for ease of integration.

The high pressure die cast brass body integrates water flow path around the cartridge, assuring even water mixing before exiting.

MORASU

Engineering Detail

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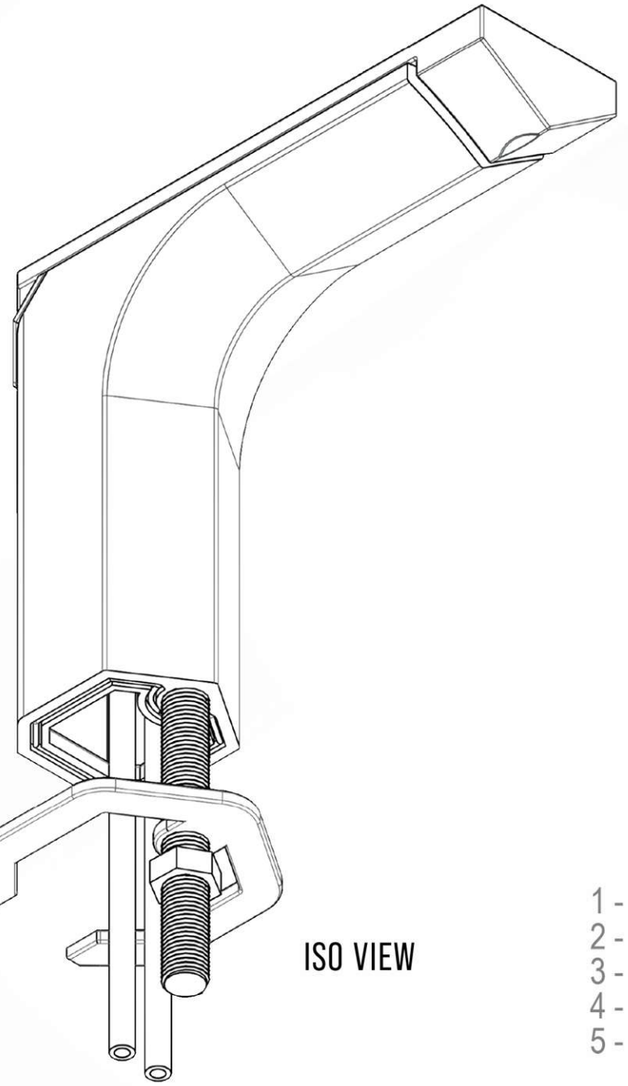
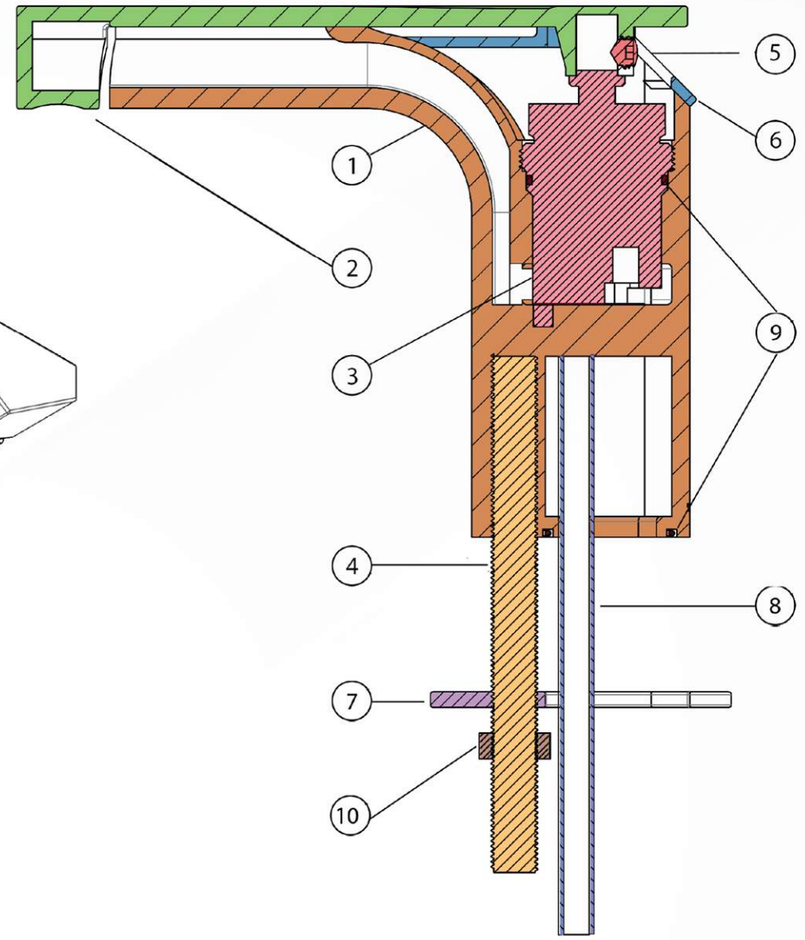


