VG-PS Ventilation
Every breath is a beautiful thing

VG-PS: Tailored to the Needs of Neonatal Patients

Mechanical ventilation for neonatal patients – supporting life in its most fragile state – is uniquely challenging. There is a fine line between help and hindrance. Improving the quality of care requires increasing the accuracy, synchrony, and versatility of respiratory assistance, breath by breath.

GE Healthcare has developed an innovative and effective solution for these exacting requirements. The Volume Guarantee form of Pressure Support (VG-PS) is a new mode of ventilation for the GE Healthcare Engström Carestation. Designed for the specific needs of neonatal patients, the VG-PS mode continuously adjusts the level of support in response to the patient’s changing needs. It provides:

- Precise volume regulation during spontaneous and mechanical ventilation
- Breath-to-breath adjustment of the inspiratory pressure delivered
- Synchrony of both the inspiratory and expiratory phase of a breath
- The ability to control the point at which mandatory mechanical ventilation is initiated

Constant adjustment, consistent accuracy
The new VG-PS mode is responsive and adaptive to the specific needs of each patient. Every breath delivered via VG-PS is volume-guaranteed and pressure-regulated.

To deliver ventilation accurately, the Engström ventilator first assesses the baby’s lung compliance against the desired target volume. As the baby continues to breathe spontaneously, the ventilator adjusts the pressure delivered, breath to breath. The clinician can also use the neonatal proximal flow sensor to further increase the accuracy of monitoring and delivery of each breath delivered.

Synchrony with safety: the right help at the right time
Precise synchronization of ventilation with the patient’s needs keeps the baby comfortable while providing lowest pressure required to deliver the desired volume. A combination of comfort and consistency is offered breath to breath.

The VG-PS mode delivers synchrony in several innovative ways. First, it allows for adjustment in the settings of how the ventilator will start, deliver, and terminate breaths. For example, the clinician can set the inspiratory trigger, rise time, and end flow for all spontaneous breaths. This allows the delivery of spontaneous breaths to be tailored very precisely for each patient.

In addition, the “minimum rate setting” of the VG-PS mode provides safety. For example, during the baby’s first attempts at weaning from the ventilator, the clinician can adjust the minimum rate setting. In the event the baby begins to need assistance and their respiratory rate is slowing, the Engström will initiate ventilation at the point set by the clinician. The minimum rate can also be set to stimulate a child who becomes apneic. In this case a breath would be delivered to stimulate spontaneous breathing.

The point at which breaths are initiated is regulated by a combination of the minimum rate set by the clinician and the baby’s own spontaneous respiratory rate. In other words, mechanical ventilation begins only when needed, and continues only as long as it’s needed.
A new standard in neonatal ventilation
VG-PS is now a standard mode of ventilation available with the neonatal option of the Engstrom Carestation. With proven accuracy, synchrony, and additional safety, VG-PS allows clinicians to select the optimal level of support – and adapt quickly to meet changing requirements. It offers consistency in volume regardless of the type of breath delivered, and it provides synchrony of both the inspiratory and expiratory phases of a breath.

Engström Carestation Highlights
- Integrated ventilation and monitoring
  - Optional proximal Neo Flow Sensor with Neonatal ventilation
- Metabolics, advanced monitoring parameters, and gas exchange measurements via plug-and-play modules (Adult and Pediatrics)
- Direct lung volume measurement with FRC/INview (Adult and Pediatrics)
- Easy to maintain, low cost of ownership
- Adaptable and flexible to your environment – NICU through Step-down
- Advanced aerosolized medication delivery via Aeroneb Pro and Aeroneb Solo
- Dual-mode (pressure controlled volume guarantee) and Non-Invasive (NIV) ventilation capability (optional)

VG-PS Parameters and Settings
Control and Ranges (Neonatal)

FiO₂: 21 to 100% O₂

Tidal Volume: 2 to 350 mL
2 to 50 mL (increments of 0.5 mL)
50 to 100 mL (increments of 1 mL)
100 to 350 mL (increments of 5 mL)

Minimum Rate: 2 to 60 breaths/min (increments of 1/min)

End Flow: 5 to 80% (increments of 5%)

PEEP: Off, 1 to 50 cm H₂O (increments of 1 cm H₂O)

Tₜₚₜ: 0.1 to 0.8 sec (increments of 0.01 sec)

Pressure Trigger: -10 to -0.25 cm H₂O
-10 to -3 cm H₂O (increments of 0.5 cm H₂O)
-3 to -0.25 cm H₂O (increments of 0.25 cm H₂O)

Flow Trigger: 0.2 to 9 L/min
0.2 to 1 L/min (increments of 0.05 L/min)
1 to 3 L/min (increments of 0.1 L/min)
3 to 9 L/min (increments of 0.5 L/min)

Bias Flow: 2 to 10 L/min (increments of 0.5 L/min)

PSV Rise Time: 0 to 500 ms (increments of 50 ms)

Tinsp: 0.1 to 10 sec
0.1 to 1 sec (increments of 0.01 sec)
1 to 4 sec (increments of 0.1 sec)
4 to 10 sec (increments of 0.25 sec)

Trigger and End Flow Leak Compensation: Up to 1 L/min
About GE Healthcare

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services help our customers to deliver better care to more people around the world at a lower cost. In addition, we partner with healthcare leaders, striving to leverage the global policy change necessary to implement a successful shift to sustainable healthcare systems.

Our “healthymagination” vision for the future invites the world to join us on our journey as we continuously develop innovations focused on reducing costs, increasing access and improving quality and efficiency around the world. Headquartered in the United Kingdom, GE Healthcare is a $16 billion unit of General Electric Company (NYSE: GE). Worldwide, GE Healthcare employs more than 46,000 people committed to serving healthcare professionals and their patients in more than 100 countries. For more information about GE Healthcare, visit our website at www.gehealthcare.com.

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