



WEINMANN
medical technology

 Saving Lives
with Ventilators

Safety. Less Stress. Efficiency.

VENTILATION MAKES A DIFFERENCE

Airway management and ventilation are amongst the most important and at the same time most difficult situations faced by the emergency medical services. Stress and significant physical and psychological strain are part of their everyday working lives. After all, when it is a matter of life and death, every move must be spot on. Manual ventilation may seem straightforward, but various studies show that it is difficult to do even with regular training. In extreme situations, ventilation must maintain the gas exchange in the lungs if the patient is unable to breathe on their own. Cardiopulmonary resuscitation is an exceptional situation whereby the quality of the ventilation is crucial and consistent ventilation can be life-saving. ¹





MECHANICAL VENTILATION: A BETTER ALTERNATIVE

Mechanical ventilation is a safe method not just for patients but also for you as the user. The ventilators from WEINMANN have been thought through down to the finest detail and offer maximum safety for emergency ventilation. They can be used in all areas of emergency medicine: from the ventilation of a narcotized person at the emergency site and patient transfers between hospitals through to cardiopulmonary resuscitation.

ADVANTAGES OF VENTILATORS

- Volume and pressure control: constant ventilation frequency, precise volume delivery and exact compliance with pressure limits
- Control function via monitoring of the ventilation parameters and visual and audible alarms
- Both invasive and non-invasive ventilation (NIV) possible in one device
- The strain of mechanical work is reduced
- The mask can be positioned tightly using two hands
- Resources are freed up for other life-saving activities
- CPR mode facilitates guideline-compliant cardiopulmonary resuscitation
- Avoidance of hypoventilation and hyperventilation thanks to precise setting and monitoring options





PATIENT SAFETY

RISKS OF BAG-VALVE-MASK VENTILATION

Studies confirm that bag-valve-mask ventilation often poses more risks than benefits. This is because it is technically demanding and requires a lot of skill and training. Even experienced emergency medical professionals are not always able to ventilate patients exactly as prescribed by international guidelines². These demand a constant ventilation volume and avoidance of pressure peaks in the airways. These often fluctuate greatly with manual ventilation³. If the ventilation parameters are not correct, the bag-valve mask does not issue an alarm, as is standard with ventilators.

TWO RESCUERS ARE REQUIRED

There is also the risk that it may not be possible to fit the mask tightly on the patient's face with one hand. This can cause a reduction in the ventilation volume, due to leakage, which may endanger the patient. Therefore the so-called two-rescuer technique may be necessary. The first person positions the mask tightly on the patient's face whilst the second person operates the bag-valve mask. The disadvantage is that: Two rescuers are required.

WHERE THE RISKS LURK

- Hypoventilation as a result of the mask not being fitted tightly
- Risk of aspiration from gastric insufflation
- Barotrauma with pressure peaks from excessively fast volume delivery
- Hyperventilation due to incorrect ventilation frequency
- Different sized respiratory volume

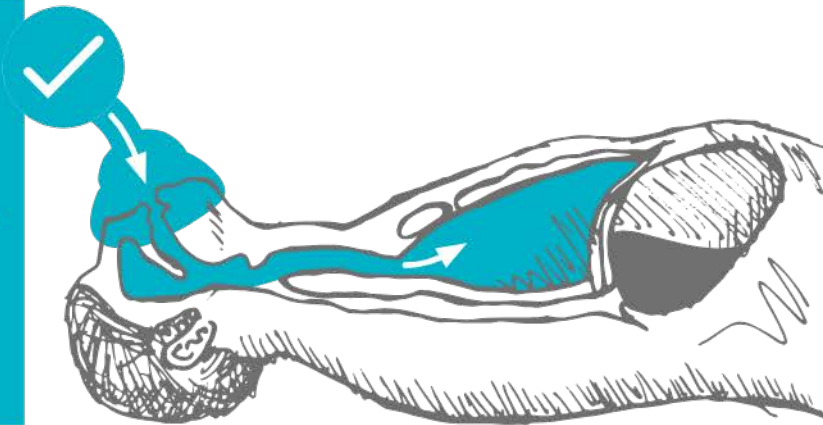
² Neth MR et al.: Ventilation in Simulated Out-of-Hospital Cardiac Arrest Resuscitation Rarely Meets Guidelines. *Prehosp Emerg Care*. 2021 Sep-Oct;25(5):712-720. doi: 10.1080/10903127.2020.1822481. Epub 2020 Oct 6. PMID: 33021857.

