



artery

Portable infusion set for
emergency rescue

OVERVIEW

This is a portable infusion designed for emergency rescue. Unlike any gravity infusion, it uses air compression as a power source, so it does not require an infusion stand. Patients only need to wear this infusion device on their arms. With this portable infusion set, medical staff can accurately control the drip-rate through a quantitative infusion system and remotely monitor the patient's infusion status through a monitoring system, so as to ensure the stability and safety of the infusion process in first aid.

BACKGROUND

Gravity infusion, also known as "the drip," is a common and basic method for delivering fluids to a patient. In a gravity driven system, a pressure difference in the infusion bag, is produced by gravity. The magnitude of this pressure is dependent on the difference in height between the drug reservoir and the outflow point into the patient.

PROBLEMS

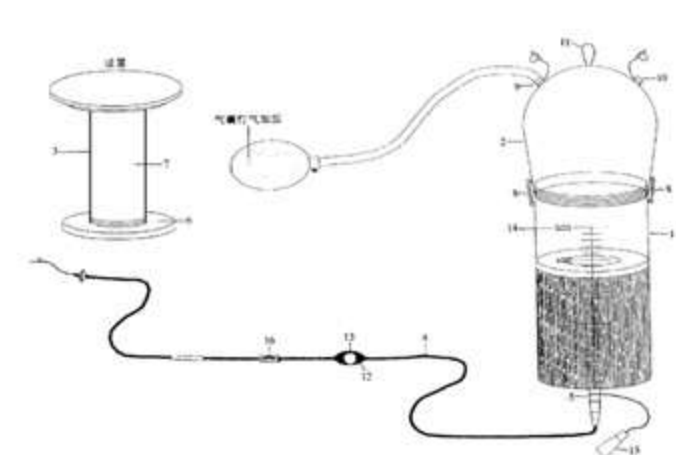
When using these infusion sets, the infusion bag needs to be hung on the infusion stand. However, in some earthquake-stricken areas, traffic accidents and other places with high complexity and chaos, the infusion stand will obstruct the smooth flow of people and reduce the work efficiency of medical staff. In the event of a lack of an infusion stand, it is often necessary for additional personnel to carry the infusion bag and keep it at a certain height for a long time, resulting in a significant decrease in the stability and safety of the infusion process.



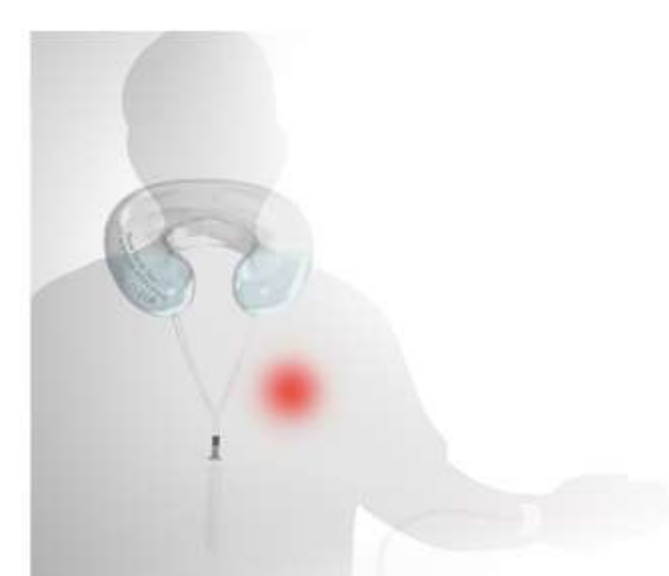
A. Gravity infusion



B. Pump infusion



C. Portable pneumatic infusion



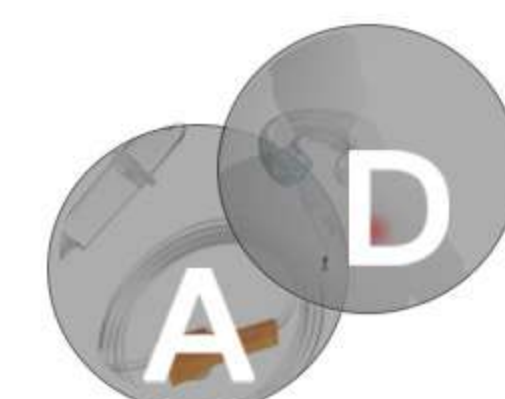
D. Portable infusion

Electronic control & precise control



Bulky

Portable



Non-electronic control & imprecise control

DESIGN OPPORTUNITIES

Electronic control & accuracy

The infusion set uses electronic precision to control the drip-rate to ensure the accuracy, stability and safety of the infusion.

