



Elisa

Universal ventilator

Homecare
Pneumology
Neonatology
Anaesthesia
INTENSIVE CARE VENTILATION
Sleep Diagnostics
Service
Patient Support

elisa

Universal ventilator

Evidence



ARF

NIV (non-invasive ventilation) should be used to treat ARF (acute respiratory failure) whenever possible to avoid the complications of invasive ventilation.

German Respiratory Society: Clinical Practice Guideline „Non-invasive Mechanical Ventilation in Acute Respiratory Failure“. Hanover 2008, p.10



NIV

In the post-extubation phase after prolonged invasive ventilation (> 48 h), patients with hypercapnic ARF and risk factors for extubation failure should receive prophylactic treatment with NIV.

German Respiratory Society: Clinical Practice Guideline „Non-invasive Mechanical Ventilation in Acute Respiratory Failure“. Hanover 2008, p.38

Areas of application



NON-INVASIVE VENTILATION

Use the full therapeutic spectrum of non-invasive ventilation.



DYNAMIC BILEVEL

Combines the advantages of pressure-controlled and volume-controlled ventilation. Significant reduction of the user's workload based on virtually full automation.

Application areas

ICU / IMC

Anaesthesia



WEANING

“A spontaneous breathing trial should be conducted once a day in a structured format (e.g., in the form of a weaning protocol).“

Terbeck,S., Bensberg, R., Kuhlen, R. (2004): Die Entwöhnung von der Beatmung (Ventilation weaning), in: Kuhlen, R., Putensen,C., Qunitel, M.: Jahrbuch Intensivmedizin 2004, Lengerich, p.159f



REDUCED LENGTH OF STAY

„Modern pressure-controlled forms of ventilation with integrated spontaneous breathing can significantly reduce the need for analgo-sedation and cut down on ventilation needs and length of hospitalization.“

Putensen C, Zech S, Wrigge H, Zinserling J, Stuber F, Spiegel Tv, Mutz NJ (2001) Long-term effects of spontaneous breathing during ventilatory support in patients with acute lung injury. Am J Respir Crit Care Med 164: 43–49



WEANING INDICATORS

Assisted assessment of weaning processes.



TUBE COMPENSATION

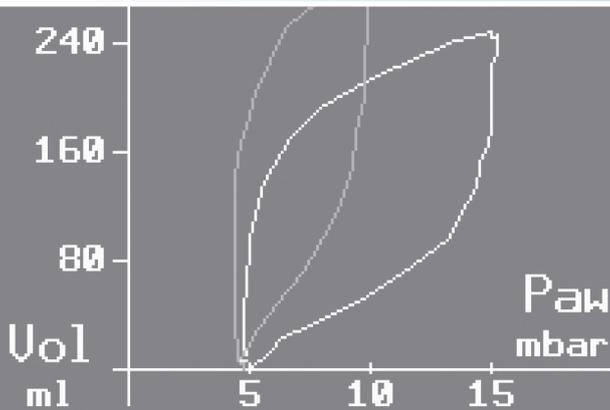
Reduces tube-related work of breathing to facilitate the weaning process and as an element of weaning protocols.

Shock room

Emergency room

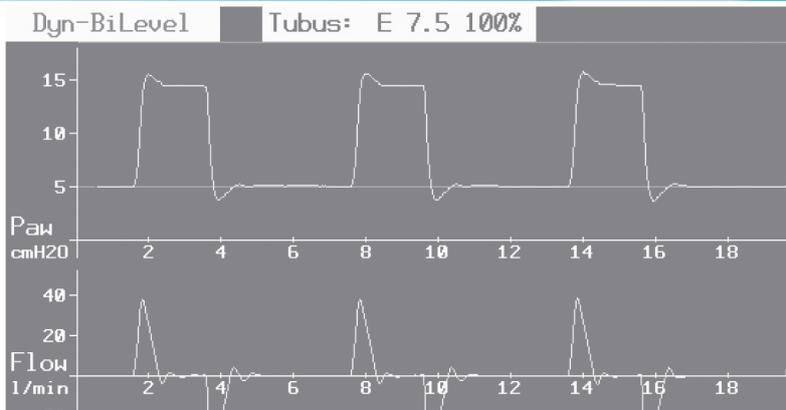
elisa

Universal ventilator



„The integration of spontaneous breathing in modern pressure-controlled ventilation modes significantly improves the ventilation-perfusion ratio and oxygenation“

