



## **ESSENZ FP3B**

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# Preface

As a team of five students, we were offered the chance to work on a project for Braun as part of the Products Now! course from the Integrated Product Design master's degree at the TU Delft. Throughout the 20 week course we worked closely with Sven Wuttig and Jordan Groskamp from the Braun Household design team with the task of redesigning the Braun PurEase Food Processor making it more emotionally connected to the user, smart, and sustainable while maintaining the essence of Braun's design language.

We followed the Double Diamond approach (see figure 1) in this project in which we analysed the food processor, then applied research and exploration to develop individual concepts, later developed and integrated the findings to a group design which was prototyped and tested for the final design. Caroline Kroon helped us closely with this project as a team coach, sharing her experience and expertise to aid us in the design process, and we would like to express our gratitude for that.



Figure 1: The Double Diamond approach by the Design Council (2003)

The discovery phase was full of exploration and understanding the current food processor

in its context, in which we asked ourselves how the product is being used and what problems we observe. After the discovery phase, we defined individual scopes creating 5 different prototypes aimed to improve singular aspects, for which each one of us presented a poster. In the develop phase, the individual aspects were integrated and merged into a group design, leading to a mid-term report. Finally, in the delivery stage we finalized our ideas into one ready for production prototype, presented in this report.

We want to thank Sven and Jordan for the bi-weekly meetings in which we were offered the chance to share our progress while they expressed their opinions freely, causing us to navigate clearly towards the product they envision. Around halfway through the project, the Braun team invited us to visit their offices and product exhibition space in Frankfurt. This visit allowed us to have a closer look at Braun's classic products and meaningful discussions with Braun's designers, which greatly enriched our understanding and inspired new designs for this project.

Ultimately we all learned lots of new information about designing and what a full design process entails. We enjoyed this project as a whole, and are grateful to have been given the chance to do a project for Braun, a company that has inspired us in our past and led us to want to study for a career in industrial design.



# Executive summary

# Executive Summary

The ESSENZ FP3B reimagines the food processor as an emotionally resonant kitchen companion, celebrating cooking through innovation, sustainability, and timeless Braun design. Created for empty nesters aged 50-65, this premium food processor transforms food preparation into a joyful and shared experience, celebrating the ritual of cooking.

With its compact and elegant design, the ESSENZ FP3B embodies Braun's legacy of functional simplicity. Features like stackable, table-ready bowls and a smart intuitive interface enhance usability while fostering an emotional connection. A redesign of the attachments allows for less loose pieces for the user and blade replacement, aligning with modern consumer values using modular components to reduce waste and extend the product life cycle.

The ESSENZ FP3B introduces a fresh perspective on food processing with thoughtful innovations tailored to enhance the cooking experience. Its three-bowl system not only accommodates different serving needs but also redefines convenience by allowing a seamless transition from preparation to serving. The user interface,

centered around a tactile dial and intuitive icons, ensures accessibility and precision for both novice and experienced users. Every design detail, from the compact storage to the soft, neutral aesthetic, reflects Braun's commitment to functionality and timeless design.

The ESSENZ FP3B fills a gap in Braun's product portfolio, targeting a demographic that values premium, multifunctional appliances. By addressing trends like healthy eating and home cooking, it offers a superior alternative to existing products, reinforcing Braun's position as a leader in design and innovation. Its user-centric features and sustainable design promise long-term consumer loyalty and market competitiveness.

This project was guided by the Double Diamond framework, progressing from extensive research and user testing to the final prototype. The ESSENZ FP3B achieves its goal of transforming cooking into an intentional, shared experience, offering Braun an opportunity to connect deeply with its consumers.





# 01



## Final design overview

In the following chapter the final design of the food processor for Braun is presented. After the presentation, the vision for this product is presented together with the technical requirements and how it fits into the Technical Readiness Levels (TRLs).

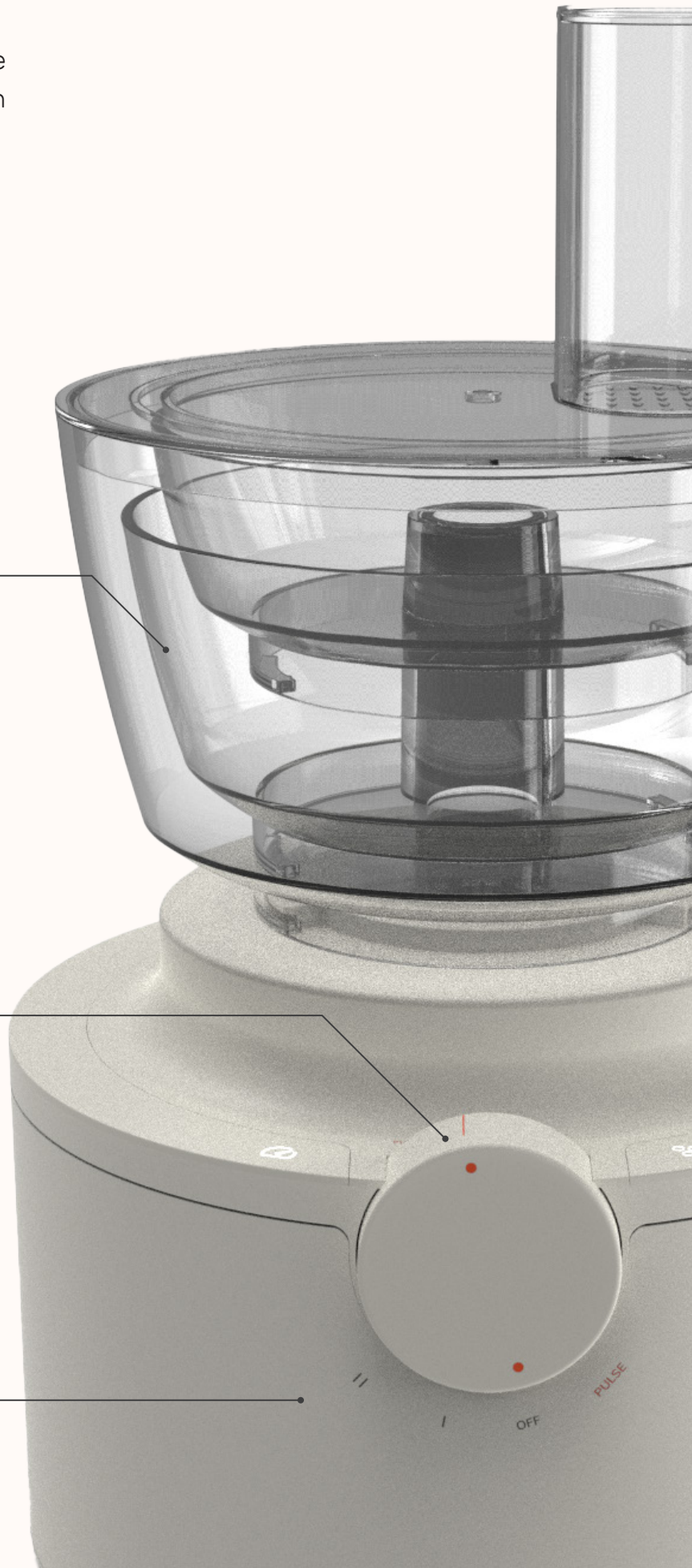
# 1.1 Presentation of final design

The outcome of this project is a new food processor for Braun that makes room for the ritual and celebration of cooking. The design emphasizes long-term use and transforms the food processor into an emotionally resonant kitchen companion. Symmetrical design contour.

The bowls of the food processor have a table-ready, aesthetic design. They are stackable and can contain different volumes, providing improved functionality and usability.

The singular dial makes for an intuitive and simple user interaction

By redesigning the base, improvements are made by introducing a simple and understandable user interface, integrated storage and noise reduction.





To foster a seamless cooking experience and celebrate the process, the food processor bowls can be transferred directly from the food processor to the table. The bowls can be placed in the dishwasher after use.





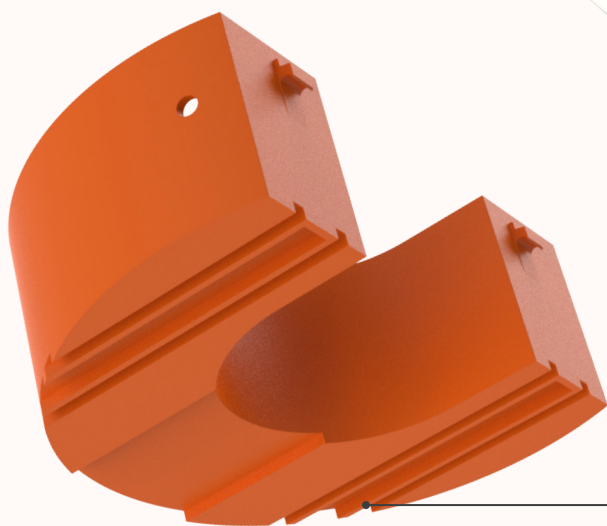
The food processor had a non-intrusive, clean and approachable design due to the use of white colours and smooth surfaces.

Orange accent colours give the food processor a joyful exterior.





The invisible drawer can be pushed to access the accessories used for the different bowls.



The rails on the bottom make for a smooth glide.



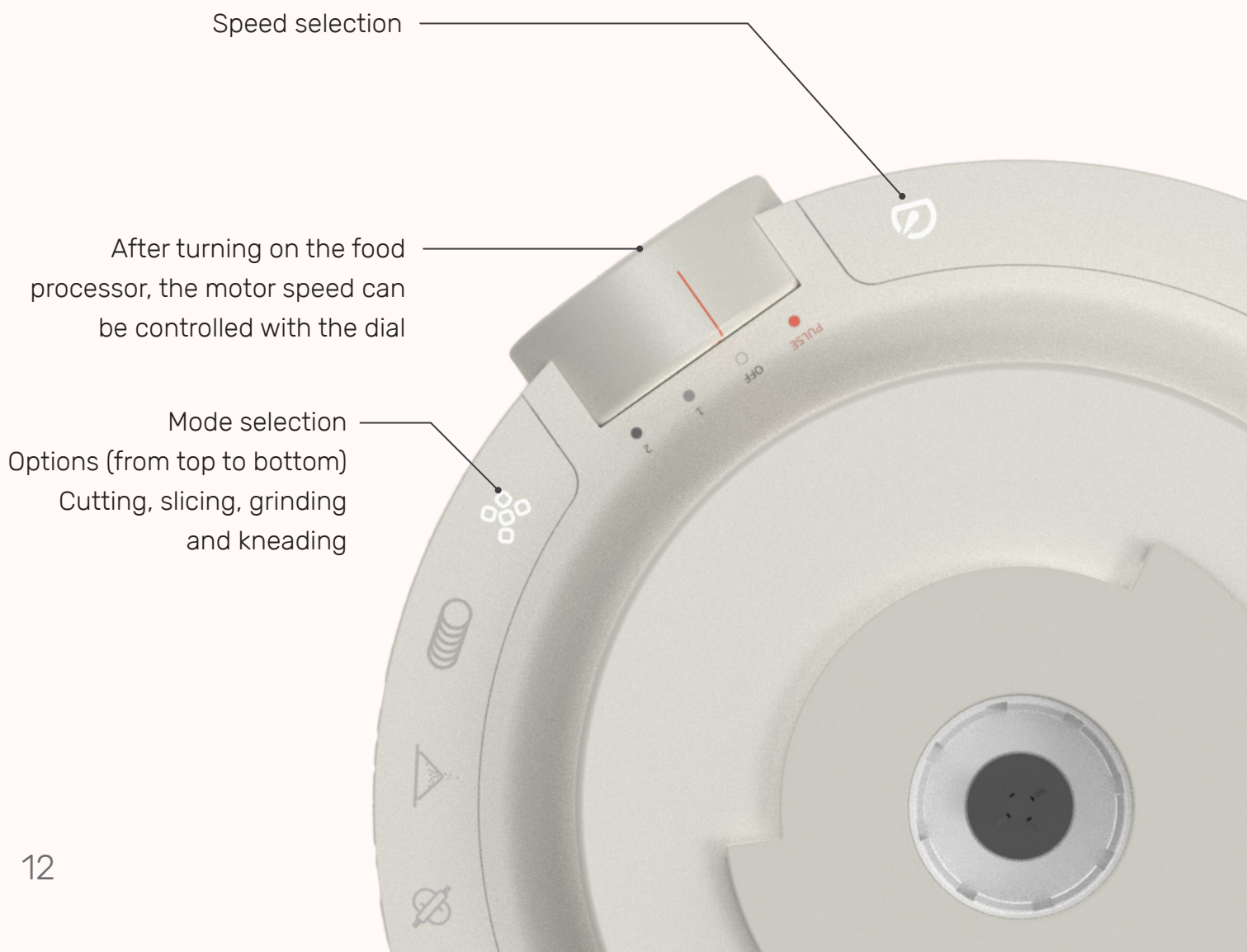
The design is compact and easy to store.







By adding a new interesting feature, the interface ring on top of the food processor base, clarity is brought by clear icons. In-detail storyboard of the interface is presented in Chapter 3 Technical Design and Functionality.





The white grip at the side houses a possibility for a lock mechanism. Additionally, it functions as an ergonomical grip to curl the fingers around. It provides stability while attaching the bowls on the base.







The three bowls have corresponding attachments to match the bowl height.

The bottom of the product has air holes to ensure right cooling of the internal parts of the product.



## 1.2 Design brief and vision

During this project we navigated from the design brief from Braun, given at the beginning of the project, three months ago. The design brief for our project is as follows:

*How can we redesign the food processor to encourage more usage in the long term for our target group, transforming it into an emotionally resonant kitchen companion that encourages consistent use and celebrates the cooking process with multiple people in the kitchen?*

This design brief helped us to clearly move towards the product we had in mind at the start. Not only did this help us steer our project, the vision statement was another key element. It ensured that each decision we made reflects the needs and aspirations of our target users while staying true to Braun's legacy of innovation and quality.

*"Our aim is to design a purposeful kitchen companion that transforms food preparation from a disruptive task into an intentional, continuous, and shared experience. By integrating intuitive technology and user-centered innovation into Braun's legacy of enduring design, our food processor creates a joyful experience and invites empty nesters to connect with the celebration of cooking."*

From here the journey towards a new food processor design started. Together with our persona, user tests and a lot of prototyping the design of the food processor came to be where it is now.



## 1.3 Project Requirements

In the midterm report requirements were presented that the final design had to adhere to. However, due to time constraints, some requirements were given more priority than others. For example, cutting efficiency became less important as we wanted to prioritize the user experience of the food processor. Additionally, we wanted to make sure that the motor principle worked well.

The sound of the motor was tested in a simulated environment. Since the motor couldn't run with 3d printed prototype materials, an accurate representation of the sound differences could not be tested.

For the requirements references were added to the corresponding chapter where is explained how the requirement was met.

The refined product requirements which were worked on to the final design include:

### **Compatibility & practicality**

(chapter 2, user centered design)

- Product is compatible with multiple container bowl sizes
- Container bowl can be easily removed from base and handled for food transferring

### **Storage & organization**

(chapter 2, user centered design)

- Base housing has storage space for at least two cutting accessories
- Lid can be attached flipped to the container bowl, allowing more efficient storage

### **Performance & functionality**

(chapter 3, technical design and functionality)

- Product maintains same motor capabilities
- Usability of the product must be easy to understand and intuitive

### **Aesthetics & presentation**

(chapter 4, research by design)

- The bowls are presentable for a dining table
- Product has an overall visually appealing aesthetic on the kitchen counter

For a clear definition on how the requirements were defined and tested, the midterm report can be consulted (Jonkman et al., 2024).

