

# FRD-e

Ventilation assistant



# HELPING HAND



## Introducing FRD-e

FRD-e is an active medical device to assist with the compression of a disposable resuscitator, typically performed by a doctor or IC nurse.



## FRD-e assists

Manually operating a CPR-bag is an intensive task. Achieving the right tidal volume and correctly timing the breaths per minute takes all ones attention, especially in often stressful environments.

*FRD-e can take over the manual operation, giving you time to focus on the patient.*

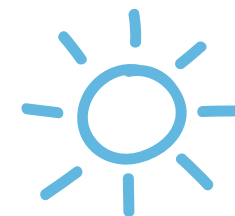
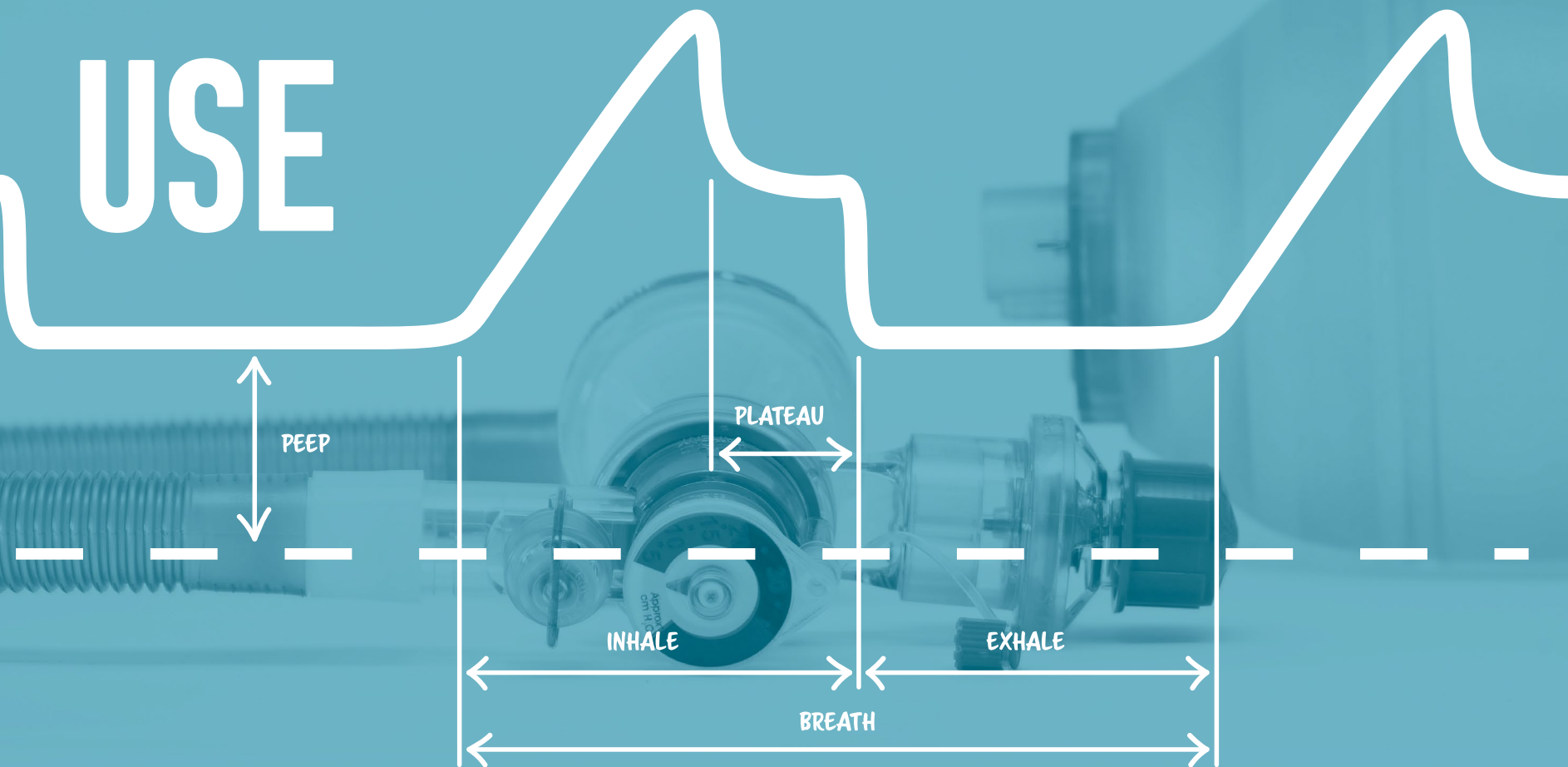
- ✓ FRD-e assists so you can focus on the patient
- ✓ No more manual squeezing
- ✓ Precise and consistent
- ✓ Easy to use



