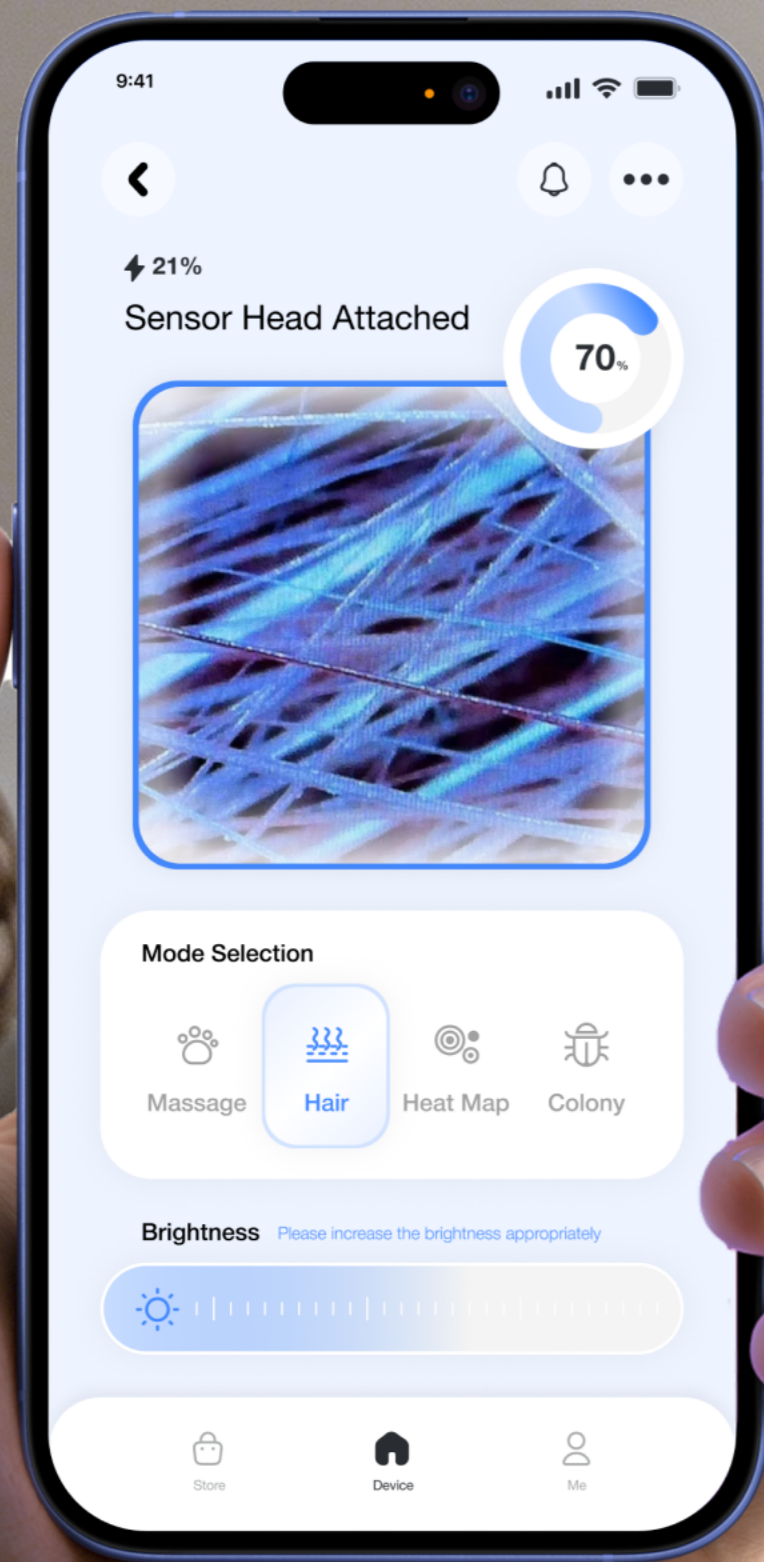


mallow



STUDENT INNOVATION

Background

Problem Finding	04
User Research	05
Target Users	06
Competitive	07

Design Process

Design Goals	09
Concept	10
Design Iteration	11
Product Introduction	12

Instruction Manual

Product Overview	27
Exploded Views	28

Background

Problem Finding
User Research
Target Users
Competitive

PROBLEM FINDING

Macro Perspective: Pet Foot Care & Dermatological Hygiene

Pathogenic Risk | Market Frequency | Interaction Conflict

Through desktop research on pet health data and urban pet-keeping behavior, we have gained a macro understanding of pet paw cleanliness and discovered the underlying conflict between cleanliness methods and the balance of health and convenience.



40%

In non-preventive visits to the pet hospital, about 40% of cases are related to skin health.

Occurrence



500+

A city pet dog needs to undergo more than 500 foot cleanings at home every year.

Number



Deep Gaps

There is a serious 'mismatch' between complex physiological structures and rough cleaning methods.

Situation

USER RESEARCH

Based on semi-structured interviews



User: A-Fei
Age: 27



Pet: Momo
Age: 8 months
Chinese Rural Dog

Outdoor Camping

City Life

Exquisite Lifestyle Group

Basic Information

Outing Locations & Frequency

Park 1/day

Camping 1/month

Pet Cleaning Habits

Camping Scenario Brings a dedicated pet mat.

Home Scenario Performs basic paw cleaning.

Primary Tools

Wet wipes / Wet tissues

Pain Points

→ Portability Pain Points

There is already a lot of camping gear; carrying an extra mat is inconvenient.

→ Operational Pain Points

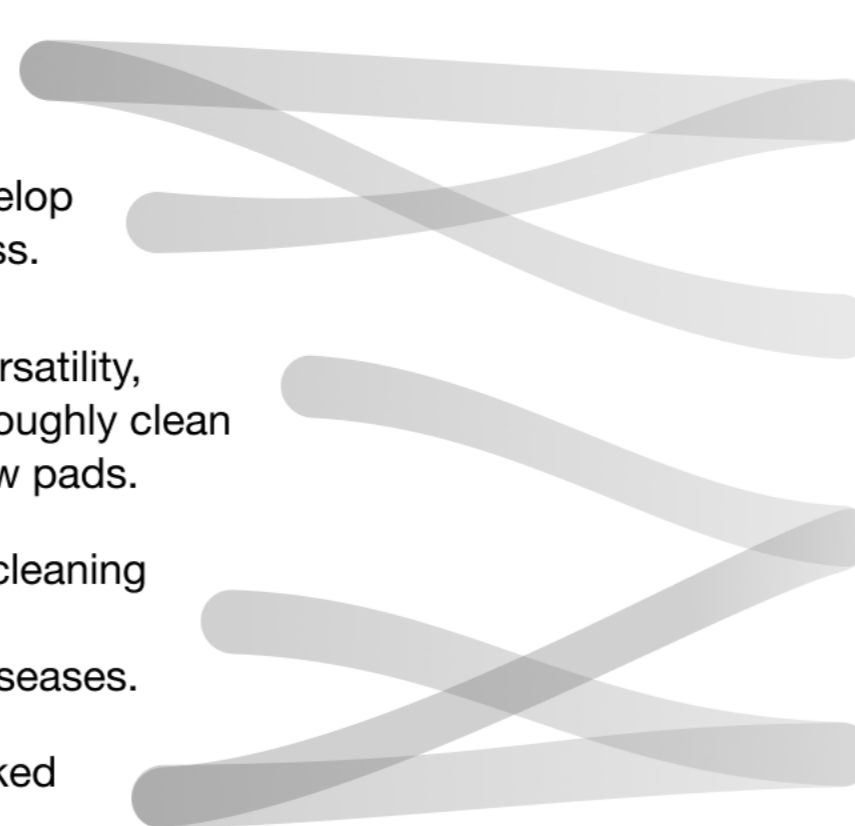
Cleaning with wet wipes has limited effectiveness; outdoor mud and dirt are difficult to clean quickly and thoroughly.

→ Experience Requirements

Concerns about noise levels and whether the dog will be comfortable with/accept the device.

DIFFICULTIES

- Traditional hand-washing is time-consuming and labor-intensive.
- Pets may resist or even develop a fear of the cleaning process.
- Current products lack versatility, making it difficult to thoroughly clean dirt trapped between paw pads.
- Dampness and incomplete cleaning of paws can breed bacteria, increasing the risk of skin diseases.
- Paw health issues are often overlooked by owners until they become severe.



High-frequency micro-vibration technology for gentle yet accelerated cleaning.

"Soft-Tech" design language to enhance the emotional bond with pets.

Multi-mode cleaning settings to tackle varying levels of paw stains and dirt.

Establish health profiles via the App for comprehensive health data analysis.