# 1.4 Technical Readiness Levels

In Table 1 the concept is rated on the Technical Readiness Levels of NASA (Manning, 2023). Technology Readiness Levels (TRL) are a framework used to evaluate the maturity of a specific technology, providing a standardized scale to assess its development from conceptual stages to full deployment.

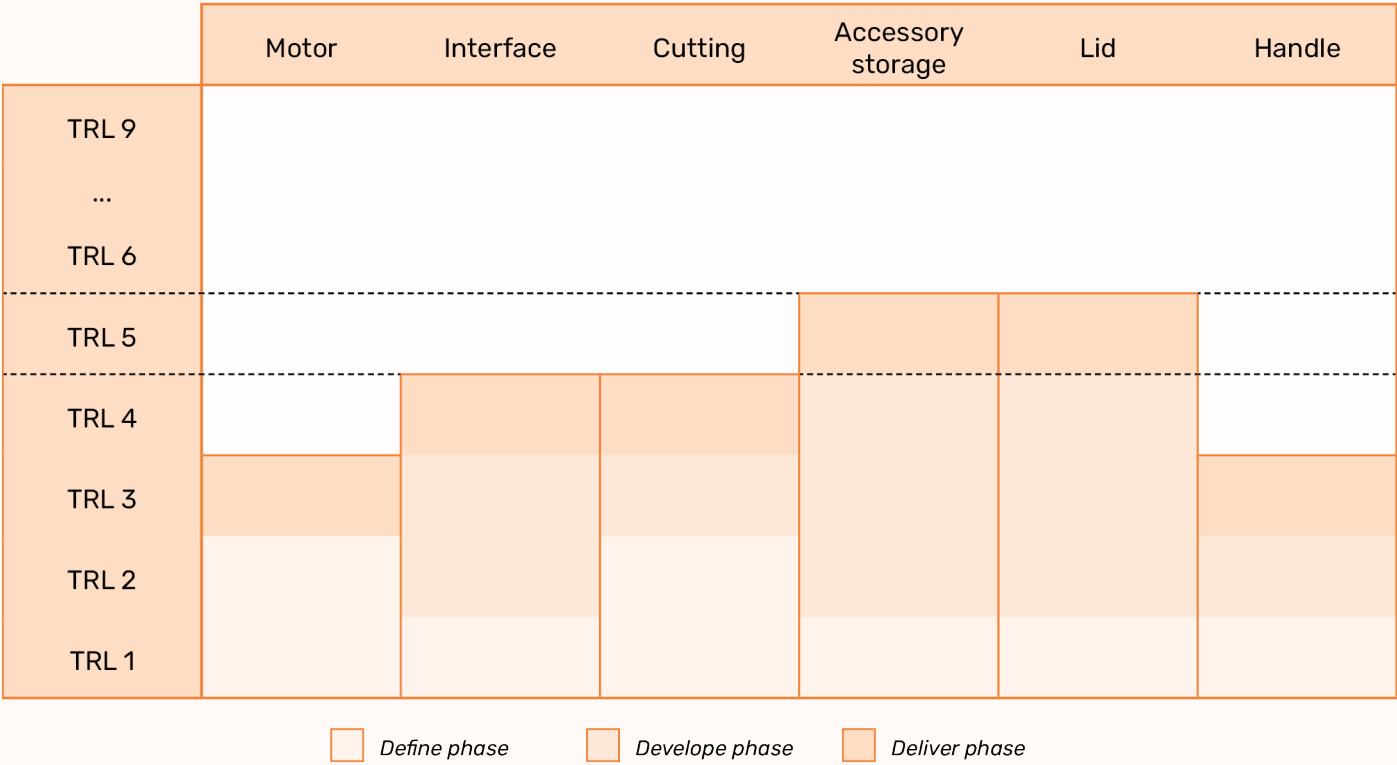


Table 1: Technical Readiness Levels of ESSENZ Food Processor





# 02

## User centered design

The objective for this project is to develop a next generation food processor for Braun that improves emotional connectivity between the user and the product. Through user research and testing, we have found opportunities for developing a food processor that - aside from its multifunctionality in the kitchen - brings the user and the product closer in a celebration of cooking.



## 2.1 Target group and persona

### Who?

Based on the market research and general Survey (See Appendix A) we concluded that parents aged 50-65 years old whose children have moved out - popularly called as 'Empty Nesters'- are an interesting demographic to target. Most of them are close to retirement and/or live a fairly decent life to afford things of premium range. As the target group indicated in user tests, they expect their products to give them the precision of a chef. Their cooking habits are healthy, and they prefer to use fresh ingredients in their cooking. Weekday meals are prepared quickly, on the weekends they have more time to spend on preparing more elaborate meals.



Figure 2: Example image of the empty nester persona

- Sacha and Jim (56 and 58 years old)
- Both work 4 days a week
- They live in Amsterdam
- Enjoy Italian, healthy cuisine
- Two sons, Chris and Casper, both students
- Both have a busy work schedule so taking the time for cooking is difficult. On Fridays and in the weekend they have time to cook together. In these moments, connecting, exploring and having fun is central.
- They like to host dinner parties for big groups of friends (see Figure 2)

### Why?

They are often brand-loyal and believe in owning timeless products, thus presenting a potentially viable group because of the promise of longer customership. They are home-owners and often have friends/family gatherings where they produce a variety of dishes with bigger quantities. In these situations a food processor could be beneficial to prepare the ingredients. Additionally, this target group has a growing awareness of sustainability and will consider more energy-efficient products, made from sustainable materials (Meaningful Planet UK, 2024).



Figure 3: Mood board for the empty nester persona

## 2.2 Identified needs and interventions

By conducting user research, which can be read in detail in the midterm report (Jonkman et al., 2024), and interacting with our target demographic, problems in the use scenario of the food processor could be uncovered. Through these insights we interpreted their needs and translated them in our design. This is summarized in the table below (see Table 2) :

| Identified Problems                                                            |   | Interpretated Needs                                |   | Design Intervention                                                                                           |
|--------------------------------------------------------------------------------|---|----------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------|
| Do not use the Food processor that frequently                                  | → | Emotional connectivity and bond with the appliance | → | Increasing its post usage by integrating 3 bowls that can also be used for presentation on table during meals |
| Users don't view the manual before using                                       | → | Simple , intuitive and uncomplicated               | → | Clean user cues, minimal touchpoints, visual feedback                                                         |
| Occupies a lot of space, wasted internal space and has too many parts to store | → | Compact, Storage and organization                  | → | Modular storage solution for attachments to utilize unused space                                              |
| Very loud and causes auditory disruptions                                      | → | Less noisy                                         | → | Larger fan and more optimized airflow                                                                         |

Table 2: Problems and interventions found in midterm research report



## 2.3 Celebration of cooking

Breaking down the multi-utility of a Food Processor, we see how diverse it is when it comes to playing with food colors, shapes, or textures. Usually used when making meals for an occasion, when more food needs to be made quickly and efficiently. A food processor designed under the “Celebration of Cooking” theme could embody this by fostering a sense of intimacy and joy, making cooking feel like a shared experience even when done individually. Referring to the product

user journey, we would like the appliance’s presence to be completely integrated in its context – the kitchen – before, during and even after its usage, to leave an impactful memory. The product aims to engage all 5 senses – through sound by making it less loud, through visual user cues, CMF referring to iconic Braun products, through tactile motion by using both hands to handle the bowls and the gustatory and olfactory senses are taken care by the food prepared – turning mundane food prep into an enjoyable ritual.



# 03

## Technical design and functionality

This chapter introduces the technical design and functionality of the product, emphasizing its creative core features and the interaction design. After implementing these aspects into the prototype, we conducted user testing to evaluate its performance.



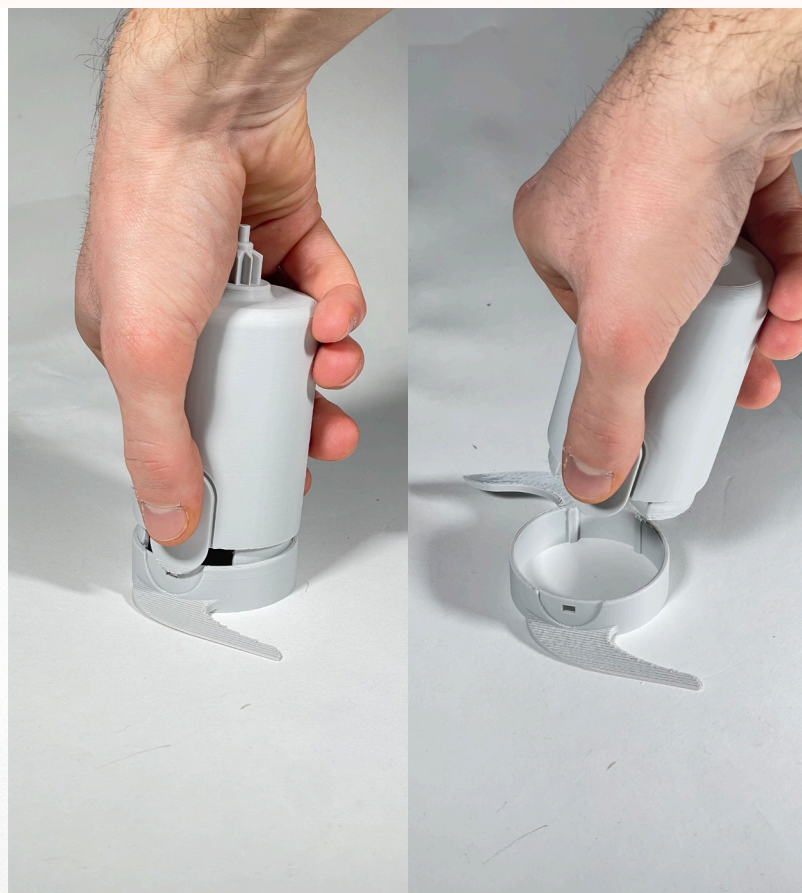
## 3.1 A closer look

### The bowls

Since cleaning the food processor was identified as one of the least pleasant actions during user tests, the design eliminates unnecessary cleaning to enhance usability and make the product more enjoyable to use. In the old design, the bowl required cleaning before plating, but our concept eliminates this step by making the product ready-to-serve. Three differently sized bowls, designed to be aesthetically pleasing and table-ready, address this issue. Additionally, the bowls are stackable for efficient storage, ensuring they can be easily organized in compact kitchen spaces.

### The attachments

Since the bowls now differ in height, multiple cutting attachments had to be made. These attachments have an inner shaft that reaches down to the motor gears to transfer the rotational force onto the blade attachment. In the old food processor the force was transitioned from the motor to a drive shaft and then onto the blade attachment. This also presented multiple steps in the use of the food processor, first placing the drive shaft, then the bowl and then the cutting attachment. However, in our design we decided to eliminate the use of the drive shaft and integrate it in the attachments, reducing use of plastic and multiple parts and simplifying the user scenario. Now, the user can place their desired bowl size on the food processor and pick the corresponding cutting attachment from the storage drawer.



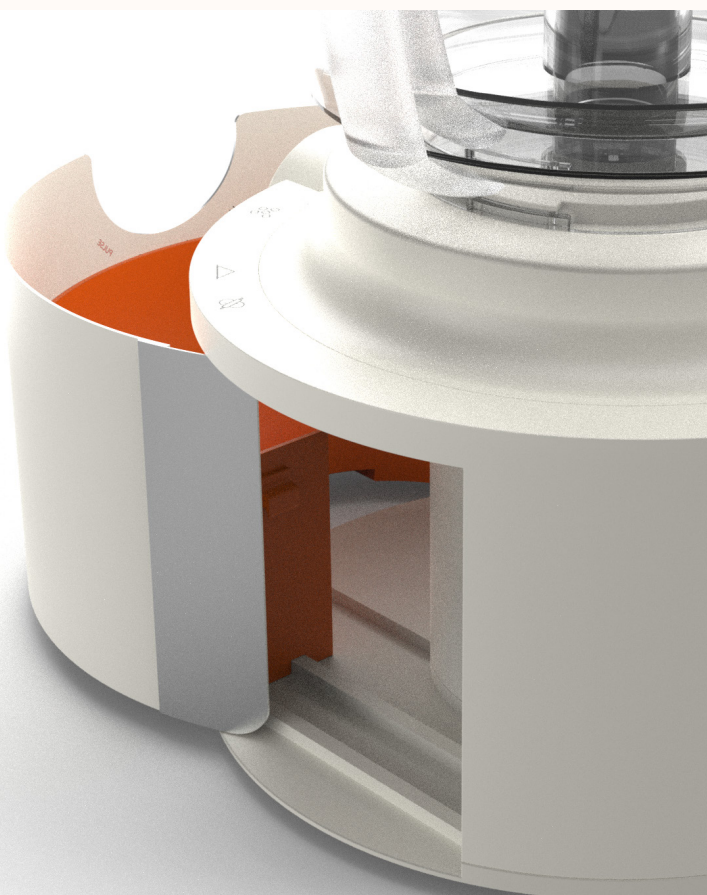
### The storage drawer

A simple integrated storage drawer was designed to utilize unused space in the food processor and accommodate multiple attachments. Accessible from the front, the horse-shoe-shaped drawer unlocks with a push and click, then slides out smoothly. It holds large and medium attachments on the sides, with smaller ones in the center (see fig XX). After use, the drawer locks back into place with a push and click. The catch-latch spring-lock mechanism, similar to modular kitchen drawers, ensures smooth operation with railings underneath for alignment. This design allows easy access and storage of accessories on the go.

### A shared experience

Beyond serving as a convenient tool for everyday use, it supports social gatherings such as weekend meals or holiday celebrations with family and friends. The three bowls of varying sizes enable flexibility for different serving needs, whether preparing a small meal for two or handling larger portions for guests. The ready-to-serve concept offers a seamless transition from cooking to dining, allowing users to focus on the social aspect of shared meals rather than the cleanup.

Product interactions have been designed to be very beginner-friendly, so everyone in the family can quickly get started and involved in cooking, which fosters collaboration in the kitchen to enhance the enjoyment of cooking together. It transforms cooking from a chore into an enjoyable, social experience, perfectly suited to the target user's needs.





## **Sustainability**

### Modular Design

The modularity of attachments, such as blades and the dough kneading tool, promotes a longer product lifecycle, and users can replace individual components rather than discarding the entire product.

### Compact Design

The stackable bowls and integrated storage features not only save space in the user's home but also reduce the need for extra storage containers, promoting minimalism and reducing consumption.

### Longer life span

The design of the food processor aims to foster emotional attachment through aesthetics and providing sense of intimacy and joy, encouraging users to value and retain the product for longer periods, reducing the possibility of premature replacement and promoting a sustainable lifecycle.

## 3.2 User interaction

A well-designed interface combines intuitive controls with engaging user experiences, making food preparation both easy and enjoyable. User testing and User journey mapping revealed that users didn't experience intuitive navigation, while insights showed users value manual operations, precise adjustments, and clear feedback for a more immersive experience. These findings informed the creation of a new, user-centered visual system.

### Dial + Backlit display

The interface centers around a single multifunctional dial, serving as the sole control component. Strategically positioned on the side of the base, with the top extending slightly beyond the top surface, the dial is ergonomically optimized to allow



users to operate it comfortably from either the top or the side. This design ensures seamless interaction regardless of the user's positioning or preference. Additionally, a ring backlit display is on the top, providing essential visual feedback during operation.

By eliminating extraneous controls, the design reduces cognitive load and enhances usability for all user demographics. The visual feedback provided by the ring further intuitive interaction, ensuring users can confirm their settings at a glance, so now novice users can effortlessly utilize pre-set modes to begin their tasks, while more experienced users have the flexibility to adjust the speed for precise and customized control.