Lee HM et al.: Can you deliver accurate tidal volume by manual resuscitator? *Emerg Med J* 2008;25:632-634

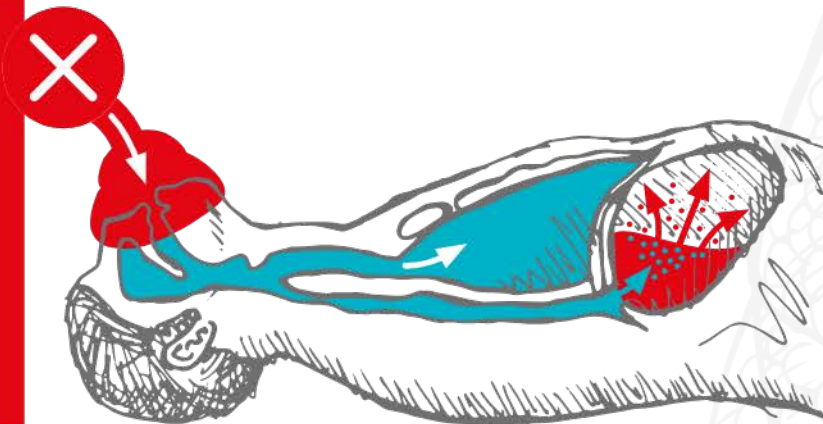
³ Becker HJ, Langhan ML. Can Providers Use Clinical Skills to Assess the Adequacy of Ventilation in Children During Bag-Valve Mask Ventilation? *Pediatr Emerg Care*. 2020 Dec;36(12):e695-e699. doi: 10.1097/PEC.0000000000001314. PMID: 29084068.



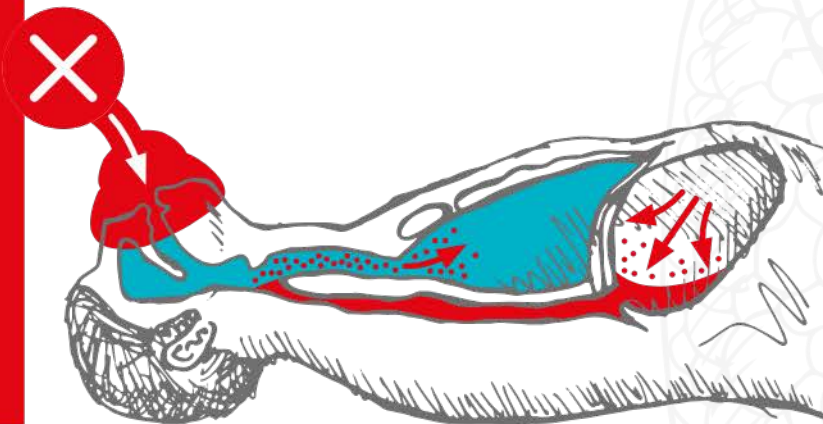
With a ventilation pressure
< approx. 20 mbar (depending
on the case) air is guided directly
into the airways.



Caution, aspiration!
With a ventilation pressure
> approx. 20 mbar (depending
on the case) overpressure builds
up causing gastric insufflation!



As a consequence of gastric
insufflation, the contents of the
stomach are regurgitated which
could cause the airways to become
blocked. There is a risk of
suffocation as well as the often
fatal delayed effect, aspiration
pneumonia.



RISK: GASTRIC INSUFFLATION

PREVENTING ASPIRATION

Ventilation with a bag-valve mask is not always sufficient. This is why too much volume is often delivered. This is not without its risks: Overpressure rapidly builds up and the risk of gastric insufflation increases. This can lead to regurgitation and aspiration of the stomach contents!

