Hamilton Medical

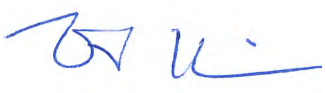
One solution, every situation

HAMILTON MEDICAL

Our passion: Intelligent Ventilation solutions

Ever since we were founded in 1983, our focus has been on supporting the frontline heroes of critical care - with ventilation technologies that are safe, effective, and lung-protective. And we want to lessen the load for those who make extraordinary efforts every day, helping seriously ill patients fight their way back to health.

That is why we are committed to helping medical teams deliver the best respiratory care - to anyone, anywhere. That commitment is present in everything we do.



Bob Hamilton
CEO

One solution, every situation

For all patient populations

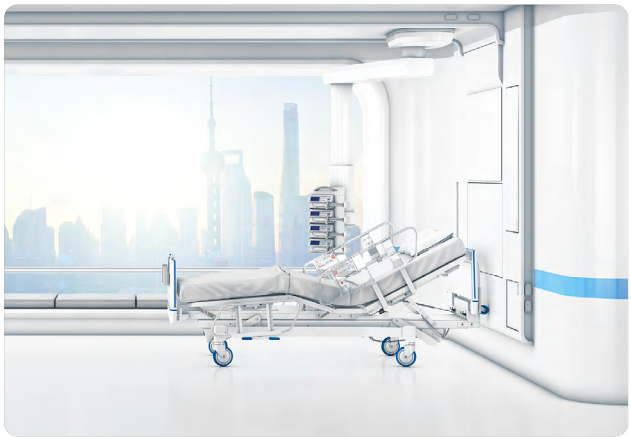
From neonates to adults, all our ventilators provide Intelligent Ventilation solutions for all patient populations, which can be used whenever mechanical ventilation is needed.

For all critical care environments

No matter where your patients are or where they need to go, our ventilators can stay by their side providing continuous ventilatory support: in the intensive care unit, in the emergency department, during an MRI procedure, or in any transport situation in or outside the hospital.

All modern and traditional ventilation modes

Whether your patients are intubated and passive, or noninvasively ventilated and active, our ventilators offer a wide range of advanced and traditional ventilation modes to meet all the needs of your ventilated patients, as well as to comply with the ventilation protocols of your hospital.



Ease of use

Gathering feedback directly from users and ventilation experts, our engineers crafted a user interface with ease of use and an intuitive design in mind. This streamlines the process of switching between Hamilton Medical ventilators, because all our devices are operated according to the same principles.

The Ventilation Cockpit consolidates the monitoring data into visually accessible graphics. These graphics provide a quick overview of the patient's current ventilation status and provide a reliable basis for therapy decisions.

“

The fact that the software is roughly the same between Hamilton Medical ventilators made it much easier for us to go from one ventilator to the other. The fact that it all flowed in a very similar fashion meant you did not need to learn for different ventilators. It was a huge advantage.

Frank Gladysz, Manager Respiratory Care Department
WHS Washington Hospital, Washington (PA), USA

The Ventilation Cockpit

1 Main monitoring parameters

All of the main monitoring parameters and alarms are visible at a glance.

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.

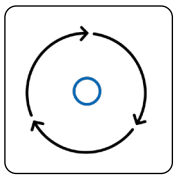
3 Vent Status

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

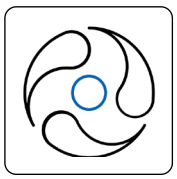
Access and adjust the most important controls for the current mode directly on the main display.

Intelligent Ventilation



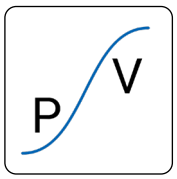
Adaptive Support Ventilation (ASV®)

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



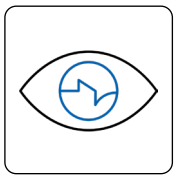
INTELLiVENT®-ASV

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 based on the physiologic input from the patient. Also, with the Quick Wean and the SBT feature, INTELLiVENT-ASV provides dynamic monitoring of patient conditions to evaluate the readiness to wean.



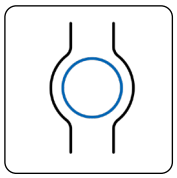
P/V Tool® for lung assessment and recruitment

P/V Tool provides a bedside method for assessing lung recruitability and carrying out recruitment maneuvers[1, 2, 3]. Additionally, you can use it to perform a sustained inflation recruitment maneuver and measure the increase in lung volume.



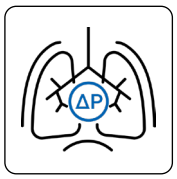
IntelliSync®+ keeps an eye on patient-ventilator synchrony

Continuously analyzing waveform shapes hundreds of times per second 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.