## 3.3 Manufacturing details

In Figure 4 the exploded view of the Essenz FP3B is presented. The technical drawings of each part can be found in Appendix B. The Bill of Materials is presented in Appendix C.

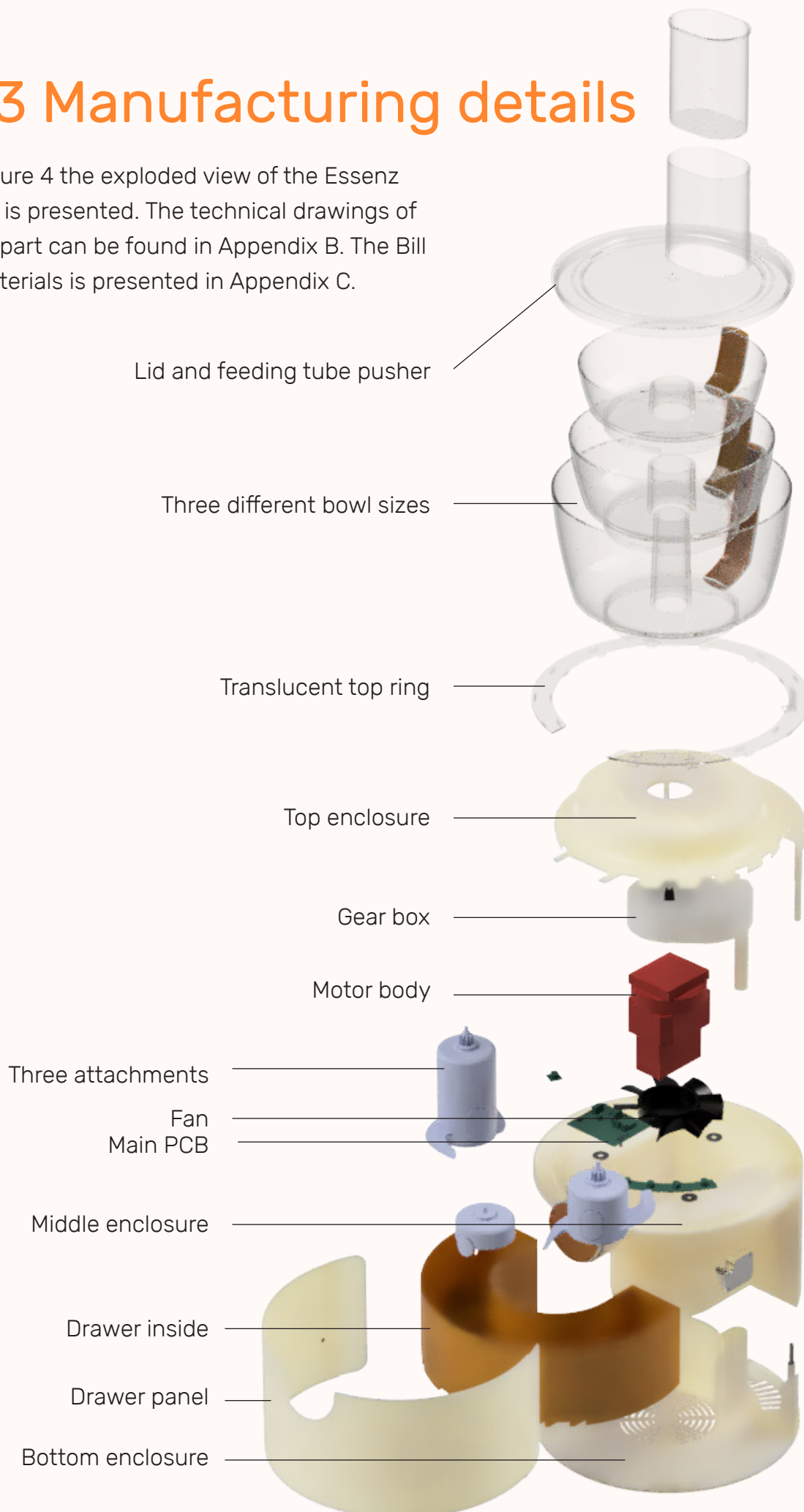


Figure 4: Exploded view



The section view of the Essenz FP3B is presented in Figure 5, and overall dimensions (in mms) are presented in Figure 6.

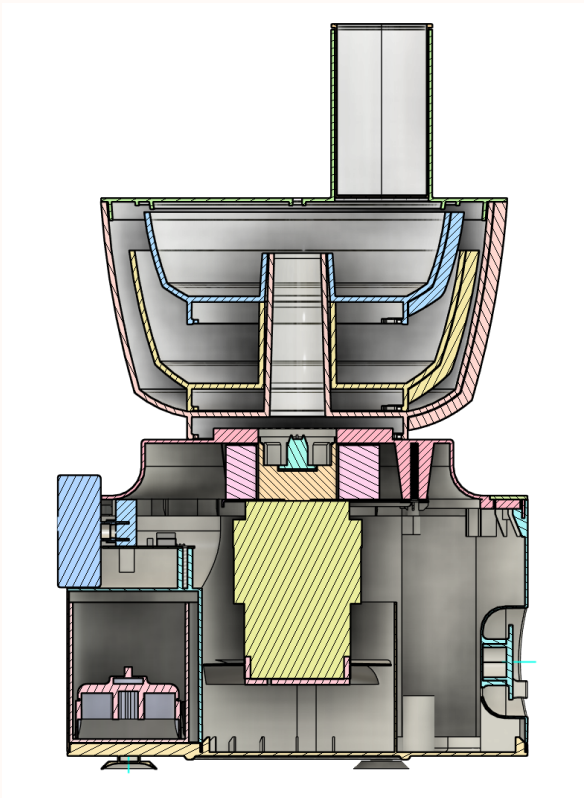


Figure 5: Section view of food processor

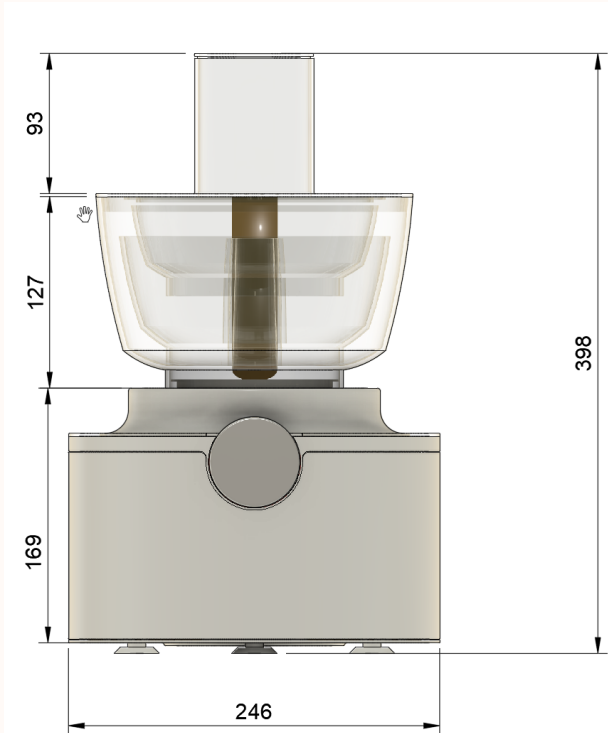


Figure 6: Dimensions

Envisioned production

To estimate the production cost of the food processor, we estimated the costs for a high volume production (100,000 units). The calculation considers tooling costs, material costs, labor costs, and associated manufacturing methods, finally resulted in the approximate cost of each unit (see Table 3). The calculations can be found in Appendix D.

|                            |                                                     |
|----------------------------|-----------------------------------------------------|
|                            | High volume production                              |
| Production volume          | 100,000                                             |
| Method                     | Outsourced mold production and molding              |
| Mold                       | Machined steel                                      |
| Lead time to final parts   | 4-8 weeks                                           |
| Equipment required         | Machined steel molds, industrial injection machines |
| Mold cost (€)              | 25,000                                              |
| Material cost per part (€) | 26.04                                               |
| Labor cost per part (€)    | 0.5                                                 |
| Total tooling cost (€)     | 25,000                                              |
| Total material cost (€)    | 2,604,000                                           |
| Total production cost (€)  | 2,629,000                                           |
| Cost per part (€)          | 26.29                                               |

Table 3: Overview of manufacturing costs

## 3.4 User testing

During user testing, our functional prototype was presented to people from the target group (see Figure 7). The objective was to see to what extent the interface of the product was perceived as intuitive. Through an interview these insights were gathered. The testing script can be found in Appendix E.

### Results

Some users were confused with the speed icon, either the lightning bolt or the speed dashboard as the icon could be ambiguous. Additionally, users needed to get used to the dial-only control at first, but they were satisfied after getting familiar with it. Some users wished that the dial itself gave a stronger tactile feedback.

### Insights

As this product is designed for the international market, the use of text in the interface is minimized as much as possible, which has resulted in some icons that do not convey the information clearly. "Speed" or "mode" text might be necessary at this stage, or a more universally understandable icon. The dial needs further development to increase damping and provide tactile feedback to give the user a clearer perception of the product.



Figure 7: User testing with the functional prototype





# 04

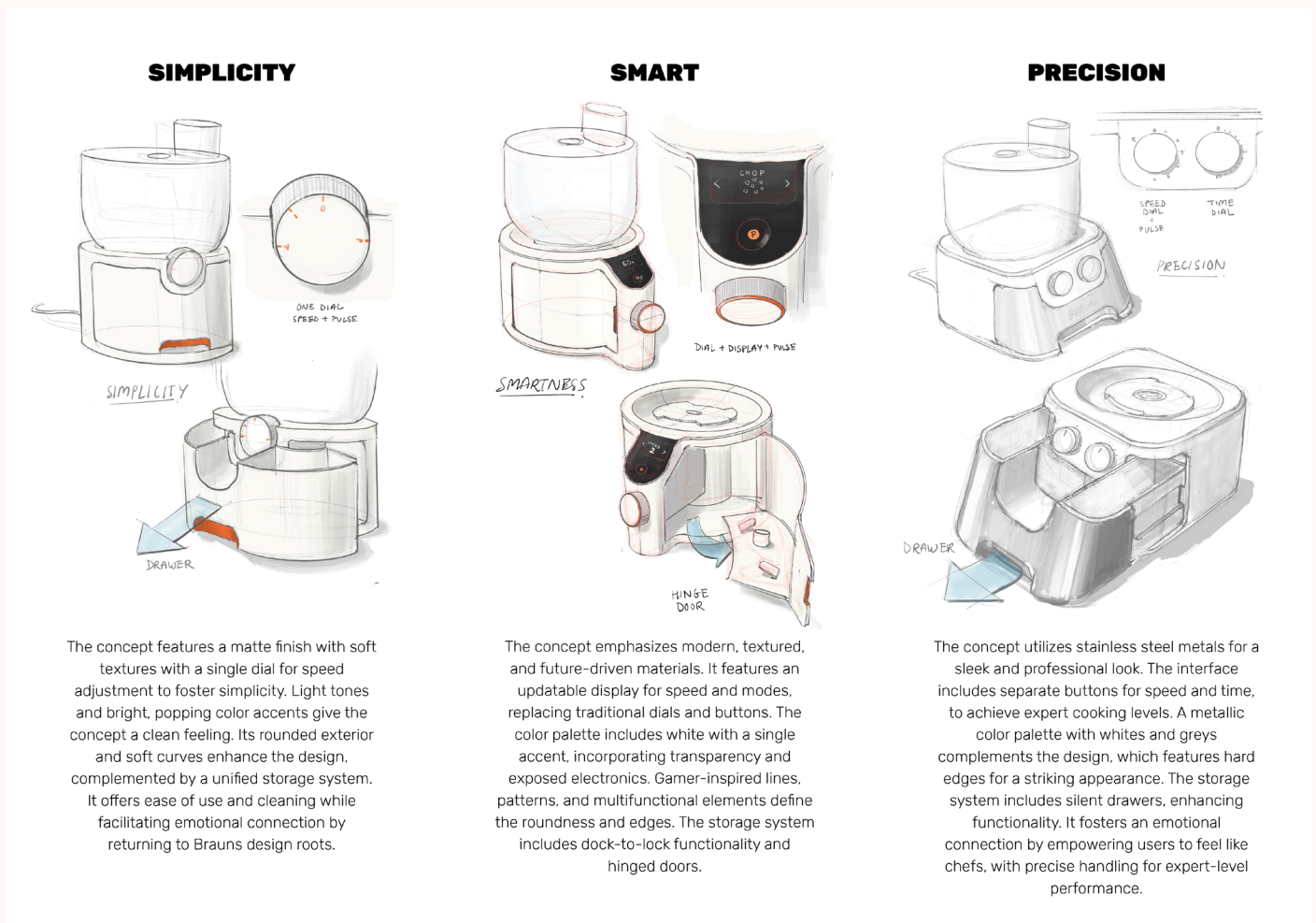
## Research by design

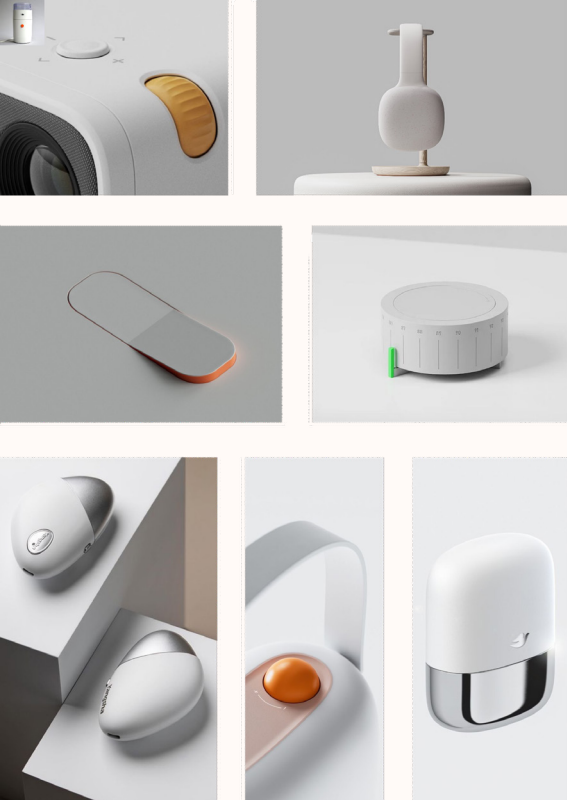
We previously examined an overview of the final design of the FP Essenz3B. In this chapter, how this outcome was achieved is explored, highlighting the aesthetic choices, functional trade offs and iterations that led to the final design.



## 4.1 Aesthetic choices

Starting with three distinct concept directions (Figure 8) – Simplicity, inspired by Braun’s timeless designs; Smart a more future-driven concept with modern technology; and Precision, designed to offer a more professional, high-performance experience – aligned with Braun’s vision for this new product, the aesthetic choices for the final design were driven by the desire to bring simplicity and ease of use into the customer’s kitchen.





The moodboards illustrate an aesthetic experienced by the target group as peaceful, clean, calm, soft, and stylish—summarized as “softly stylish”.

This aesthetic builds on the design principles inspired by Dieter Rams and Braun (Design Museum, n.d.), adding a minimalist yet timeless design language.