OPPORTUNITIES

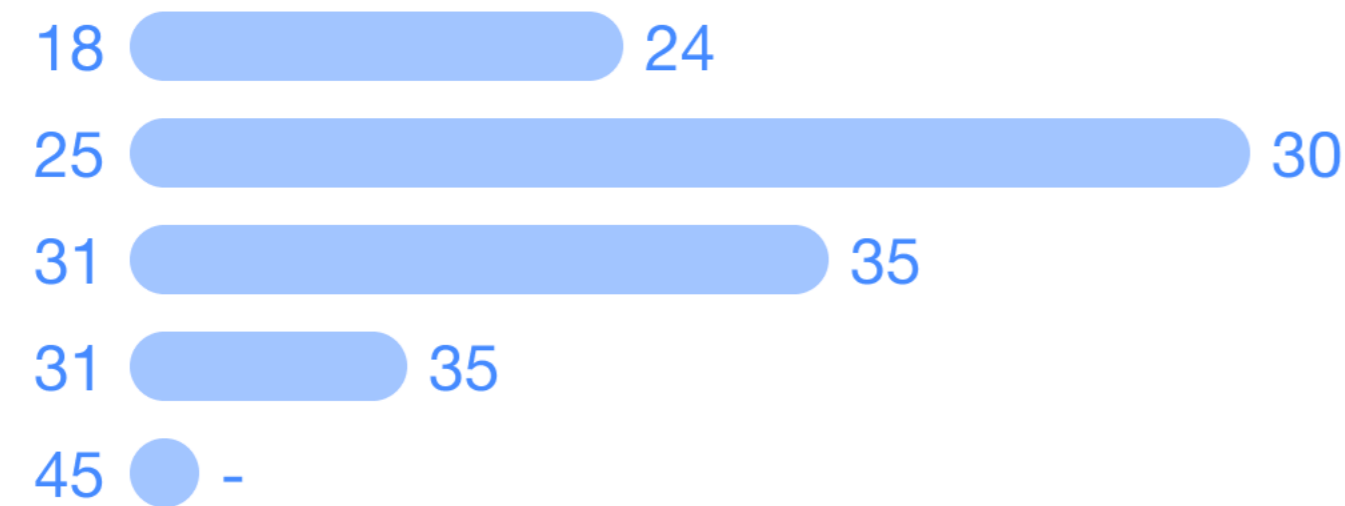


TARGET USERS

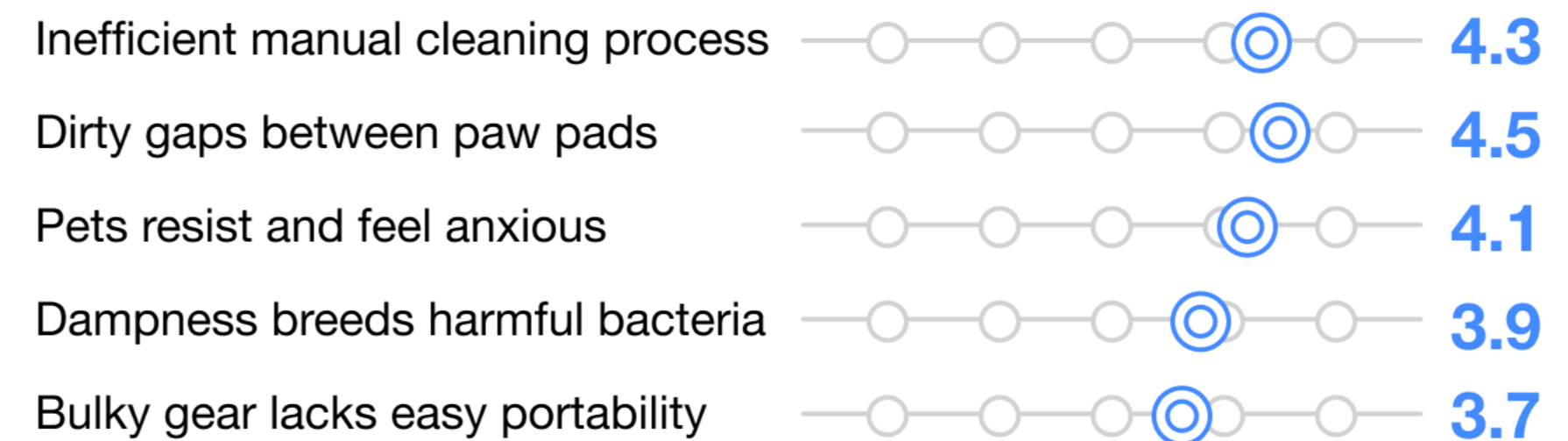
Based on questionnaire surveys and data analysis

We obtained findings on pet paw cleanliness through 60 questionnaires and face-to-face interviews.

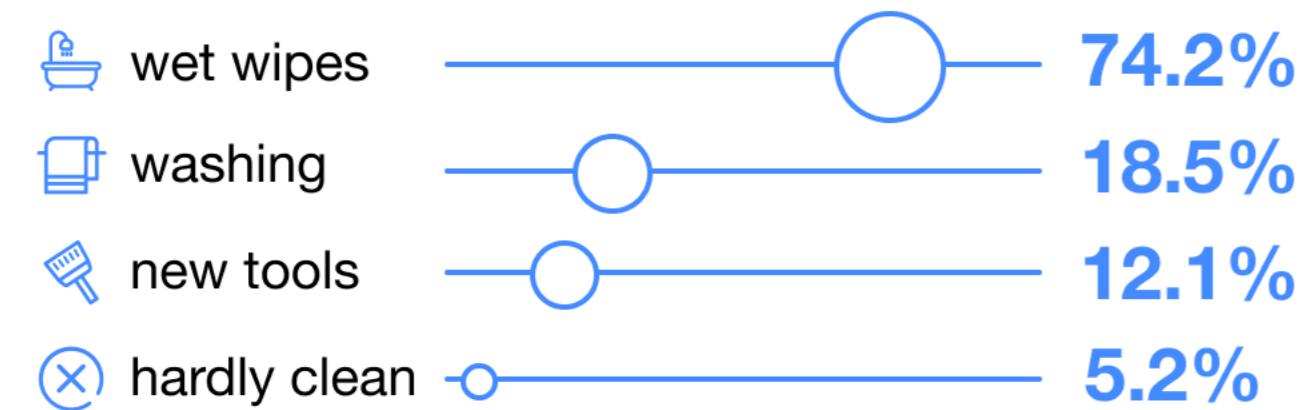
Age Distribution



Troubles of Cleaning Process



Current Method of Cleaning



User Classification

- Tech-Savvy Pet Parents** Focus on quality of life and are eager to invest in innovative products that enhance their pets' well-being.
- Refined Pet Lifestylers** Values aesthetics, touch, and eco-concepts; pays a premium for design and emotional healing.
- Health-Conscious Guardians** Highly aware of pet health, prioritizing prevention over treatment.
- Busy Urban Pet Owners** Seek to provide the best possible care for their pets in the shortest amount of time.

Modern pet-owning families who pursue a high-quality lifestyle and value both pet health and emotional connection.

COMPETITIVE

Research on Handheld Injection Products

Manual

Dexas MudBuster



Technical Core

Physical Friction



Cleaning Ability

Only Surface Cleaning, Difficult To Reach Between Fingers



Pet Stress Level

High (Strong Sense Of Constraint)



Portability

Medium (Average Volume)

Electric Rotation

DOGNESS



Technical Core

Motor Drive



Cleaning Ability

There Are Often 'dead Spots' Between The Fingers



Pet Stress Level

Medium (Noise And Rotating Pulling Sensation)



Portability

Poor (Clumsy)

Foam Brush

JHLY



Technical Core

Chemical Dissolution/Surface Wiping



Cleaning Ability

Low Ability, Unable To Carry Away Sediment



Pet Stress Level

Low (Highest Acceptance)



Portability

Excellent

Design Opportunity

Currently, Electric Cleaners On The Market Are Essentially Just Automated Manual Cups, Failing To Address The Two Fundamental Pain Points Of 'deep Cleaning Between Fingers' And 'pet Anxiety.' We Achieve 'sensory-Free Cleaning' By Introducing Micro-Vibration Technology, And Use Data Monitoring To Transform A Single Hardware Product Into A 'health Management Service,' Establishing A Very High Competitive Barrier.



Design Process

Design Goals
Concept
Design Iteration
Product Introduction

DESIGN GOALS

From needs to goals

Entryway Cleaning

A High-Frequency Cleaning Step Performed After Each Walk, Before Re-Entering The Home.

Smart Paw-Care System

A Unified System Designed To Support Both Frequent Home-Entry Cleaning And Flexible Outdoor Care.

01



Deep Paw Cleaning

02



Health Monitoring

03



Self-Cleaning System

Outdoor Cleaning

A Quick Cleaning Step Before Getting Into The Car, Entering A Tent, Or Moving Into Other Temporary Enclosed Spaces.

CONCEPT

Product Definition

MALLOW

MALLOW combines a handheld cleaner and a smart docking station into one integrated paw-cleaning system, enabling vibrating wash, auto refill, airflow drying, and self-maintenance for premium everyday pet care.



