

HAMILTON·G5

Intelligent Ventilation



More safety for your patients

HAMILTON
MEDICAL

HAMILTON-G5



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Help save 100,000 lives!

Errors in health care in the USA alone cause up to 98,000 deaths every year.¹ In response, the Institute of Health Care Improvement (IHI) has launched the 100,000 Lives Campaign, an initiative to improve patient care and prevent avoidable deaths.²

Start changes in your ICU

The 100,000 Lives Campaign and other initiatives focus on changes that can be implemented in any hospital – and particularly in ICUs. According to the IHI, “Intensive care is not only complex, it is also expensive... Errors occur in ICUs at unacceptable rates”.³ A number of initiatives focus on critical care, such as the Ventilator Bundle (100,000 Lives campaign, IHI).

HAMILTON-G5 technology supports you

As a manufacturer of ICU ventilators, it is our duty to support these initiatives. Other high-risk industries such as aviation and nuclear power have embraced automation and user interface design.⁴ The HAMILTON-G5 is the first ventilator to provide:

- a new Ventilation Cockpit that is designed to improve safety through intuitive operation and monitoring
- proven closed-loop ventilation that automatically applies lung-protective strategies, reduces the risk of operator error, and promotes early weaning

The HAMILTON-G5 was designed to provide Intelligent Ventilation, delivering:

- superior performance in complex environments
- improved patient outcomes
- reduced costs

¹ Kohn LT et al. To err is human: a safer health system. National Academy Press; Washington DC, 2000.

² <http://www.ihl.org/IHI/Programs/Campaign/> [Status: Oct. 2006]

³ <http://www.ihl.org/IHI/Programs/CollaborativeLearning/Implementing-an-idealizedModelforCriticalCare.htm> [Status: Oct. 2006]

⁴ Drews FA, Westenskow DR. The right picture is worth a thousand numbers: data displays in anesthesia. Hum Factors. 2006 Spring;48:59-71.

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Normal compliance and resistance with patient trigger

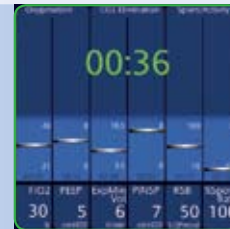


Low compliance (stiff lung) and medium resistance

Understand lung mechanics

The Dynamic Lung expands and contracts in synchrony with actual breaths. It visualizes in real-time:

- tidal volume
- lung compliance
- resistance
- patient activity



Low ventilatory support – Consider taking the patient off the ventilator.



High ventilatory support

Reduce complexity in your ICU

Aren't a dozen ventilation modes more confusing than helpful? Aren't there already more monitoring parameters available than most users ever need? Clearly, ventilators need to be simpler to use. HAMILTON MEDICAL has responded with the HAMILTON-G5: the first mechanical ventilator designed from the ground up for ease of use.

See all important information at a glance

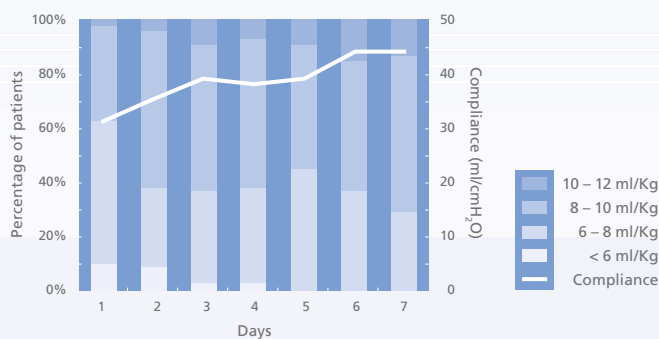
Monitoring in mechanical ventilation means curves, loops, numbers and more numbers. But what do they tell us about the patient's condition? The HAMILTON-G5 is the first ventilator to provide a Ventilation Cockpit that visualizes the patient's respiratory mechanics and ventilatory support in an intuitive way.

Provide patient-centered care with fewer resources

Unlike conventional modes, which require you to set many parameters, closed-loop ventilation with Adaptive Support Ventilation (ASV) requires attention to just one: minute ventilation.