### Base

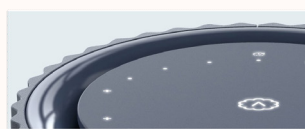
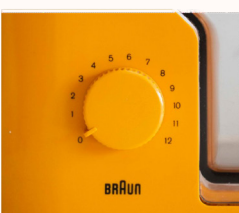
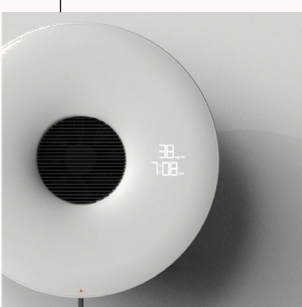
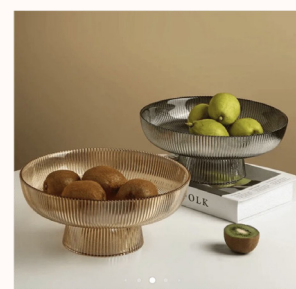
The resulting form language is characterized by soft textures and shapes, high-quality plastic materials, and a white color palette accented with hints of orange.

### Bowls

High-quality transparent material (glass-like) is desired to achieve a premium feel.

### Interface

A big dial with minimal indications gives the original Braun design language.



This style was chosen not only for its alignment with Braun’s heritage and design principles but also because, based on research conducted by the International Furnishing and Design Association (IFDA), modern design is expected to remain a significant trend in home environments for the coming years (Elliot, 2020). Together, these elements create a product that feels both contemporary and enduring, seamlessly blending functionality and elegance.



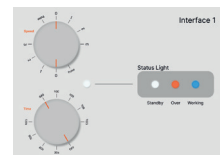
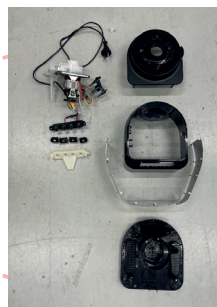
## 4.2 Design process

Throughout the project, we followed a structured design process, mentioned in the preface, using iterative feedback loops to refine and improve our concepts.

Weekly coach meetings and bi-weekly client meetings provided valuable insights, guiding our work and ensuring that the design met both user needs and client expectations.

### Phase 1: Discover

### Phase 2: Define

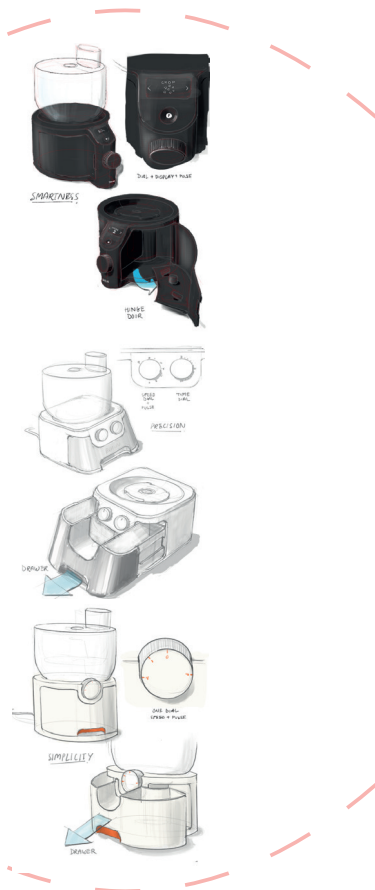
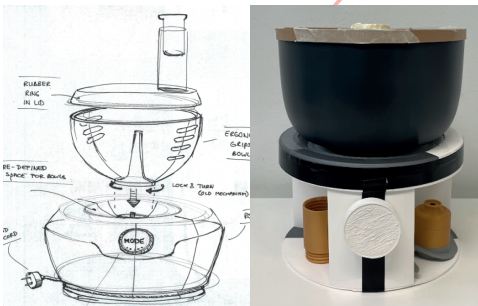


The design process began with an analysis of the company, market, and existing products to understand the current landscape and identify opportunities. This was followed by defining the target persona, highlighting their needs and pain points. The insights helped identify the key problems, translated, then, into research questions explored individually

The process continued with the integration of individual research findings, combining insights to form a collective understanding of the problems and opportunities. This phase resulted in the development of a concept that outlined the direction and requirements for the final design.

## Phase 3: Develop

## Phase 4: Deliver



The developing phase focused on defining the aesthetics and refining the design. To explore different design directions, three concepts were developed, each reflecting a distinct approach: simple, smart, and precise.

In the last phase, visual and functional prototypes were created to test and validate the design. Based on feedback and further refinements, the final product was developed, ensuring it met all the design objectives, user needs, and functional requirements.



## **Conclusion**

The ESSENZ FP3B by Braun came from a design process that balanced aesthetics, functionality, and user needs. Featuring a hidden-until-lit icons and dial interface, glass stackable bowls, clean lines and simple color palette, this design combines simplicity, maintaining elegance and ease of use.

# 05

## Market positioning

The food processor market is highly competitive, requiring unique value propositions to stand out. This chapter examines how the ESSENZ FP3B by Braun addresses consumer needs and market trends, highlighting its innovative features and strategic positioning within the residential food processor segment.

## 5.1 Market trends and consumer demands

In general, small appliances, including food processors, are very popular kitchen products, resulting in a highly competitive and saturated market due to the presence of numerous companies offering similar products (Data Bridge Market Research, 2023). Specifically, in the food processor market, leading companies include Oster, Russell Hobbs, Hamilton Beach, Waring, Cuisinart, Magimix, Morphy Richards, and Braun.

In general, the products offered by these companies can be classified in two categories:

- Professional food processors, characterized by high performances, number of functions, working capacity, and price (Figure 9);
- Residential food processors, with less motor power and functions, but better in terms of space saving and price (Figure 10).



Figure 9: Waring WFP16SC



Figure 10: Hamilton Beach 70450

Relevant current and future trends that we have found in our research include:

**Vegetarianism and Veganism:** a 2023 study by Statista, forecasts a significant increase in vegetarian and vegan diets over the next decade (Statista, 2023).

This trend opens the way for new eating habits, for which appliances like food processors can play a key role in a more efficient meal preparation.

**Healthy food:** The seek of healthier diets continue driving the demand for appliances like food processors. From the Health and Nutrition survey conducted by Euromonitor International, it emerged that “consumers are most willing to pay for health and nutritional properties, followed by superior taste” (Vaičiūnienė, 2024).

**Home Cooking:** According to the 10 Global Food Trends 2024 Report by Innova Market Insights, home cooking, a trend that grew significantly during the Covid-19 pandemic, is projected to continue expanding. A key characteristic of this trend is the preference for cooking from scratch using fresh ingredients (Innova Market Insights, 2024).

**New Technologies:** In the food processor market, the companies are innovating their products by integrating smart features and improving their energy efficiency (Data Bridge Market Research, 2023).



## 5.2 Financial overview

Braun is an established brand that operates in many different markets ranging from sound systems, shavers, clocks, to kitchen appliances. We are specifically interested in the kitchen appliances department in which Braun is known as an iconic German brand for its design of coffee makers, hand blender, and mixers. With their products available worldwide, Braun is “a mid-market brand, not the cheapest, but consumers who want value for money find them a good choice” (Chef’s Pencil, n.d.).

Braun’s current PurEase foodprocessor retails at 109,90€ for the base model and 144,90€ for the complete model with all the attachments. We would advise the retail price for the ESSENZ FP3B to be 199,90€. The higher price reflects a higher quality design with more attention to detail for storage and more functionality with three different bowls, keeping in mind that the target consumers for the product are the empty nesters with higher disposable income compared to young adults.

With production costs being around 30,00€ (discussed in Manufacturing Details before), we could estimate the costs of goods sold around 120€, using the estimation rule of multiplying by 4 times. This leaves Braun with a comfortable gross profit margin over 30% of the product, while broadening their product range and potentially targeting a new demographic that does not own Braun products already.



€199,90

## 5.3 Product positioning

The ESSENZ FP3B positions itself in the market of residential food processors. Its compact storage and multi functionality design adds value to users and separates itself for the current market. Innovations such as the 3 bowl container system, making the processed food ready to serve, is a new functionality not yet observed in other food processors sold and offers a new perspective to how users interact with the food processor.

The product innovations and timeless design falls perfectly in the legacy of products Braun is known for, drawing inspiration from their CJ5050 citrus juicer for example. When looking at the current Braun household products, the ESSENZ FP3B expands the food processor line sitting next to the PurEase Food Processor and MultiPractic Chopper as a more luxurious alternative for the user that wants to celebrate cooking.

At the price point of 199,90€ the product will compete with the higher end food processors on the market from brands such as Ninja, Magimix, Kenwood, and Bosch (Figure 11).

In this market segment you see an overall increase in functionality, as the food processors gain multiple modes that aid in cooking. Conform to this, the ESSENZ FP3B also adds a mode selection. Furthermore, our product adds a form of storage which is not found in that of other brands together with innovative use in the bowls.

The ESSENZ FP3B acknowledges trends like healthy eating and home cooking, offering innovative features and a compact design that differentiate it in a crowded market. Positioned as a premium product, it enhances Braun's portfolio and appeals to consumers seeking quality and functionality, ensuring its competitiveness in the high-end segment.



Figure 11: Food processor market price

06

Conclusion



This project presented a unique challenge: reimagining the Braun food processor to create a product that is not only functional but also emotionally resonant and sustainable. Through rigorous research, iterative prototyping, and collaboration with Braun, we are proud to present the ESSENZ FP3B as a thoughtful evolution of Braun's product line.

### **Design Achievements**

The ESSENZ FP3B establishes a new product identity for Braun with its refreshed architecture and distinctive three-bowl system, delivering practical value for users while enhancing their cooking experience. The redesigned interface is intuitive and user-friendly, a big improvement on the buttons found in the PurEase.

This product addresses a critical need: many food processors are underutilized after purchase, often relegated to storage. By fostering an emotional connection between users and the ESSENZ FP3B, we aim to encourage frequent use and ensure the product's full lifecycle is realized. Unlike the current Braun PurEase model, which is bulky, loud, and less intuitive, our product offers improved storage, modular blade attachments, and a more sustainable design that makes it attractive to keep on the countertop and convenient to use.

### **Potential Improvements and Next Steps**

While the ESSENZ FP3B achieved significant advancements, there is room for further development. Based on the Technical Readiness Levels (TRLs), our product reached levels 3 to 5 across key components, reflecting prioritization due to time constraints. Although the original goal was TRL 6/9, adjustments were made to focus on delivering a cohesive design with achievable results.

Critical aspects such as safety locks and compliance with detailed regulations were deprioritized after discussions with Braun, as their existing smart solutions could address these concerns. Similarly, sound design was identified as a key factor for enhancing user experience. Despite conceptualizing solutions, such as an improved fan system, practical testing was limited due to material constraints in our prototypes. Braun did send us their FP3020 from their tribute collection for us to investigate, and that product is extremely quiet, largely due to their different motor and a belt gear system. Unfortunately for us it was too late to make drastic changes including our findings from that product, but we would advise Braun to look back at their own product to draw inspiration for quiet design.

### Group Evaluation

Reflecting on the process, we recognize that starting prototyping earlier would have strengthened the connection between the conceptual and functional prototypes. Additional detailing could have improved the final prototype, as we remained in the conceptualization phase slightly too long.

However, our teamwork became increasingly efficient as the project progressed, and we all stand behind our concept and its innovative features. We feel that our strong narrative and design decisions make the ESSENZ FP3B a compelling addition to Braun's product portfolio.

Beyond designing the food processor, we gained valuable experience in research through design, report writing, and using the pyramid structure to present our findings.

### Closing Statement

The ESSENZ FP3B represents a product we are proud to have developed. Working closely with Braun allowed us to draw inspiration from their legacy and create a meaningful, user-centered product. Our design exemplifies the harmonious balance between innovation, sustainability, and emotional connection, reimagining the food processor as a true kitchen companion. Guided by Braun's design philosophy and informed by extensive research, the final product addresses modern consumer needs while remaining timeless and versatile. By enhancing the cooking experience with thoughtful features like

stackable bowls, a refreshed interface, and improved modularity, the ESSENZ FP3B creates a stronger bond between users and their appliances. The ESSENZ FP3B is a celebration of cooking, inspiring users to make their kitchens a space of joy, functionality, and connection.

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# Appendices



## Human Interaction Analysis

To gauge how people really used and interacted with the product, we sat down and analyzed a few aspects such as – the users, their goals, the tasks they carry out and the context for their usage. We conducted a small workshop within the faculty of IDE, sent out a general survey and mapped out a user journey map , to gather well rounded insights.

### 1.1 General Survey

#### Aim

To get an overview about the demographics, socio-economic status and thought process of current and potential food processor users using Google Forms.

#### Insights

##### Have a food processor :

- Majority of the users are aged 45 to 65, own a house, living with their partner and children.
- Usually use for cutting, shredding and kneading to make salads, soups or dough.
- Users enjoy the efficiency and versatility, however they dislike cleaning the device.
- They do not use it frequently.
- They end up storing it in their cabinets.

- The users find the experience of using the device comparable to sharpening a chef's knife – preparing with precision and focus.
- Most users barely touched the manual before using it.

##### Never used a food processor :

- Mainly young adults aged 18-30 with many being students or starting a new family.
- The reasons to not buy it yet were that they find it space consuming , did not require it or do not know its purpose.
- To get such a device they need it space conscious, cost-effective and easy to clean.
- The users find the metaphor – Unlocking a treasure chest – discovering hidden potential and excitement.. – best captures the experience they would like to have when using a food processor.

Choose which accessory do you use the most

☐ Cutting Knife

☐ Grater or shredder

☐ Slicer

☐ Dough

☐ Blender

☐ Emulsifier

☐ Grinder

☐ Other:

On a scale of 1 to 5, how frequently do you use this product?

Less than once a month

1 ○

Figure ##: A screenshot of the google form

Figure ##: A screenshot of the summary of the responses we received.

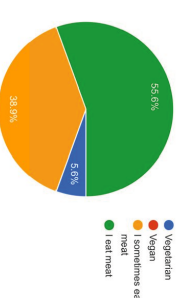
Products Now Studio| General Survey

Questions Responses 19 Settings

What is your eating habit?

18 responses

☐ Copy



#### Your experience with a food processor

Do you have a food processor at home?

18 responses



Figure 3: outcomes user workshop

1.2 User Journey Map

Scenario: To shred a cucumber using Braun's PureEase Food Processor.

➤ To breakdown every step taken while interacting with the appliance, we built a user journey map based on the general survey and the workshop conducted.