APP



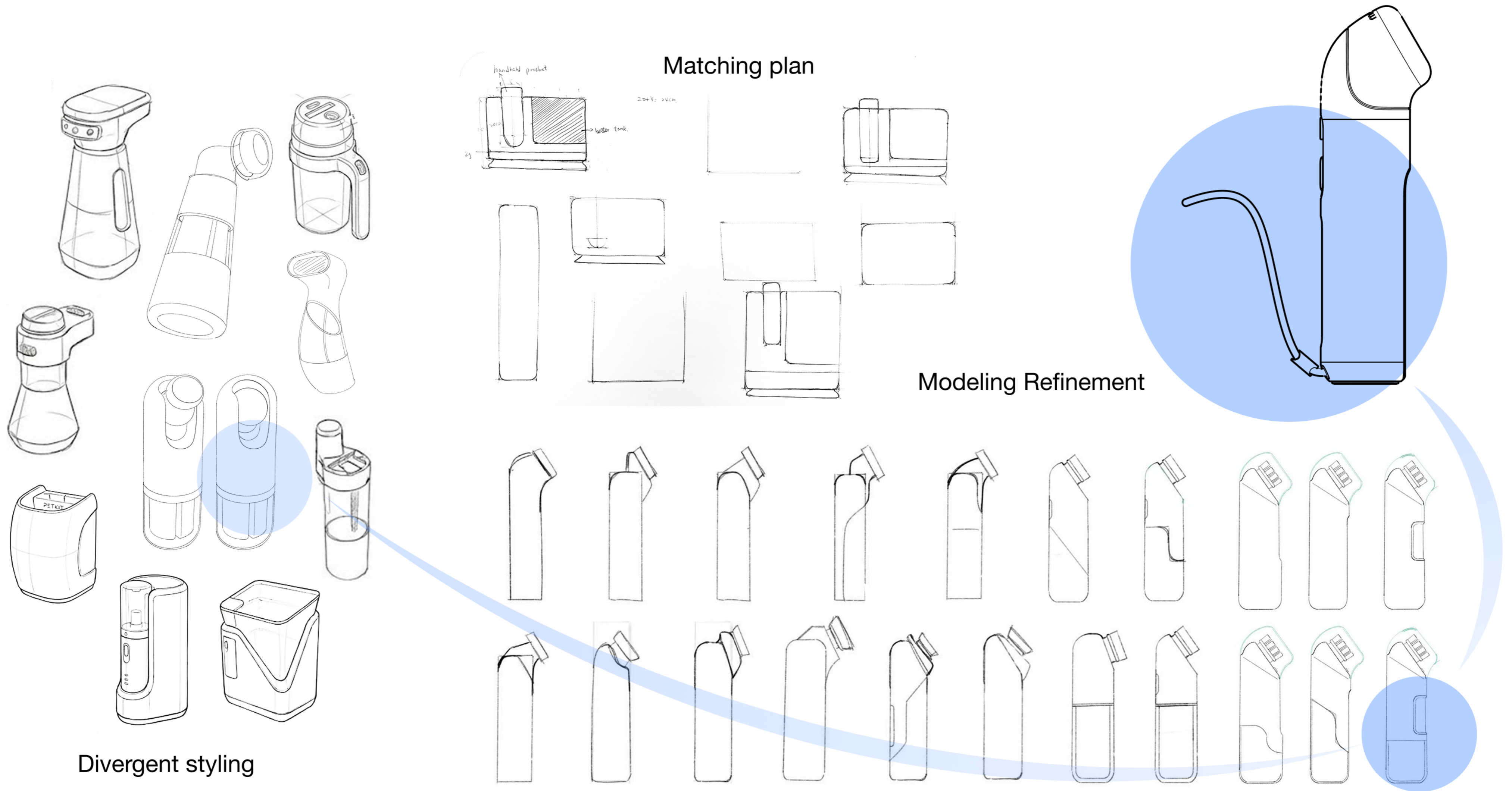
Handheld product



Base station

DESIGN ITERATION

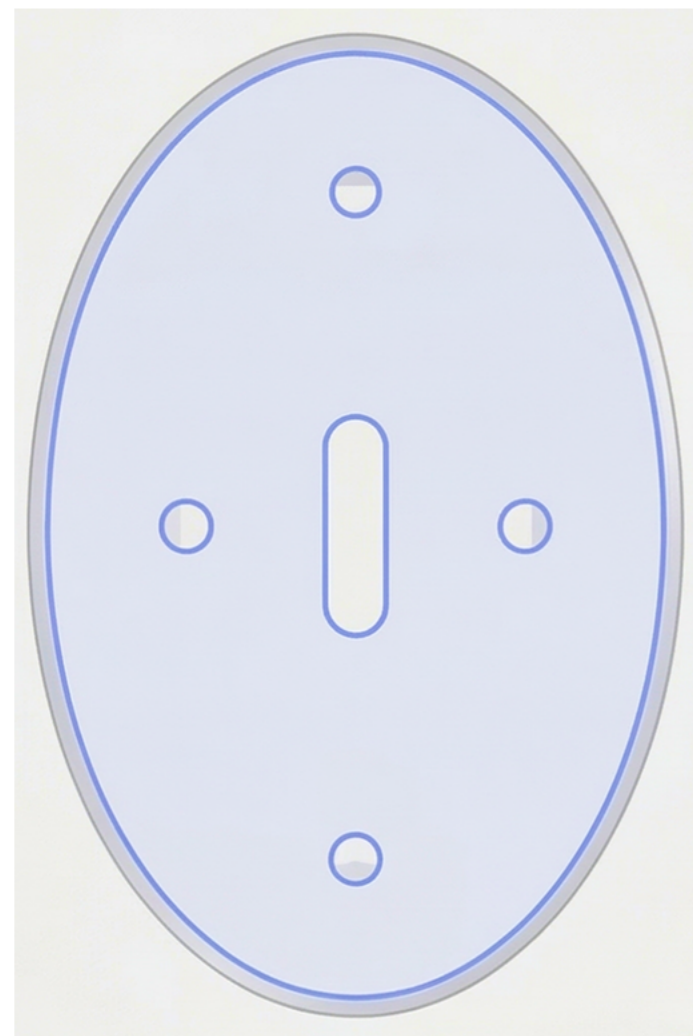
From divergent styling to meticulous attention to detail



BRUSH HEAD LAYOUT

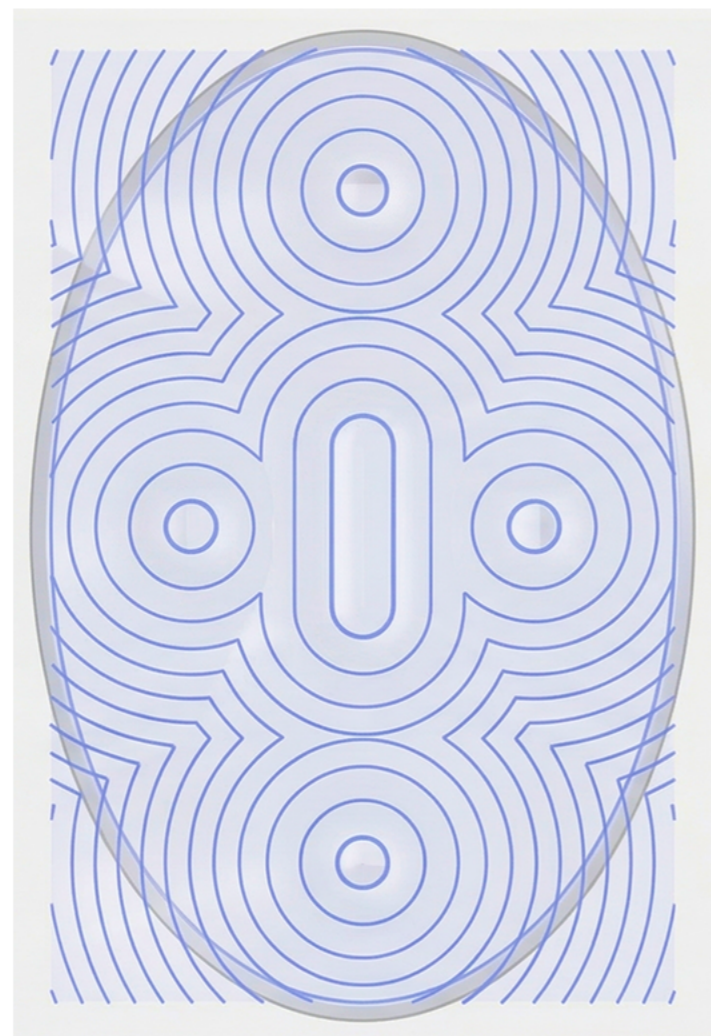
From fluid outlets to balanced bristle distribution

Using Four Peripheral Foam Outlets And One Central Rinse Slot As Fluid Origins, The Brush Head Layout Is Generated Through A Contour-Based Parametric Method. This Workflow Transforms Fluid Structure Into A Balanced Bristle Field For More Even Foam Coverage And Stable Cleaning Performance.



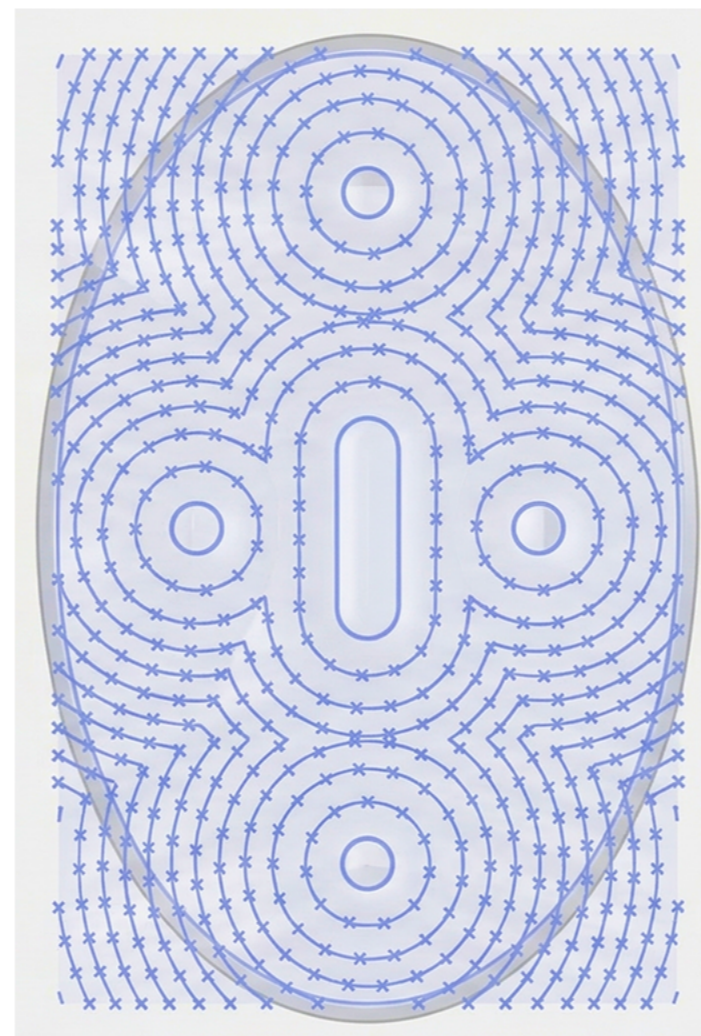
Define Fluid Origins

Four Peripheral Foam Outlets And One Central Rinse Slot Define The Initial Fluid Structure, Supporting Even Foam Coverage And Stronger Rinsing Under Limited Water Use.



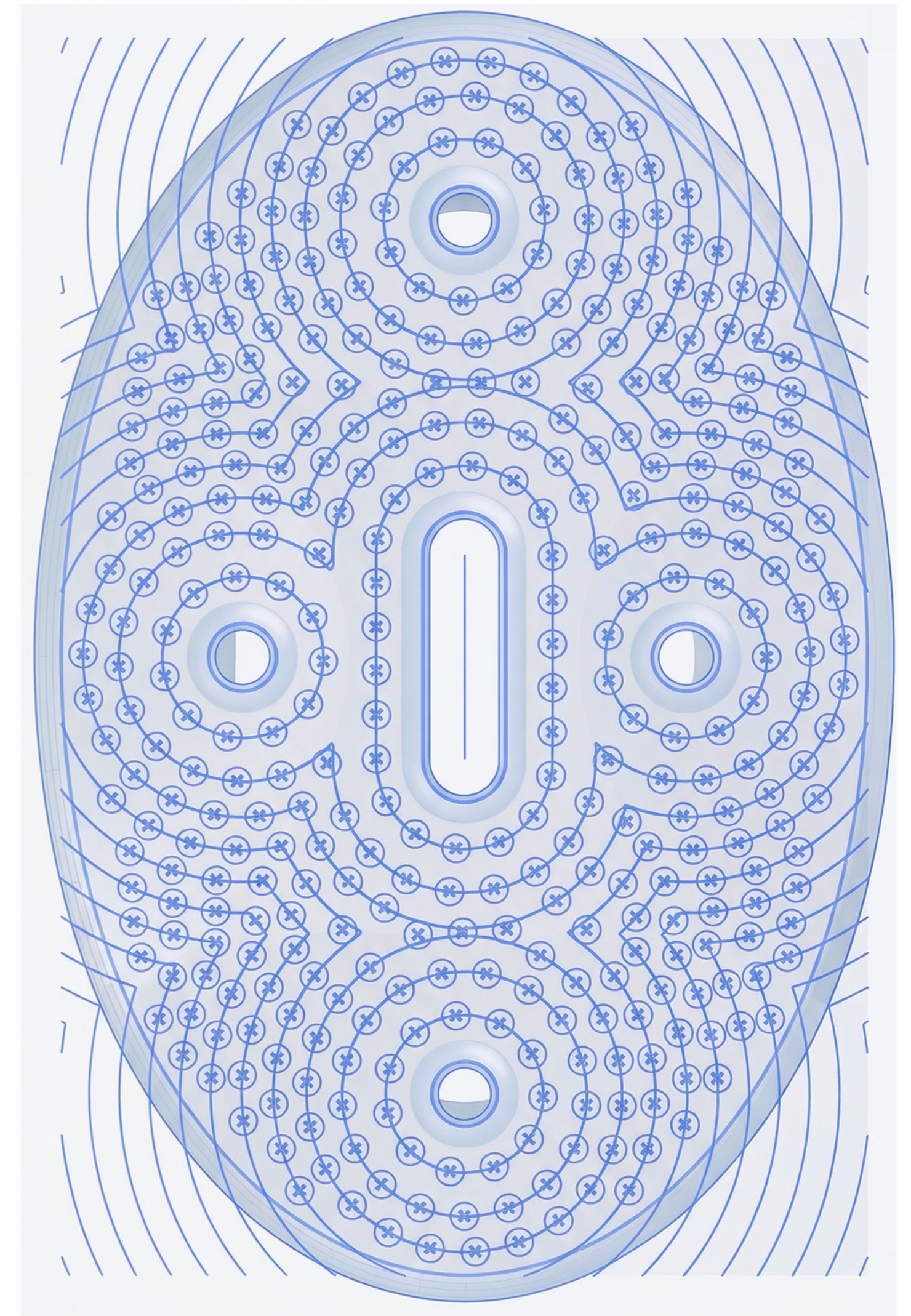
Generate Contour Fields

The Five Outlets Act As Geometric Origins For Contour Lines, Translating Fluid Structure Into A Continuous Field For Brush Head Organization.



