



# Hamilton Medical

One solution. Every situation.



Swiss  
Quality

**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.

Jens Hallek  
President

Bob Hamilton  
Member of the board

## One solution. Every situation.

### For all patient populations

All Hamilton Medical ventilators provide Intelligent Ventilation solutions for all patient populations from neonates to adults, which can be used for almost any patient condition where mechanical ventilation is needed.

### For all critical care environments

No matter where your patients are or where they need to go, Hamilton Medical 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, Hamilton Medical ventilators offer a wide range of advanced and traditional ventilation modes to meet all the needs of your ventilated patients, as well as comply with the ventilation protocols of your hospital.



## Ease of use

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

The Ventilation Cockpit 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.

“

I would recommend the Hamilton Medical ventilators primarily due to the transferability of their operating platform. All ventilators have basically the same user interface, just in a different case. That makes the training of the staff very efficient.

Thomas Berlin, Director of Respiratory Care  
Florida Hospital, Orlando (FL), USA



# 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.





### 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.



### 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. It 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.



### IntelliCuff® pressure controller

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



### 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 to perform recruitment maneuvers.

## Individualized, lung-protective ventilation

The features available on the Hamilton Medical 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<sup>1,2</sup>
- ✓ Shortens the ventilation time in various patient groups<sup>1,2</sup>

### Adaptive, lung-protective ventilation with INTELLiVENT-ASV

- ✓ Rated best among all evaluated modes in terms of capabilities relating to safety, comfort, and weaning<sup>3</sup>
- ✓ Follows the current recommendations for lung-protective ventilation in terms of tidal volumes and driving pressure<sup>4</sup>

### Lung assessment and recruitment with the P/V Tool Pro

- ✓ Hysteresis of the pressure/volume curve can be used for assessing the recruitability of the lung at the bedside<sup>5</sup>
- ✓ Has been shown to open the lung in the majority of patients with early ARDS<sup>6</sup>

### Synchronization based on waveform analysis with IntelliSync+

- ✓ Waveform analysis is a reliable, accurate, and reproducible method for assessing patient-ventilator interaction<sup>7</sup>
- ✓ In terms of cycling, IntelliSync+ performs at least as well as ETS optimized by clinicians<sup>8</sup>

### Automatic cuff pressure control with IntelliCuff

- ✓ Continuous cuff pressure control can decrease microaspiration and VAP<sup>9, 10</sup>

### Transpulmonary pressure measurement

- ✓ PEEP set based on transpulmonary pressure can improve compliance and oxygenation in ARDS patients<sup>11</sup>
- ✓ Transpulmonary pressure measurement can avoid the use of ECMO in the most severe patients<sup>12</sup>

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. Crit Care. 2014 Apr 21;18(2):R77. | 10 Nseir S. Am J Respir Crit Care Med. 2011 Nov 1;184(9):1041-7. | 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.

## Available options and features



State-of-the-art ventilation modes



High-performance turbine



Integrated high flow oxygen therapy



Integrated control for IntelliCuff pressure controller



Integrated pneumatic and optional Aerogen<sup>S</sup> nebulizer



Integrated control for HAMILTON-H900 humidifier



Pulse oximetry (SpO<sub>2</sub> 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



Tube Resistance Compensation (TRC)