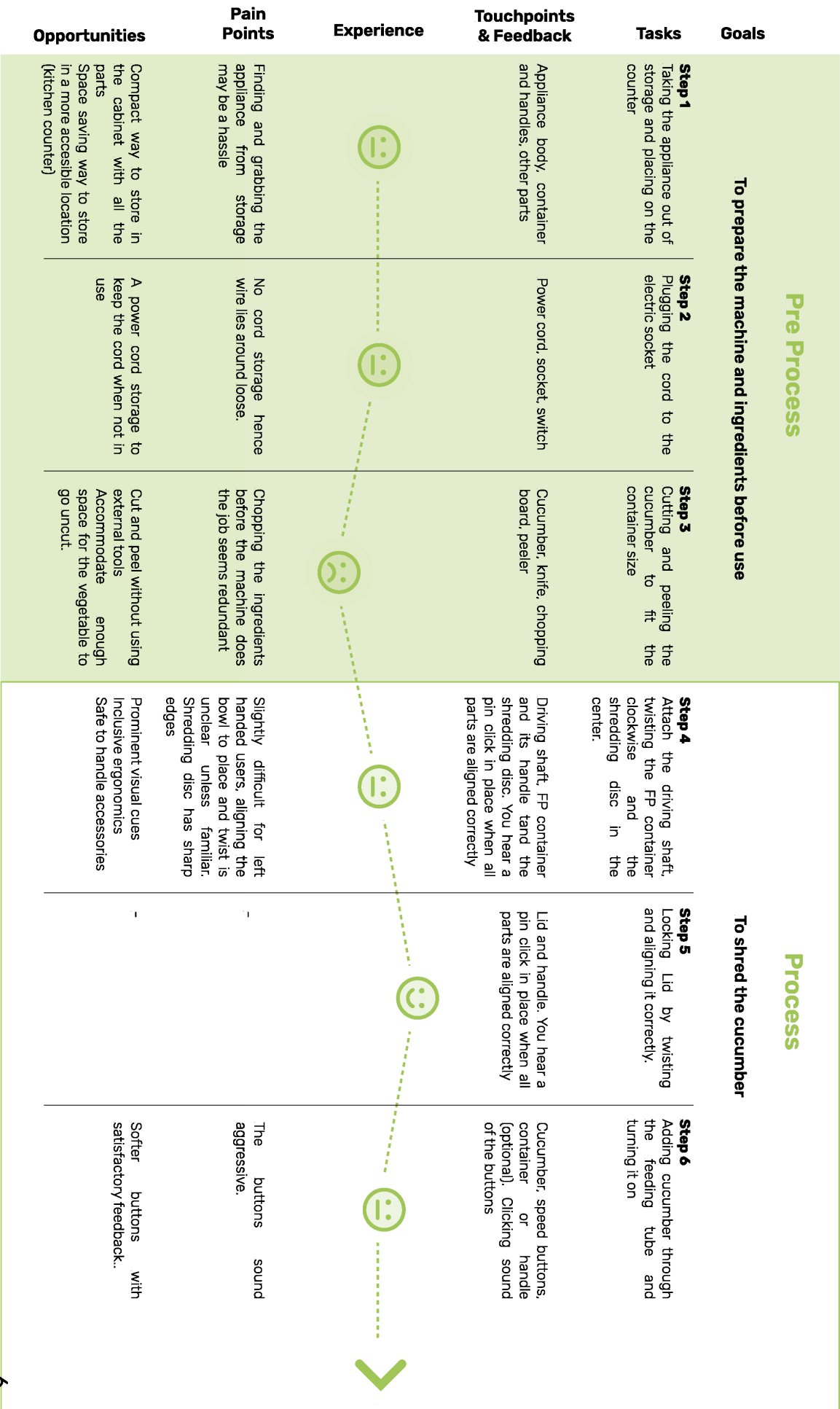
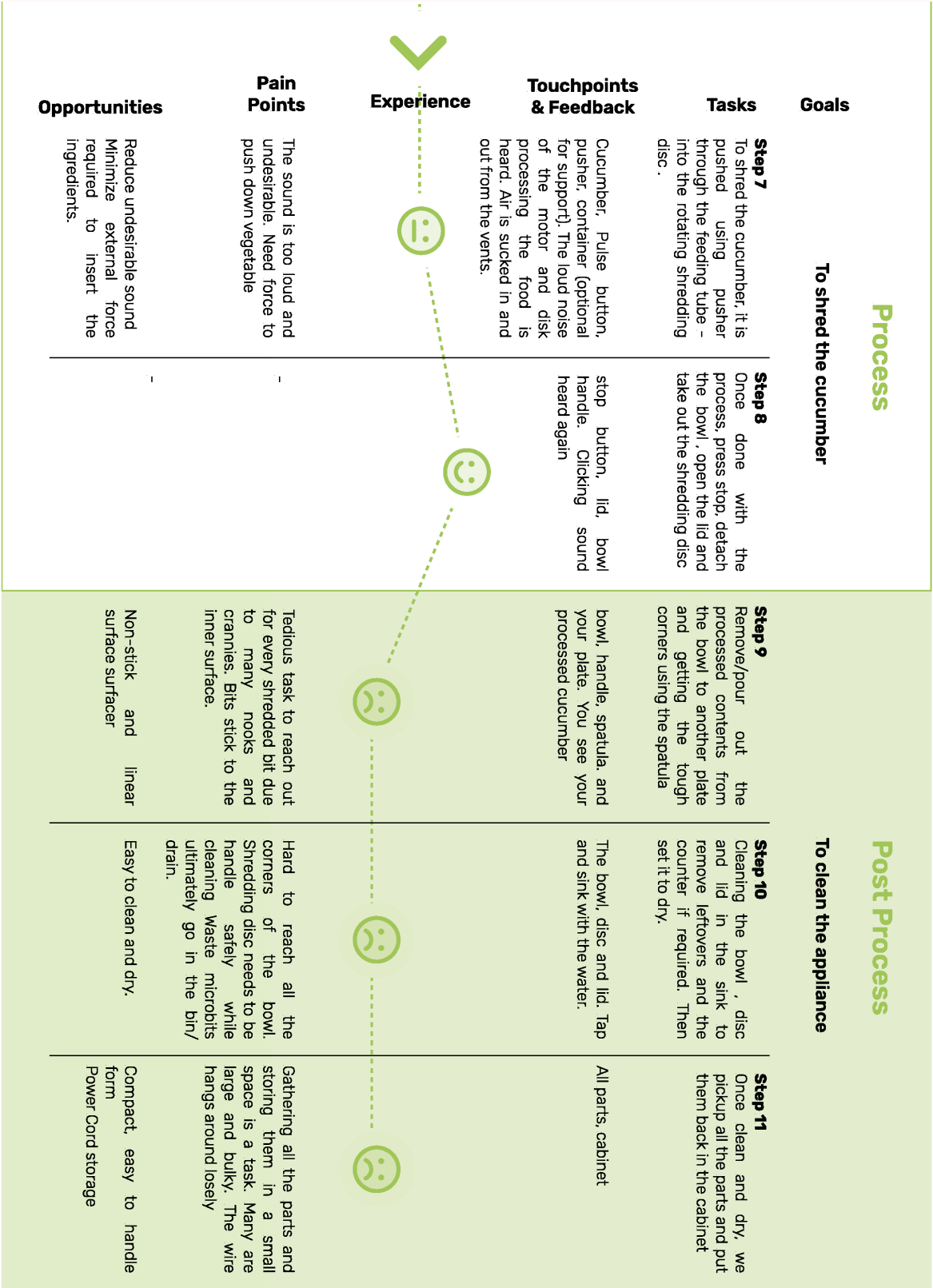


Figure 4: user Journey map (part 1)

1.2 User Journey Map

Scenario: To shred a cucumber using Braun's PureEase Food Processor.



- Insights
1. The user did not enjoy the fact that they need to prepare the ingredients before (cutting and peeling) processing it.

2. The cleaning process is taxing with the food sticking to the ridges or corners and often leads to food getting wasted.

3. The appliance and its accessories require considerable amount of space especially when storing it away.

Figure 4: user Journey map (part 2)



## 1.3 Workshop

### Insights

#### Aim

To study people interact with the current product without any instructions and fill a short survey based on their experience.

#### Goal

To cut or shred the vegetable using the given product.

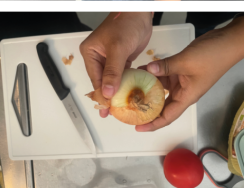
#### Users

- Students at IDE, TU Delft
- Faculty at IDE, TU Delft
- Staff at IDE, TU Delft

#### Methods

- Fly on the wall
- Think-out-loud
- Questionnaire with both close and open ended questions

Many were unfamiliar with the name of the appliance but recognized its function. Not everyone were able to quickly identify the 'Pulse' symbol. They appreciated the need of safety mechanisms. To deduce the costs, they reflected on their experience and then looked at the brand.



The ingredients need to be prepared before the process - peeling them or slicing them into smaller parts if they don't fit in the container.

How can we make the pre-process more convenient?



Participants found it difficult to align and lock the container without instructions

How can we make it more intuitive?



Cut food often sticks to the unreachable corners of the inner surface of the container making it harder for the blade to cut further. This causes uneven cutting.

How can we process the food evenly?



The gap between the grating disc and lid leaves a portion of the food uncut and it lodges itself within this gap

How can we reduce wastage of food?



The inside is not smooth and the food often sticks to the inner surface making it difficult to pour out food and clean the container

How can we make the post-process easier?

#### How can we :

- make the pre-process more convenient
- make it more intuitive?
- process food evenly?
- reduce wastage of food?
- make the post-process easier?
- emotionally engage the users to the product?

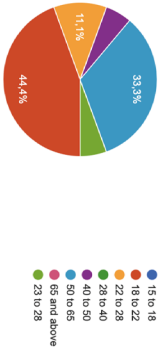
### Insights

Studying human behavior with, around and without the appliance gave us major take aways. On conducting a general survey we were able to form an overview of the demographic, their experiences and their reasons to avoid buying the product. The workshop provided us with live insights through observing them interact with the product without instructions while they expressed their feelings out loud and summarizing their experience in a short questionnaire. Based on that, a user journey map was made which highlighted the tasks, feelings they experience and key pain points and possible solutions. Such as their frustration with aligning the product the correct way without a manual, or the auditory discomfort of the motor noise or even the post process hassle of cleaning and storing away the large bulky appliance. We also took the pros into account where people appreciated the pin fail-safe mechanism or the non-intimidating interface. This also helped set the stage for User validation after prototyping.

# Appendix A: Questionnaire

How old are you?

18 antwoorden



Kopieren

What is your living situation?

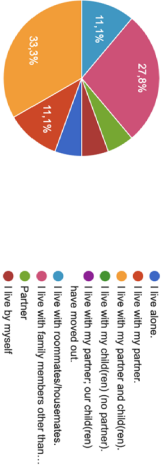
18 antwoorden



Kopieren

With how many people do you currently live?

18 antwoorden



Kopieren

What is your eating habit?

18 antwoorden



Kopieren

Your experience with a food processor

Do you have a food processor at home?

18 antwoorden



Kopieren

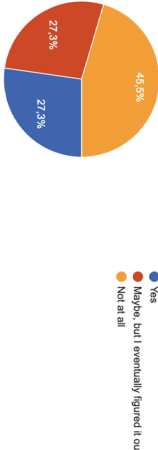
Could you tell us the brand or model?

11 antwoorden

|                              |
|------------------------------|
| Bosch Munn54                 |
| Kitchen aid                  |
| Braun                        |
| 九阳                           |
| Action model, simple blender |
| Tefal en braun               |
| No idea                      |
| Bosch                        |
| I don't know                 |
| No                           |
| Tefal                        |

Did you require a manual to start it?

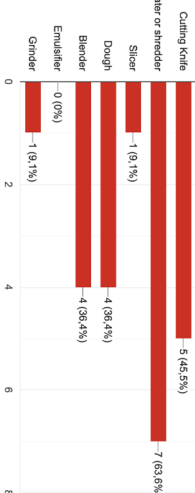
11 antwoorden



Kopieren

Choose which accessory do you use the most

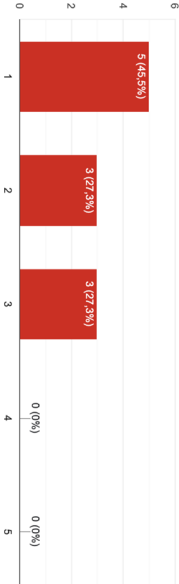
11 antwoorden



Kopieren

On a scale of 1 to 5, how frequently do you use this product?

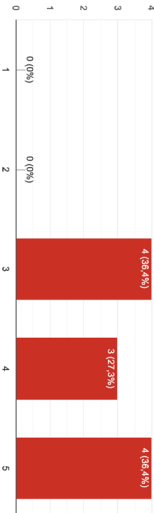
11 antwoorden



Kopieren

On the scale of 1 to 5, how easy was it for you to use it on the first try?

11 antwoorden



Kopieren

# Appendix A: Questionnaire

What activities do you usually use the food processor for?

11 antwoorden

|                                                                                                 |
|-------------------------------------------------------------------------------------------------|
| Raspen van kaas of groenten, mixen (taartdeeg, beslag, etc.), fijnhakken (noten, kokjes, pesto) |
| Chopping up lots of vegetables, making pastes for sauces                                        |
| Juice, dough salad cutting                                                                      |
| porridge                                                                                        |
| Smoothies                                                                                       |
| salades ,saus, 'toefjes                                                                         |
| Making soup                                                                                     |
| Blending, making dough and mixing                                                               |
| Doughs                                                                                          |
| Smoothie                                                                                        |
| Grate carrots and cucumber                                                                      |

Why did you feel the need to buy/use this device?

11 antwoorden

|                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Met name handig voor raspen, maar ook fijn om 1 machine te hebben die voor verschillende doeleinden gebruikt kan worden ipv allemaal aparte apparaten. |
| I wanted to make my cooking faster                                                                                                                     |
| Large quantities                                                                                                                                       |
| It is convinice and can save time                                                                                                                      |
| Opleving van "healthy life"                                                                                                                            |
| Gemak bij grotere hoeveelheden klaar te maken                                                                                                          |
| No similar option                                                                                                                                      |
| Comfort                                                                                                                                                |
| To cook in an easier way                                                                                                                               |
| Smoothie                                                                                                                                               |
| Fast grate                                                                                                                                             |

What do you dislike about this product?

11 antwoorden

|                                                                                                           |
|-----------------------------------------------------------------------------------------------------------|
| Schoonmaken van de materialen                                                                             |
| It could use a little more power, and it's a little big. More slicing options/knives would have been nice |
| Too big in kitchen en difficult to clean                                                                  |
| Price                                                                                                     |
| Veel te groot om op te bergen                                                                             |
| Moelijk schoon te maken en te drogen door teveel kleine en lastige onderdelen en hoekjes                  |
| Washing it                                                                                                |
| Nothing so far                                                                                            |
| The rumor                                                                                                 |
| So much to clean                                                                                          |
| Cleaning up                                                                                               |

What kind of dishes would you like to use the food processor for?

11 antwoorden

|                                                                  |
|------------------------------------------------------------------|
| Heel divers, voor taarten, desserts, hoofdgerechten, sauzen, etc |
| Blending to a fine soup                                          |
| Juice bread salades                                              |
| 粥滑                                                               |
| Smoothies                                                        |
| Zie hierboven                                                    |
| Baking/making dough                                              |
| All kinds                                                        |
| Dishes that requires doughs                                      |
| Geen idee                                                        |
| Raw food or salad                                                |

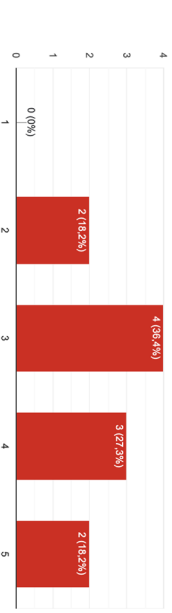
What do you like about this product?

11 antwoorden

|                                                         |
|---------------------------------------------------------|
| Gebruik voor verschillende doeleinden en tijdsbesparend |
| It's great at shredding and cutting                     |
| Easy to use                                             |
| Malfunction                                             |
| Doet zijn werk adequaat                                 |
| Zie hierboven                                           |
| Useful                                                  |
| Easy, versatile                                         |
| The versatility                                         |
| Quick use                                               |
| Cuts and grate fast much food                           |

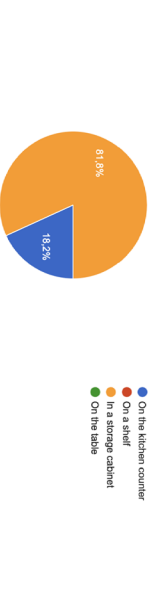
How satisfied are you with this purchase?

11 antwoorden



Where do you usually keep it when not in use?

