



HAMILTON-S1

The first Ventilation Autopilot



HAMILTON
MEDICAL

Intelligent Ventilation since 1983



We live for ventilation technology

We live for ventilation technology. Technology that helps caregivers improve the lives of their critically ill patients. We believe that innovation is essential to meet the demands of critical care. To us, innovation is about realizing visionary new ideas and continuously improving existing products, always maintaining the focus on safe, individualized ventilation, as well as ease of use.

We learn from our customers and from multi-disciplinary experts. And we invest in long-term research and development. We develop Intelligent Ventilation solutions: devices and consumables for the ventilation of all critically ill patients – from neonates to adults.

A handwritten signature in blue ink that reads "Jens Hallek".

Jens Hallek
President

A handwritten signature in blue ink that reads "Bob Hamilton".

Bob Hamilton
Member of the board

Meet the HAMILTON-S1

The HAMILTON-S1 is one of the most advanced mechanical ventilators with a number of unique features. It was the first ventilator featuring the "Ventilation Autopilot" INTELLiVENT®-ASV®.

- ✓ Automated control of the patient's ventilation and oxygenation with INTELLiVENT-ASV
- ✓ Real-time patient synchronization with IntelliSync+
- ✓ P/V Tool® Pro for lung assessment and recruitment
- ✓ Transpulmonary pressure measurement
- ✓ High flow oxygen therapy
- ✓ Integrated IntelliCuff® pressure controller
- ✓ Integrated HAMILTON-H900 humidifier control
- ✓ Adult, pediatric, and neonatal ventilation



Flexible device configuration

Customized solution

You can configure the HAMILTON-S1 in several different ways to customize the device for your environment. If using a trolley, you can mount the monitor either on top or in front of the ventilation unit. If the unit is positioned on a shelf, you can mount the monitor on top or to the side using the side-mount option. You can also adjust the orientation and angle of the monitor by turning and tilting it as required.

Optimal visibility

The 360°-visible alarm lamp on top of the HAMILTON-S1 monitor allows you to identify alarms easily. The optional nurse-call capability provides additional support for optimal alarm detection. The 15-inch touch screen was designed for smooth and fast operation. It also gives you an overview of the patient's current ventilation status at a quick glance and provides a reliable basis for therapy decisions.





Ease of use

In close cooperation with users and ventilation experts, our engineers have designed a user interface that is particularly intuitive. Switching between the HAMILTON-S1 and all other Hamilton Medical ventilators is easy because they are all operated according to the same principles.

The Ventilation Cockpit on the HAMILTON-S1 consolidates the monitoring data and displays it as intuitive graphics. These provide a quick overview of the patient's current ventilation status and provide a reliable basis for therapy decisions.



We gain time by using INTELLiVENT-ASV, which we can use to accomplish other important tasks that take place in an ICU, such as taking care of the patients and providing essential medical care.

Laurent Buscemi, ICU Nurse
Intercommunal Hospital Toulon, France



The Ventilation Cockpit

1 Main monitoring parameters

All of the main monitoring parameters and alarm limits at a glance. The large characters allow you to see them even from a distance.

2 Dynamic Lung

One quick look shows you tidal volume, lung compliance, resistance, and patient efforts/ triggers in real time. The lungs expand and contract in synchrony with the actual breaths.

3 Vent Status

The Vent Status panel displays six parameters related to the patient's dependence on the ventilator. When all values are in the weaning zone, the panel is framed in green, indicating that spontaneous breathing trials or extubation can be considered.

4 Direct access to main controls

Access and adjust the most important controls for the current mode directly on the main display.



Individualized, lung-protective ventilation

The features available on the HAMILTON-S1 help you to individualize your patient's ventilation and to implement a lung-protective ventilation strategy.

Adaptive, lung-protective ventilation with ASV

- ✓ Supports the earliest possible spontaneous breathing by the patient^{1, 2}
- ✓ Shortens the ventilation time in various patient groups^{1, 2}

Adaptive, lung-protective ventilation with INTELLiVENT-ASV

- ✓ Rated best among all evaluated modes in terms of capabilities relating to safety, comfort, and weaning³
- ✓ Follows the current recommendations for lung-protective ventilation in terms of tidal volumes and driving pressure⁴

Lung assessment and recruitment with the PV Tool Pro

- ✓ Hysteresis of the pressure/volume curve can be used for assessing the recruitability of the lung at the bedside⁵
- ✓ Has been shown to open the lung in the majority of patients with early ARDS⁶

Synchronization based on waveform analysis with IntelliSync+

- ✓ Waveform analysis is a reliable, accurate, and reproducible method for assessing patient-ventilator interaction⁷
- ✓ In terms of cycling, IntelliSync+ performs at least as well as ETS optimized by clinicians⁸