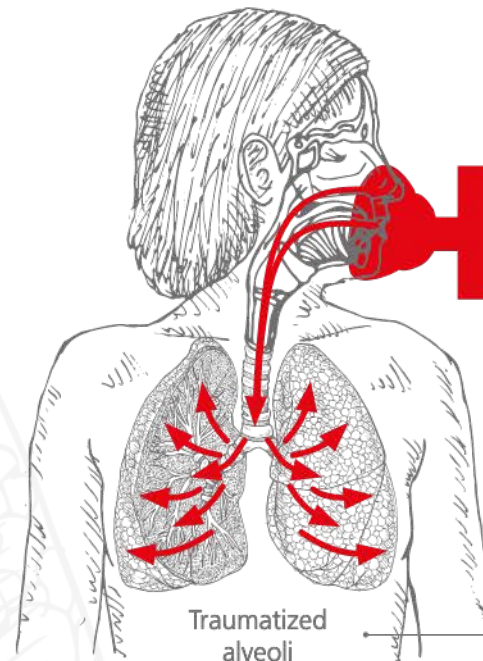
With mechanical ventilation this risk is reduced. This was confirmed by a study on a manikin with simulated circulatory arrest⁴: Whilst the lung tidal volume was comparable, the stomach tidal volume was considerably less with mechanical ventilation than with manual ventilation.

⁴ Stallinger A et al.: Effects of decreasing inspiratory flow rate during simulated basic life support ventilation of a cardiac arrest patient on lung and stomach tidal volumes. Resuscitation 2002 Aug;54(2):167-73

RISK: LUNG DAMAGE

AVOIDING PRESSURE PEAKS

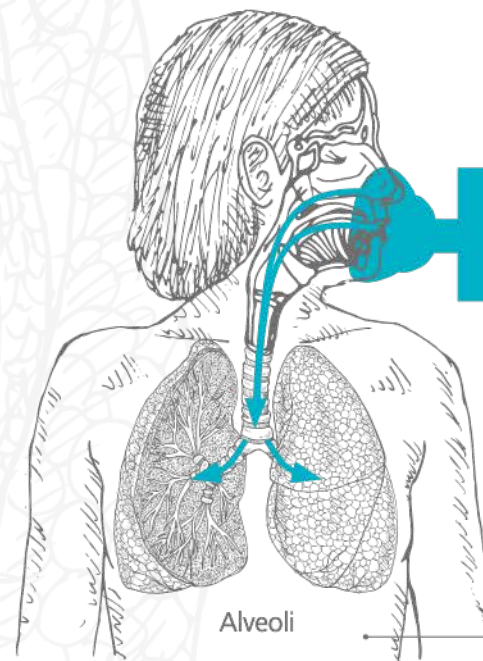
Excessively high ventilation pressures can lead to overinflation of the pulmonary alveoli and trigger barotrauma or volutrauma. Given the lack of monitoring, there is no pressure control with manual ventilation. Pressure is delivered by instinct. This results, in part, in considerably higher peak pressures than a ventilator would generate⁵. Moreover, emergency medical professionals use different techniques – and thus apply more or less pressure to the bag. With ventilators, on the other hand, there is integrated pressure limitation to avoid pressure peaks.



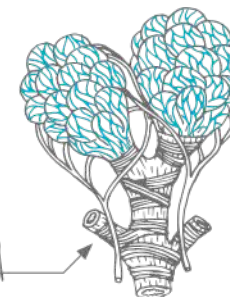
High risk of overpressure with manual ventilation



- ✗ High plateau pressures (barotrauma)
- ✗ High shear forces (atelectrauma)
- ✗ Progressive overinflation (volutrauma)
- ✗ Inflammation (biotrauma)



Ventilators guarantee continuous pressure control



- ✓ Avoidance of pressure peaks thanks to integrated pressure limitation
- ✓ Pressure control thanks to monitoring
- ✓ Uniform pressure delivery
- ✓ Constant over a longer ventilation period