Heliox therapy



IntelliTrig leak compensation for NIV and invasive ventilation



Speaking valve mode



Hot-swappable battery backup



# Ventilator comparison

Feature / Option	HAMILTON-S1	HAMILTON-G5	HAMILTON-C6	HAMILTON-C3	HAMILTON-C1	HAMILTON-C1 neo	HAMILTON-T1	HAMILTON-MR1
ASV mode	✓	✓	✓	✓	✓	X	✓	✓
INTELLiVENT-ASV mode	✓	○	○	○	X	X	X	X
Neonatal ventilation	○	○	○	○	○	✓	○	○
High flow oxygen therapy	✓	○	○	○	○	○	○	○
Volume support	✓	✓	X	X	X	X	X	X
Noninvasive ventilation	✓	✓	✓	✓	○	○	○	○
DuoPAP / APRV mode	✓	✓	✓	✓	○	○	○	○
Loops / Trends	✓	✓	✓	✓	○	○	○	○
Pulse oximetry	✓	○	○	○	○	○	○	X
Volumetric capnography	✓	○	○	○	○	○	○	X
Sidestream capnography	○	○	○	○	○	○	○	X
Integrated IntelliCuff	✓	○	○	○	X	X	X	X
P/V Tool Pro	✓	○	○	○	X	X	X	X
Pneumatic nebulizer	✓	✓	✓	✓	✓	X	✓	✓
Aerogen nebulizer	○	○	○	X	X	X	X	X
HAMILTON-H900 humidifier control	○	○	○	X	X	X	X	X
Heliox	○	○	X	X	X	X	X	X
Transpulmonary pressure measurement	✓	✓	✓	X	X	X	X	X
Monitoring of driving pressure	✓	○	✓	X	X	X	X	X
IntelliTrig	✓	✓	✓	✓	✓	✓	✓	✓
IntelliSync+	✓	○	○	X	X	X	X	X
High-performance turbine	X	X	✓	✓	✓	✓	✓	✓
Hot-swappable battery	○	○	X	○	X	X	○	X
On-screen troubleshooting	X	X	✓	✓	X	X	X	X
Speaking valve mode	X	X	X	X	○	X	○	○
Night vision goggles option (NVG)	X	X	X	X	X	X	○	X
NBC filter adapter	X	X	X	X	X	X	○	X
MR-Compatibility	X	X	X	X	X	X	X	✓
Detachable monitor	✓	✓	✓	X	X	X	X	X

Standard: ✓    Option: ○    Not available: X

## Our ventilators and peripheral devices



### HAMILTON-S1

- ✓ For complex patients in all ICU settings
- ✓ For long-term ventilated patients where lung protection is of paramount importance
- ✓ Comprehensive monitoring package
- ✓ State-of-the-art diagnostic tools for lung assessment
- ✓ Additional therapy options such as Heliox and high flow oxygen therapy
- ✓ All features and options included

### HAMILTON-G5

- ✓ For complex patients in all ICU settings
- ✓ For long-term ventilated patients where lung protection is of paramount importance
- ✓ Comprehensive monitoring package
- ✓ State-of-the-art diagnostic tools for lung assessment
- ✓ Additional therapy options such as Heliox and high flow oxygen therapy
- ✓ Customizable option package





## 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 oxygen therapy

## HAMILTON-C3

- ✓ A compact high-end ventilator
- ✓ For environments in which space is limited, but no compromise may be made in terms of advanced ventilation modes and sophisticated features for lung assessment
- ✓ Hot-swappable batteries and independence from compressed air allow for mobility during intrahospital transport





## HAMILTON-C1

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

## HAMILTON-C1 neo

- ✓ Versatile neonatal ventilator
- ✓ Combines invasive and noninvasive modes with the additional options of nCPAP and high flow oxygen therapy
- ✓ Its compact design makes it an ideal companion for your smallest patients in various environments such as the delivery room, intensive care unit, and emergency ward, as well as during intrahospital transport





## HAMILTON-MR1

- ✓ Fully featured ICU ventilator able to be used at a magnetic field strength of up to 50 mT
- ✓ For any critical care department that needs 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

## 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





## HAMILTON-H900 humidifier

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

## IntelliCuff pressure controller

- ✓ 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)<sup>9</sup>



## From the Swiss ventilation specialist

### E-learning

Hamilton Medical College provides free and open e-learning on mechanical ventilation and ventilators. Join at [college.hamilton-medical.com](https://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.

### Swiss Quality and social responsibility

In the Hamilton Medical production facilities in Switzerland, quality and reliability are of the utmost importance. To ensure the highest quality standards, all Hamilton Medical ventilators and proprietary components are produced in-house. Hamilton Medical is committed to environmental protection by following and even surpassing the stringent Swiss regulations.





More information and free software simulations:  
[www.hamilton-medical.com](http://www.hamilton-medical.com)



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Intelligent Ventilation since 1983

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