Hugo Touw MD PhD,

# EASY TO USE

Parameters set using the FRD-e app

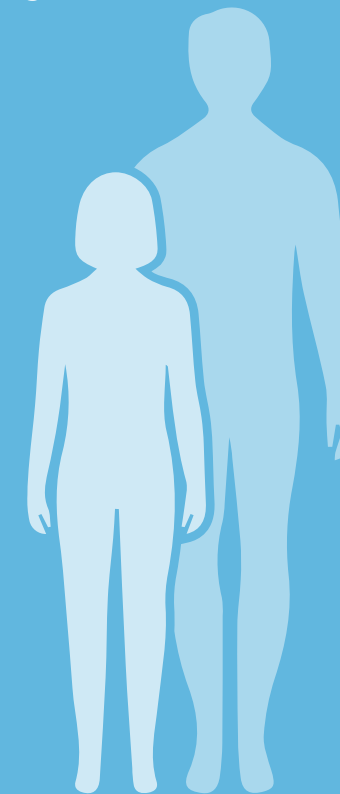


## Easy to use...

The FRD-e is a easy to use ventilation assistant. It offers the very basics needed for volume controlled ventilation. The device can easily be used with only little training.

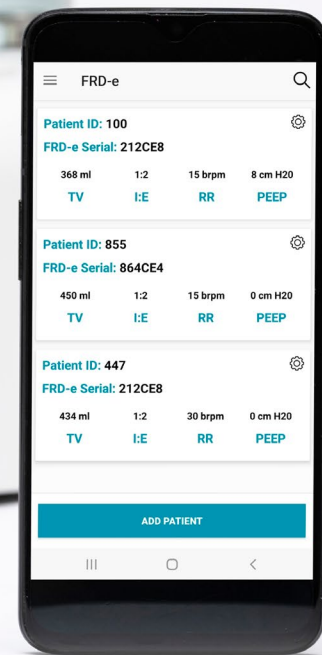
The FRD-e can be controlled manually on the device itself or by using the app on any mobile device. The application, available for both Android and iOS allows for simple and intuitive machine setup. For instance based on the patients gender and body length the application automatically calculates the needed tidal volume.

- ✓ FRD-e can be easily used after little training
- ✓ Control using intuitive app
- ✓ Available for iOS & Android
- ✓ Automatic configuration using body gender and body length





