Flow-i Anesthesia Machine

Advanced anesthesia for all situations

This document is intended to provide information to an international audience outside of the US.

GETINGE

The power to care

If there's one thing you can be certain of in the OR, it's that a patient's situation can change in a matter of seconds. We live to assure that you can be prepared.

The Flow-i is a product of the designers behind the well-known Servo ventilator platform. The result is a next-generation anesthesia machine with better patient safety in an easy-to-use workstation.

The Flow-i lets you treat even your most challenging patients. From neonates to the morbidly obese – patients benefit from lung-protective and cost-efficient anesthetic care when they need it the most.

Experience the Flow.

Precise ventilation when you need it most

Ventilation performance is not only about modes. Most importantly, it's about ensuring the power and precision needed to ventilate any patient.

Next-generation technology at the core

The Flow-i was created by the engineers behind the world-class Servo ventilator platform. It is designed to deliver set tidal volumes regardless of compliance and resistance to handle the most complex cases – from neonates to bariatric patients.

The innovative technology inside Flow-i ensures excellent ventilation performance and outstanding agent efficiency – we call it the Flow core technology.

Servo gas modules

The Servo gas modules enable ICU-quality ventilation. They deliver up to 200 l/min inspiratory flow and are capable of adjusting pressure and flow constantly within every breath, according to each patient's needs.

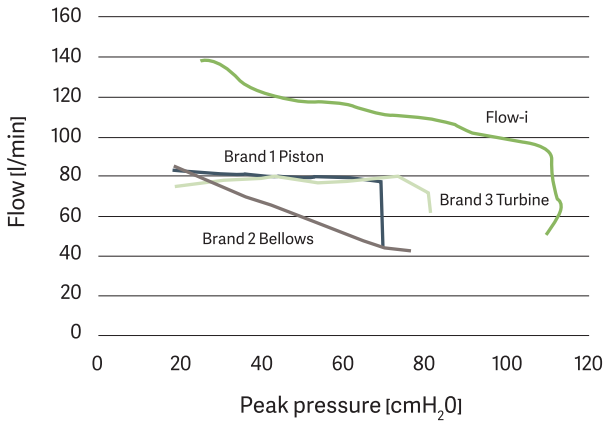
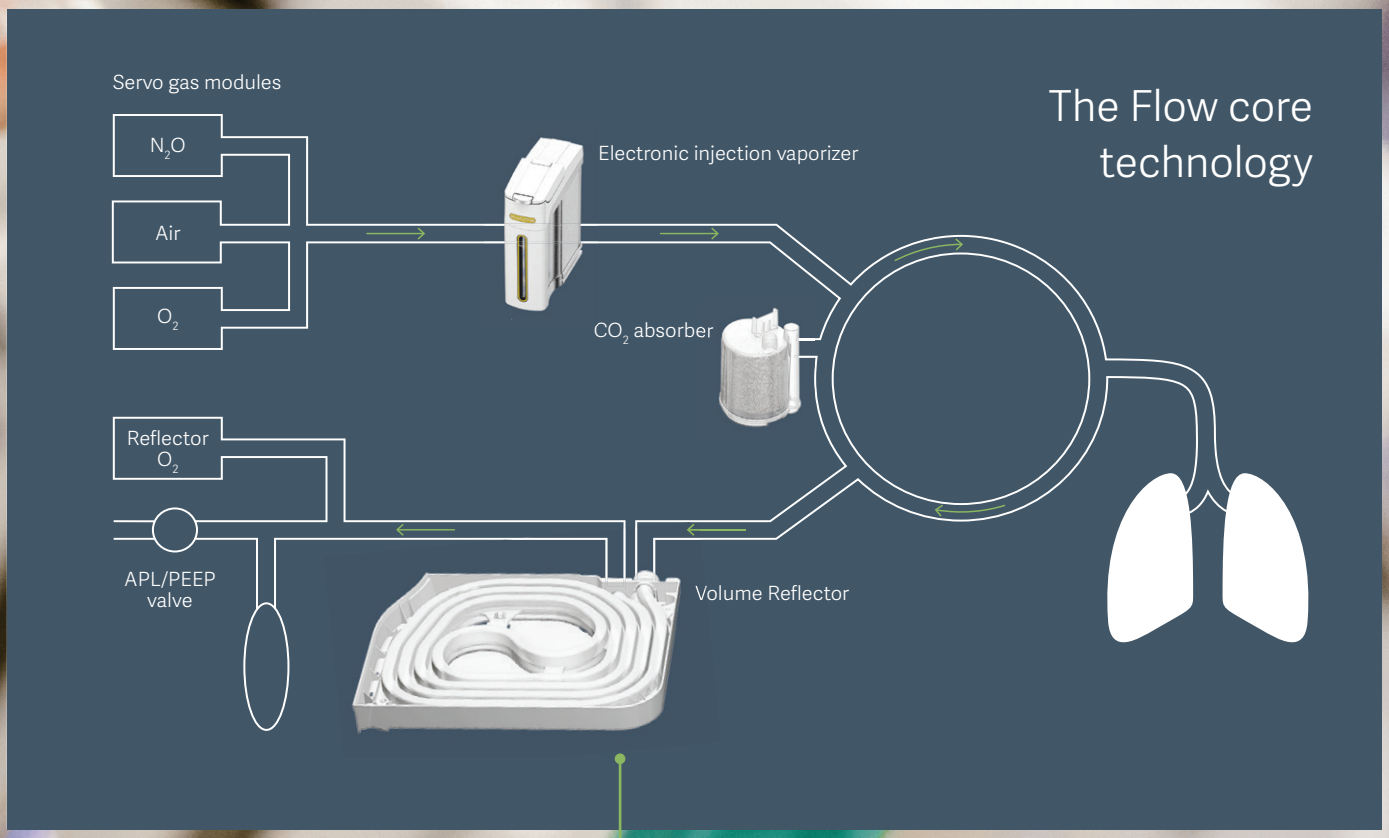