Putensen C, Mutz NJ, Putensen-Himmer G, Zinserling J (1999) Spontaneous breathing during ventilatory support improves ventilation-perfusion distributions in patients with acute respiratory distress syndrome. *Am J Respir Crit Care Med* 159: 1241-1248



„Modern pressure-controlled forms of ventilation with integrated spontaneous breathing can significantly reduce the need for analgo-sedation and cut down on ventilation needs and length of hospitalization.“

Putensen C, Zech S, Wrigge H, Zinserling J, Stuber F, Spiegel Tv, Mutz NJ (2001) Long-term effects of spontaneous breathing during ventilatory support in patients with acute lung injury. *Am J Respir Crit Care Med* 164: 43-49

Ventilation patterns with combined benefits

The pressure-controlled elisa universal ventilator combines the patient's spontaneous breathing with dynamic adjustment of the upper pressure level to the tidal volume, thus combining the benefits of pressure-controlled and volume-controlled ventilation. Thanks to the virtually automatic setup, less user time is spent on settings. The upper pressure level self-adjusts within an established safe range. As two additional benefits, the elisa universal ventilator allows for performing lung-protective ventilation therapy with low tidal volume and CO_2 target values are easily reached based on volume specifications.

Spontaneous breathing possible at all times

The elisa universal ventilator features separate systems for ventilatory support and spontaneous ventilation. The time-controlled alternation between two different CPAP levels (PINSP, PEEP) ensures that the mandatory portion of ventilation therapy is adequately available at all times. At the same time, the demand mode, which is tied to the CPAP mode, allows for virtually unrestricted spontaneous breathing in all phases of the automated ventilation cycle. That means that changes in ventilation demand do not necessarily lead to changes in machine assistance.

Furthermore, the patient's spontaneous breathing can be combined with conventional pressure support and tube compensation. This is made possible by the functional principle of open valves in BiLevel, Airway Pressure Release Ventilation, and Dynamic BiLevel.

Optional products

1. Quick change sensors
2. Drug nebulizer
3. Cart
4. Water trap with integrated swirl valve and exchangeable filter unit
5. Air compressor A 40
6. Aircon respiratory gas humidifier

I. Quick change sensors



Exchangeable sensors are available for adapting the measuring circuit to the respective patient category (2-6 kg body weight or > 5 kg body weight) or after administration of aerosolized medication. Thanks to their Quick Change design, users can exchange these sensors in seconds. The integrated sensor allows for precise measuring procedures, contains no consumables and can be autoclaved.



„Non-invasive ventilation should be used to treat ARF whenever possible to avoid the complications of invasive ventilation.“

German Respiratory Society, Clinical Practice Guideline „Non-invasive Mechanical Ventilation in Acute Respiratory Failure“. Hanover 2008, p.10

„In the presence of leakages, pressure cannot be held constant.“

German Respiratory Society: Clinical Practice Guideline „Non-invasive Mechanical Ventilation in Acute Respiratory Failure“. Hanover 2008, p.31

NIV therapy without compromise

The leakage rate during mask ventilation is subject to continuous variation, which hampers spontaneous breathing at the upper pressure level. It may also impede the reliable detection of the trigger signal and the criterion for activating pressure assistance. Conventional ventilators attempt to address these problems with compromises, such as pressure-controlled ventilation (PCV) without spontaneous breathing at the upper pressure level or a signal trigger.

The elisa universal ventilator offers an effective technical solution instead. Its highly responsive measuring and control technology, comprehensive leakage compensation, and trigger detection based on adaptive byflow technology make no compromise in ventilation therapy in spite of mask-related leakages.

Extensive leakage compensation

The compensation of leakage caused by masks and tubes represents a major challenge for medical devices. Even short-term pressure drops of just 0.2 seconds may lead to the collapse of alveolar areas, which means they must be avoided as effectively as possible. The dual hose system of the elisa universal ventilator continuously measures and adjusts mask-related leakage. Furthermore, the display provides precise data about the leakage status. Because of the active valve control of expiration, the device can rely on high-speed control algorithms, which prevents the risk of rebreathing CO₂. In contrast to single-hose systems, no additional flush flow is therefore required to compensate the tube stricture.

2. Drug nebulizer

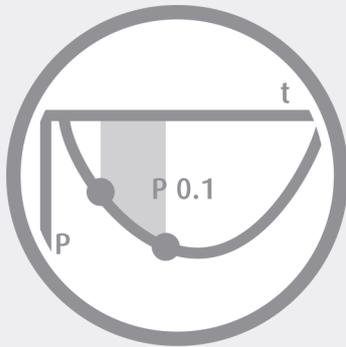


The high-quality nebulizer can be filled with ready-to-use drug solution during ongoing therapy. The integrated safety valve prevents potential pressure loss and therefore rules out reflex alveolar collapse. The clear drug chamber enables early detection of possible incompatibilities.

