

GE Healthcare

# Simple. Smart. Agile.

## Carestation™ 650



Carestation 650 is a reliable and agile anaesthesia solution with smart tools to help simplify your daily work and manage non-ordinary events.

# Simple.

Ease of use, easy to learn.

Carestation 650 intelligently packages and connects monitoring devices, innovative parameters and advanced ventilation tools in a single, integrated system. A rotating clinical staff in a fast paced OR requires minimal product training in order to focus more time on the patient. Perioperative care is increasingly complex with more sick patients, requiring more tasks to accomplish in the same time and with the same resources in a highly regulated environment.

Carestation 650 is simply familiar and helps you to reduce part of this complexity with comfort.

“Reducing reliance on human beings by standardizing and simplifying clinical processes with decision support and technology is a powerful way to increasing process reliability.<sup>1</sup>”



#### Intuitive Navigation

15" screen with quick touch controls. Direct access to operations without menu overlap. Highly configurable screen. Simple access to specific OR tasks re-grouped in a dedicated menu.



#### Unified User Interface

Carestation 650 features a unified CARESCAPE user interface between ventilator and patient monitors to flatten the learning curve and help reduce the risk of errors.



#### APL and switch

Primary controls are comfortably within reach to speed up operations, help eliminate stretching and awkward positions.



#### Interactive system check

The daily checkout process is as simple and quick as it is thorough. It is interactive with traffic light step-by-step on screen guidance.



#### Breathing circuit cassette

Breathing circuit that can be quickly dismantled without the use of tools. Minimal components to clean, to meet high hygienic standards.



“ A clinical study shows that inadequate alarms, improvised oxygen delivery systems and misdiagnosis or treatment of breathing circuit events can contribute to severe patient injuries.<sup>2</sup> ”

“ Clinical alarm with inadequate configuration practices is the TOP Health Technology Hazards on the 2014 annual report published by ECRI Institute. Several death and severe patients harm may be prevented with more effective alarm management.<sup>3</sup> ”

# Smart.

Intelligent tools to give you more confidence in your daily work.

The industry role is fundamental to help prevent device misuse. GE is committed to building innovative anaesthesia solutions that balance user interface design with intelligent tools to help clinicians prevent misuse and medical errors. The best way to demonstrate effectiveness in preventing errors is to not let them happen.

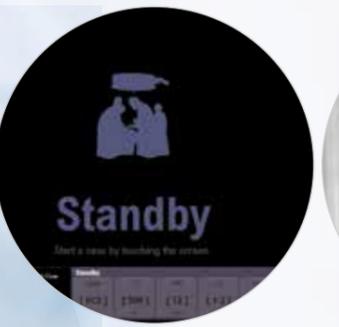
Carestation 650 offers smart tools to simplify daily work and help ensure effective reactions to non-ordinary events. When seconds count, active mechanisms can help clinicians better manage non-ordinary events.



**Easy alarm management**  
Direct access to favourite Primary Alarms limits. Auto Alarm Limits software may help reduce alarm fatigue, allowing you to quickly review and accept tailored CO2 and MV/TV alarm limits real-time within a case.



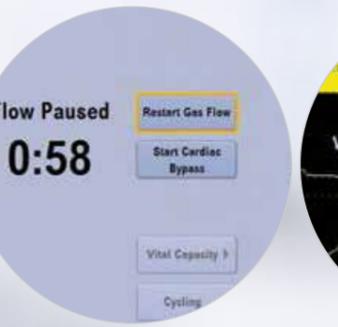
**Intelligent lighting controls**  
Automatic lighting on all flow controls provide information on the active ones. A clear indicator on the next step to follow can help avoid incorrect maneuvers.



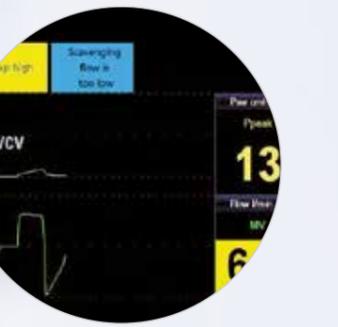
**Clear active case notifications**  
Automatic patient case activation when switching from manual to automatic ventilation. Visible and clear stand-by screen notification.



**ACGO protective mechanism**  
ACGO port has a protective lid to avoid misconnection. By switching on the ACGO, a dedicated screen is automatically activated to visually reinforce which port is in use. This visible alert will remain until the ACGO is on.



**Pause Gas flow**  
A workflow solution that simplifies temporary circuit disconnects. One button temporarily stops all gas flows and suspends alarms, agent delivery and ventilation for up to one minute allowing you to focus on the patient.



**Scavenging alert**  
An alarm with a notification on the screen alerts the staff when scavenging gas flow is out of range. It will help detect incorrect gas evacuation.



“ Making environment less complicated can offset some of the potential hazards to patient outcome.”

