

ERVA

Emergency Respiratory Ventilation Apparatus



A product of Vexma Technologies Pvt. Ltd.

ERVA - Emergency Respiratory Ventilation Apparatus

ERVA is an Emergency Respiratory Ventilation Apparatus. A Non Invasive (NIV) portable ventilation device to suit emergency response as well as personal care.

ERVA is an Automated Bag Valve Mask (BVM) system which provides mechanical ventilation through a highly controlled fashion. A plug and play device through minimal training, any healthcare personal can operate it. By simplifying conventional ICU Ventilators with an intuitive design we can easily set it up with 3 major parameters which are tidal volume, inspiration to expiration (I:E) ratio and respiratory rate. ERVA offers up to 8 hours of battery life and has built in audio-visual alarms keeping safety first. With compact form factor and user friendly interface ERVA bridges the gap between a manual Ambu bag and an ICU ventilators when they aren't easily available. This device offers a Boost to Viable and Cost-Effective emergency treatments.

The robust design delivers consistent airflow which makes it applicable to be used in tough emergency environments to treat Covid-19 or other respiratory related emergencies. It can be used with or without oxygen in-line as per the patient requirement.

Key Features



Simple Setup : Plug & Play device



Auto Calibration : Device calibrates itself during the ventilation if gets out of sync



Sensors : Thermal, Humidity, CO gas



Emergency stop



Power backup : up to 8 Hr



24 x 7 Operation : Designed to run with zero downtime

- Modes : Volumetric, Assist & Assist Control Modes
- Compatible for both Invasive and Non-Invasive methods
- Measurement of Airway pressures : PIP, PEEP, Plateau pressure
- PEEP is controlled mechanically by PEEP Valve and monitored on the device
- Airway Pressure monitored at the patient - connection port relative to ambient pressure

Applications

- Supports breathing for COVID-19 patients, before availability of Conventional Mechanical Ventilators.
- Supports ventilation during transport of patients in ambulance for further care.
- Provides short term breathing support in Hospitals with limited ICU facilities.
- Due to its easy portability, can be used during mass emergencies.
- It can be used as a personal care device for patients with respiratory illness.
- Place it at home, Tourists spots, Malls, Airports, or anywhere to treat breathing emergencies until further medical care arrives.

Key Specifications

PARAMETER	RANGE
Tidal Volume	200 - 800 ml
Respiratory Rate	6 - 40 BPM
I/E Ratio	1:1 - 1:4
Max Pressure	40 cm H ₂ O
Max Plateau Pressure	30 cm H ₂ O
PEEP	5 - 20 cm H ₂ O

VENTILATION ALARMS

TRIGGER CONDITIONS

Exceeded PIP Pressure	$P > P_{max} = 40\text{cmH}_2\text{O}$
Under Pressure	$P_{plateau} < P_{plat_min} = 5\text{cmH}_2\text{O}$
High Resist Pressure	$P_{pip} - P_{plateau} > P_{resist_max} = 10\text{cmH}_2\text{O}$
Tidal Volume not delivered	$V_{final} < V_{set} - V_{thres} = 50\text{mL}$
Tidal Pressure not detected	$P_{peak} - P_{peep} < P_{tidal_min} = 1\text{cmH}_2\text{O}$ (2 cycles)

Supply Mode	When device switches from main to battery source
Battery Mode	Alarm triggers at particular intervals
Calibration Failure	Unable to calibrate the gripper arms
Battery low	Indicates low Battery
Emergency Stop	Alarm triggers when emergency button is pressed
Motor Failure	If motor not functioning while calibration

HARDWARE

SPECIFICATION

Power Source	230V
Internal Battery	24V DC, up to 8 Hr Backup
Display	20x4 LCD
Main Controller	Atmel AVR 8-bit controller
Motor Capacity	150Kg-cm
Pressure Sensor	0-10Kpa
Buzzer	12V
LED Indicators	Ventilation in Process, Alarm trigger, Power , Battery level, Ventilation mode



Vexma Technologies is a Product Development startup with expertise in Industrial 3D Printing. We provide value added services for new design and product development suitable for all modes of manufacturing compatible with Industry 4.0. Under Make In India Campaign, we make sure that Indian manufacturing technologies follows the evolutionary trends from the global platform while making sure cost effectiveness is the key.

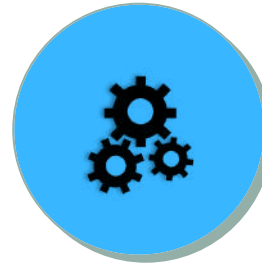
ERVA is an Emergency Respiratory Ventilation Apparatus designed & Manufactured by Vexma Technologies Pvt. Ltd. This device can be used for personal care for patients with breathing difficulties. A low cost solution to combat emergency respiratory problems.

Services we offer

3D PRINTING



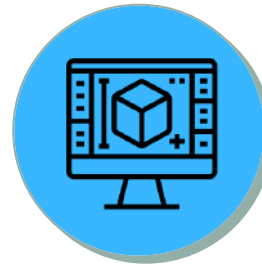
RESEARCH &
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ELECTRICAL
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