RISK: HYPER- VENTI- LATION

*Intubation is not
absolutely necessary*

RISK: AIRWAY ACCESS

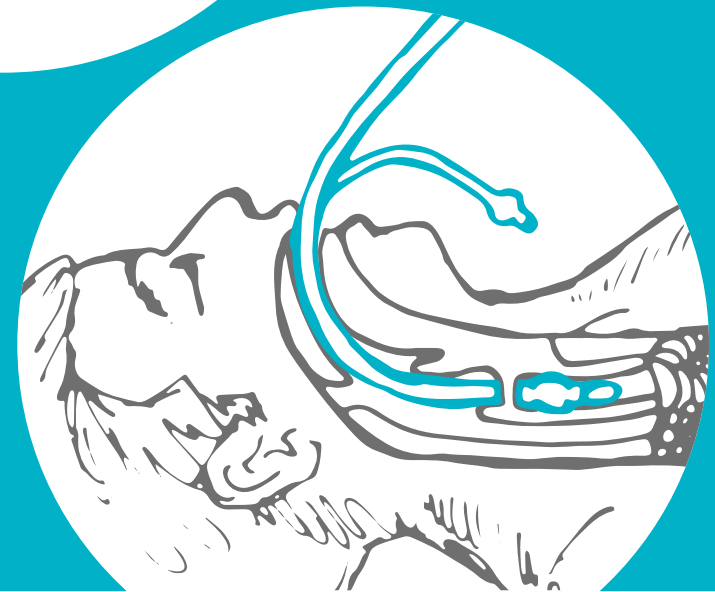
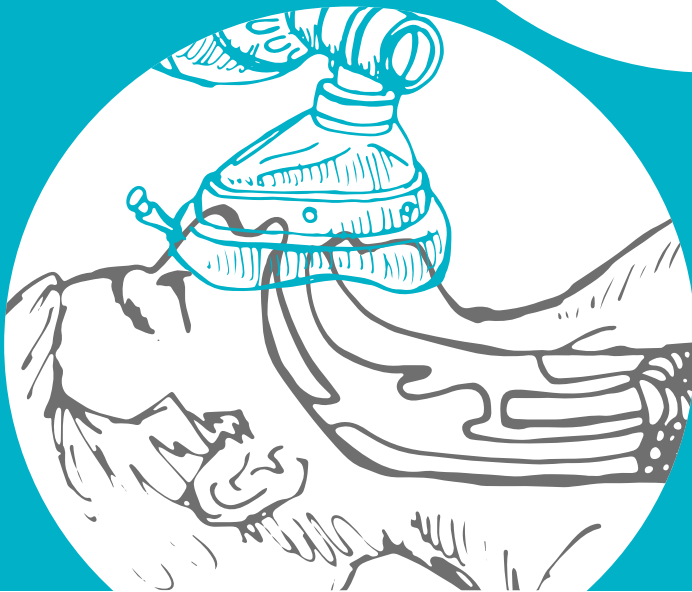
There is no doubt that intubation is the gold standard with mechanical ventilation as it protects against aspiration. However, safe intubation in prehospital treatment is associated with risks and failed attempts with extended hypoxia times are not the exception. This is why many emergency medical services opt for alternatives. If you wish to avoid intubation, but still desire controlled ventilation, you can also use our ventilators with less invasive techniques such as a laryngeal mask, tracheal tube or ventilation mask.



Possible AIRWAY ACCESS

Whether a ventilation mask, supraglottic airway aids or an endotracheal tube, select the type of airway access which is best suited to your patient and the specific emergency. It goes without saying that the ventilators from WEINMANN are compatible with all three types of airway management.

Figures showing the different types of airway access from left to right:
Ventilation mask,
laryngeal mask and
endotracheal tube.