IntelliCuff® pressure controller

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



Transpulmonary pressure measurement

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

1. Maggiore SM, et. al. Am J Respir Crit Care Med. 2001 Sep 1;164(5):795-801.

2. Grasso S, et. al. Am J Respir Crit Care Med . 2005 May 1;171(9):1002-8.

3. Demory D, et. al. Intensive Care Med. 2008 Nov;34(11):2019-25.

Individualized, lung-protective ventilation

The features available on our ventilators 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[4, 5]
- ✓ Shortens the ventilation time in various patient groups[4, 5]

Adaptive, lung-protective ventilation with INTELLiVENT-ASV

- ✓ Clinical studies have shown that INTELLiVENT-ASV selects safe driving pressure[6], safe mechanical power[6], and safe tidal volume[7]
- ✓ Requires fewer manual adjustments than conventional ventilation and thus supports in lowering the workload for the healthcare team[8, 9, 10]

Lung assessment and recruitment with the P/V Tool

- ✓ Hysteresis of the pressure/volume curve can be used for assessing the recruitability of the lung at the bedside[3]
- ✓ Has been shown to open the lung in the majority of patients with early ARDS[11]

Synchronization based on waveform analysis with IntelliSync+

- ✓ Waveform analysis is a reliable, accurate, and reproducible method for assessing patient-ventilator interaction[12]
- ✓ In terms of cycling, IntelliSync+ performs at least as well as ETS optimized by clinicians[13]

Automatic cuff pressure control with IntelliCuff

- ✓ Continuous cuff pressure control can reduce microaspiration and VAP[14, 15]

Transpulmonary pressure measurement

- ✓ Setting PEEP based on transpulmonary pressure improved compliance and oxygenation in ARDS patients[16]
- ✓ A ventilation strategy guided by transpulmonary pressure may increase the proportion of patients with severe ARDS successfully weaned from ECMO[17]

3. Demory D, et. al. Intensive Care Med. 2008 Nov;34(11):2019-25.

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

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

6. Arnal JM, Saoli M, Garnero A. Heart Lung. 2020;49(4):427-434.

7. Lellouche F, Bouchard PA, Simard S, L'Her E, Wysocki M. Intensive Care Med. 2013;39(3):463-471.

8. Beijers AJ, Roos AN, Bindels AJ. Intensive Care Med. 2014;40(5):752-753.

9. Bialais E, Wittebole X, Vignaux L, et al. Minerva Anestesiol. 2016;82(6):657-668

10. Fot EV, Izotova NN, Yudina AS, Smetkin AA, Kuzkov VV, Kirov MY. Bypass Grafting. Front Med (Lausanne). 2017;4:31. Published 2017 Mar 21.

11. Borges JB, et. al. Am J Respir Crit Care Med. 2006 Aug 1;174(3):268-78.

12. Mojoli F, et. al. Intensive Care Medicine Experimental 2016, 4(Suppl 1):A1168.

13. Mojoli F, et. al. Intensive Care Medicine Experimental 2016, 4(Suppl 1):A1164.

14. Lorent, et. al. Crit Care. 2014 Apr 21;18(2):R77.

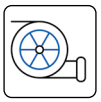
15. Nseir S, et. al. Am J Respir Crit Care Med. 2011 Nov 1;184(9):1041-7.

16. Talmor D, Sarge T, Malhotra A, et al. N Engl J Med. 2008;359(20):2095-2104.

17. Wang R, Sun B, Li X, et al. Crit Care Med. 2020;48(9):1280-1288.

Available options and features

State-of-the-art ventilation modes



High-performance turbine

Integrated high flow nasal cannula therapy

Integrated control for IntelliCuff pressure controller

Integrated pneumatic and optional Aerogen§ nebulizer

Integrated control for HAMILTON-H900 humidifier

Pulse oximetry
(SpO2 and pulse measurement)

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

Mainstream (volumetric) and sidestream capnography

On-screen help for alarm troubleshooting

Continuous monitoring of driving pressure

Configurable loops and trends

CPR ventilation

Hot-swappable battery backup

Speaking valve mode

Ventilator comparison

Feature / Option	HAMILTON-C6	HAMILTON-C3	HAMILTON-C1	HAMILTON-T1	HAMILTON-MR1
ASV mode	✓	✓	✓	✓	✓
INTELLiVENT-ASV mode	O	O	O	O	x
Neonatal ventilation	O	O	O	O	O
High flow nasal cannula therapy	O	O	O	O	O
Noninvasive ventilation	✓	✓	O	O	O
DuoPAP / APRV mode	✓	✓	O	O	O
Loops / trends	✓	✓	O	O	O
Pulse oximetry	O	O	O	O	x
Volumetric capnography	O	O	O	O	x
Sidestream capnography	O	O	O	O	x
Integrated IntelliCuff	O	O	x	x	x
P/V Tool	O	O	x	x	x
IntelliSync+	O	x	x	x	x
Transpulmonary pressure measurement	✓	x	x	x	x
Monitoring of driving pressure	✓	x	x	x	x
CPR ventilation	x	x	✓	✓	✓
Integrated pneumatic nebulizer	✓	✓	✓	✓	✓
Integrated Aerogen nebulizer	O	x	x	x	x
HAMILTON-H900 humidifier control	O	x	O	O	x
Speaking valve mode	x	x	O	O	O
High-performance turbine	✓	✓	✓	✓	✓
Hot-swappable battery	x	O	x	O	x
On-screen troubleshooting	✓	✓	x	x	x
Compatibility with Night vision goggles (NVG)	x	x	x	O	x
NBC filter adapter	x	x	x	O	x
MR-Compatibility	x	x	x	x	✓
Detachable monitor	✓	x	x	x	x