Portability

The infusion set needs to meet the needs of portability and mobility.

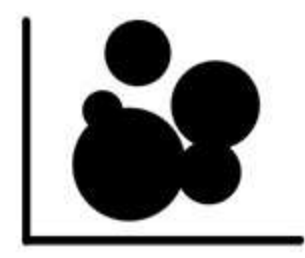


FOR MEDICAL STAFFS



Simplified operation

The convenient operation of the equipment can greatly improve the efficiency of medical staff.



Data monitoring

Drip-rate and dosage are displayed in digital form.



Terminal control

It not only monitors the process of the infusion, but also enable workers remotely controls the infusion.



Project handover

Facilitate the handover of projects between different medical personnel.

FOR PATIENTS



Alarm

When the infusion is complete, just press the alarm button, and medical workers will get notice.



Wearable

The integrated wearable design not only saves space, but also simplified the operation.



Comfortable

The infusion time can reach 2-3 hours, so it is very important to ensure a comfortable infusion process.



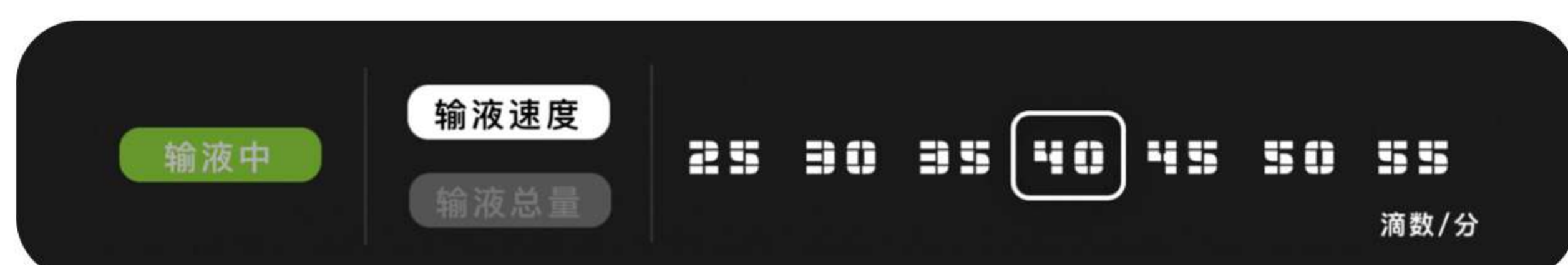
Safety

Safe and stable are most important principles, even it is subjected to impact.

OPERATING PROCEDURES

1. Put the fluid bag into the infusion set.
2. Put the infusion set on the patient's arm.
3. Set the total dosage.
4. Set the drip-rate.
5. The remaining time will be shown in the front display.

