

What is ventilation? Respiration?

Ventilation is the process of moving air in and out of the lungs. Respiration is the process during which the exchange of oxygen (O₂) and carbon dioxide (CO₂) occurs in the alveoli of the lungs. The alveoli are small air sacs at the end of the bronchial tree in the lungs, and it is through the walls of these air sacs that O₂ diffuses into the blood and CO₂ diffuses out of the blood. Ventilation is a constant process of maintaining the proper balance between the two.

What is a ventilator?

A ventilator, also known as a respirator, is the equipment used to mechanically assist breathing by delivering air to the lungs. Many people may be familiar with ventilators in the hospital setting, such as the ICU, where large complex acute care ventilators are used. The ventilators used in the home are small, lightweight and portable; they can be mounted on wheelchairs or carts or put on a bedside stand. Most of these operate on household electric current—some have internal batteries—and can be operated with external batteries. It is advisable to have a backup battery or even a generator readily available in case of power outages or emergencies.

alarm volume is regulated.

OVERVIEW

A portable ventilator with exceptional capabilities

The Newport™ HT70 plus ventilator combines ruggedness, ease of use and clinical proficiency with exceptional mobility for patients from 5kg to adult. All models of the Newport™ HT70 ventilator family can be used for home care, transport, hospital, long-term care and emergency preparedness, as well as for invasive or noninvasive ventilation.

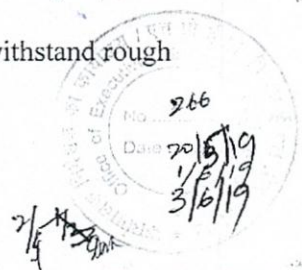
In addition to its standard clinical features, the Newport™ HT70 plus ventilator offers an on-airway flow sensor that provides expanded monitoring with alarms and the choice of flow or pressure trigger. With waveform graphics, an oxygen cylinder usage calculator and internal battery use time estimator, the Newport™ HT70 plus ventilator goes beyond standard portable ventilation.

FEATURES

- An on-airway flow sensor provides more choices for ventilation — inspiratory or expiratory monitoring and alarms, flow or pressure trigger.
- The hot-swappable battery provides up to 10 hours of operation (depending on settings). Batteries can be swapped out on the go for extended operation and added freedom without interrupting ventilation.
- The Battery Time Estimator provides added peace of mind during transports.
- Built-in oxygen monitoring and alarms alert users to changes or disruptions when using supplemental oxygen.
- The Cylinder Use Time Calculator helps estimate how long oxygen will last when on the go.
- The full-color touch screen provides easy access to all controls, simple navigation and a help guide for added convenience.
- With its rugged and reliable construction, the ventilator is designed to withstand rough treatment in a wide range of environments.

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- A patented gas generator runs cool and quiet, is gas efficient and provides consistent volume delivery.
- Advanced features such as Alarm Quickset, custom presets and custom backup ventilation make this an exceptional portable ventilator.

Technical Specification:-

Specification of ICU Ventilator (Respiratory Ventilator)

1. Should have facility for Invasive and Non-Invasive ventilation.
2. Microprocessor Control suitable for Pediatric and adult ventilation.
3. Electromagnetic Compatible Hinged arm holder for holding the circuit.
4. Should have built in touch color screen TFT display of minimum 10" or more for display of waveforms and Monitored value.
5. Should have inbuilt facility to upgrade with EtcO₂.

6. Facility to Measure and display:-

- a) Status indicator for ventilator mode.
- b) Battery indication.
- c) Pressure Vs time Vs volume Vs time, flow Vs time 3 curves/ waveforms.
- d) Alarm setting.
7. Automatic compliance and leakage compensation for circuit and ET Tube.
8. Should have facility of log book, for events and alarms with date & time.

9. Should have following settings.

- a) Tidal volume (Minimum at least 50ml, Maximum up to 2000ml)
- b) Inspiratory Pressure (upto 80 cm of H₂O)
- c) Respiratory rate 1 to 80 bpm.
- d) Apnoea back up rate.
- e) CPAP/PEEP
- f) Pressure support.
- g) FiO₂
- h) Pause Time
- i) Pressure & flow Trigger
- j) Inspiratory flow up to 120 Lpm.

10. Monitoring and Display of the following Parameters.

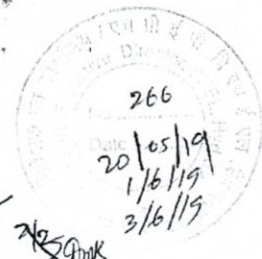
- a) Airway Pressure (Peak & Mean).
- b) Tidal volume (Inspired & Expired).
- c) Minute volume (Inspired & Expired)
- d) Respiratory mechanics.
- e) Spontaneous Minute Volume.
- f) Total Frequency.
- g) FIO₂ dynamic.
- h) Intrinsic PEEP.
- i) Plateau Pressure.
- j) Resistance & Compliance.
- k) Use selector Alarms for all measured & monitored parameters.
- l) Occlusion Pressure.
- m) Pressure Flow & Volume curves.

11. Modes of Ventilation equipped with newer modes of ventilation:-

- a) Assist /control.
- b) Volume Control.

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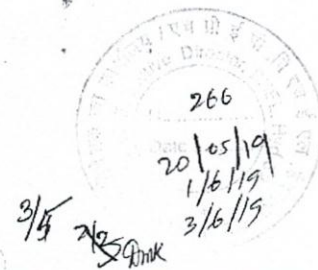
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- c) Pressure control.
- d) Pressure support.
- e) SIMV with pressure support (Pressure and volume control).
- f) PEEP.
- g) Inverse ratio Ventilation.
- h) Non invasive ventilator- BIPAP, CPAP.
- i) Apnea Ventilation, User selectable, volume & pressure control.
- 12. Should have built in safety alarms for Airway Pressure High & low, Minute volume, High & low, power failure, Low oxygen, High Respiratory Rate, Air Source in-operable.
- 13. Should have inbuilt exhalation filter.
- 14. Compressor should be of same company inbuilt/ mounted with ventilator assembly.
- 15. Should have compatibility with existing central pipe line.

16. Humidifier

- a) Servo controlled heated Respiratory Humidifier.
- b) Temperature of delivered Gas on LED display.
- c) Temperature should be adjustable.
- d) Jar should be autoclavable
- 17. Quality Certification : Valid CE/BIS/US FDA
- 18. Demonstration of the quoted model is must, preferable on site.
- 19. Nebulization assembly compatible with ventilator and circuit.
- 20. Should have interface facility.
- 21. Flow sensor-Should have life more than 1 year.
- 22. Expiratory Unit- Life should be more than 3yrs.
- 23. Data storage facility for at least 24hrs.
- 24. Internal rechargeable battery at least 30min. backup.
- 25. Should be supplied with compatible UPS.
- 26. Should have flow sensors having long life and the company shall specify the life cycle and the cost of the flow sensors at the time of quoting the tender.
- 27. CMC/ AMC for the atleast 5yrs and Cost of consumables spares.
- 28. Source :Indigenous/Imported
- 29. Warranty 2 years from the date of installation.

30. Standard Accessories alongwith :

- a) Patient breathing circuit of silicone for Adult & Paediatric (reusable).
- b) Non invasive ventilator mask reusable for adult (3sizes) and paediatric according to age- 4set each.
- c) ET tube cuff pressure monitor and HME filter - 10.

Difference between the existing ventilator and proposed ventilator :

- 1. Existing ventilator is non invasive
- 2. Existing ventilator is external use only
- 3. Proposed ventilator is invasive and non-invasive

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