Standard: ✓ Option: O Not available: x

Our ventilators

The next generation of intelligent ICU ventilators. HAMILTON-C6

- For complex patients in all ICU settings
- For long-term ventilated patients where lung protection is of paramount importance
- INTELLiVENT-ASV, IntelliSync+ and IntelliCuff ensure constant lung-protective ventilation 24/7
- Independence from compressed air and easy maneuverability allow for patient transport and early mobilization
- Many therapy options such as NIV and high flow nasal cannula therapy

The compact high-end ventilator.
HAMILTON-C3

- A compact high-end ventilator
- Built for environments with limited space, but without compromising advanced ventilation modes and sophisticated features for lung assessment
- Hot-swappable batteries and independence from compressed air allow for mobility during intrahospital transport

Small on size, big on performance.
HAMILTON-C1

- Versatile all-rounder
- Offers a wide range of ventilation therapy options, including adaptive ventilation modes, noninvasive ventilation and high flow nasal cannula therapy
- Designed for challenging environments like emergency rooms, where the patient's condition can change rapidly and easy transportability is a must

Intelligent Ventilation from the ICU to MRI.

HAMILTON-MR1

- ✓ Fully featured ICU ventilator capable of withstanding a magnetic field strength of up to 50 mT
- ✓ For critical care departments that need to ventilate patients in the MRI suite
- ✓ Combines reliability and high performance with patient-adaptive modes that support advanced lung-protective strategies
- ✓ High degree of mobility

Intelligent transport ventilation.

HAMILTON-T1

- ✓ Combines the functionality of a fully featured ICU ventilator with the compactness and ruggedness required for transport
- ✓ Enables you to provide high-end ventilation therapy to all patient groups during transport
- ✓ Approved for use in ambulances, helicopters and airplanes
- ✓ Hot-swappable batteries and independence from compressed air allow for prolonged patient transports

Our accessories

Advanced humidification.
HAMILTON-H900

- All-in-one heated dual limb breathing circuit sets
- Integrated temperature probe
- Temperature and humidity settings can be adjusted to suit the individual patient and environmental conditions
- Ventilator-controlled operation
- Intuitive alarm messages

The clever way to manage cuff pressure.
IntelliCuff

- Provides continuous monitoring and control of cuff pressure
- Generates an alarm and maintains the desired cuff pressure in the case of a damaged cuff
- Can contribute to reducing the risk of ventilator-associated pneumonia (VAP)[16]

14. Lorent, et. al. Crit Care. 2014 Apr 21;18(2):R77.

From the ventilation specialist

For lifelong learners - The Hamilton Medical Academy

We are passionate about investing in the growth and development of our customers and the wider ventilation community. That is why we offer free and open e-learning modules on mechanical ventilation and ventilators through our e-Academy.

We also understand the importance of seamlessly integrating our devices into your environment. That is why our Academy team is happy to create customized training programs tailored to your organization's needs. With our VenTrainer app, learning paths, tests, certification, user- and group-learning management, and more, we are here to help you make the most of your Hamilton Medical devices.

Join our e-Academy community today and unlock the full potential of mechanical ventilation and your ventilators. Visit us at **www.hamilton-medical.com/Academy**

For the little things in between - Our ventilator consumables

We know that patient safety and ease of use are of the utmost importance. That is why we have developed a comprehensive range of accessories and consumables that are specifically designed with these priorities in mind.

Whether you prefer reusable or disposable parts, browse our full portfolio and select the accessories and consumables that meet your institution's needs: **www.hamilton-medical.com/e-catalog**

Last but not least

Revolutionizing mechanical ventilation

Since the very beginning, we have invested a great deal of time and money into researching and developing groundbreaking technologies. We are inspired to develop mechanical ventilation further with new ideas, and innovative approaches, and in close collaboration with ventilation experts from around the world.

We make way for innovation, and the results speak for themselves. Over the last few decades, we have revolutionized mechanical ventilation. Not just once, but many times. And we will keep on doing so.

Sustainability @Hamilton Medical

Economic success is important for every company, but so is the future. We think long-term and follow the principles of social justice and ecological responsibility. For us, sustainability is not just about buildings and materials, it is also about relationships. Whether it's with our employees and customers, our partners and suppliers, or the environment and society, long-term relationships play a key role.

To learn more visit: **www.hamilton-medical.com/sustainability**

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

Manufacturer:

Hamilton Medical AG

Via Crusch 8, 7402 Bonaduz, Switzerland

+41 (0) 58 610 10 20

info@hamilton-medical.com

www.hamilton-medical.com

Subsidiary:

Hamilton Medical UK Ltd.

Unit J6 Fulford Drive, Minworth, Sutton Coldfield, B76 1DJ

+44 1212729280

info@hamilton-medical.com

www.hamilton-medical.com

ELO20240502N.00