11 antwoorden

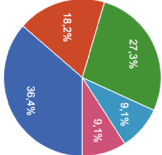




# Appendix A: Questionnaire

Which of the following metaphors best captures the experience you would like to have when using a food processor?

11 antwoorden



- Sharpening a chef's knife - preparing with precision and focus.
- Revolving up a classic car engine - unleashing power and control.
- Firing up a wood-fired oven - engaging in a traditional, transformative process.
- Unlocking a treasure chest - discovery, hidden potential and excitement.
- Decanting a fine wine - bringing out the hidden potential and excitement.
- None of the above. Easy to process it...
- Sitting in a train/ bus taxi, while another...

Thank you for your participation! One last question. Do you give consent that this information may be used for further research purposes?

11 antwoorden



- Yes
- No

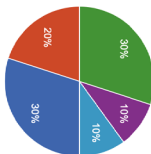
Can you tell us why you don't own a food processor?

10 antwoorden

- Never needed it before so I didn't think about getting one
- Too big in the kitchen and too much fuss to clean
- Nieemt te veel ruimte in beslag en veel functies die ik eigenlijk niet gebruik
- We never had the chance to buy one and we adapted to cook without using one
- In China most of the food don't need it
- I use the equipment my parents have. And they don't own any.
- I have other appliances (like a (hand) blender) that do the same work as a foodprocessor, so I don't think it is necessary to have one.
- We have a small hand blender that we sometimes use
- I think I've never felt the specific need for it. I do have a basic machine that works like it, more like a chopper.
- What would need to happen for you to use a food processor?
- 10 antwoorden
- Start a new family with a lot of hungry kids
- Een keukengerichtjes worden. 🍷
- I would use it very often if I had one at home
- Can make milkshake and 虾滑
- If my situation changes and if I know it will save me energy and costs.
- I would need more information about what it adds to my kitchen. For example, what are the pros of having a food processor?
- Get in contact with more recipes that require a food processor
- Decrease my love for cutting vegetables and herbs with a kitchen knife
- For me to be more into cooking and taking/having the time to do so.
- I think when I have (and take) more time to make food

Which of the following metaphors best captures the experience you would like to have when using a food processor?

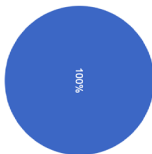
10 antwoorden



- Sharpening a chef's knife - preparing with precision and focus.
- Revolving up a classic car engine - unleashing power and control.
- Firing up a wood-fired oven - engaging in a traditional, transformative process.
- Unlocking a treasure chest - discovery, hidden potential and excitement.
- Decanting a fine wine - bringing out the hidden potential and excitement.
- None of the above. Easy to process it...
- Sitting in a train/ bus taxi, while another...

Thank you for your participation! One last question. Do you give consent that this information may be used for further research purposes?