Divide Contour Paths Evenly

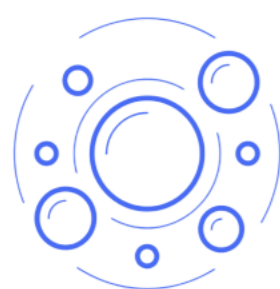
The Contour Paths Are Divided At Regular Intervals To Generate Evenly Spaced Sample Points For The Next Stage Of Bristle Distribution.



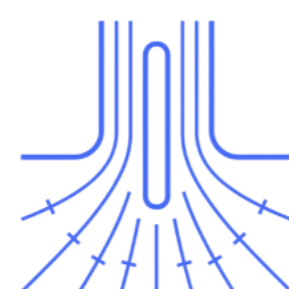
Final Bristle Distribution

Adjacent Points Are Merged And Reorganized Into A More Even Density Pattern, Forming The Final Bristle Distribution Across The Brush Head.

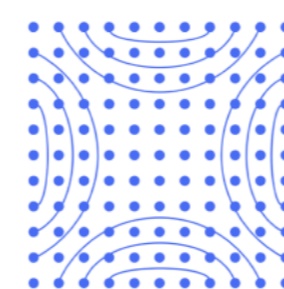
Key Outcomes



EVEN FOAM COVERAGE



FOCUSED RINSING



BALANCED PRESSURE

PRODUCT INTRODUCTION

UI Design

Health data visualization

Paw Vitality Score
The moisture between the toes of the right front paw is relatively high, with slight redness. Further examination is recommended.

70%

Moisture Level: 85%
Surface Temp: Normal
Skin Condition: Redness

Professional veterinary consultations

Dr. Sarash Joh
Licensed Veterinarian
License Number: A01201

Skin diseases, infectious diseases, general and external medicine, orthopedics, etc. In-depth diagnosis and treatment of feline internal diseases and geriatric diseases in dogs and cats, as well as common diseases in exotic pets.

Dogs Cats Small Pets Birds Reptiles Turtles

★ 4.9 1797 99%

Text Consult ¥29 Phone Consult ¥79

Multiple mode options

Mode Selection

Message Hair Heat Map Colony

Scientific skin testing

Periodic records

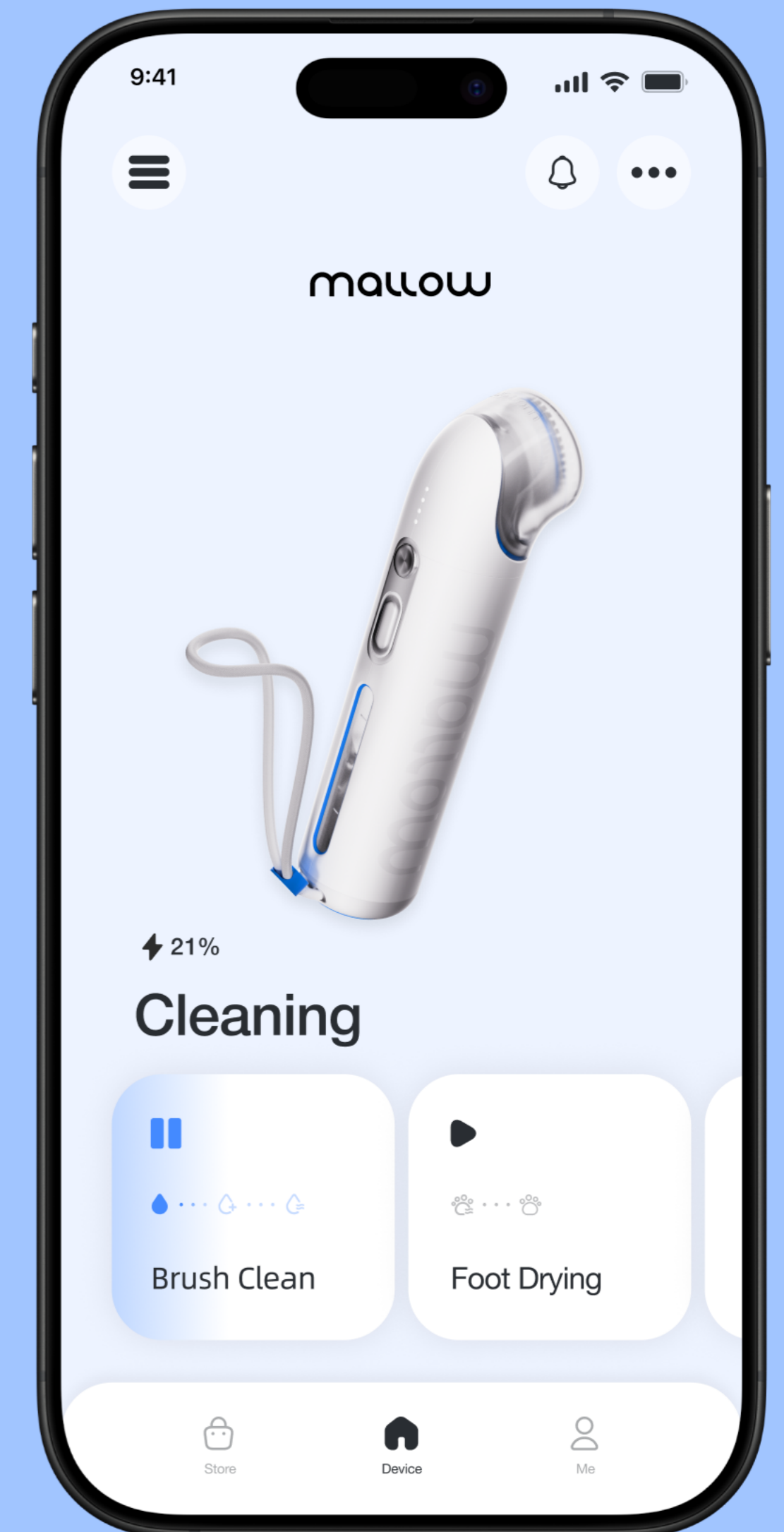
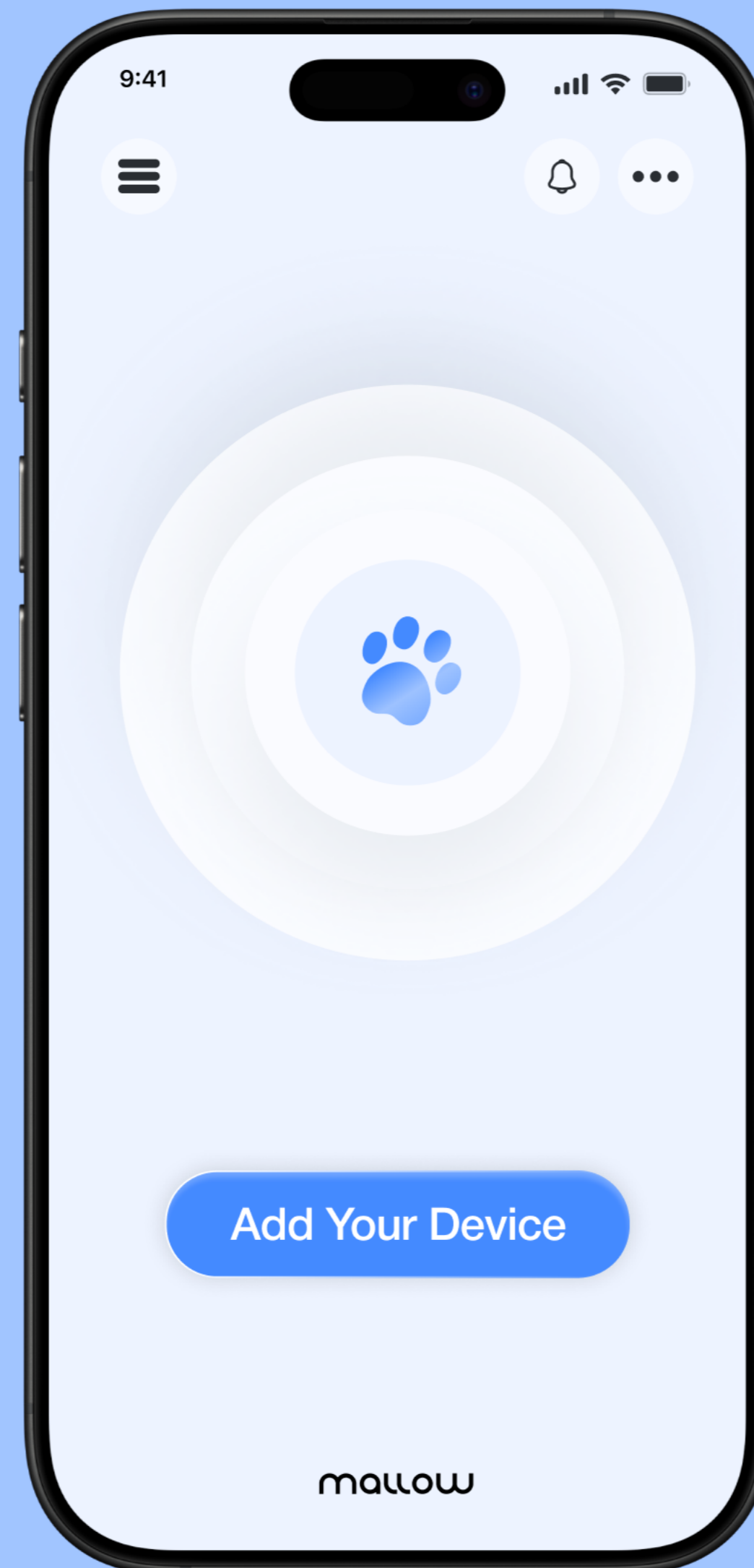
Healthy Footprints