# Agile.

Optimizing the workspace.

Designed with essential flexibility in mind, the Carestation 650 features cutting-edge technology and head-turning design in a compact and transport-friendly system that can go where you need it.

In the operating theater world that keeps getting smaller Carestation 650 precisely meets the space constraints needed to stay nice and roomy. It is all about configuring the Carestation to fit your space and meet your team's needs comfortably.



Wall mount system  
(Carestation 650c)

Pendant system  
(Carestation 650c)



**Flexible patient monitor mountings**

Multiple choices of patient monitors mounting within rotating and tilting display arm to allow optimized visualization



**Variety of customizable supports**

Bars and supports for additional devices and accessories to keep lines and cables tidy in place.



**Workspace optimization**

Great work surfaces, additional flip desk. Ample drawers. Bi-level surface illumination.



**Convenient mobility**

Central brake and back wheels brakes to ensure stability. In built cable pusher to protect patient cables.



# Flexible options that grow...

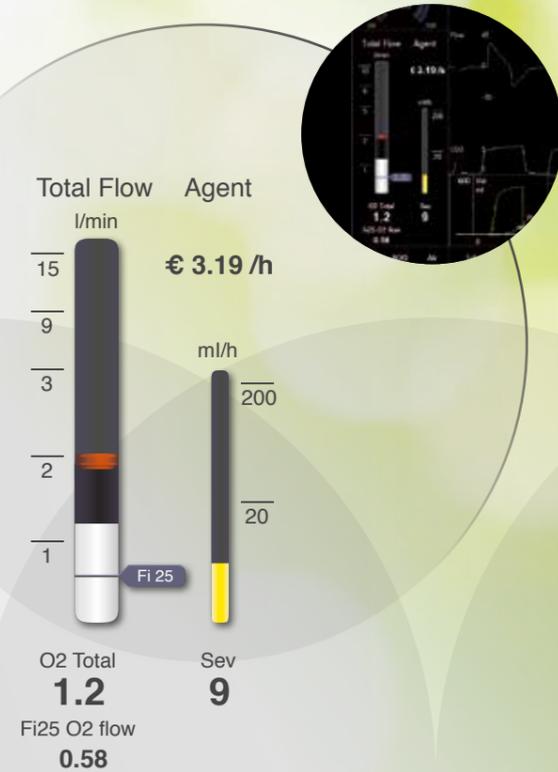
## Low flow. High impact.

### ecoFLOW

Clinicians skilled in the practice of low and minimal flow anesthesia delivery understand that sometimes less is more. That's why we developed ecoFLOW, an efficient anesthesia delivery technology that provides visual guidance to help you maintain the desired inspired oxygen concentration and identify unnecessarily high fresh gas flow rates.

### ecoFLOW technology

A new way to look at flow tubes to help you ensure your inspired oxygen target settings are achieved. The illustration shows flows above the Fi25 target as potential waste gas or excess to the patient's consumption. Whenever fresh gas flow exceeds the patient's requirement, gases enter the scavenging system and, ultimately, contaminate the atmosphere.



## A true eco system. Economical and ecological.

Anesthetic agents are not only costly, but scientific evidence suggests that excess inhaled agents released into the atmosphere have the potential to affect the environment.<sup>5</sup> Offered on the Carestation 650, ecoFLOW may have a positive impact on the environment when agent waste gases are reduced.



### Patient

Helps your patient care by continuously monitoring the precise flow rates required to maintain target inspired oxygen concentrations.



### Economical

Anesthetic agents are the biggest ongoing expense associated with anesthesia units. The ecoFLOW option offers cost savings through more efficient utilization of inhaled anesthetics.<sup>6</sup>



### Ecological

By choosing a low flow practice, the environmental impact of anesthetic vapors and gases can be minimized to help reduce the impact of these greenhouse gases.