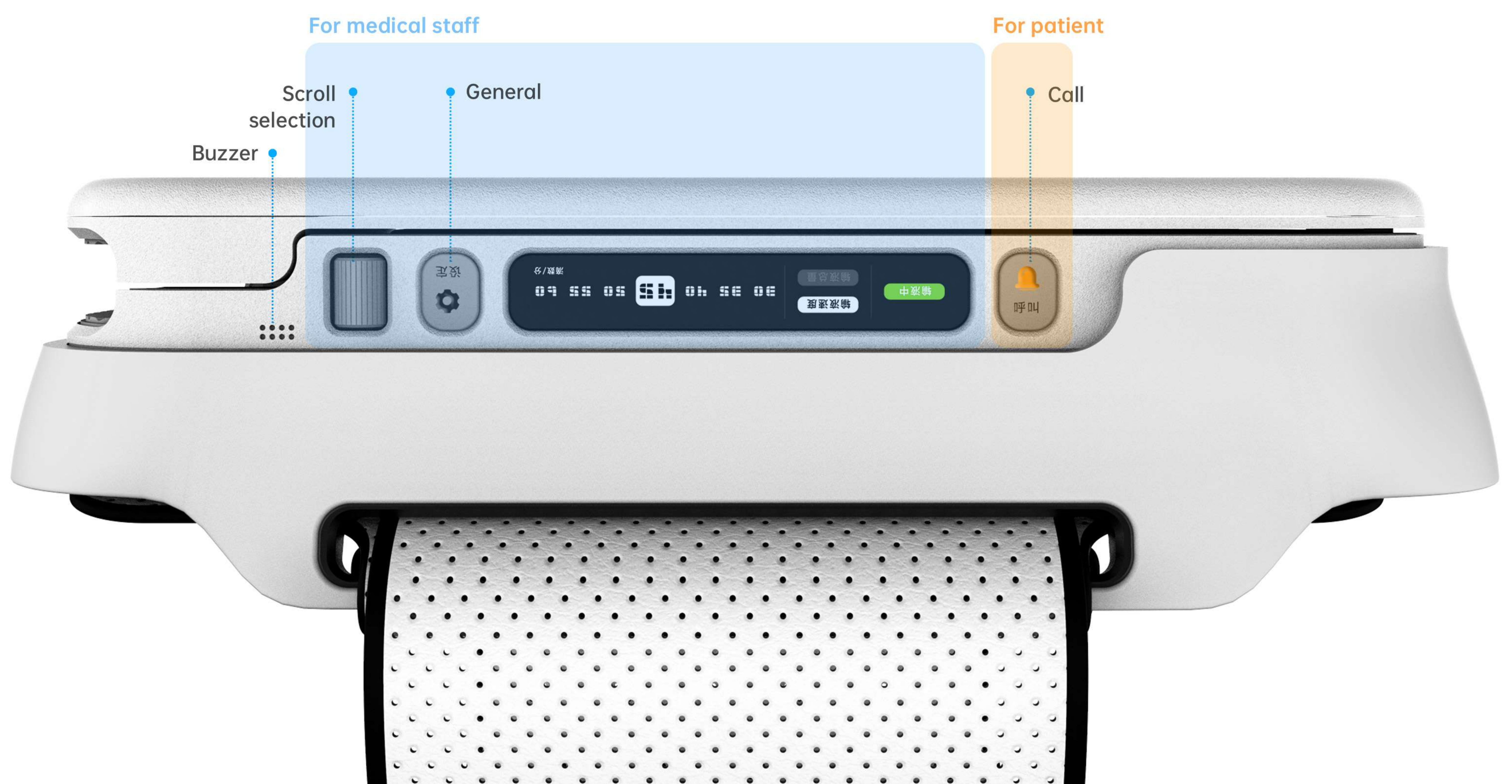
If there are any equipment problems during the infusion process or the patient has other needs, they can press the "call" button to quickly communicate with the medical staff.

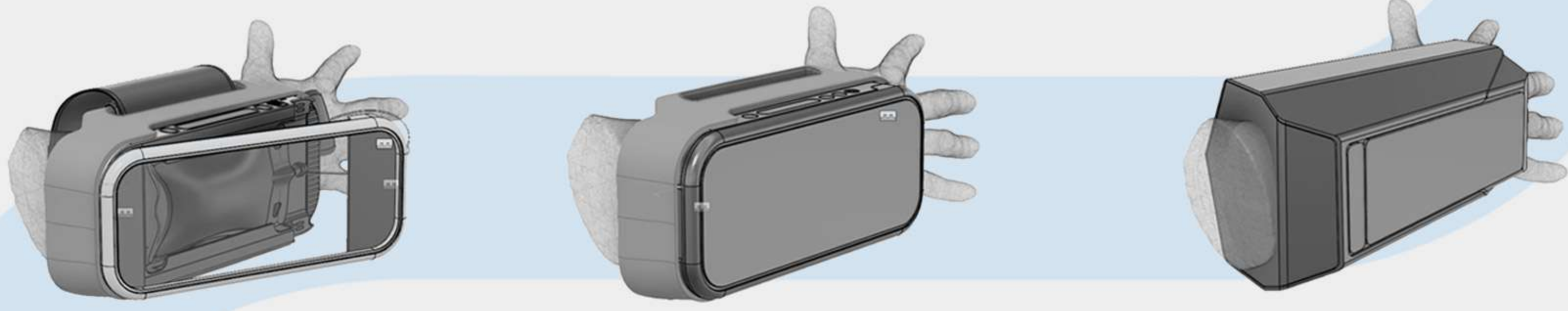
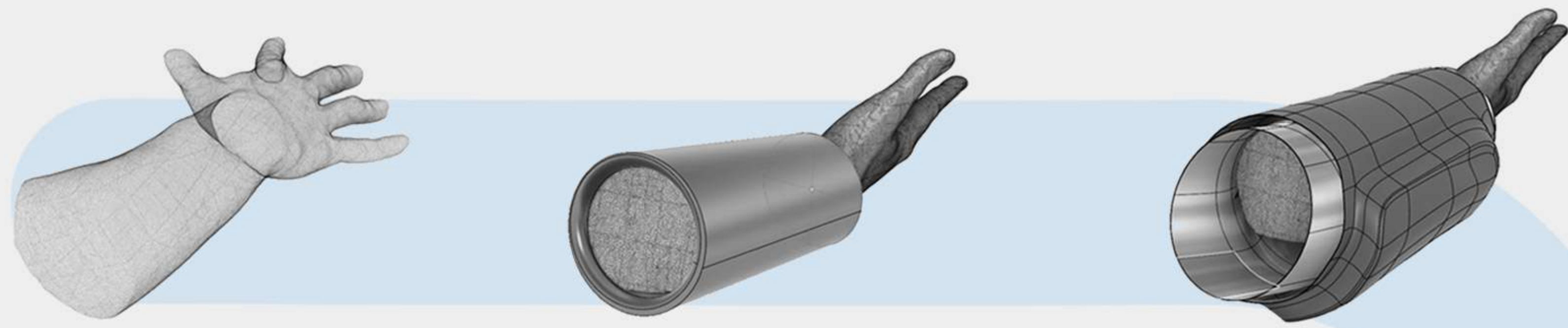