Automatic cuff pressure control with IntelliCuff

- ✓ Continuous cuff pressure control can decrease microaspiration and VAP^{9, 10}

Transpulmonary pressure measurement

- ✓ PEEP set based on transpulmonary pressure can improve compliance and oxygenation in ARDS patients¹¹
- ✓ Transpulmonary pressure measurement can avoid the use of ECMO in the most severe patients¹²

¹ Kirakli C. *Eur Respir J*. 2011 Oct;38(4):774-80

² Chen CW. *Respir Care*. 2011 Jul;56(7):976-83

³ Mireles-Cabodevila E. *Respir Care*. 2013 Feb;58(2):348-66. *Erratum in: *Respir Care*. 2013 Apr;58(4):e51

⁴ Arnal JM. *Intensive Care Med Exp* 2016, 4(Suppl 1):A602

⁵ Demory D. *Intensive Care Med*. 2008 Nov;34(11):2019-25

⁶ Borges JB. *Am J Respir Crit Care Med*. 2006 Aug 1;174(3):268-78

⁷ Mojoli F. *Intensive Care Med Exp* 2016, 4(Suppl 1):A1168

⁸ Mojoli F. *Intensive Care Med Exp* 2016, 4(Suppl 1):A1164

⁹ Lorente L. *Critical Care*. 2014;18(2):R77

¹⁰ Nseir S. *American Journal of Respiratory and Critical Care Medicine*. 2011;184(9):1041-1047

¹¹ Talmor D. *N Engl J Med*. 2008 Nov 13;359(20):2095-104

¹² Grasso S. *Intensive Care Med*. 2012 Mar;38(3):395-403



Adaptive Support Ventilation (ASV)

adjusts respiratory rate, tidal volume, and inspiratory time continuously depending on the patient's lung mechanics and effort. ASV adapts ventilation breath-by-breath, 24 hours a day, and from intubation to extubation.



Automated ventilation with INTELLiVENT-ASV

continuously controls the ventilation and oxygenation of the patient. It sets the minute ventilation, PEEP, and Oxygen based on the targets set by the clinician, and on physiological input from the patient. INTELLiVENT-ASV also provides tools to promote early, automated weaning (Quick Wean).



P/V Tool Pro for lung assessment and recruitment

can be used to assess lung recruitability and determine the recruitment strategy to apply. The P/V Tool Pro can also be used to perform a sustained inflation recruitment maneuver and measure the increase in lung volume.



IntelliSync+ keeps an eye on patient-ventilator synchrony

by continuously analyzing waveform shapes hundreds of times per second. This allows IntelliSync+ to detect patient efforts and cycling immediately, and initiate inspiration and expiration in real time. IntelliSync+ applies to invasive and noninvasive ventilation, regardless of the ventilation mode.



Transpulmonary pressure measurement

allows optimization of PEEP, tidal volume, and inspiratory pressure. Use it in combination with the P/V Tool Pro to assess lung recruitability more precisely and perform recruitment maneuvers.



IntelliCuff pressure controller

continuously measures and automatically maintains the user-set cuff pressure of an endotracheal or tracheostomy tube in real time.

Features and options



State-of-the-art ventilation modes



Adult, pediatric, and neonatal ventilation



Integrated high flow oxygen therapy



Integrated control for HAMILTON-H900 humidifier



Integrated pneumatic and optional Aerogen^S nebulizer



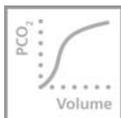
Integrated control for IntelliCuff pressure controller



Pulse oximetry (SpO₂ and pulse measurement)



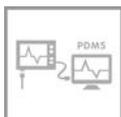
Heliox therapy



Mainstream (volumetric) and sidestream capnography



Continuous monitoring of driving pressure



Serial interface for connection to electronic patient data records and patient monitors



Configurable loops and trends



High-performance noninvasive ventilation (NIV)



Hot-swappable battery backup

From the ventilation specialist

E-learning

Hamilton Medical College provides free and open e-learning on mechanical ventilation and ventilators. Join at college.hamilton-medical.com.

Universal ventilator consumables

Our accessories and consumables are specially developed for the highest possible patient safety and ease of use. Choose between reusable and disposable parts according to your institutional policies.

Peripheral devices

Our ventilation portfolio includes an active humidifier, the HAMILTON-H900, as well as the automatic cuff pressure controller, IntelliCuff. Both devices may be used with all kinds of mechanical ventilators.





More information and free simulation software:
www.hamilton-S1.com



HAMILTON MEDICAL

Intelligent Ventilation since 1983

Manufacturer:

Hamilton Medical AG

Via Crusch 8, 7402 Bonaduz, Switzerland

☎ +41 58 610 10 20

info@hamilton-medical.com

www.hamilton-medical.com

689318.04

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