Studies show that ASV

- ventilates virtually all intubated patients – whether active or passive and regardless of their lung disease¹
- requires less user interaction, adapts to patient's breathing activity more frequently, and causes fewer alarms²
- adapts to changes in the patient's lung mechanics over time³



ASV adapts to lung mechanics by automatically applying lower tidal volumes in ARDS patients.³ The graph above shows the changing tidal volumes applied in ARDS patients from onset to day 7 depending on compliance.

¹ Arnal JM et al. Int Care Med 2004;30:84.

² Petter AH et al. Anesth Analg 2003;97:1743-50.

³ Arnal JM et al. Int Care Med 2006;32: 120.

Know when to consider taking the patient off the ventilator

The Vent Status panel gives you a visual representation of 6 parameters related to the patient and the ventilatory support, grouped into:

- oxygenation
- CO₂ elimination
- patient activity

Since the panel is user-configurable, it helps you enforce your ICU's weaning protocol.

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Safely set PEEP

The automated P/V Tool uses a simple and repeatable method to find best PEEP, based on respiratory mechanics. It also enables sophisticated lung recruitment maneuvers and therapy assessment.

Adapt lung recruitment

With the P/V Tool you can adapt lung recruitment maneuvers to your patient.

Monitor CO₂ (Option)

Through the combination of HAMILTON MEDICAL's proximal flow sensing and CO₂ measurement, the HAMILTON-G5 allows not only time-based, but also volume-based, capnography, expanding the use of CO₂ measurement.

Improve patient outcome

In a root cause analysis of deaths or injuries related to long-term ventilation, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) found inadequate orientation/training and communication breakdown between staff members to be by far the most important causes.¹

Increase safety of operation

The Ventilation Cockpit plays a crucial role in simplifying the operation of the ventilator and the interpretation of monitored data. In addition, the specially designed alarm lamp at the top of the unit ensures that an alarming ventilator is immediately identified, without the need to look at the screen.

Ventilate safely with ASV

ASV employs lung-protective strategies to minimize complications from AutoPEEP and resultant volutrauma and barotrauma. ASV also prevents apnea, tachypnea, excessive dead space ventilation, and excessively large breaths. ASV guides the patient in a favorable breathing pattern, avoiding potentially detrimental patterns, from fully supported ventilation to extubation.

An international multicenter study further shows that ASV provides ventilation at least as safely and effectively as international ventilation experts using conventional modes.²

Improve patient assessment

Two options available for the HAMILTON-G5 help you further improve patient assessment:

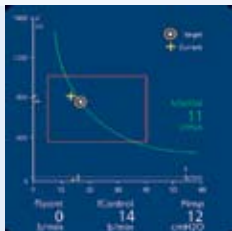
- The P/V Tool provides the only way to safely set PEEP and tidal volumes in patients with the most severe conditions
- Optional mainstream CO₂ measurements provide both time- and volume-based capnograms as well as dead space measurement, allowing you to monitor correct ventilation of the patient



¹ Preventing ventilator-related deaths and injuries. Sentinel Event Alert. 2002 Feb 26:1-3.

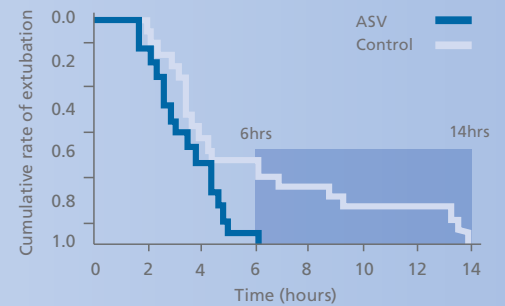
² Iotti GA et al. Int Care Med 2005;31:192.

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Understand changes in the patient and how ASV reacts

The ASV target graphics screen shows how the adaptive lung controller moves toward its targets. It shows both the target and actual parameters for tidal volume, frequency, pressure, and minute ventilation.