呼叫



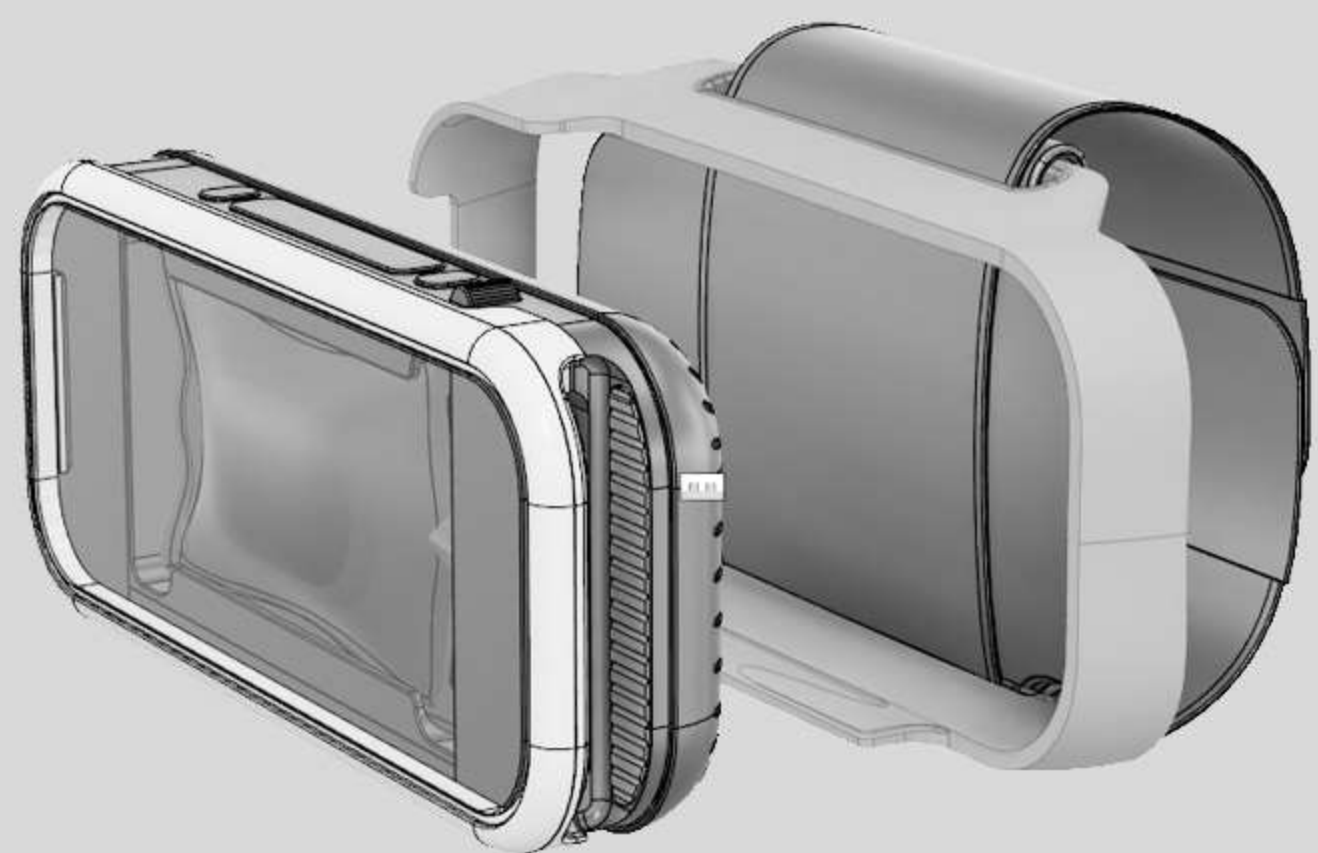
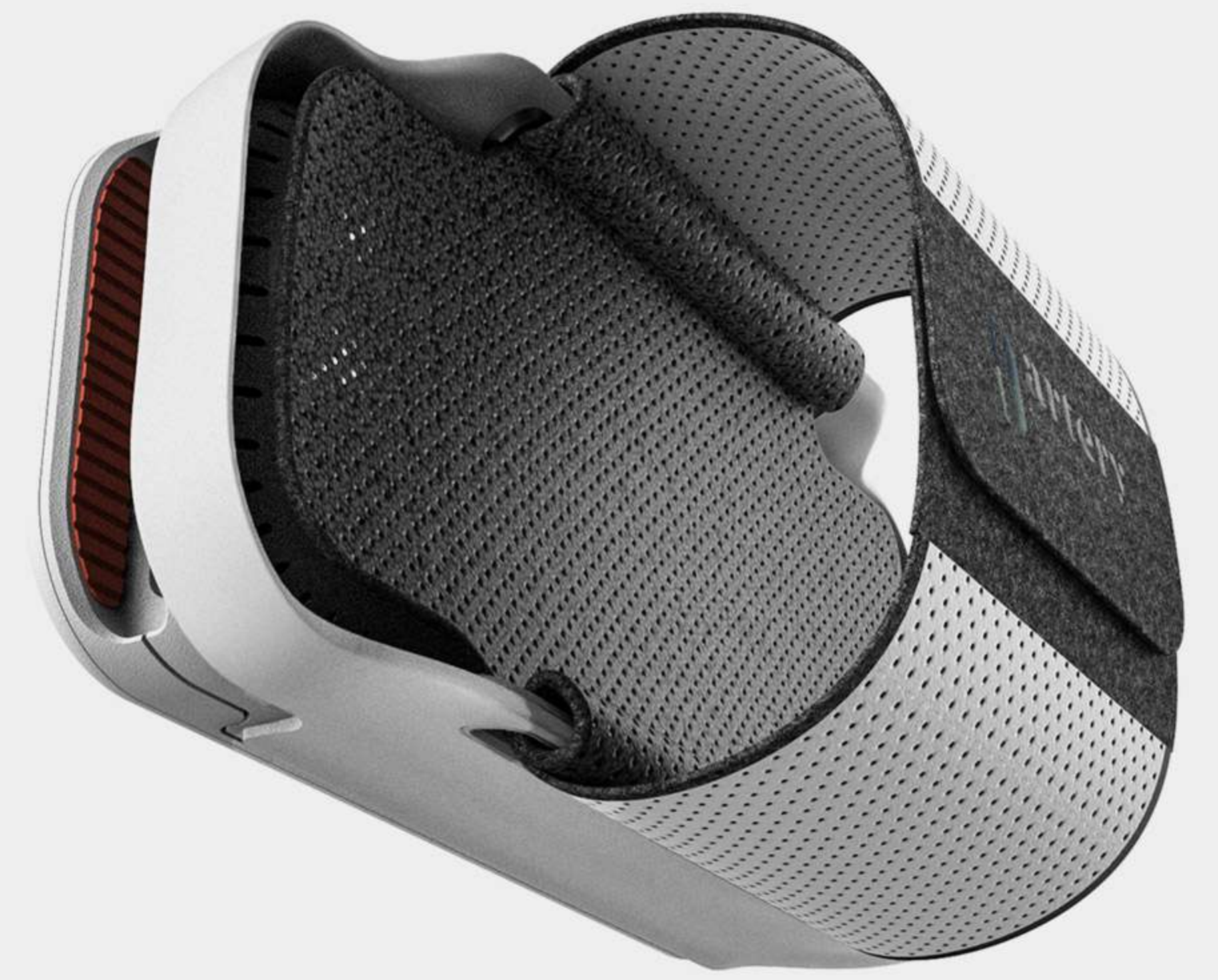
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INITIAL DESIGN

The whole infusion set is made of soft cloth, which can be firmly tied to the patient's arm. However, the disadvantage is that due to the soft material, it will cause great harm to the stability of the infusion in the event of a collision.