USER SAFETY

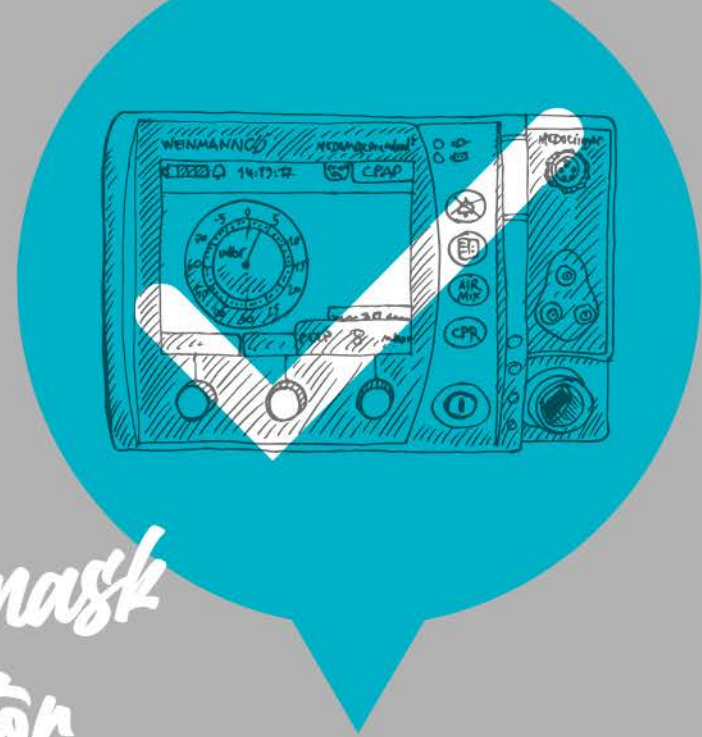
Free your head and your hands

Not only patients but also you as an EMS field provider benefit from mechanical ventilation. After all, ventilators offer enhanced safety: Visual and audible alarms, clearly visible measurement and setting parameters as well as constant ventilation parameters ensure consistent and guideline-compliant ventilation of patients. Some of the devices from WEINMANN also feature special functions such as CPR* and RSI** modes. The MEDUtrigger allows individual mechanical breaths to be triggered manually on the mask. This means that you can determine the timing of mechanical breaths very precisely.

Making the best use of resources

Mechanical ventilation also takes the strain, and not just in ergonomic terms. Whilst manual ventilation ties up one or even two people, mechanical ventilation of intubated patients leaves you both hands free for other important tasks. Valuable human resources can be put to the best possible use – this greatly improves the workflow and frees up capacity for other life-saving measures or documentation.

* cardiopulmonary resuscitation
** rapid sequence induction



Bag valve mask or ventilator

Arguments against bag mask ventilation:

- Risk of hypoventilation or hyperventilation due to incorrect ventilation frequency
- Danger of pressure peaks if volume is delivered too quickly
- Ventilation volumes can fluctuate
- No alarm function
- At least one hand is required for bag compression
- Mechanical operation is tiring on long transport routes
- It is only possible to use one hand to position the mask or a second rescuer is necessary
- Ties up the resources of many highly-qualified personnel

Arguments in favor of mechanical ventilation:

- Compliance with international guidelines
- Avoidance of hypoventilation and hyperventilation thanks to a constant ventilation frequency and tidal volume
- Reduced risk of gastric insufflation through pressure limitation
- Comprehensive visual and audible alarm function
- Optimum tight positioning of the mask using two hands with MEDUtrigger
- The strain of mechanical work is reduced
- Resources are freed up for other activities
- Consistent ventilation when transporting patients

Make the right decision

For an informative overview of scientific study results, please refer to our white paper on mechanical ventilation.



MOBILE VENTILATORS FOR EMERGENCY CALLS AND PATIENT TRANSPORT



⚡ MEDUVENT Standard

MEDUVENT Standard is perfect for use at the emergency site and in all types of emergency vehicle. Its integrated blower and light weight make this device the perfect companion on an emergency call.

The ventilator provides volume and pressure-controlled ventilation for all situations as well as a safe and quick way to start the ventilation using its preset emergency modes or by inputting the patient's height. The MEDUtrigger also provides the option of manual ventilation as a substitute for bag-valve-mask ventilation.