3. Cart with gas cylinder holders

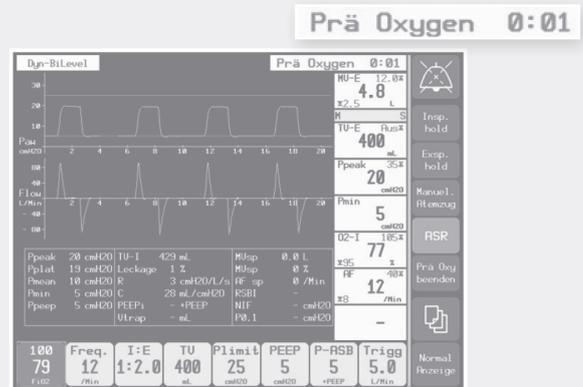


The cart for elisa is designed for both mobile and stationary use. The large castors make it easy to transfer ventilated patients within clinical settings. The basic configuration of the cart features standard rails for storing accessories. Optional holders to accommodate compressed air and oxygen cylinders are also available.



„Spontaneous breathing trials provide information about a patient’s current breathing capability“

Cook D, Meade M, Guyatt G et al (1999) Evidence report on criteria for weaning from mechanical ventilation. Agency for Health Care Policy and Research



„Elevated inspiratory oxygen concentrations (100% O₂) result in the formation of absorption atelectasis within a short time.“

Edmark L, Kostova-Aherdan K, Enlund M, Hedenstierna G. (2003) Optimal oxygen concentration during induction of general anesthesia. Anesthesiology 2003; 98: 28-33

Detecting the weaning point

Even current clinical study results do not provide any clear specifications for weaning. There still is no reliable indicator to accurately predict weaning success. The current recommendation is to perform a daily, structured spontaneous breathing trial to assess the patient’s respiratory situation. Weaning protocols allow for the clinical assessment of the actual status along with continuous evaluation of spontaneous breathing activity. Tube-related resistance can be compensated to eliminate factors that impede weaning due to additional work of breathing (WOBadd).

The elisa universal ventilator supports the successful application of weaning protocols with adjustable inspiratory and expiratory tube compensation, P01 occlusion pressure measurement, Rapid Shallow Breathing Index (RSBI), and Negative Inspiratory Force (NIF).

Avoiding absorption atelectasis

Preoxygenation and postoxygation procedures with 100% oxygen during bronchial hygiene measures pose the risk of causing alveolar collapse with so-called absorption atelectasis. When the inspiratory oxygen supply is reduced below 80%, the extent of such oxygen-related resorption atelectasis can be drastically decreased. The automatic suction routine (ASR) of the elisa universal ventilator adapts the inspiratory oxygen to the necessary level, which contributes to reducing oxygen-induced complications.

4. Water trap

Water trap with integrated swirl valve and exchangeable filter unit.

The water trap with integrated gas filter protects patients and the ventilation device from dirt particles, rust and condensation from the centralized gas supply unit, thereby supporting the low-maintenance operation of intensive care ventilators.



5. Air compressor A 40

The low-noise air compressor A 40 generates oil-free medical-grade air in accordance with the stringent requirements of the pharmacopeia. Thanks to its flexible use options, it is ideal for locations without a centralized compressed air supply. The air compressor is integrated into a wheeled cart with a table top that offers space for the elisa and NI 60 respiratory therapy devices.



The images contains optional accessories which can be ordered in addition. (Please inquire further information.)

- Expiratory measurements without consumables
- Weaning indicators and virtual extubation for structured weaning
- Designed for non-invasive ventilation and respiratory therapy
- User-friendly implementation of lung-protective ventilation with Dynamic BiLevel
- Automatic suction routine for low-complication bronchial hygiene
- Triple compensation for mask and tube leakage



6. Aircon respiratory gas humidifier



The Aircon respiratory gas humidifier combines modern technology and innovative design in a high performance unit. Thus, it fulfills the medical requirements and the economic expectations of the market. The result is optimal physiologically conditioned respiratory gas, which protects the mucous membranes of the ventilated patient from drying out and prevents interference with the mucociliary clearance.

Heinen + Löwenstein
Arzbacher Straße 80 D - 56130 Bad Ems
Phone: +49 26 03/96 00 0
Fax: +49 26 03/96 00 50
www.hul.de



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