ISO VIEW



SECTION VIEW

1 - BRASS BODY
2 - DIE CAST HANDLE
3 - LATERAL CARTDRIDGE
4 - MOUNTING BOLT
5 - GRUB SCREW
6 - BONNET
7 - HORSESHOE RING
8 - FLEXI-HOSE
9 - O'RINGS
10 - MOUNTING NUT

ACRYLIC GEARBOX

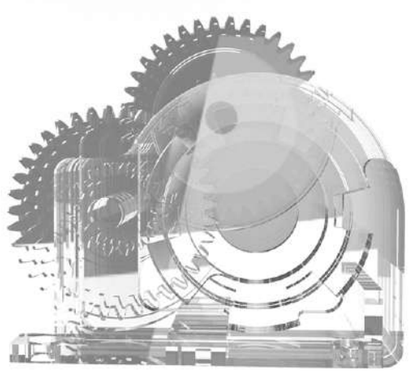
The small acrylic gearbox that more than pulls it's weight

This gearbox was created in response to a challenge to pull a 10kg weight over a 1m distance as quickly as possible.

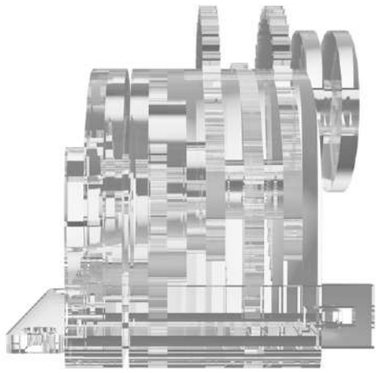
Design requirements:

- Pull 10kg load as quickly as possible
- Assembly only via glue
- Interface with existing motor mount
- Minimise overall dimensions
- Construct from single A4 acrylic sheet

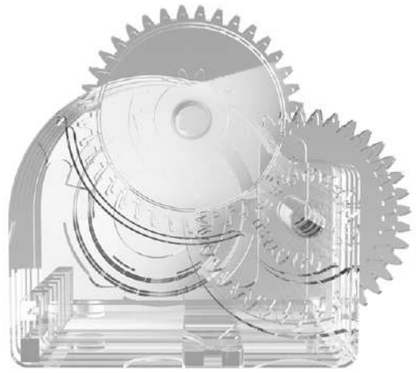
Gear ratios were calculated using the known load input via weight and friction. Iterative design stages were then carried out to minimise size.