⚡ MEDUMAT Standard²

MEDUMAT Standard² has numerous features to ensure maximum safety on emergency calls. The intuitive ventilator has a monitor with a large color display. This shows all key respiratory values quickly and clearly. The device also features an innovative ventilation mode for resuscitation - Chest Compression Synchronized Ventilation (CCSV). In the CCSV mode, a mechanical breath is administered in sync with each chest compression, thus providing additional support for the heart.

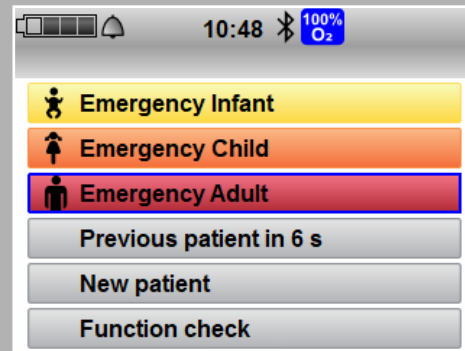


SIMPLE TECHNOLOGY

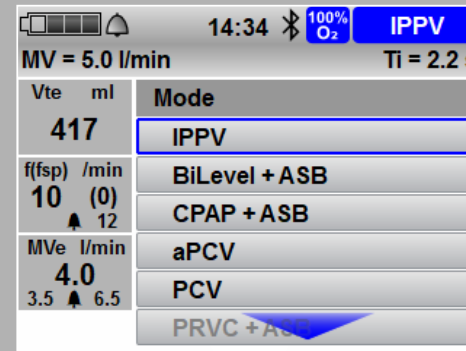
The ventilators from WEINMANN are easy to use: Emergency modes and setting of the sex and height of the patient offer rapid access to the correct parameter settings.

Ventilators guarantee the right ventilation frequency and keep this constant. Depending on the ventilation form, the ventilation pressure/ volume are also constant or are measured and displayed. This means hyperventilation and hypoventilation are avoided.

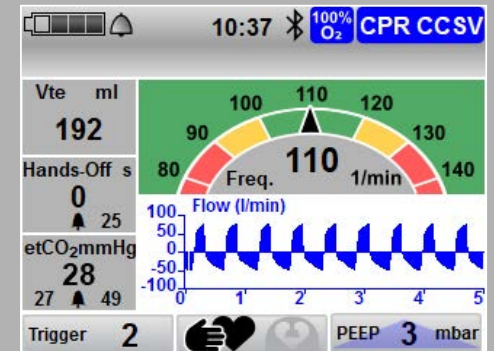
Better monitoring



Intuitive start screen



Various differentiated ventilation forms



Innovative CPR ventilation mode



 We
Simplify Saving
Lives

Contact
+49 40 88 18 96-0
+49 40 88 18 96-480 (fax)
info@weinmann-emt.de
weinmann-emergency.com

Headquarters
WEINMANN Emergency
Medical Technology GmbH + Co. KG
Frohbösestraße 12
22525 Hamburg • Germany

Center for Production,
Logistics and Service
WEINMANN Emergency
Medical Technology GmbH + Co. KG
Siebenstücken 14
24558 Henstedt-Ulzburg • Germany



China
Weinmann (Shanghai)
Medical Device Trading Co. Ltd.
+86 21 52 30 22 25
info@weinmann-emt.cn

UAE (Branch)
WEINMANN Emergency
Medical Technology GmbH + Co.KG
+971 432 100 31
info-dubai@weinmann-emt.com

France
WEINMANN Emergency
France SARL – Paris – Les Ulis
+33 1 69 41 51 20
info@weinmann-emt.fr

Singapore
Weinmann Singapore PTE, Ltd.
+65 62 50 09 49
info-singapore@weinmann-emt.sg

Spain
WEINMANN Emergency
Medical Technology GmbH + Co. KG
+34 653 50 95 59
info-spain@weinmann-emt.es

USA
Weinmann Emergency LP
+1 770-274-2417
info@weinmann-emergency.com