# PATIENT MANAGEMENT

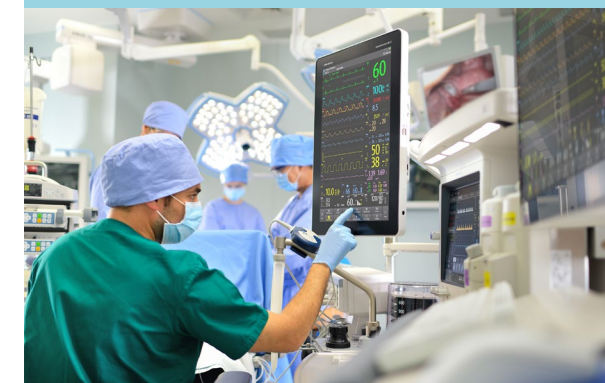


## Easy... and efficient multiple patient management

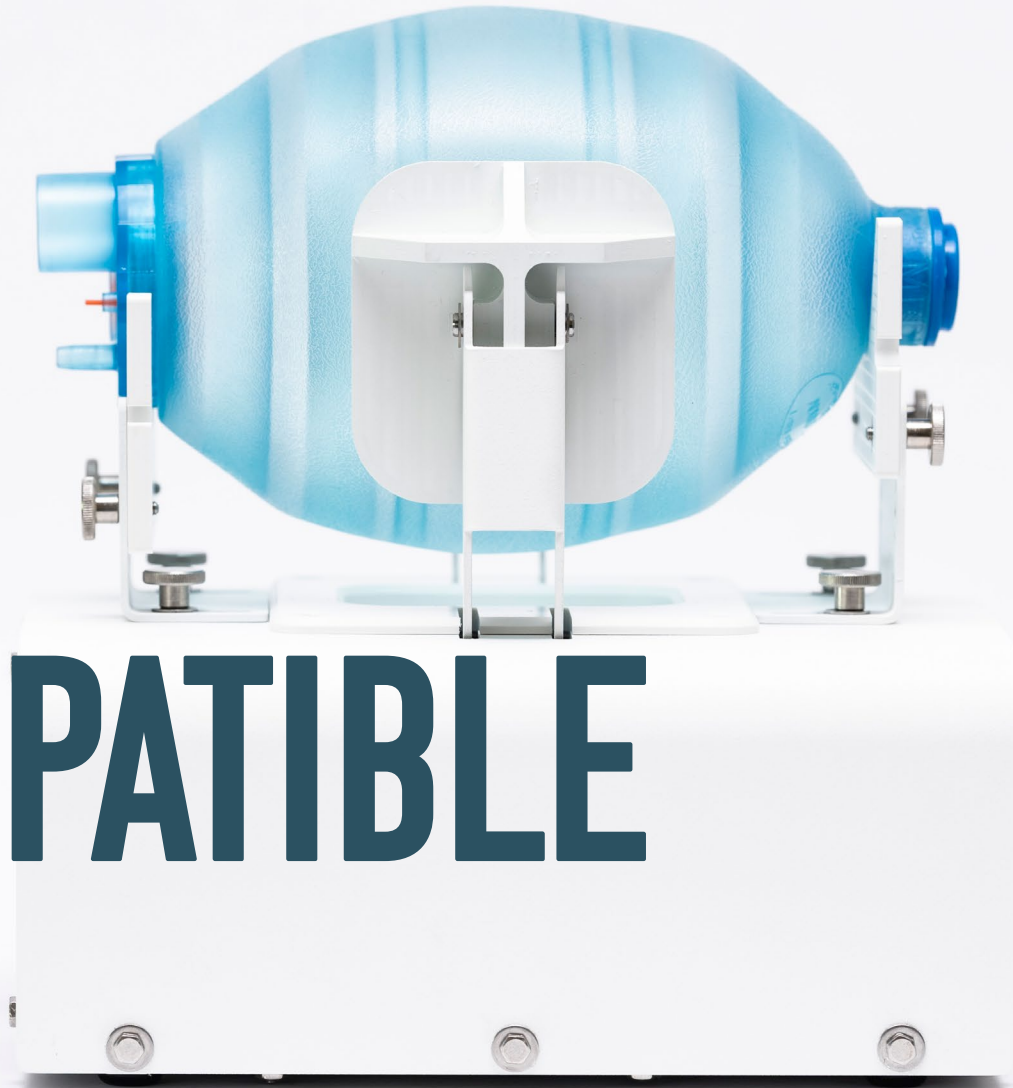
With the Stogger FRD-e application, you can easily control multiple FRD-e's. Next to the basic settings, also advanced settings such as PEEP and plateau time can be set. The application eliminates the need to be near to a FRD-e, greatly reducing the potential infection risk a doctor or a nurse faces.

The Stogger FRD-e application provides the operator with an instant overview of all the available devices within range. It typically communicates with devices in a 10m range or more, depending on the specific on-site conditions.

- ✓ Manage multiple FRD-e devices with 1 app
- ✓ Reduced infection risks through remote device management
- ✓ Calculates TV using gender and body length



# COMPATIBLE



Compatible with a wide range of manual resuscitators

FRD-e accepts a wide range of manual resuscitators. The adjustable support chucks can be set to suit most commercially available resuscitators.

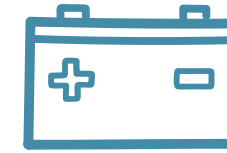
Most important criteria is that the resuscitator accepts a remote breathing valve system, has a PEEP and an overpressure valve.

Right now FRD-e is optimized for use with the Mercury Medical adult CPR-2 bag manual resuscitator. However through the app, the FRD-e can be calibrated for use with other resuscitators.

- ✓ Easy & secure placement
- ✓ Compatible with most CPR-bags
- ✓ Adjustable chucks



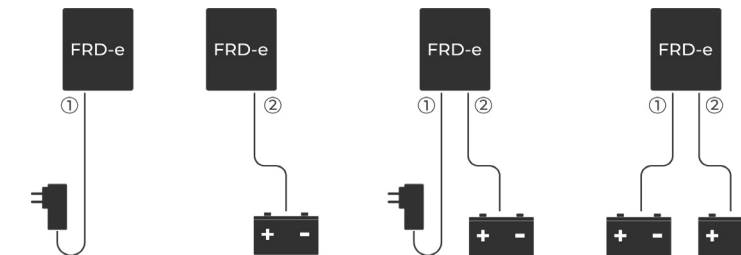
# FLEXIBLE



## Power options

The FRD-e can be powered using a multitude of power sources. The device has two power connectors, each suitable for an independent power supply. Typically one connector is paired with an external 24Vdc power supply. As a backup the second power terminal can be hooked up to an external battery. This can be any power supply ranging from 18-24 Vdc. As an example: a typical 18V 5Ah cordless drill battery can power the device for up to 10 hrs\*.