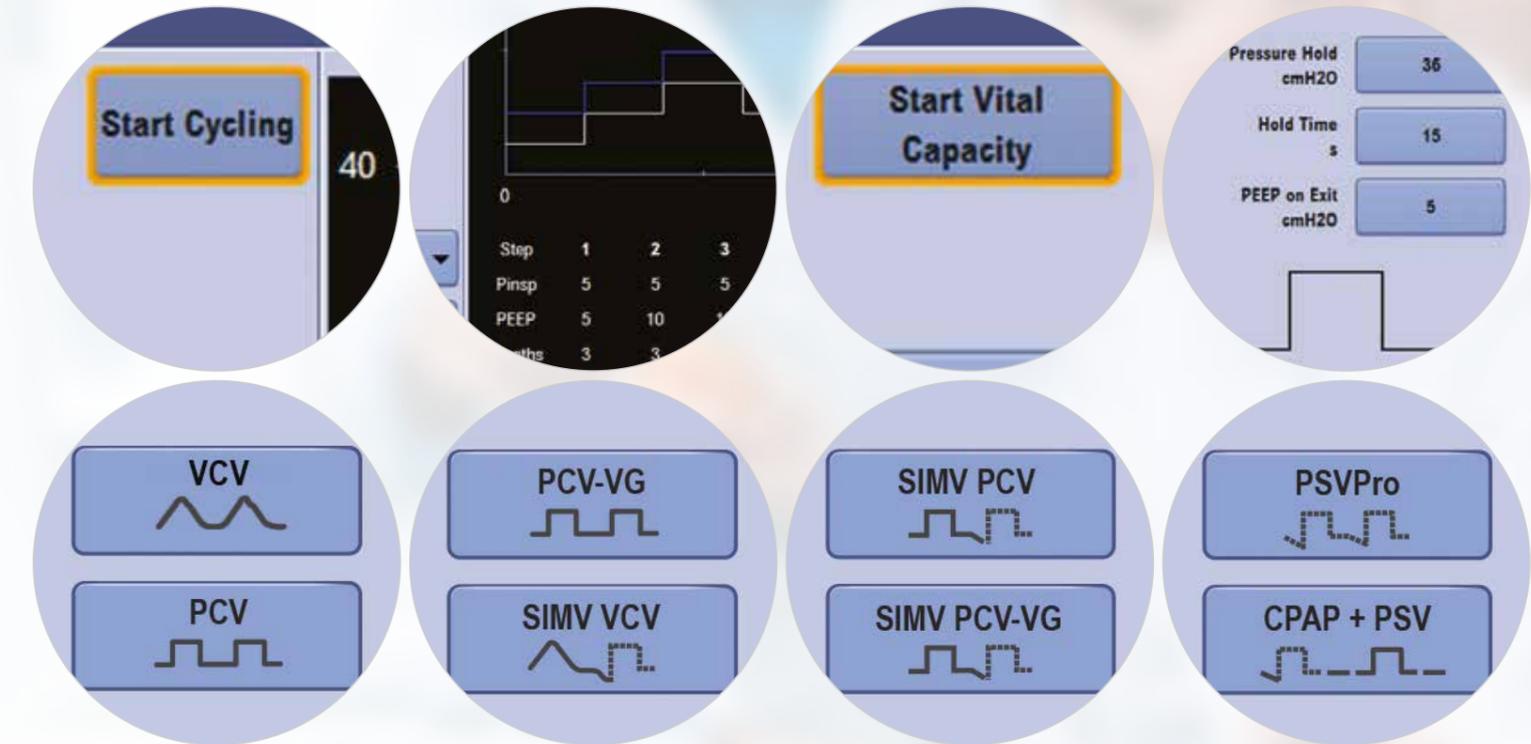
# ... with you as your needs change

### Lung Protection

Software-enabled tools help simplify your workload. Vital Capacity and Cycling Procedures help automate repetitive tasks used during lung ventilation procedures.

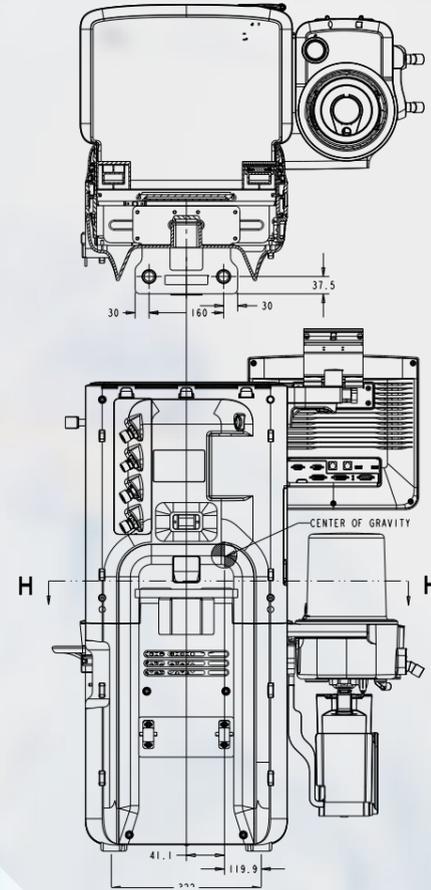
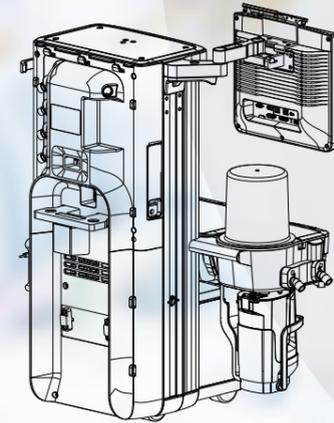
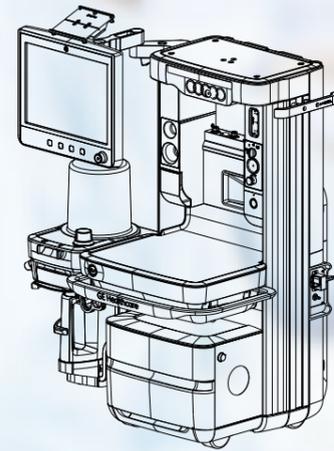
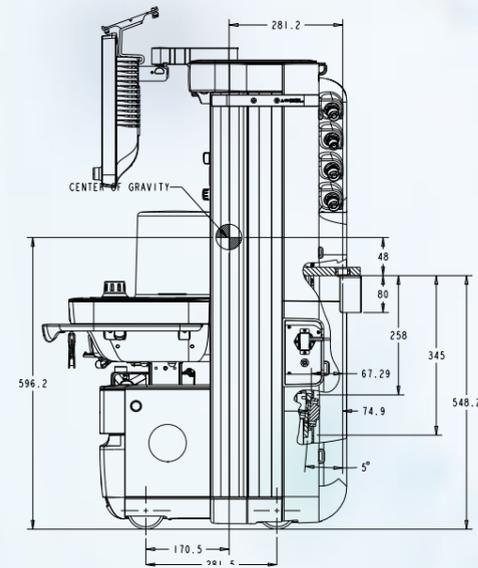
### Advanced ventilation – neonate to adult

