

1. Respiration Assistive Intervention Device - Respi-AID

Introduction

Ventilator is a mechanical device used to support the ventilation function i.e. breathing function, in the patients with weak respiratory system. Due to the pandemic spread of a novel coronavirus disease 2019 (COVID-19), the requirement of ventilators was envisaged in high number. Since the availability of ventilators was not adequate, so an urgent need was felt to develop cost effective respiration assistance devices with minimum required functionality of ICU ventilator to support the healthcare professionals during pandemic situation. The proposed device is based on the Ambu bag where the operation of Ambu bag is automated by a motorised mechanism. It has the provision to set the ventilation parameters i.e. Tidal volume, Respiration rate, I:E ratio, PEEP value, FiO₂ etc. through user interface and the device start working by applying pressure to the attached Ambu bag. All the parameters are controlled and monitored through the display provided at the front panel. The device can also be used as transport ventilator.

Features

- Ventilation parameters setting for Respiratory Rate, Tidal Volume, I:E Ratio, PEEP and FiO₂
- GUI for monitoring Set values of Tidal volume, Respiration rate & I:E ratio, and Delivered values of Tidal Volume, Inspiration Peak Flow, Inspiration Peak Pressure; Mean Airway Pressure; PEEP
- Oxygen concentration display; Air-Oxygen Blender
- Alarms: Delivered Tidal volume mismatch, Lower and upper pressure limits, Power failure

Specifications

- Mode : Volume Controlled Continuous Mandatory Ventilation (VC-CMV)
- Tidal volume : 200-600 mL
- Respiratory rate : 10-30 BPM
- PIP Pressure : 0 - 40 cmH₂O
- PEEP Pressure : 0 - 10 cmH₂O
- Oxygen : 21-100 %

- I : E Ratio : 1:1, 1:2, 1:3, 1:4, 2:1
- Gas source : Environment Air, Hospital Supply, Oxygen Cylinder
- Power Supply : 230 VAC; 1 phase; 50Hz
- Electrical Safety : Compliance to IEC standard for electrical safety of electro-medical equipment

Applications

- For use in hospitals when patient require Volume Controlled Continuous Mandatory Ventilation (VC-CMV)
- Portable ventilator for patients not requiring critical care ventilator
- Can be useful as transport ventilator in ambulances

Status

- TRL Level : 5 - 6
- ToT Documents : Ready
- Commercialization Status : Technology transferred to SEL Chennai

Respiration Assistance Intervention Device (*Respi-AID*)