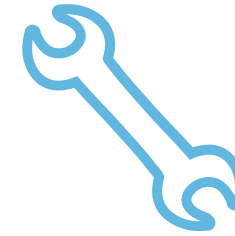
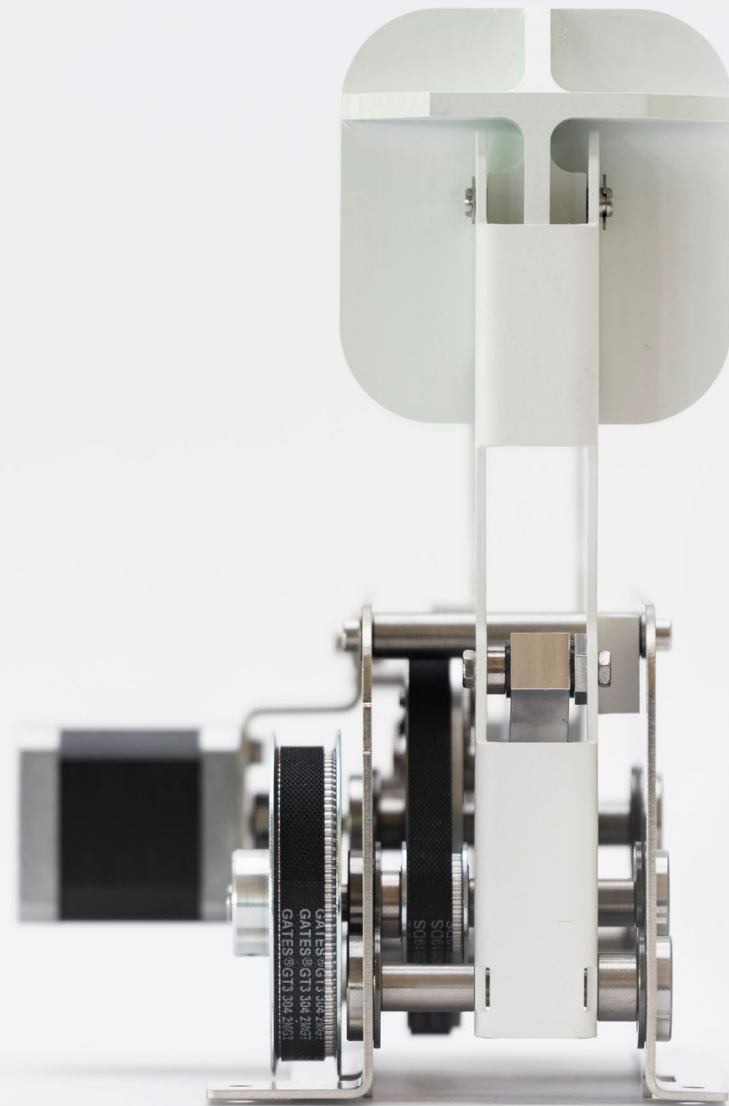
\*10 hrs using default machine settings



- ✓ Off grid operation
- ✓ Up to 10 hours operation using a standard power tool battery
- ✓ Automatically selects power source
- ✓ 18-24Vdc input voltage
- ✓ 220VAC external power supply



# DURABLE



## Durable

**The FRD-E was designed with durability as one of its corner stones.**

The device chassis and main components have been constructed out of high quality stainless steel, greatly over dimensioned bearings and proven industrial motor technology. The body has been subsequently coated with an easy to clean long lasting antibacterial coating.

## Maintenance free

The FRD-e is almost maintenance free, only needing a service every 2 years of continuous operation. In fact, The FRD-e has a lifetime warranty on the chassis and drive mechanism. If required the machine software automatically updates through the mobile application. Ensuring the FRD-e is always up to date, ready for use.

- ✓ FRD-e lifetime warranty on chassis and drive mechanism
- ✓ Stainless steel construction
- ✓ Anti-bacterial coating
- ✓ Automatic software updates





# PROVEN QUALITY



Parameters set using the FRD-e app



According to the experts:

FRD-e successfully completed the in vitro & in vivo testing performed at the Twente university TechMed centre and Radboud university medical centre.