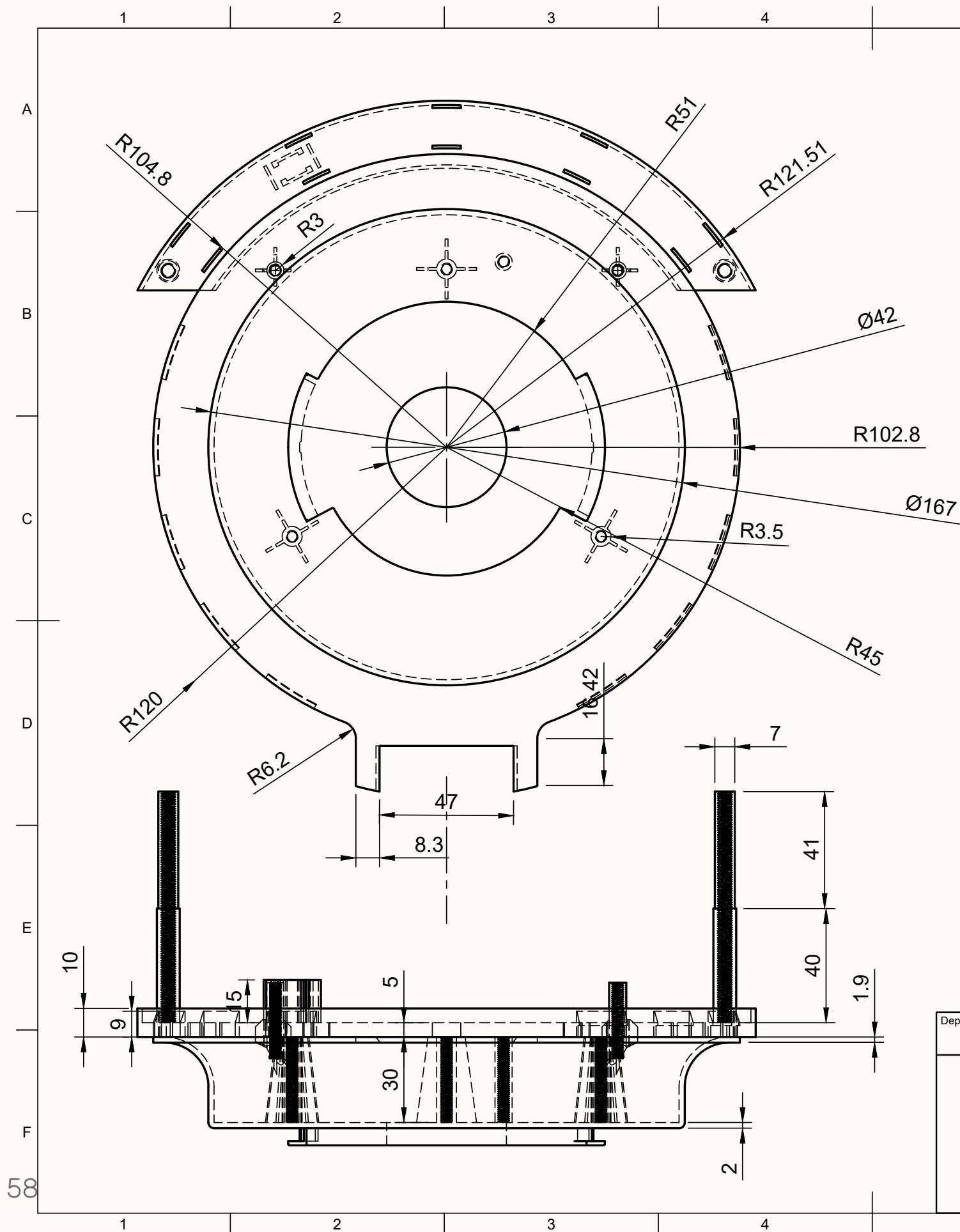
10 antwoorden



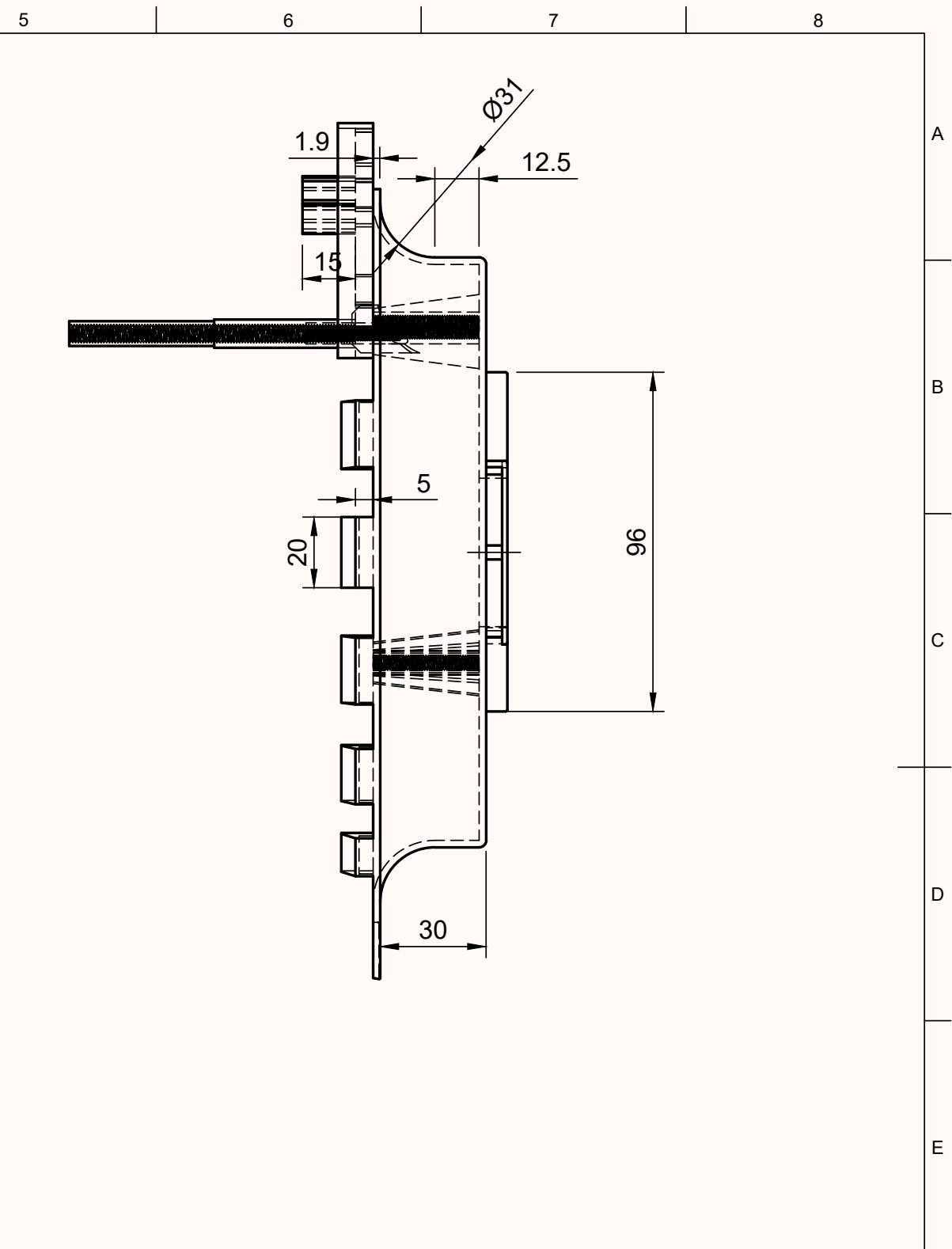
- Yes
- No



## 1. Top part

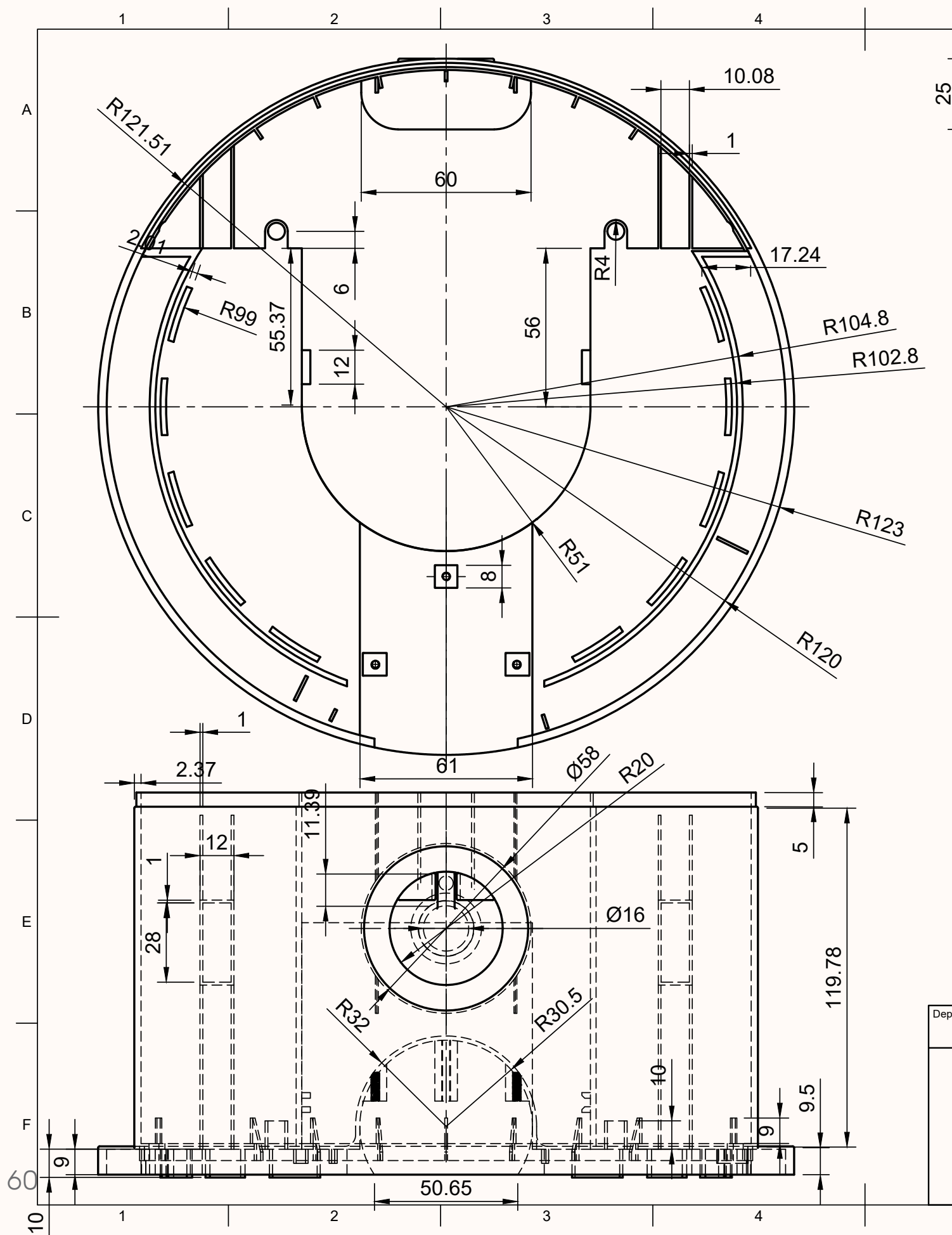


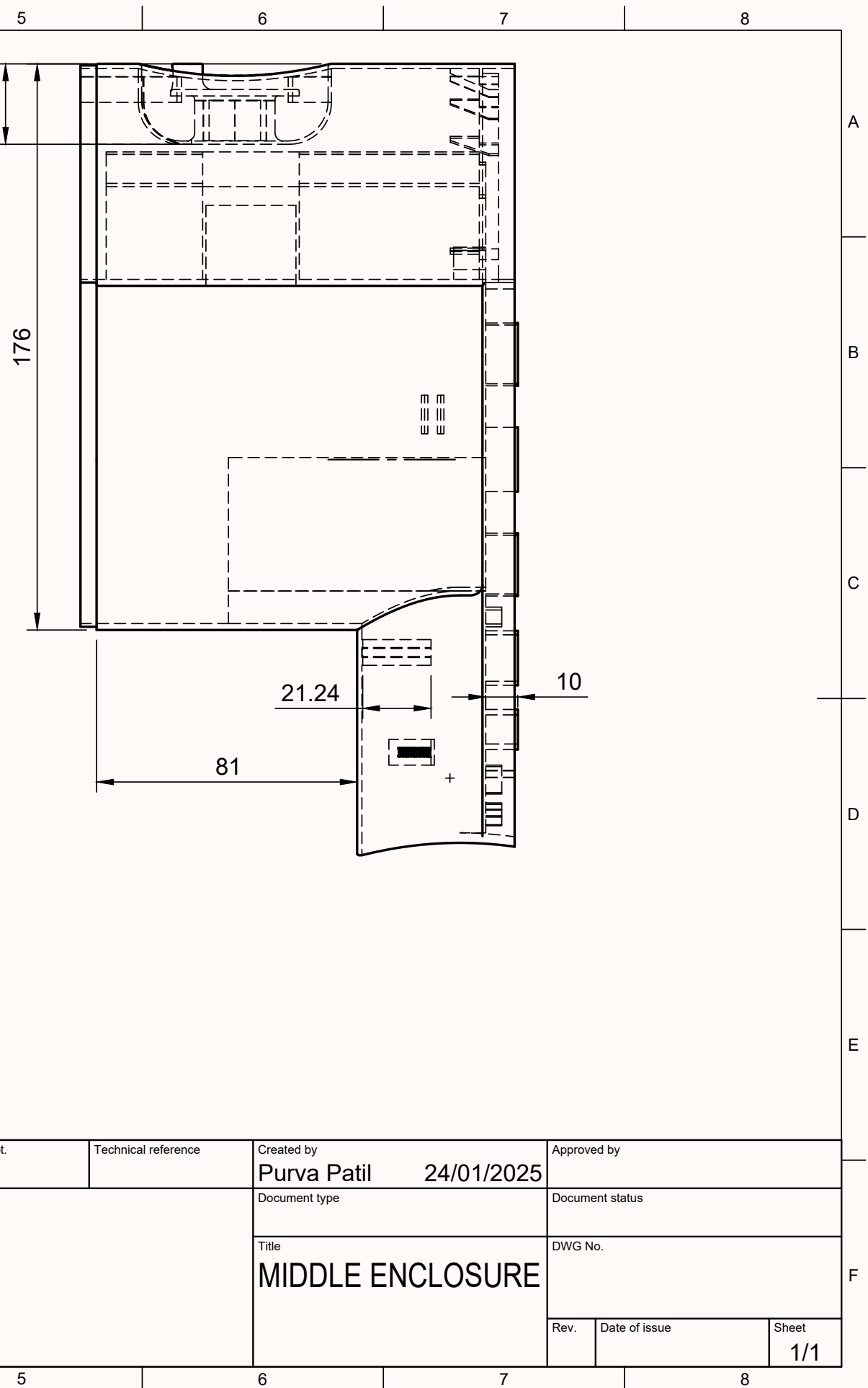




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|    |                     | Document type<br><b>COMPONENT DRAWING</b>   | Document status |               |                     |
|    |                     | Title<br><b>TOP ENCLOSURE</b>               | DWG No.         |               |                     |
|    |                     |                                             | Rev.            | Date of issue | Sheet<br><b>1/1</b> |