03/10 04/10 05/10 06/10 07/10 08/10

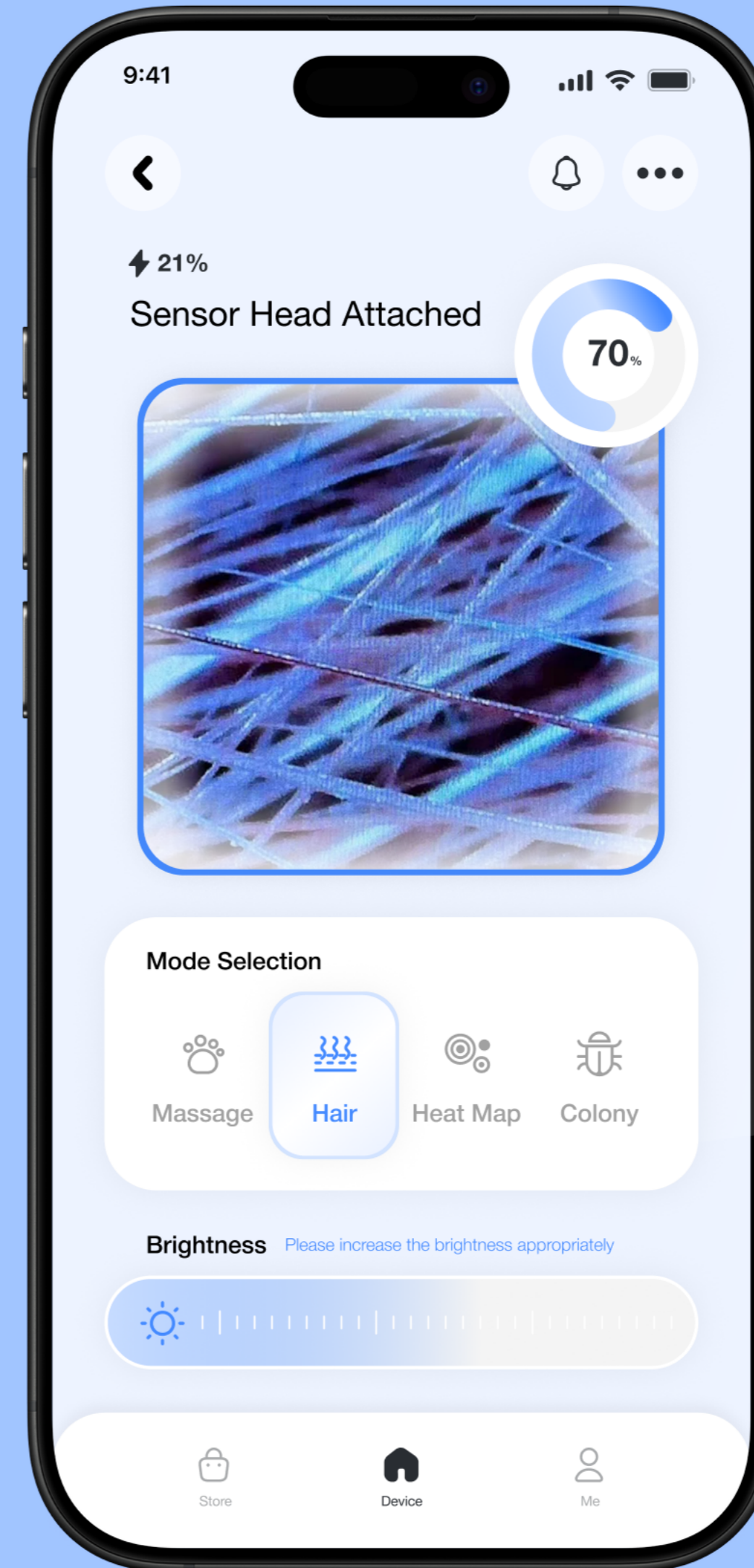
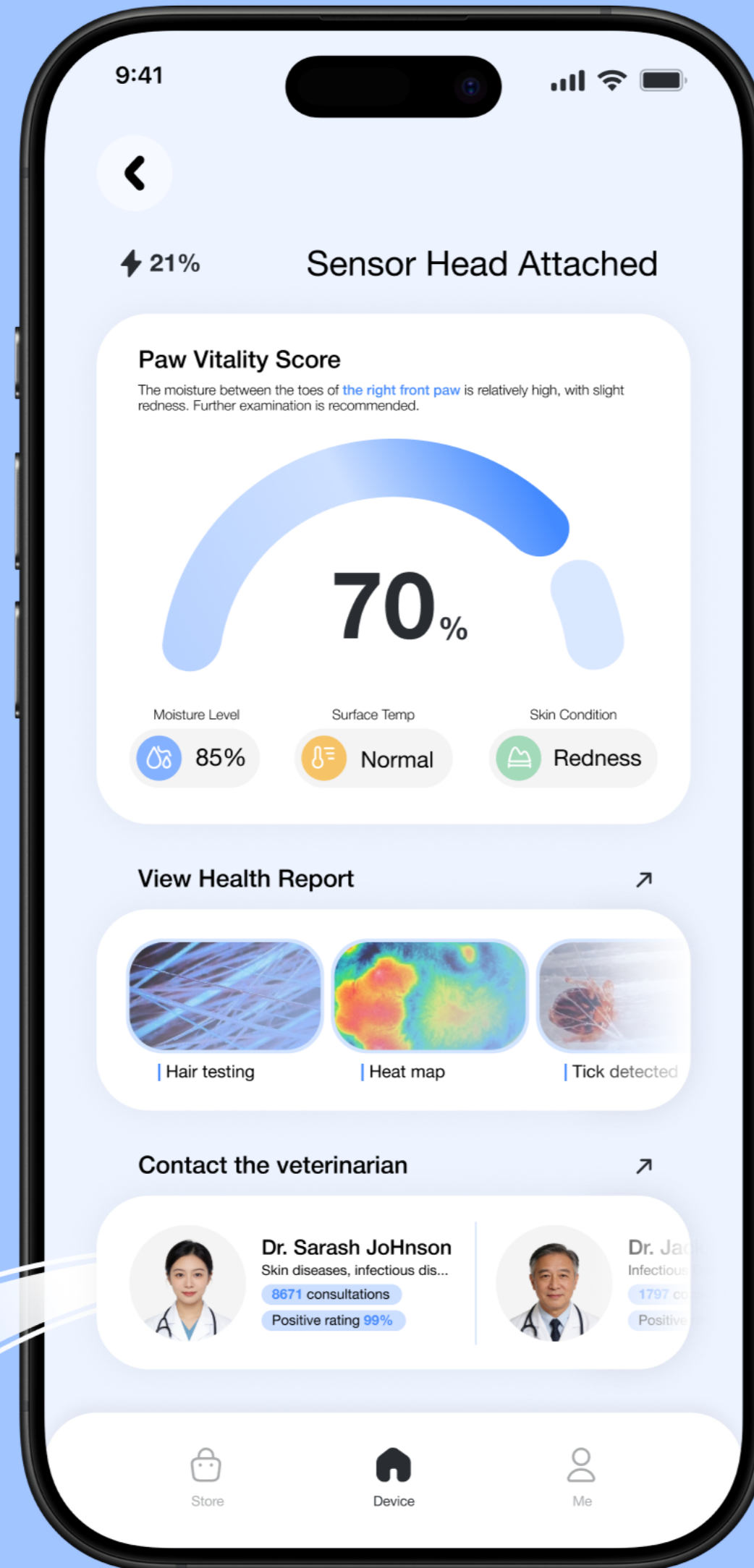
Store supplies

【Family set】 ¥99
清洁液*2L

Connect your device
Clean with peace of mind.



Health management, keep skin problems away.



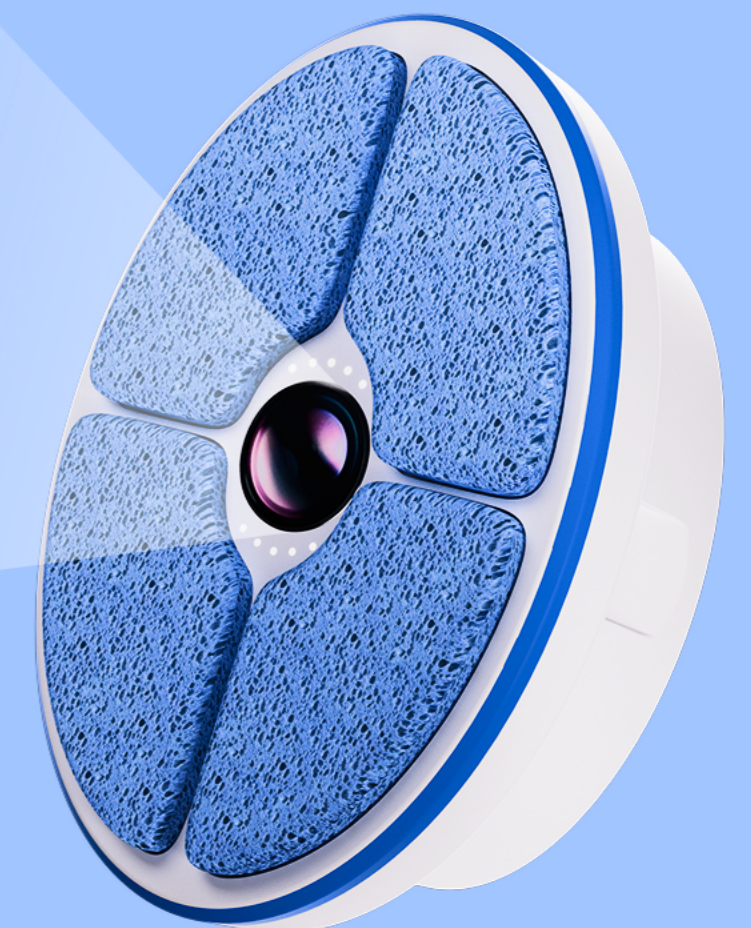
Dr. Sarash JoHnson
Licensed Veterinarian
License Number: A012017620054

Skin diseases, infectious diseases, general internal and external medicine, orthopedics, etc. In-depth diagnosis and treatment of feline internal diseases and geriatric diseases in dogs and cats, as well as common diseases in exotic pets.