“FRD-e complies with the basic requirements for use on patients with severe respiratory problems. It is able to assist patients with very low lung compliance.”

Hugo Touw MD PhD - Intensivist  
Radboud university medical centre, the Netherlands

“The FRD-e exceeded our expectations, in performance, design and ease of use!”

dr. Ir. F.H.C. de Jongh - Pulmonary physiologist  
TechMed centre University of Twente, the Netherlands

“We prefer the use of the FRD-e over manual operation of our CPR bags. FRD-e operates precise and consistent. It enables the doctor to increase their focus on the patient.”

Mercury Medical

“

Through FRD-e, we are able to treat patients suffering from ARDS, should our existing number of ventilators across hospitals not be enough.

Radboud university medical centre,  
the Netherlands



In vitro testing by dr. Ir. F.H.C. de Jongh





# STRATEGIC RESERVE



## Strategic reserve

**Contrary to ventilators, the FRD-e can be stored for long periods of time, without servicing.**

The basic nature of the machine and its mechanics allows it to be used as an **strategic reserve** item, stocked for longer periods of time and ready for instant deployment.

A FRD-e can be used **straight out of the box**. No assembly nor extensive setup needed. Simply hook up the power and switch on the device.

- ✓ Out of the box, ready to use
- ✓ Strategic reserve
- ✓ Store without periodic maintenance





# ABOUT US



## About us

Located in the Eindhoven region – the European Silicon valley- Stogger is the inventor of the FRD-e. Stogger is one of the top 15\* most innovative SME companies in the Netherlands. Our strength lies in our ability to materialise ideas. We love product development, bringing ideas to mass production. Together with strong partners we aim to improve our world using smart and durable healthcare products.

\*2018 MKB innovation top 100

Developed in  
coöperation with doctors

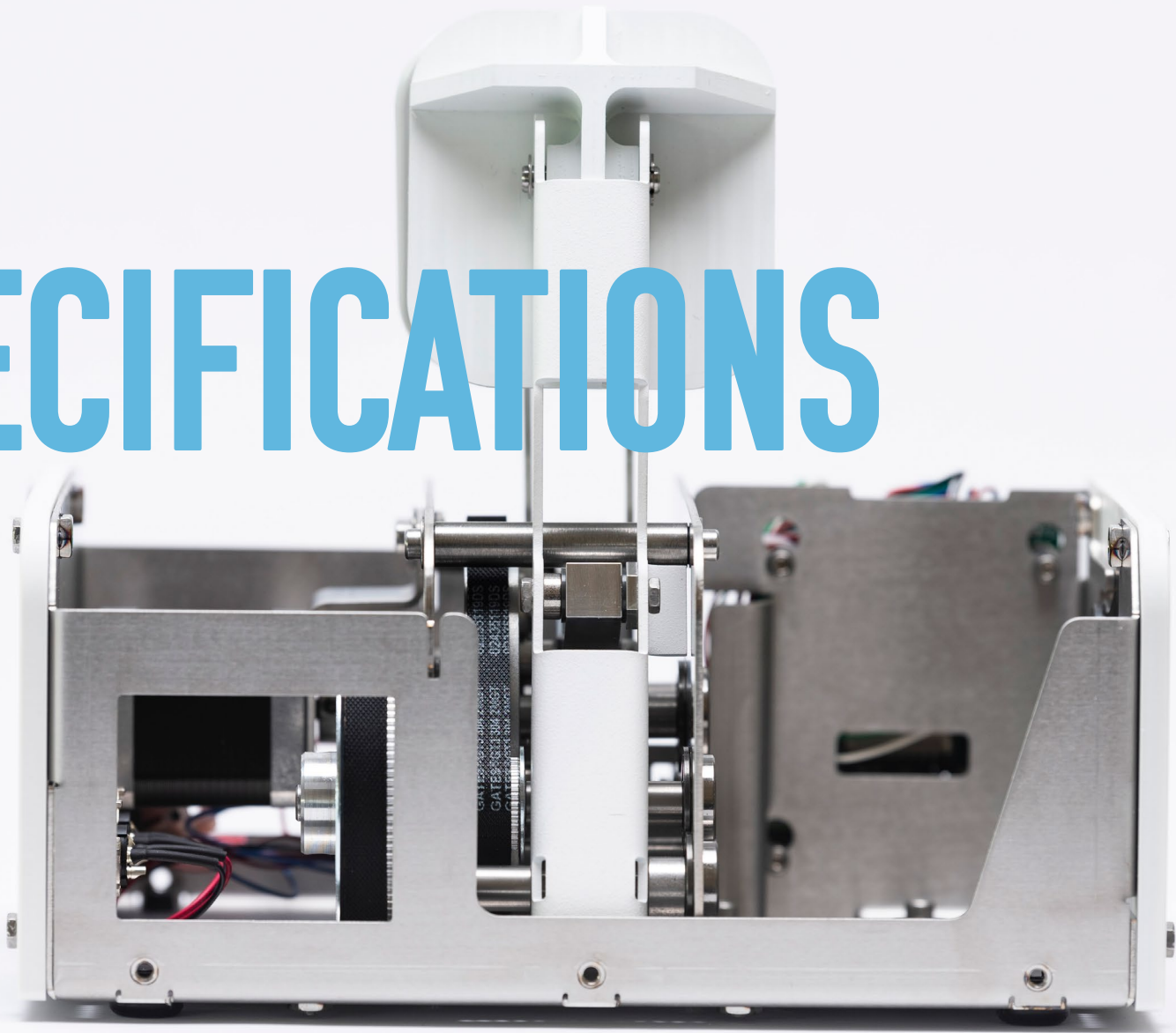
The FRD-e was developed in close coöperation with intensivists of the **Radboud university medical centre**, located in Nijmegen, the Netherlands