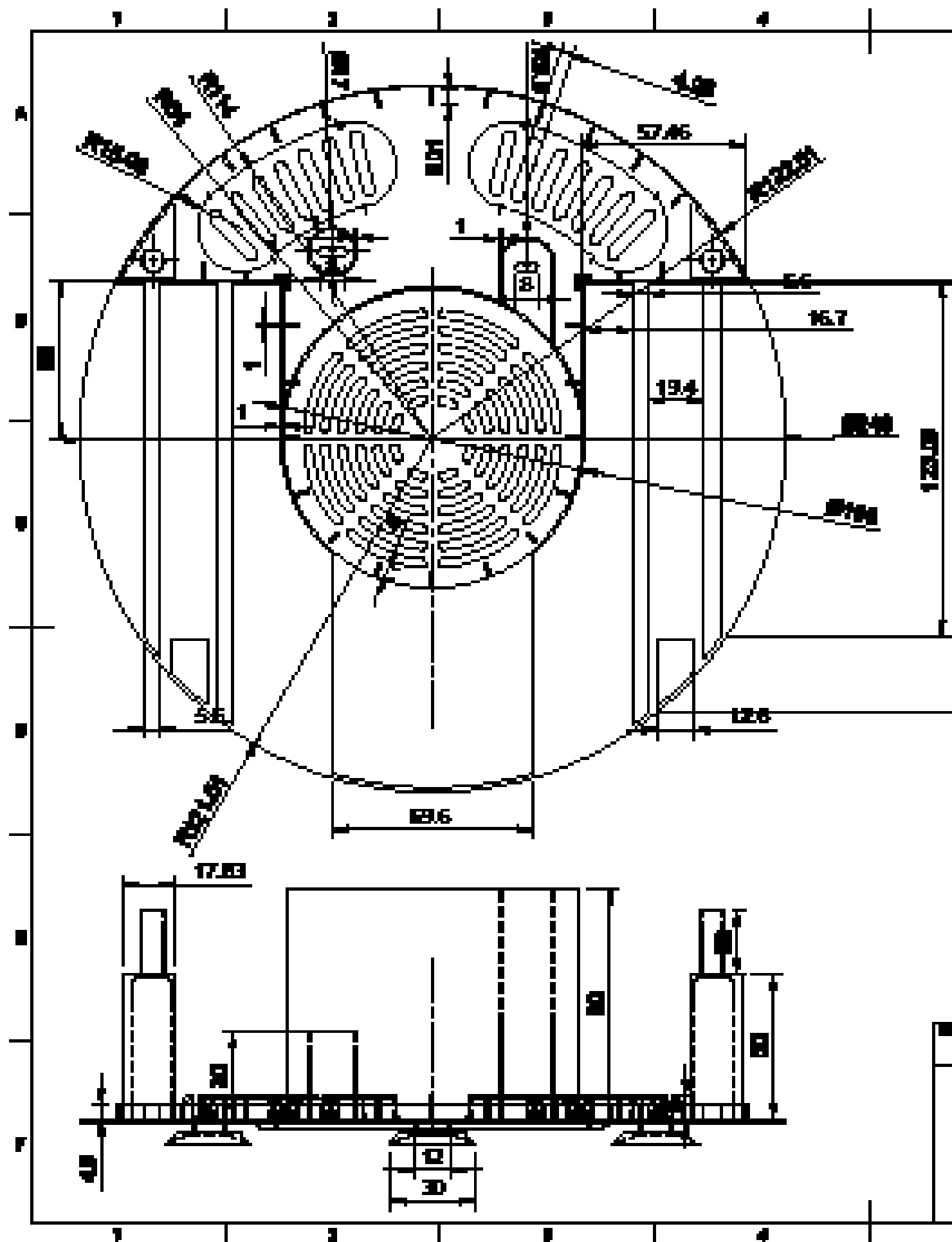
## 2. Middle part





# Appendix B: Technical drawings

## 3. Bottom part

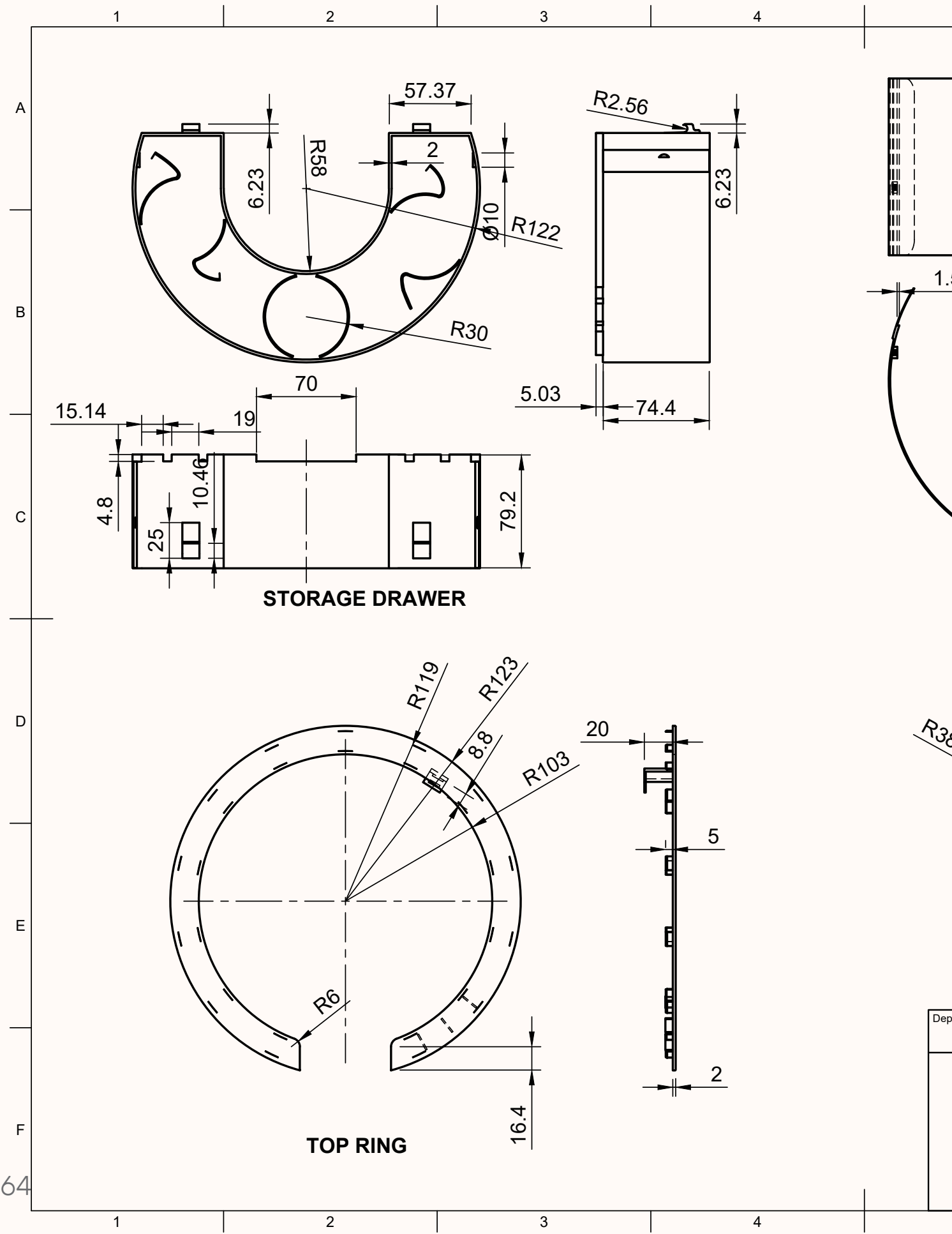


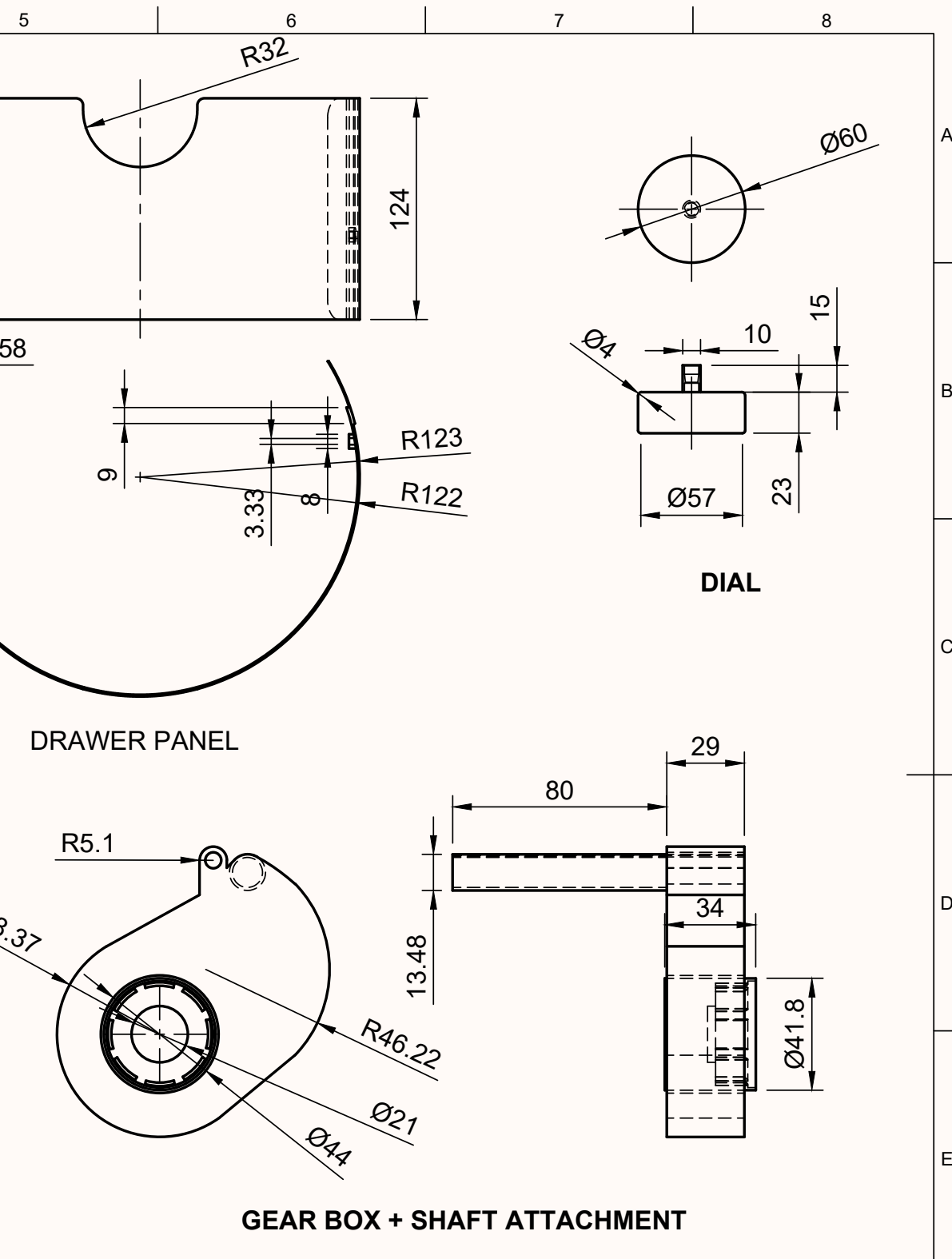




# Appendix B: Technical drawings

## 4. Components A

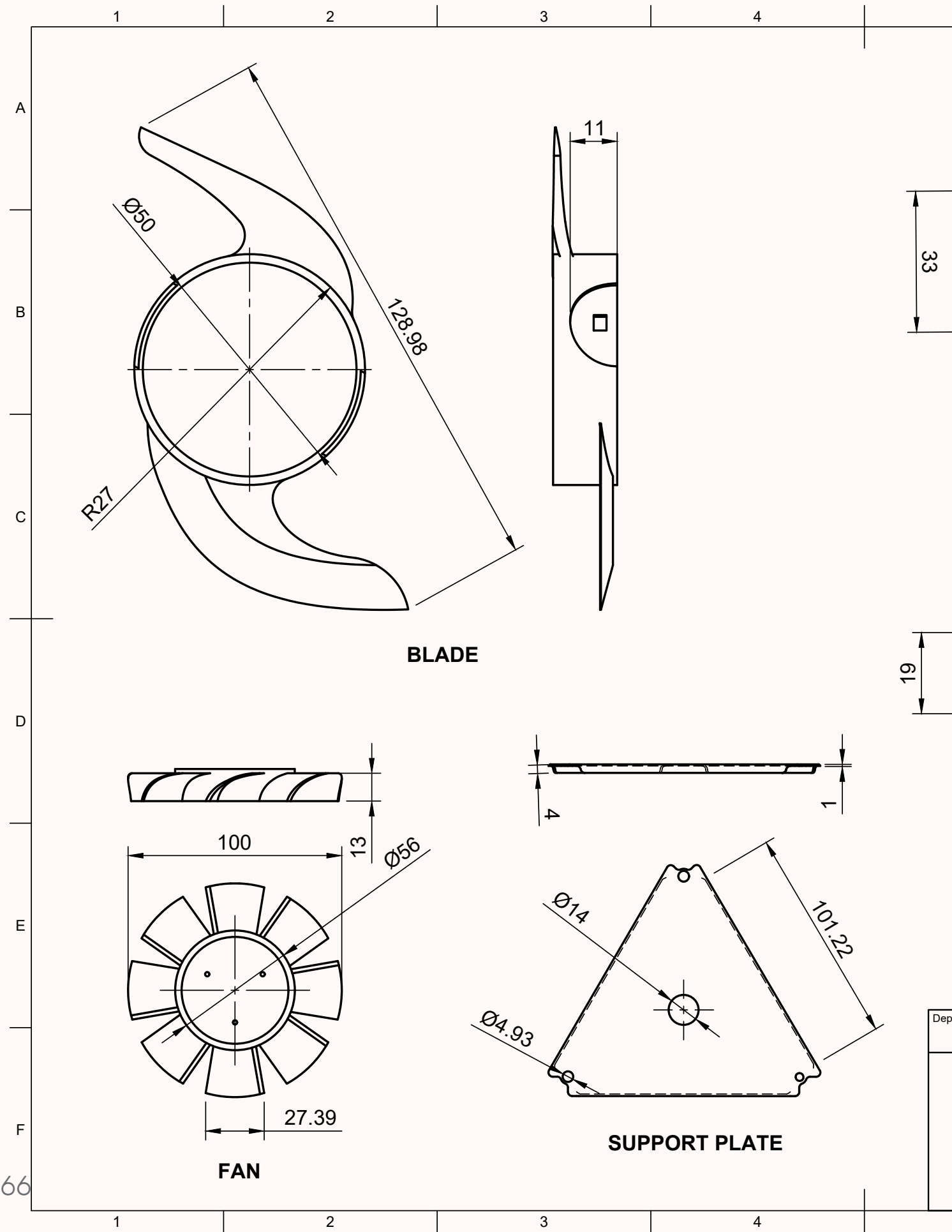




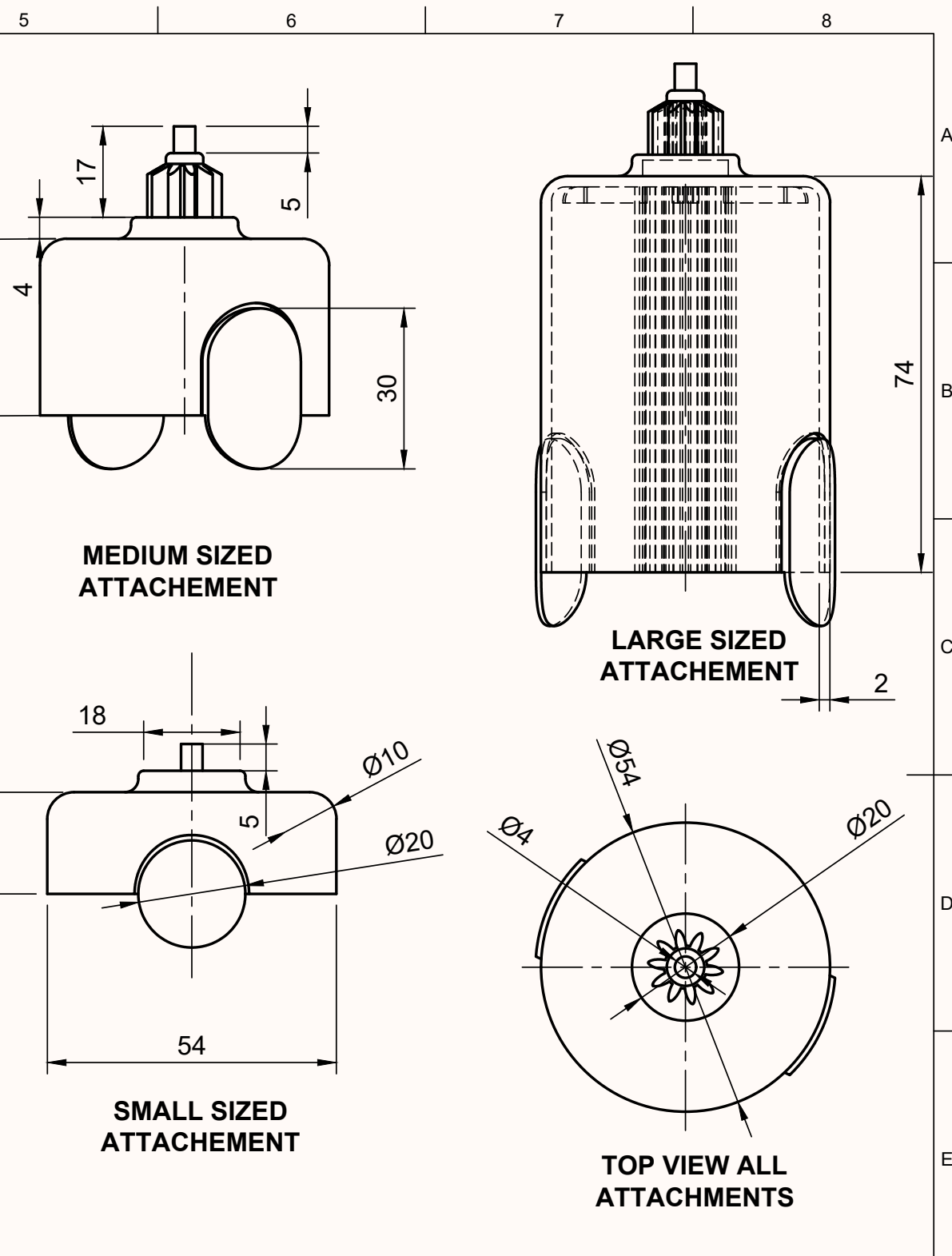
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| Technical reference | Created by<br><b>Purva Patil</b> | 24/01/2025    | Approved by         |
|                     | Document type                    |               | Document status     |
|                     | Title<br><b>BASE COMPONENTS</b>  |               | DWG No.             |
|                     | Rev.                             | Date of issue | Sheet<br><b>1/1</b> |

# Appendix B: Technical drawings

## 4. Components B



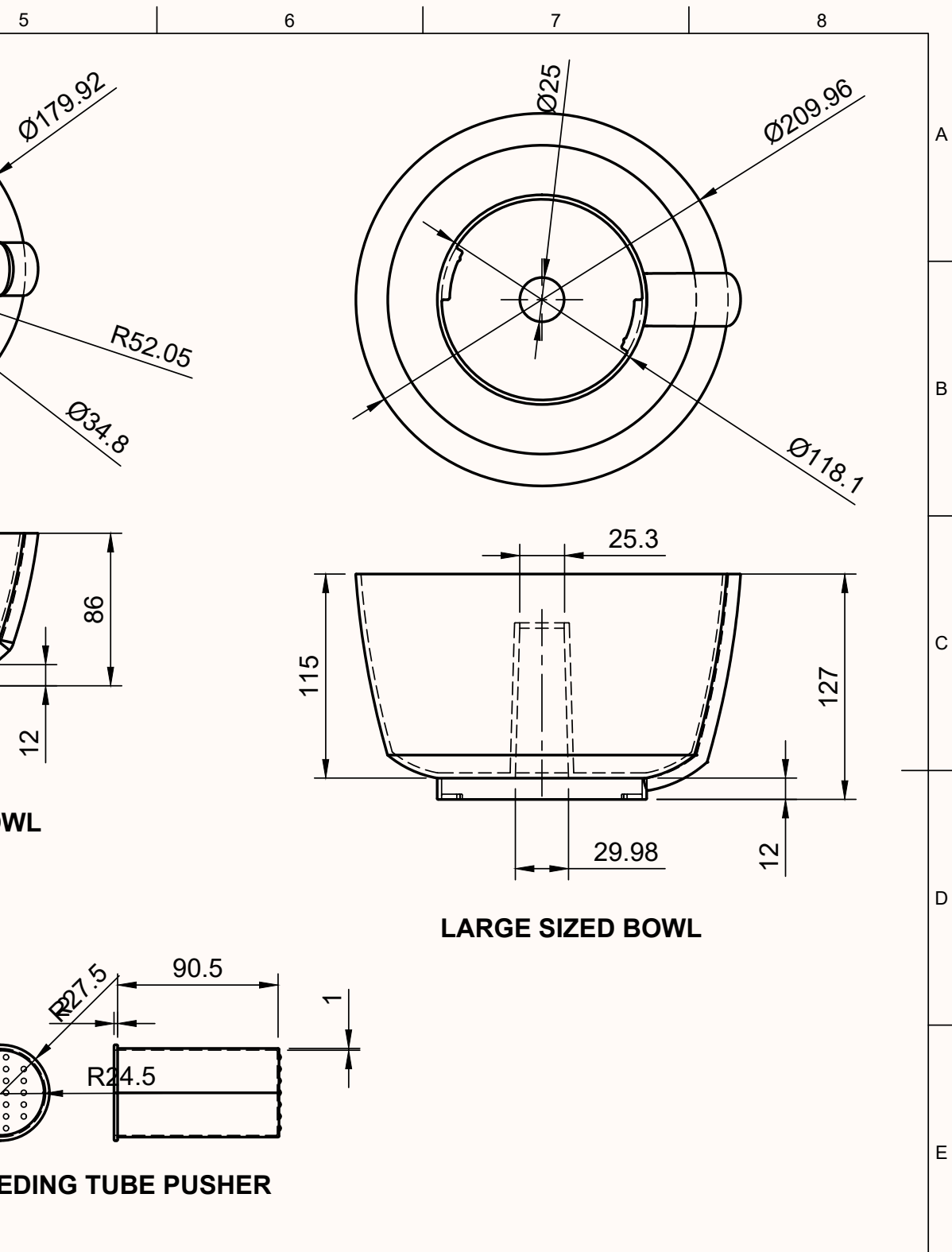




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|--|---------------------|-----------------------------------------------------------|---------------------|
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## 4. Components C





|    |                     |                                             |                 |               |                     |
|----|---------------------|---------------------------------------------|-----------------|---------------|---------------------|
| t. | Technical reference | Created by<br><b>Purva Patil</b> 24/01/2025 | Approved by     |               |                     |
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|    |                     | Title<br><b>FOOD BOWLS, LID AND PUSHER</b>  | DWG No.         |               |                     |
|    |                     |                                             | Rev.            | Date of issue | Sheet<br><b>1/1</b> |

# Appendix C: Bill of Materials

| Sr. No | Component Name            | Proposed Material Details |                         | Quantity | Vendor     |
|--------|---------------------------|---------------------------|-------------------------|----------|------------|
| 1      | Top Enclosure             | PP                        | Injection Moulded       | 1        | In-house   |
| 2      | Middle Enclosure          | PP                        | Injection Moulded       | 1        | In-house   |
| 3      | Bottom Enclosure          | PP                        | Injection Moulded       | 1        | In-house   |
| 4      | Drawer Panel              | PP                        | Injection Moulded       | 1        | In-house   |
| 5      | Storage Panel             | PP                        | Injection Moulded       | 1        | In-house   |
| 6      | Dial                      | PP                        | Injection Moulded       | 1        | In-house   |
| 7      | Fan                       | ABS                       | Injection Moulded       | 1        | Bought-out |
| 8      | Triangular Plate          | Stainless Steel           | Sheet metal fabrication | 1        | In-house   |
| 9      | Top Ring                  | PC                        | Injection Moulded       | 1        | In-house   |
| 10     | Gear box enclosure        | PC                        | Injection Moulded       | 2        | In-house   |
| 11     | Small Attachment          | PP                        | Injection Moulded       | 1        | In-house   |
| 12     | Medium Attachment         | PP                        | Injection Moulded       | 1        | In-house   |
| 13     | Large Attachment          | PP                        | Injection Moulded       | 1        | In-house   |
| 14     | Small bowl                | Glass                     | Glass Moulding          | 1        | In-house   |
| 15     | Medium Bowl               | Glass                     | Glass Moulding          | 1        | In-house   |
| 16     | Large Bowl                | Glass                     | Glass Moulding          | 1        | In-house   |
| 17     | Lid                       | PC                        | Injection Moulded       | 1        | In-house   |
| 18     | Feeding Tube Pusher       | PC                        | Injection Moulded       | 1        | In-house   |
| 19     | Dough Blade               | PP                        | Injection Moulded       | 1        | In-house   |
| 20     | Chopping Blade            | Stainless Steel           | Sheet metal fabrication | 2        | In-house   |
| 21     | Motor                     |                           |                         | 1        | In-house   |
| 22     | Motor adapter             |                           |                         | 1        | Bought-out |
| 23     | Dial Regulator            |                           |                         | 1        | Bought-out |
| 24     | Spring Lock               |                           |                         | 2        | Bought-out |
| 25     | PCB                       |                           |                         | 3        | Bought-out |
| 26     | LED                       |                           |                         | 5        | Bought-out |
| 27     | M3 x 20 Pan headed screws | Stainless Steel           | ISO7045:2011-H          | 3        | Standard   |
| 28     | M5 x 45 Pan headed screws | Stainless Steel           | ISO7045:2011-H          | 2        |            |
| 29     | M4 x 30 Pan headed screws | Stainless Steel           | ISO7045:2011-H          | 3        | Standard   |
| 30     | M3 Slotted screws         | Stainless Steel           | ISO1207:2011-H          | 3        | Standard   |
| 31     | Rivets                    | Stainless Steel           | BS4620:1970             | 2        | Standard   |
| 32     | Washer                    | Stainless Steel           |                         | 3        | Standard   |



# Appendix D: Mold calculation

## Base:

PP+ABS, estimated 200g of material per base.

PP+ABS price 1.2 €/kg.

Material cost per base: 0.24 €.

## Bowls:

Glass, each bowl requires 400g of material

The price of glass is 2 €/kg.

Material cost per bowl: 0.8€.

## Motor:

Unit price is about 20 €.

Control boards: cost per piece: approx. 5 €.

|                            | High volume                                         |
|----------------------------|-----------------------------------------------------|
| Production volume          | 100,000                                             |
| Method                     | Outsourced mold production and molding              |
| Mold                       | Machined steel                                      |
| Lead time to final parts   | 4-8 weeks                                           |
| Equipment required         | Machined steel molds, industrial injection machines |
| Mold cost (€)              | 25,000                                              |
| Material cost per part (€) | 26.04                                               |
| Labor cost per part (€)    | 0.5                                                 |
| Total tooling cost (€)     | 25,000                                              |
| Total material cost (€)    | 2,604,000                                           |
| Total production cost (€)  | 2,629,000                                           |
| Cost per part (€)          | 26.29                                               |

Using these prices to calculate "Total material cost" (per unit):

$$0.24\text{€} + 0.8\text{€} + 20\text{€} + 5\text{€} = 26.04\text{€}.$$

The estimated mold cost for the high-volume production is based on data and ranges provided by Formlabs (2023). Considering the complexity of our design and the target production volume of 100,000 units, we determined that €25,000 is a reasonable estimate for this situation.

# Appendix E: Test script

Questions before the test:

- What are your first impressions of the prototype?
- Can you understand the role and intent of each part?
- Is there anything that confuses

Testing:

- Only one prompt: Press the button to switch or confirm

-Tasks:

Turn on the device and choose the speed.  
Switch to mode selection and select a mode.  
Confirm the selection and complete the operation.

-Observation Points:

Are users able to follow the expected process?  
Is there mis-operation?  
How do users respond to lights, dial and button?

Questions after the test:

- How was your overall experience with this prototype?
- Which parts of the operation did you find easiest to understand? -Which part was the most difficult?
- Do you think the prototype meets your expectations?
- What do you think could be improved in the prototype?