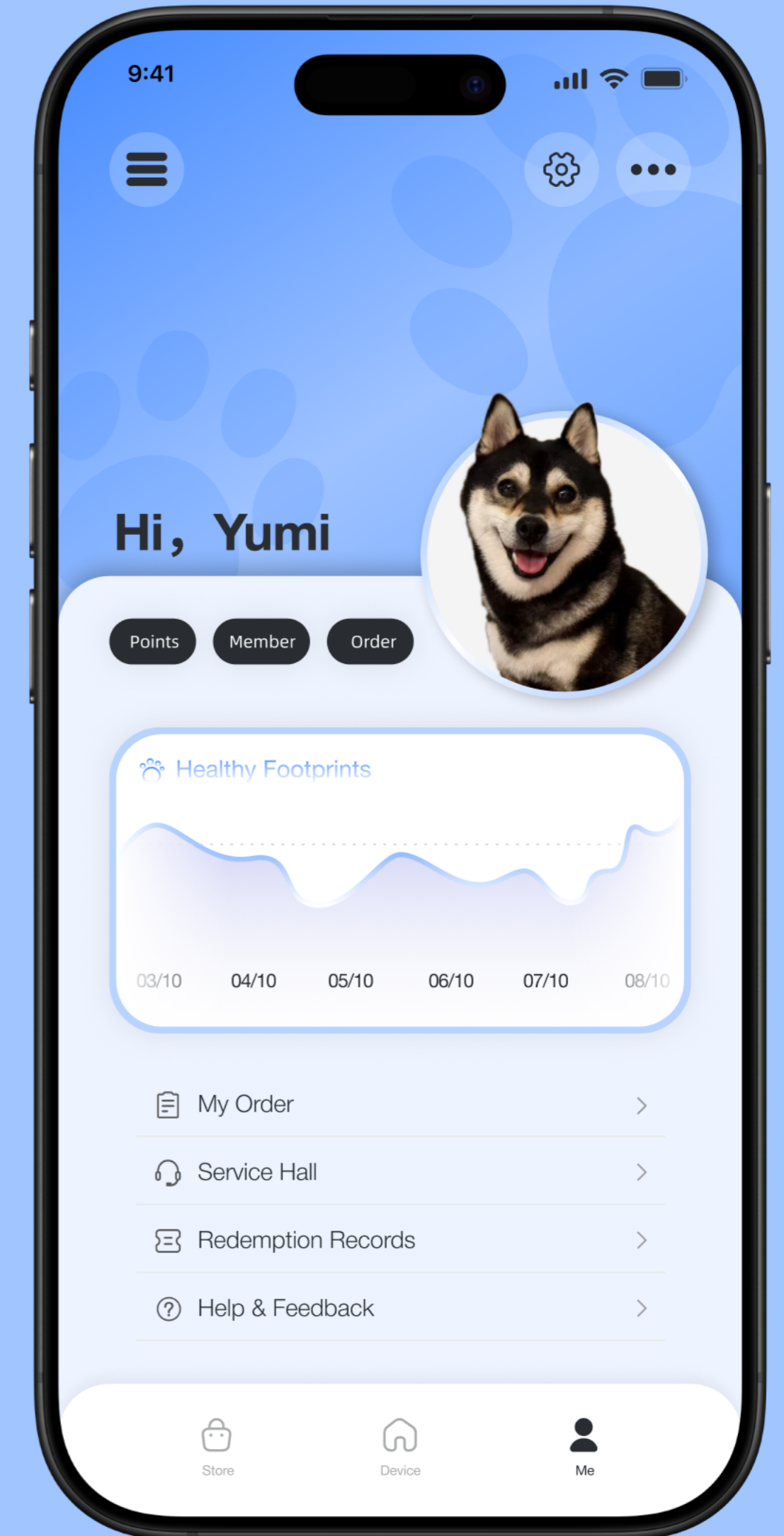
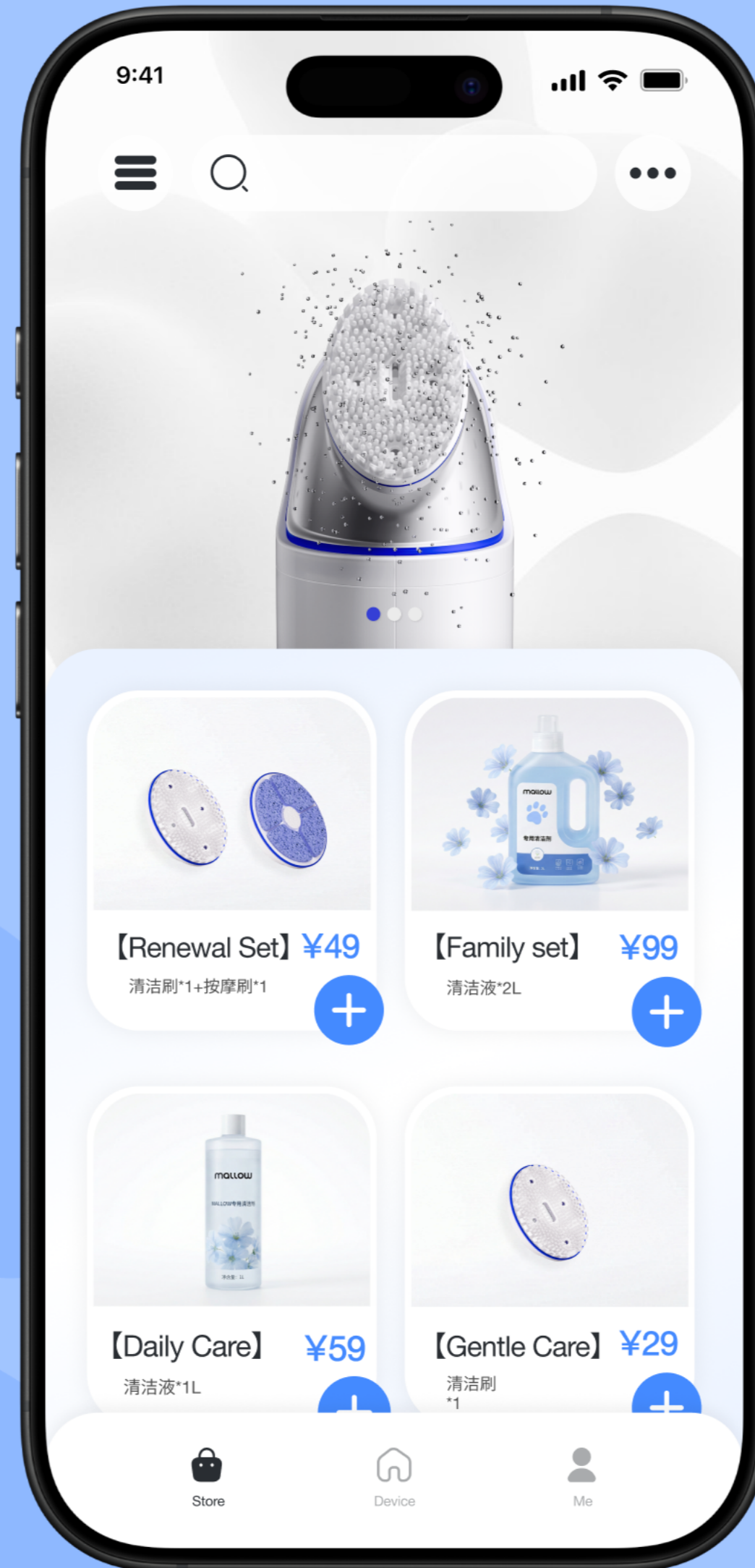
Dogs Cats Small Pets Birds Reptiles Turtles

★ 4.9 1797 99%

Text Consult ¥29 Phone Consult ¥79



One-click add to cart
Protect your pet's health.



PRODUCT INTRODUCTION

Product Design



**Every clean
is a caress from the palm**



High-Frequency Vibration — Deep Cleaning

Activates the silicone bristles to penetrate narrow gaps and uneven paw surfaces more effectively. Improves cleaning depth and reduces manual scrubbing effort for a more efficient daily cleaning experience.



Rinse Mode

High-pressure water quickly washes away soil residues



Micro-foaming mode

Encapsulates and lifts deep dirt



Mode Switching

Press and hold to turn on, press the button to switch between Rinse Mode and Micro-foaming Mode with one key

High-Frequency Vibration — Deep Cleaning

Press once to spray water or foam

Visible Fluid Level

The translucent frosted reservoir makes the remaining liquid easy to read at a glance, balancing functional clarity with a soft and refined visual expression.



Press to Release — One-Step Removal

An integrated hidden structure seamlessly embeds the water tank into the handle, enabling quick press-to-release detachment while preserving a clean and streamlined form.

Quick-Release Button — Easy Head Switching

A single press unlocks the brush head for fast replacement. The massage head and cleaning head can be switched according to different paw-care needs, improving versatility in daily use.



Protective Cap — Portable and Hygienic

Designed for outdoor carrying, the frosted cap covers and protects the brush head for cleaner and more convenient transport. The textured top surface enhances grip, making removal easier and more controlled.



Water injection port

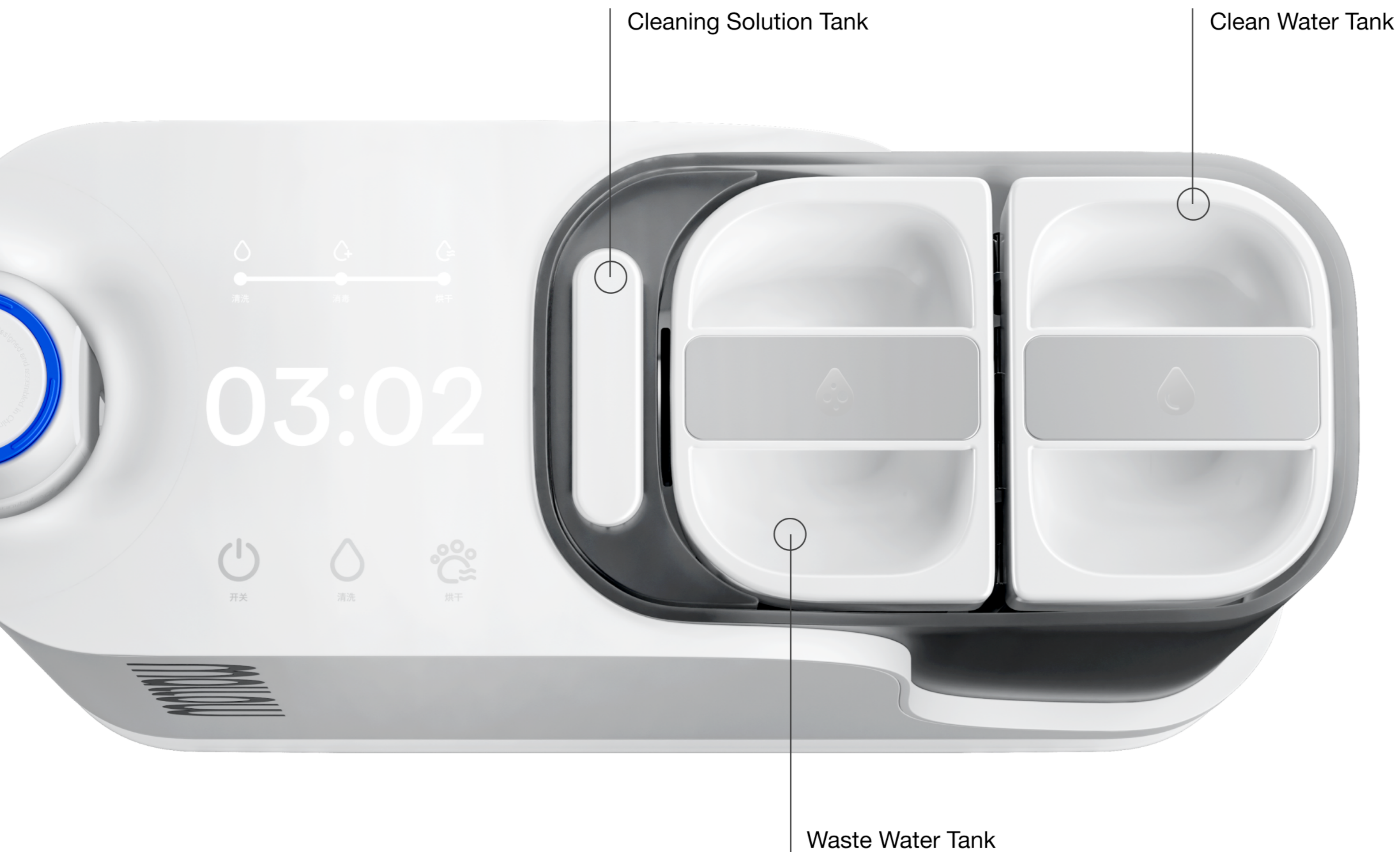
Connect the water inlet to the base station water tank to enable automatic water filling and wastewater discharge.