The machine was designed and improved with their feedback. This resulted in a simple, easy to use machine capable of taking over the manual operation of a resuscitator, giving experts time to focus on their patients.

**Radboud**umc



# SPECIFICATIONS

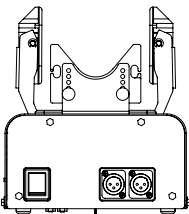
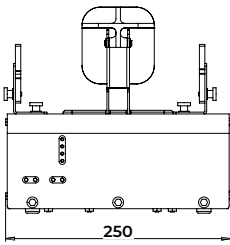
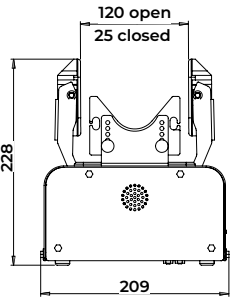


## Parameters and ranges

Tidal Volume	150 - 760 4 - 6 - 8	ml* ml / kg
Inhale - Exhale ratio	1:1 1:1,5 1:2 1:3 1:4	
Respiratory rate	10 - 60	brpm
Plateau time	0 - 5 - 10 - 15	%
PEEP	0 - 20	cmH <sub>2</sub> O**
Pmax	40	cmH <sub>2</sub> O***

## General

Dimensions (LxWxH)	250 x 209 x 228 mm
Operating voltage	18 - 24 VDC
Current draw	1000 mA (max)
Power	20 W (max)



\* Calculated by the application using gender and body length  
\*\* Peep value also needs to be set on the breather valve  
\*\*\* Safety valve CPR bag valve body



## Power Options

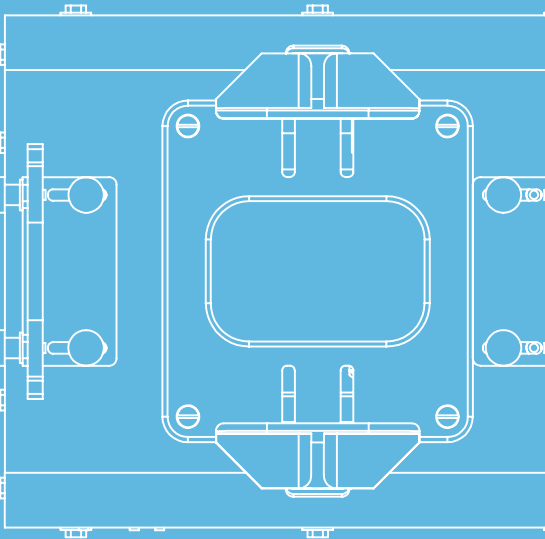
Main power supply	110 - 240 VAc / 24 Vdc, 50 - 60 Hz
And/or external battery (optional)	18 - 24 Vdc

## Packaging

Dimensions (LxWxH)	340 x 280 x 280 mm
Weight	6 kg

## Environment conditions

Storage temperature	10 - 50 °C
Storage humidity	10 - 90 %RH
Operating temperature	0 - 35 °C
Operating humidity	Non condensing







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