Healthcare is more complex than ever and your anesthesia system needs to adapt to suit a wide range of patients. Our electronic flow valve technology offers precise flow sensor sensitivity for volumes as low as 5 mL in PCV mode to help you deliver with confidence.



# Leveraging expertise of the GE Perioperative Global Design team to anticipate future demands

Based on input from customers, we invited the GE Global Design team to help us reimagine the anesthesia system to tackle today's challenges. They delivered on this and so much more with a design that will write the next chapter in GE's already iconic 100 year history of anesthesia innovation. Carestation 650 marries elegant and functional design with digital technologies that anticipate future user demands — instilling confidence in an uncertain and evolving healthcare environment.



★★★★★ Award winning design expertise from GE Global Design Group

 Ventilation expertise from GE Global Anesthesia

 Patient Monitoring and Parameter Expertise

## Reliable.

Making better possible for over a century.

20,000 Hours of reliability and endurance testing – equal to over 8 million simulated cases<sup>7</sup>.

 500,000+ Hardware component cycles

 17,000,000+ Software actions stress test

 -60° to +120° C Extreme temperature testing

 Rigorous interference and shock testing

 Stability and tip testing under harsh conditions

 Industry-leading Lean Six Sigma manufacturing

 120,000,000+ Flow sensor tests

 1,000,000,000+ Flow valve cycles

 250,000+ Hardware and software reboot cycles

Every single detail of the Carestation 650 has been in the center of rigorous engineering actions for development and verification. This has involved systematic design rigor, reviews, and the implementation of reliability growth methods like stressing and testing software and hardware to emulate extreme operational conditions.





- 1 Essentials of Patient Safety, European Society of Anaesthesiology (ESA 2013)  
[http://html.esahq.org/patientsafetykit/resources/downloads/01\\_Basics/Essentials-of-Patient-Safety-Ch-Vincent](http://html.esahq.org/patientsafetykit/resources/downloads/01_Basics/Essentials-of-Patient-Safety-Ch-Vincent).
- 2 Mehta SP, Eisenkraft JB, Posner KL, Domino KB, Patient injuries from anesthesia gas delivery equipment: a closed claims update. *Anesthesiology*. 2013 Oct;119(4):788-95. doi: 10.1097/ALN.0b013e3182a10b5e.
- 3 ECRI report 2014.
- 4 Ronnie J. Glavin, "Best Practice & Research Clinical Anaesthesiology 2011 193-206.
- 5 There are several online resources available to learn more about the environmental impact of anesthetic agents including:  
General Anesthetic Gases and the Global Environment (author Yumiko Ishizawa, M.D., MPH, Ph.D.) *Anesth. Analg.* September, 2010  
Global Warming Potential of Inhaled Anesthetics: Application to Clinical Use (authors: Susan M. Ryan, M.D., Ph.D., and Claus J. Nielsen, CSc) *International Society for Anaesthetic Pharmacology* July 2010  
[www.anesthesia-anelgesia.org](http://www.anesthesia-anelgesia.org)
- 6 ECRI Institute Healthcare Product Comparison: Anesthesia Units. 2011.
- 7 GE internal verification and validation testing report 2015. DOC1677887.

[www.gehealthcare.com](http://www.gehealthcare.com)

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.

**GE Imagination at work**

Not approved in all markets. Not cleared or approved by the US FDA.  
Not for sale in the United States.

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This document applies to Carestation 650 A1 and Carestation 650c A1