Magnetic charging port

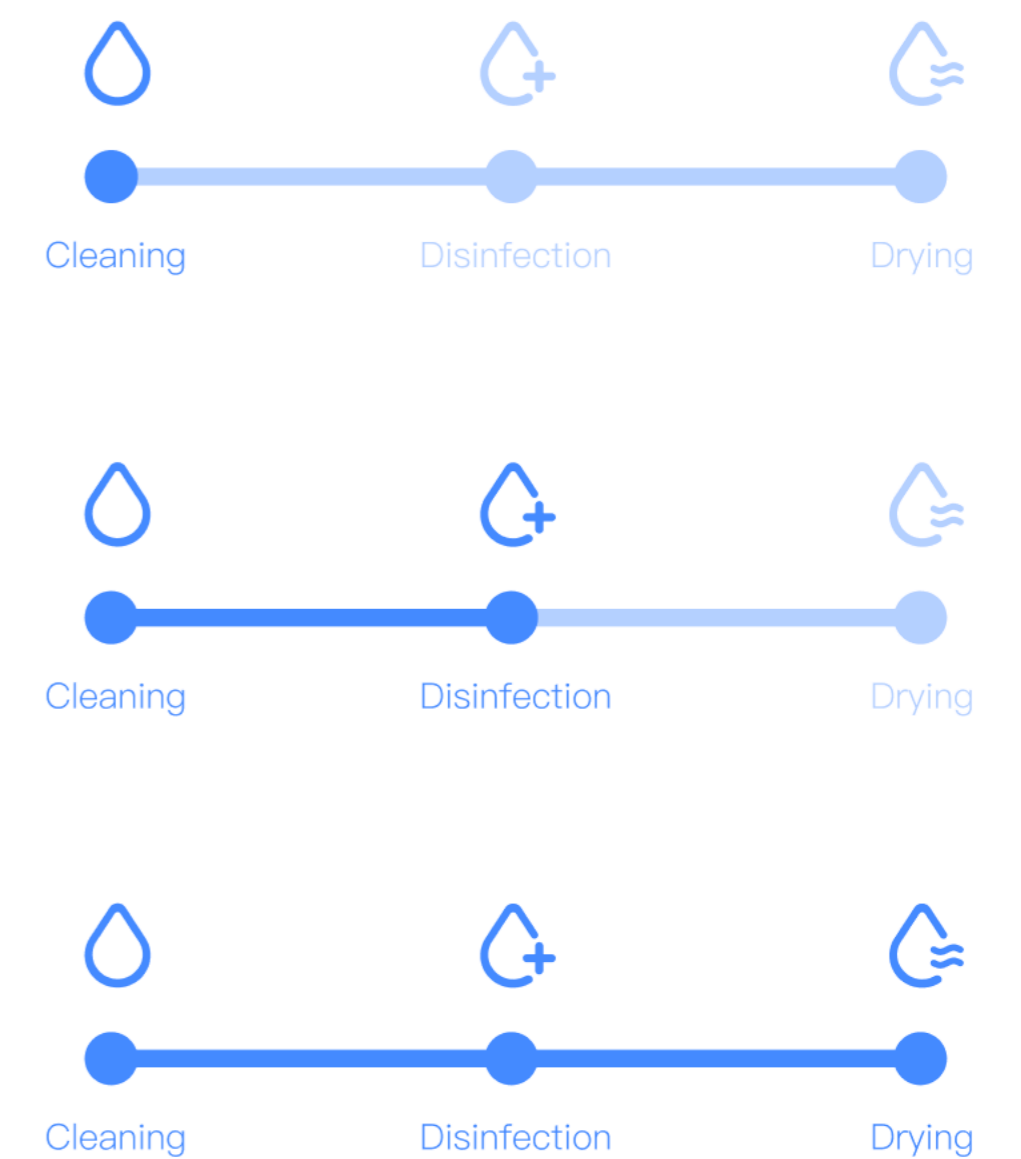
Connect to the base station with magnetic charging, simple and fast

Hidden Touch Interface — Visible Status

A concealed touch panel is integrated into the top surface of the base station, remaining visually clean until activated. It translates the cleaning cycle into a clear and intuitive visual language, displaying real-time progress across cleaning, disinfection, and drying while making tank status easy to monitor at a glance.



Cycle Progress



row

Slide-Out Head Storage

A pull-out drawer integrated into the base stores interchangeable brush heads for quick access and easy replacement.