Body

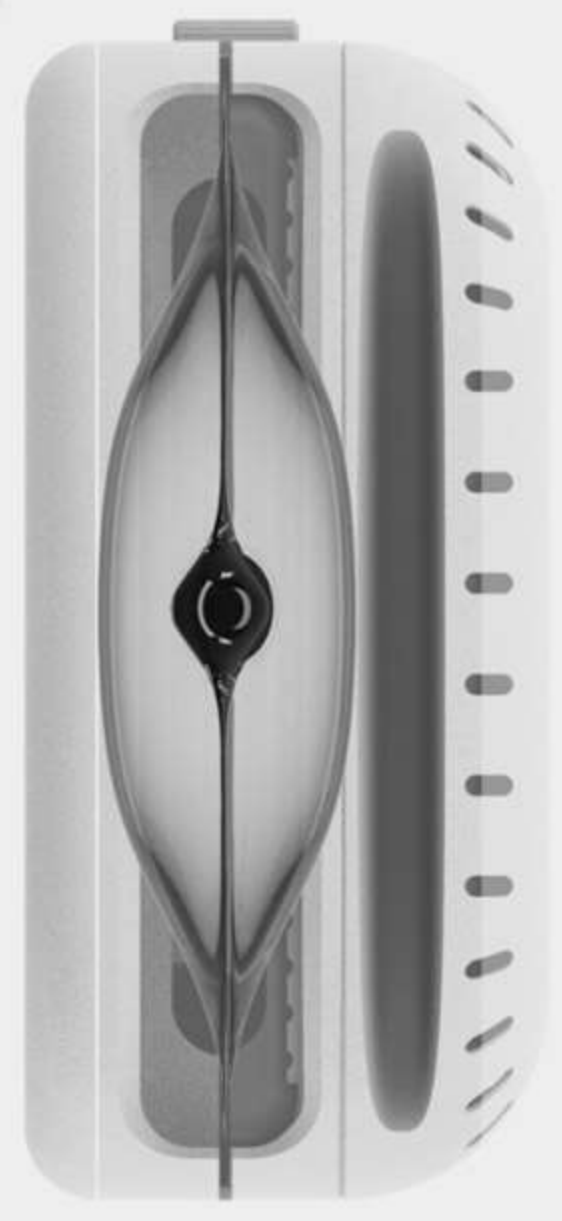
Fixing kit

The infusion set can be adapted to different types of fixing kits, so that it can be conveniently fixed to different parts of the human body, such as arms, legs, or other parts.