FRONT VIEW



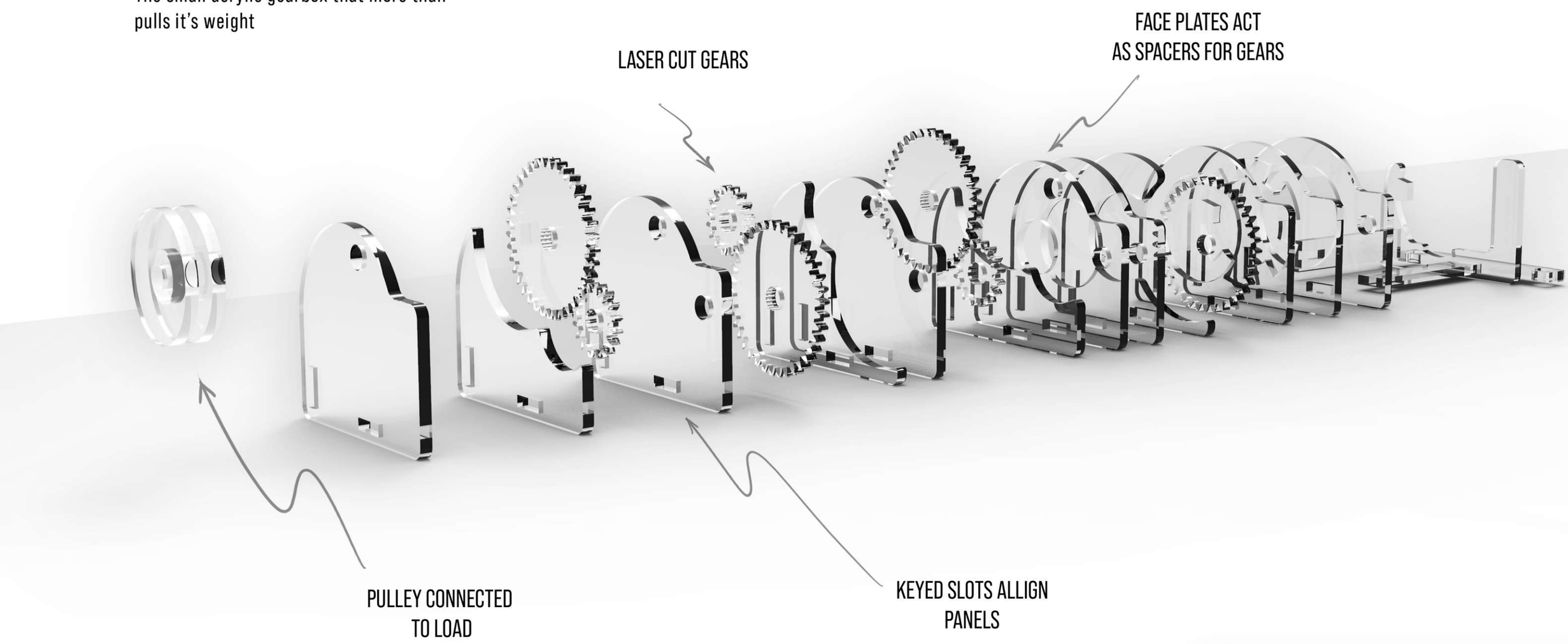
SIDE VIEW



REAR VIEW

ACRYLIC GEARBOX

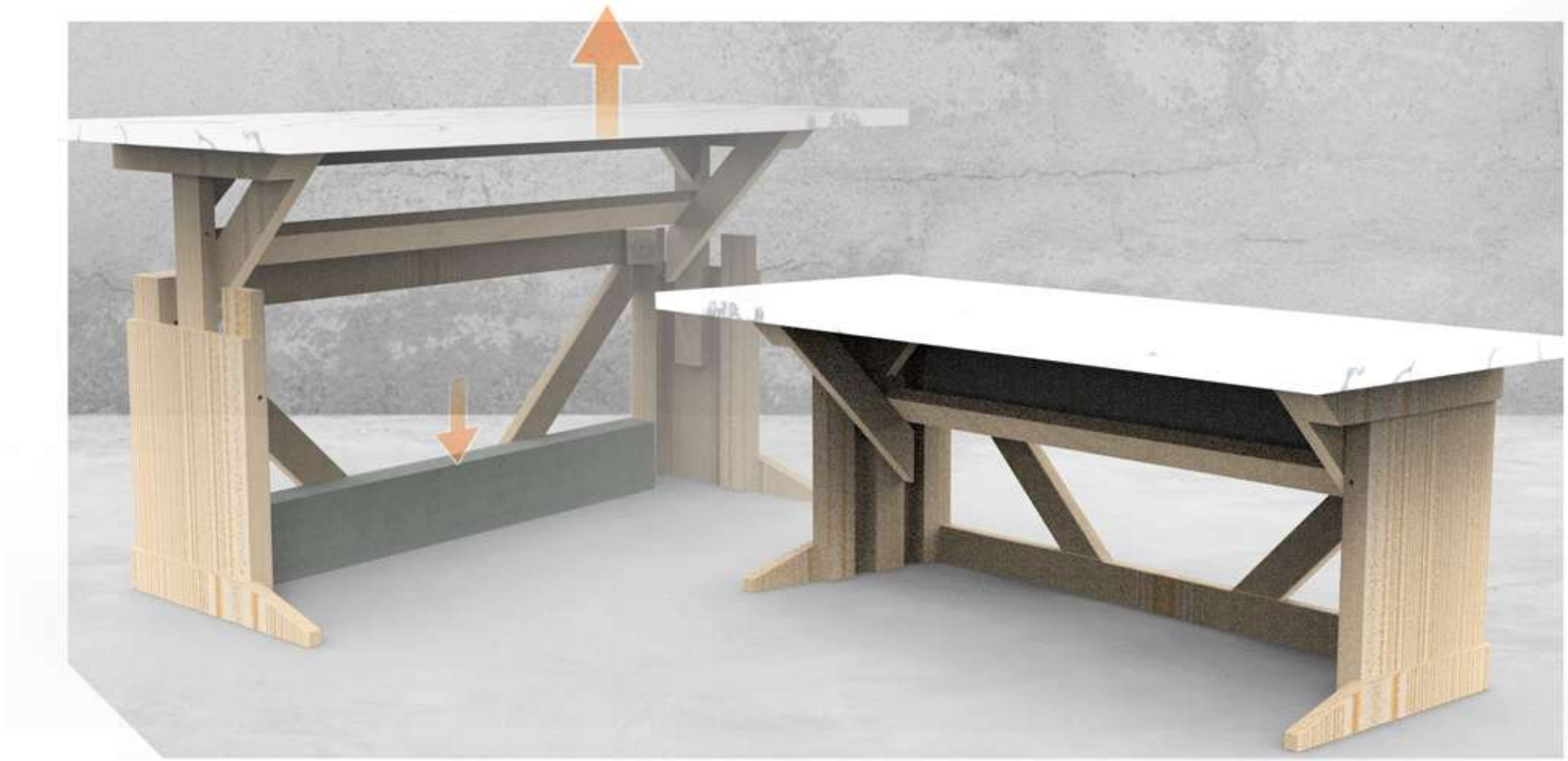
The small acrylic gearbox that more than pulls it's weight



This design won best overall design in this challenge

RISE DESK

Sit / Stand Counterweighted Desk



This desk design was a response to personal back issues due to the poor ergonomics of sitting for extended period of time during work at home.

A cast concrete counter-weight was designed to create a smooth transition between standing and sitting configurations via a pulley system. By allowing quick change between positions it encouraged me to change more often, helping alleviate my pains. Friction was engineered within the system to allow the desk to stay sturdely in place whilst at maximum extension.

This design was constructed by hand as a lockdown project during 2020 and has served me well since.