Reduce costs

Critical care is expensive – and so is ventilation. In the USA, each extra day on the ventilator costs an additional \$1,522.¹ And the risk of ventilator-associated pneumonia compounds these costs: a study showed that preventing just one case of VAP can save \$57,000.²

The HAMILTON-G5 lets you optimize clinical resources and skills while reducing cost of ownership and management overhead. And most importantly, it can help you reduce the patient's time on the ventilator.

Know when to consider taking the patient off the ventilator

With the Ventilation Cockpit's Vent Status panel you get an intuitive visualization of the most important parameters and settings related to patient-ventilator dependency. This helps you decide when to take the patient off the ventilator.

Studies have shown that notifying caregivers about the patient's recovery from respiratory failure can significantly reduce the duration and total cost of ventilation.³

Start weaning at intubation

The closed-loop ventilation system ASV automatically promotes free breathing for patients in all ventilation modes and phases. It encourages spontaneous activity right from the start of ventilation and promotes weaning from first deployment. Studies show the results: shorter ventilation times (see graph).⁴

Reduce training costs

The HAMILTON-G5's intuitive interface simplifies ventilator setup. That translates into easy training and less chance of operator error.

Reduce time on the ventilator by over 50%

ASV facilitates shorter times on the ventilator: 6 hours with ASV as compared to 14 hours with conventional ventilation.⁴

¹ Dasta JF et al. Crit Care Med. 2005 Jun;33:1266-71.

² Cocanour CS et al. Surg Infect. 2005 Spring;6:65-72.

³ Ely W et al. N Engl J Med. 1996 Dec 19;335:1864-9.

⁴ Sulzer CF et al. Anesthesiology. 2001 Dec;95:1339-45.

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Touchscreen and one-knob operation

You can operate the HAMILTON-G5 with a touchscreen or with its single knob. Backlit hard keys simplify night-time use.

Alarm lamp

Even when you are at a distance or when several devices are operating in the same room, you can immediately identify an alarming ventilator by the alarm lamp at the top.

Interface for storage media

Do you need a screenshot for a presentation or to capture the patient's status? Simply press the Print screen key and your screenshot will be saved to the external storage media – for easy transfer and viewing on a PC.

DVI interface with VGA output

When you need the HAMILTON-G5 for training or a presentation, the standard DVI interface lets you connect the ventilator to a flat panel display or a digital projector.

Serial interface for PDMS or patient monitor

The optional serial RS-232 interface provides two ports for connection to hospital monitors and Patient Data Management Systems (PDMS).

Extended battery backup option

With the extended battery option, your trolley-mount ventilator can run for an indefinite time on hot-swappable batteries. Each battery affords one hour of operating time, augmenting the one hour of power provided by the standard internal battery.



If you want to know more

Beside its unique features, the HAMILTON-G5 includes everything you expect from a high-end ventilator:

- a choice of ventilation modes for invasive and noninvasive ventilation
- an extensive monitoring package
- the ability to ventilate adult, pediatric, and neonatal patients

This brochure is not designed to give you an exhaustive overview of all the features and functions of the HAMILTON-G5. You will find detailed information and a simulation on: www.hamilton-medical.com/G5

Neonatal option

The neonatal option expands your ventilator's patient range down to the tiniest infants and premature babies. And the HAMILTON-G5 proximal flow sensing provides the precise volume and leak monitoring with accurate, responsive triggering that your smallest patients demand.

Heliox option

Heliox therapy is gaining acceptance as a temporary measure in cases of acute and life-threatening upper airway obstruction. With the heliox option, your HAMILTON-G5 helps you to successfully reduce the patient's work of breathing while treating the cause of the obstruction.



Configurable Ventilation Cockpit

The Ventilation Cockpit lets you configure your patient's monitored data the way you want. You can select from four different layouts to display a combination of intelligent panels, such as the Dynamic Lung, plus traditional curves and loops.

Flexible device configuration

To adapt the HAMILTON-G5 to your ICU environment, you can configure the device in the following ways:

- on a trolley with the Ventilation Cockpit on top or in front
- as a shelf-mount version with the Ventilation Cockpit on the unit's side or on the shelf

For infection control, you can also place the Ventilation Cockpit outside the patient room.

For further information about the HAMILTON-G5,
please contact:

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