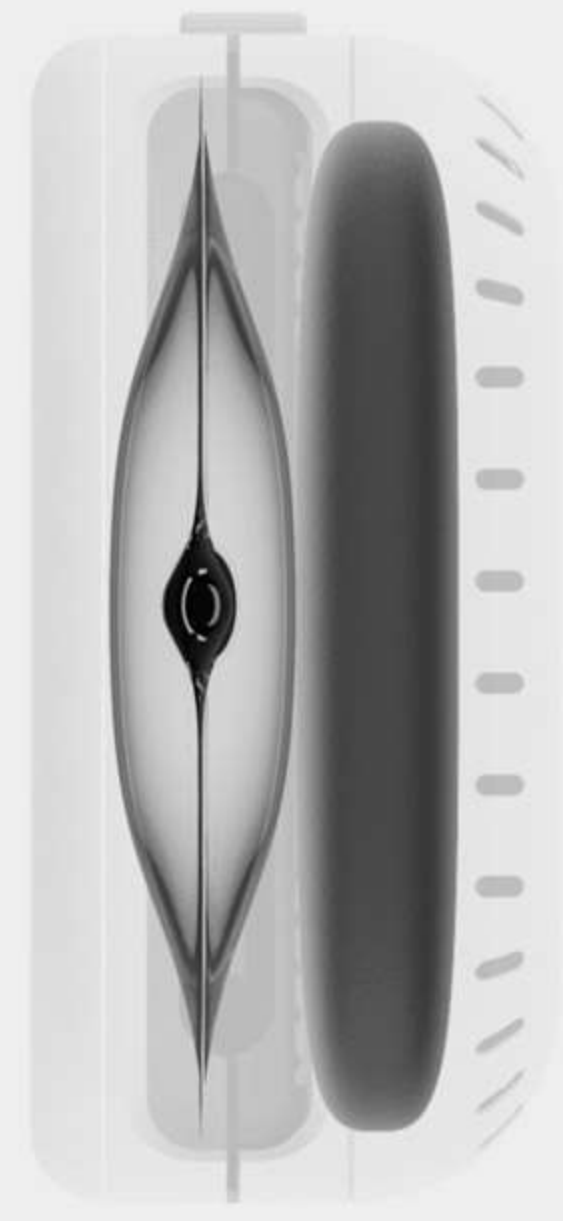
FINAL DESIGN

The entire infusion set is composed of a main body and a fixing kit. A standard size transfusion bag can be placed inside the main body. The fixation kit can fix the infusion set on the patient's arm or other places.





Start



In Progress



Done

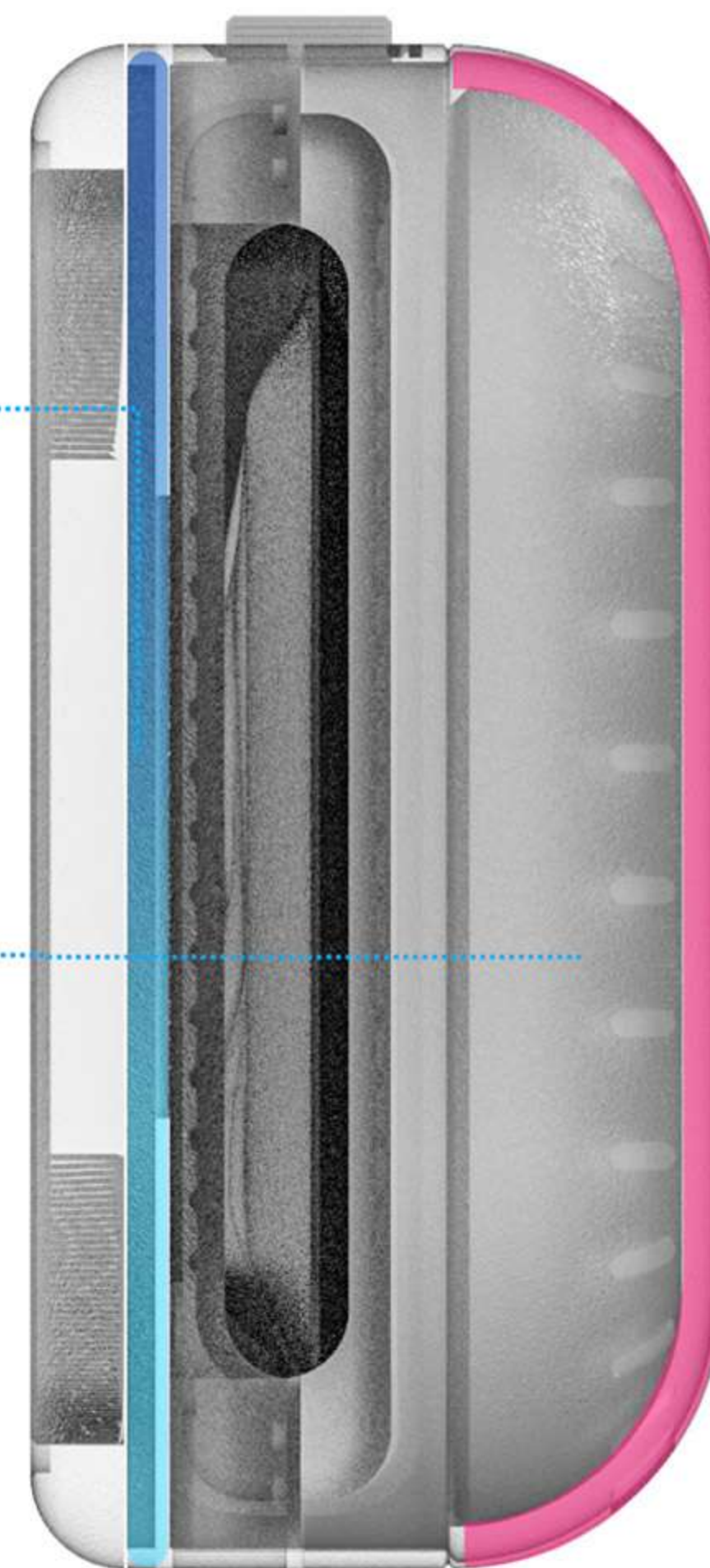
WORKING PRINCIPLE

The micro air pump will slowly fill the air bag with air, thereby squeezing the liquid bag and delivering the liquid to the patient's body.