AIRFLOW SYSTEM DESIGN



Coandă-Guided Drying Airflow

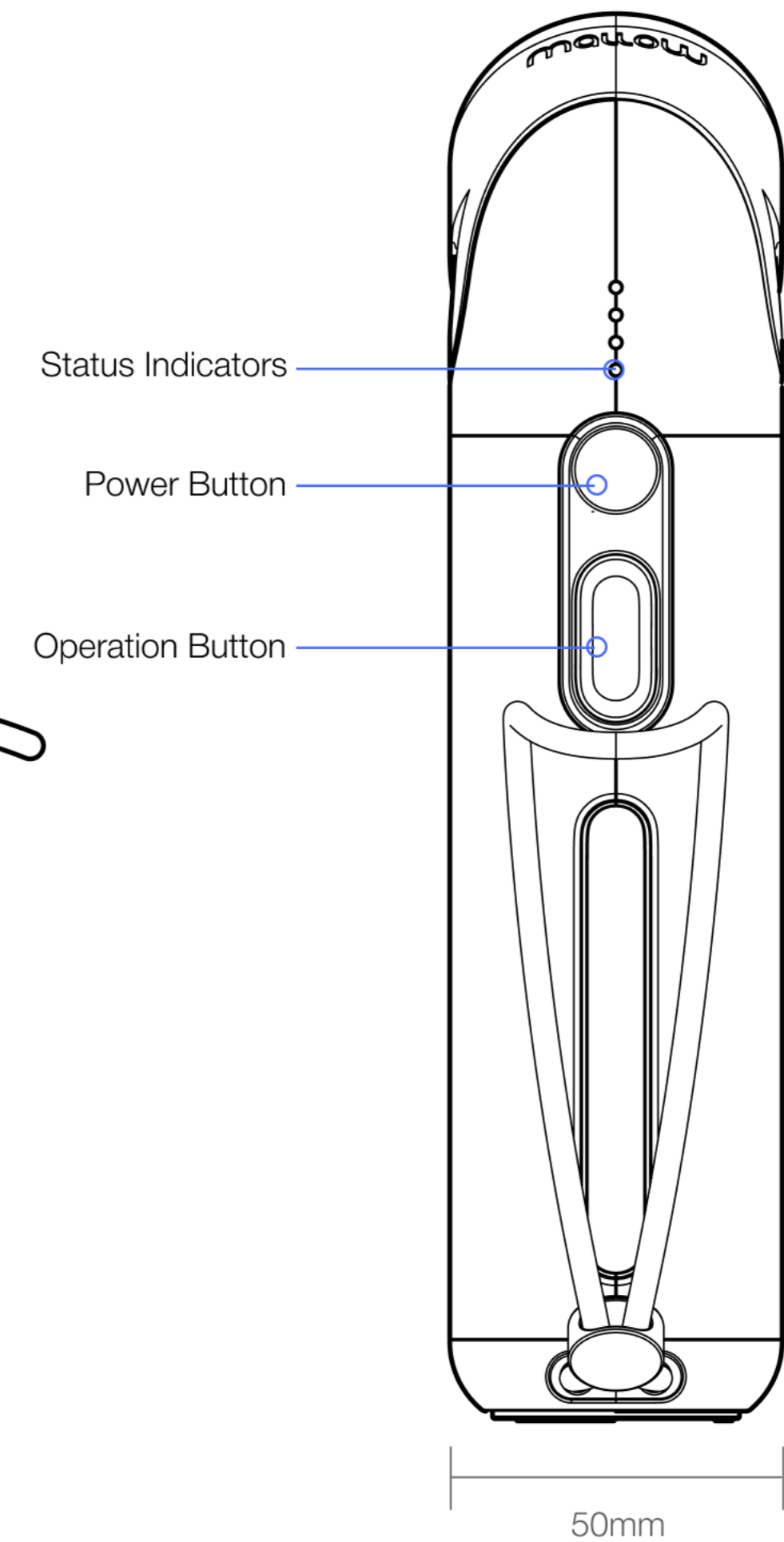
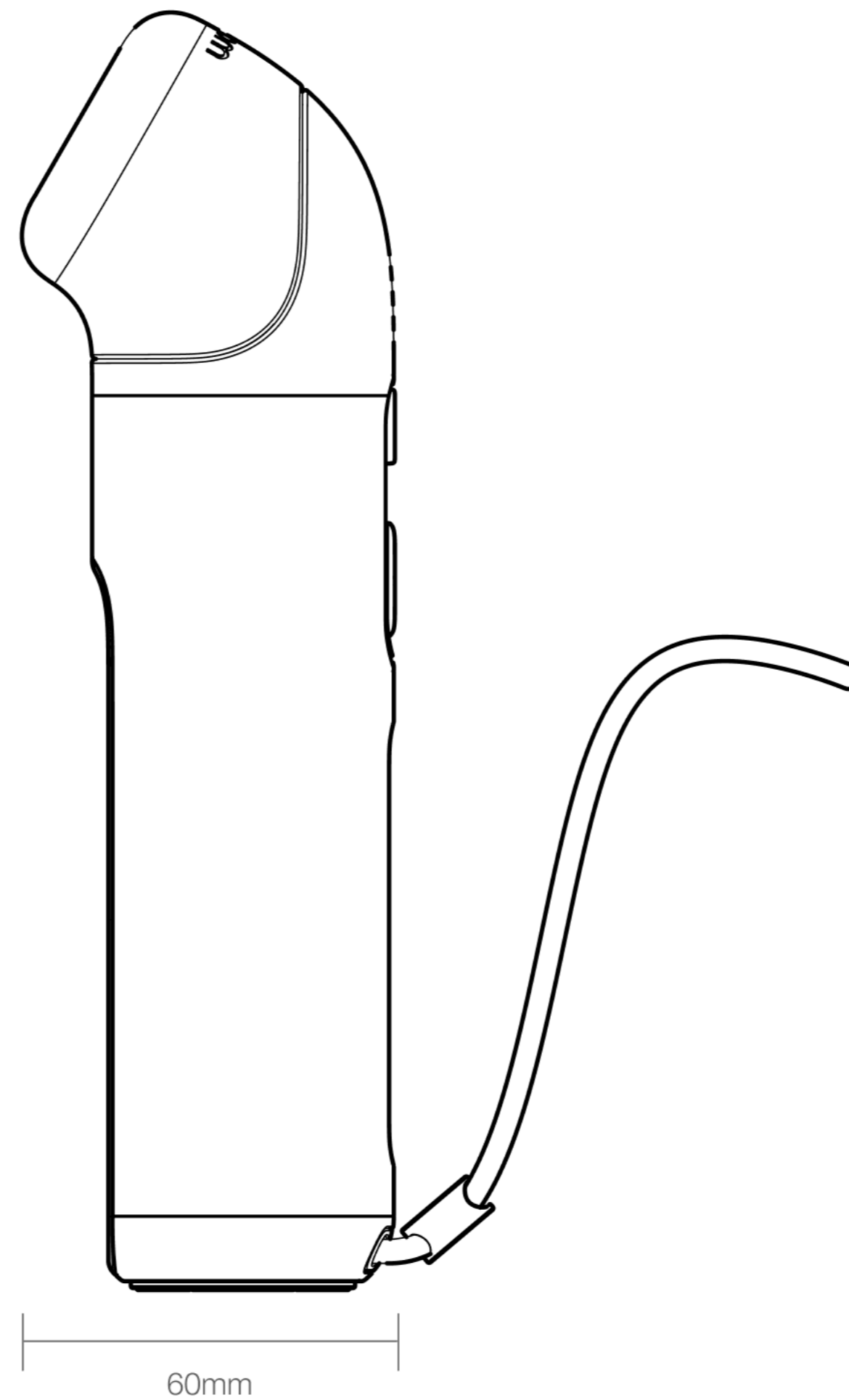
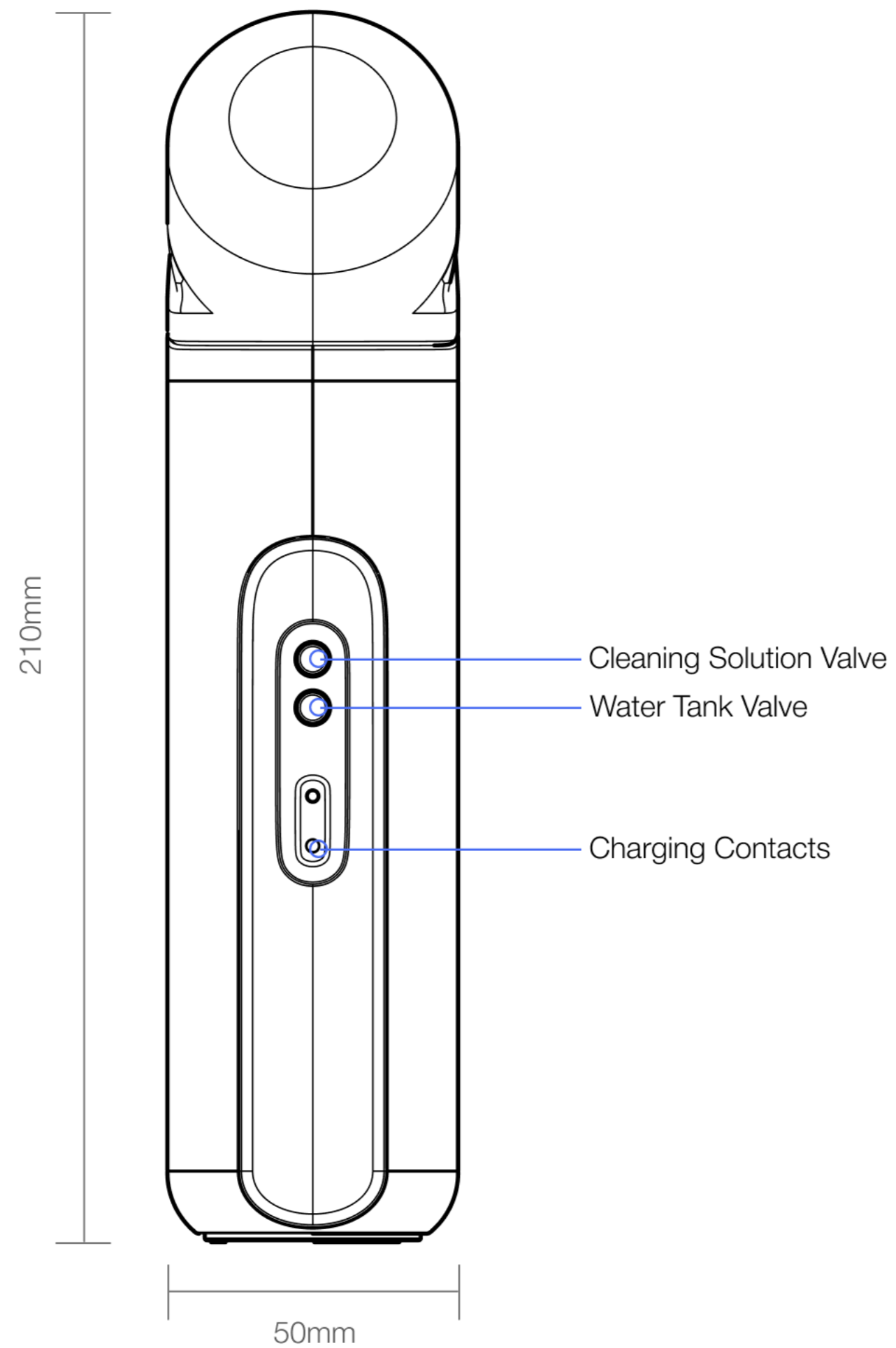
Rear-intake air is heated, compressed, and guided to the bottom outlet. By leveraging the Coandă effect, the airflow hugs the base profile and spreads close to the ground for wider, more even drying coverage.



Instruction Manual

Product Overview
Exploded Views

PRODUCT OVERVIEW



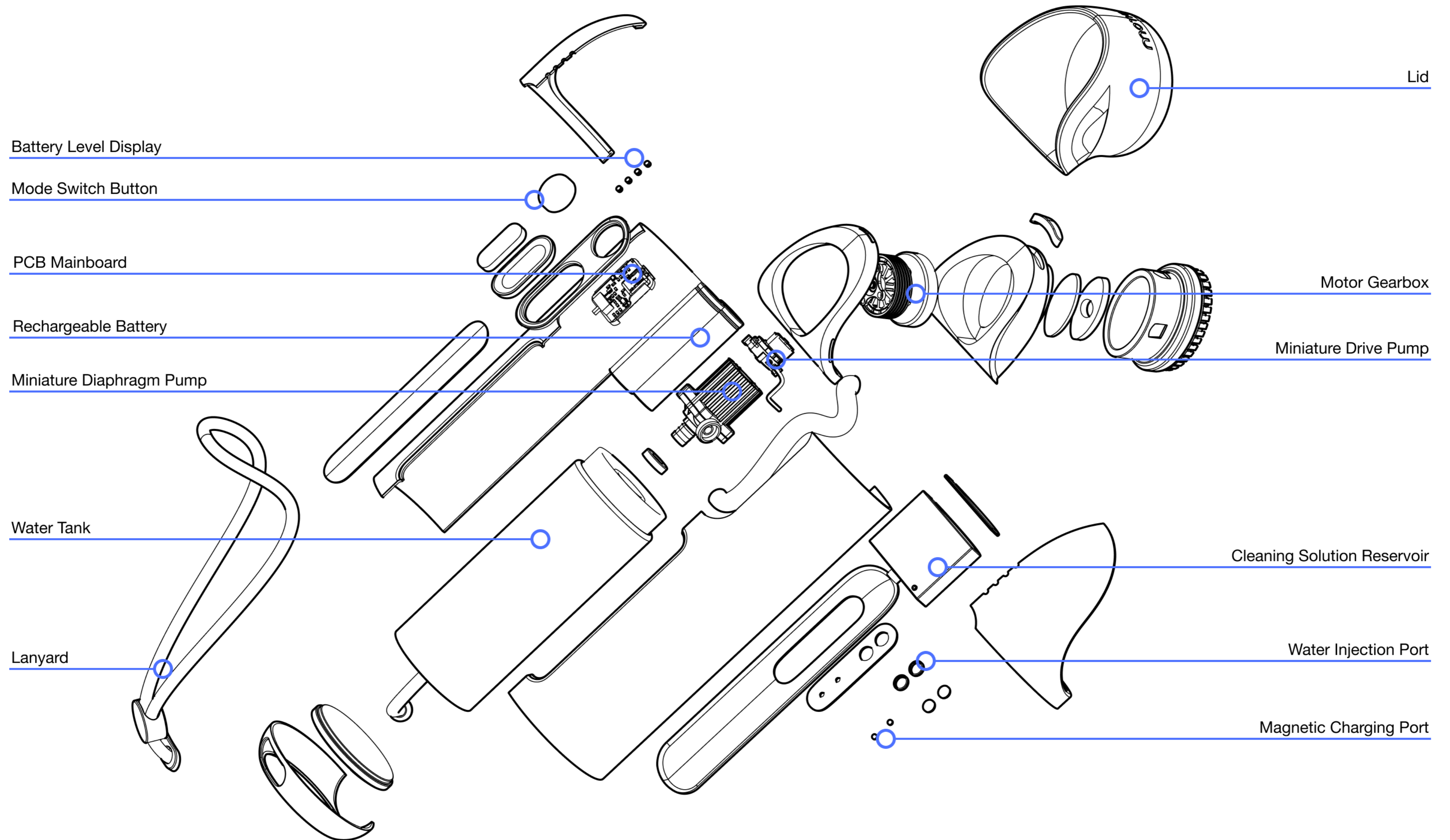
Docking Interface

When Docked Onto The Base Station, The Inlet Valves Are Automatically Opened For Liquid Refill, While The Charging Contacts Connect To Supply Power For Charging.

Control Interface

The Top Indicators Display Power And Device Status. The Circular Button Controls Power And Mode Switching, While The Lower Button Activates Foam Dispensing And Rinsing Functions.

EXPLODED VIEWS





Thank you for taking the time to read.