Micro Air Pump

Front baffle



Air Inflow

The air inlet covers the whole area of the rear of the device, to increase the volume of air.

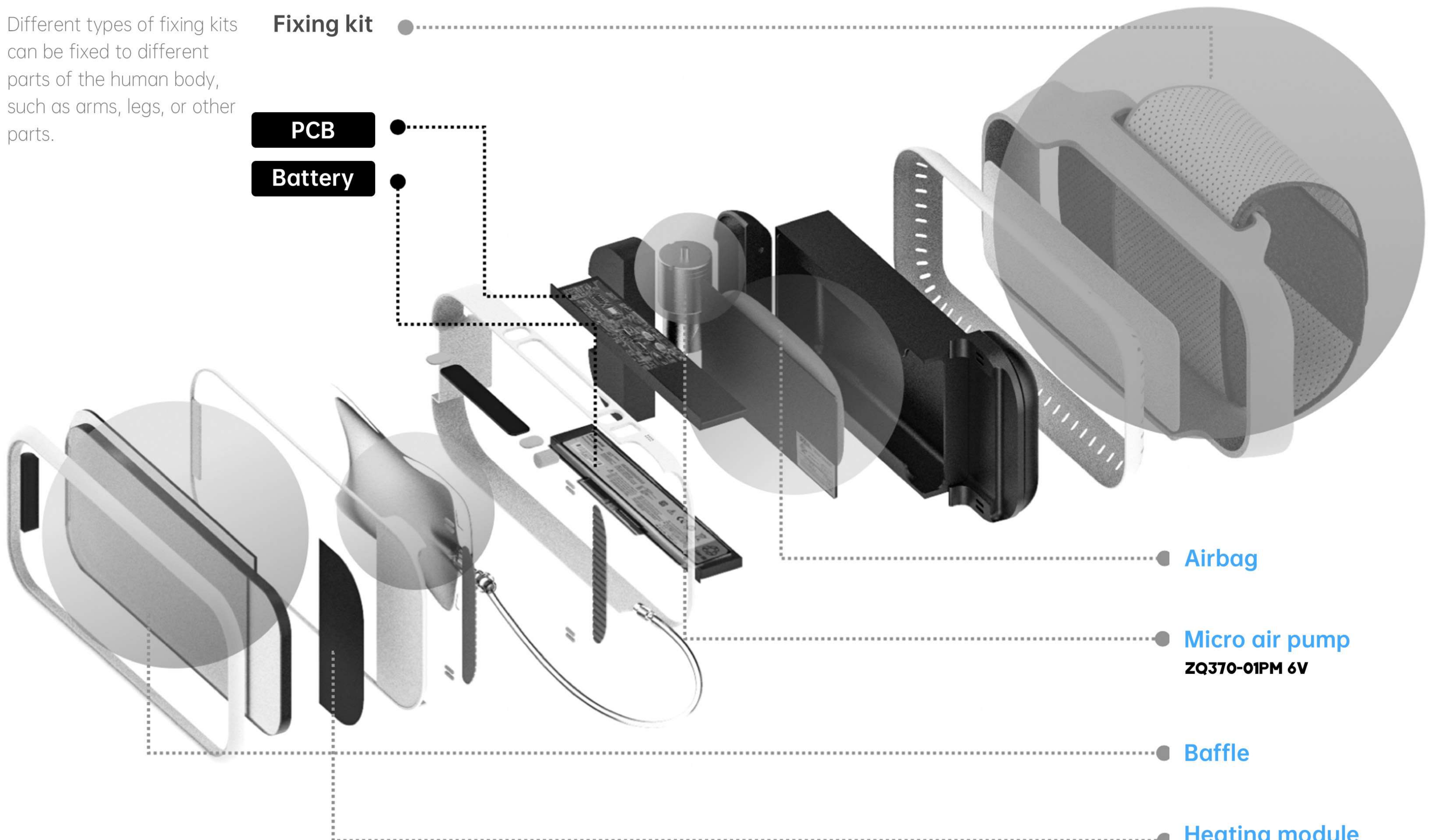


Different types of fixing kits can be fixed to different parts of the human body, such as arms, legs, or other parts.

Fixing kit

PCB

Battery



Airbag

Micro air pump
ZQ370-01PM 6V

Baffle

Heating module

Indirect heating the input liquid