Figure 1: The Flow-i Anesthesia Machine can deliver the set tidal volumes even when there is high abdominal and thoracic pressure, thus avoiding hypoventilation.[1]



Volume Reflector rebreathing system

Our patented Volume Reflector is a smart rebreathing system. In combination with Servo gas modules, it enables accurate tidal volumes down to 5 ml, providing better ventilation performance compared to bellows, turbine and piston-operated systems[1], see figure 1.

The rigid Volume Reflector is never empty, ensuring uninterrupted ventilation, and compensates effectively for any leakage.[2] And because it's oxygen driven, the risk of hypoxic mixtures becomes almost impossible. The Volume Reflector has a small system volume for fast wash-in and wash-out and a rebreathing fraction of 98%.

Electronic injection vaporizers

Electronic injection technology enables precise delivery of agents, primarily during the inspiratory phase, with minimal waste. The lightweight and maintenance-free vaporizers can be refilled and exchanged while the machine is running, and do not require annual calibration.

A tiny miracle

Read the story of how a premature infant weighing only 393 g (13.9 oz) was successfully anesthetized and ventilated using a Flow-i during major abdominal surgery. Today, she is a healthy little girl.

www.getinge.com/393g

Smart tools that support decision-making

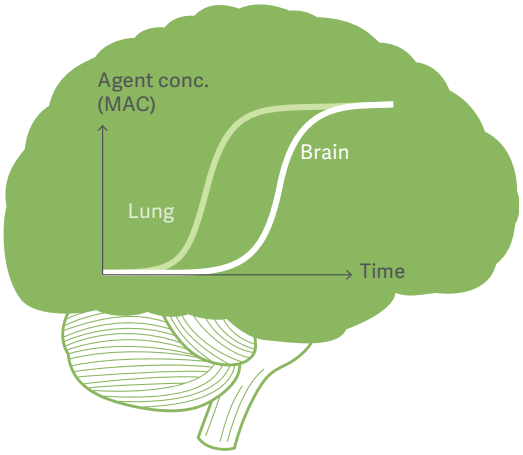
Our close collaboration with clinicians around the world has shaped the range of vital tools you'll find in the Flow family. These include innovations to automate manual tasks, improve patient outcomes and take safety to new levels.

Low-flow anesthesia the safest[5] way

Active inspired O_2Guard protects your patients

O_2Guard is designed to prevent hypoxia.[4] This unique safety mechanism overrules the clinician´s settings and increases the flow of fresh gas and oxygen should the O_2 level drop below 21%. Conventional guards will only trigger an alarm. The O_2Guard is a standard feature on all Flow models. Learn more at www.getinge.com/o2guard.w

»O_2Guard is the only commercially active inspired hypoxic guard available.«[5]

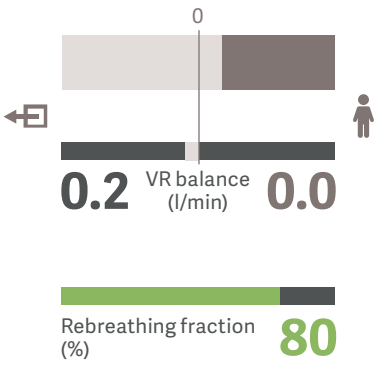


Agent concentration in target organ – MAC Brain guides you

Due to pharmacokinetics there is a time delay in agent concentrations between the lungs and the target organ, the brain. The unique MAC Brain tool visualizes the difference to support better dosing and planning of agent delivery.

Visual support when lowering the flows

The VRI (Volume Reflector Indicator) is a useful visual guide that enables you to optimize the rebreathing fraction and thus save anesthetic agent. The tool makes it simple to set the optimal Fresh Gas Flow (FGF) and volume ratio. Agent consumption can easily be monitored via the interface.



Automatic Gas Control makes low flow easier

Automatic Gas Control (AGC) makes it simpler and safer to deliver low-flow anesthesia with high precision. Just specify the target end-tidal anesthetic agent level and the speed required and AGC does the rest.

Once the target is reached, the system automatically reduces fresh gas flow and anesthesia agent delivery to minimal levels. Now you have precise control combined with improved patient comfort and reduced risk of error.

Cost saving per year
€106,000
since the change
to Flow-i with AGC*

More time for your patients

Parameters can be preset before the patient arrives at the OR, freeing up time during the busy induction phase. AGC also eliminates the many adjustments demanded when using a manual approach – over 200 adjustments can be reduced to zero.[6]

More efficient delivery

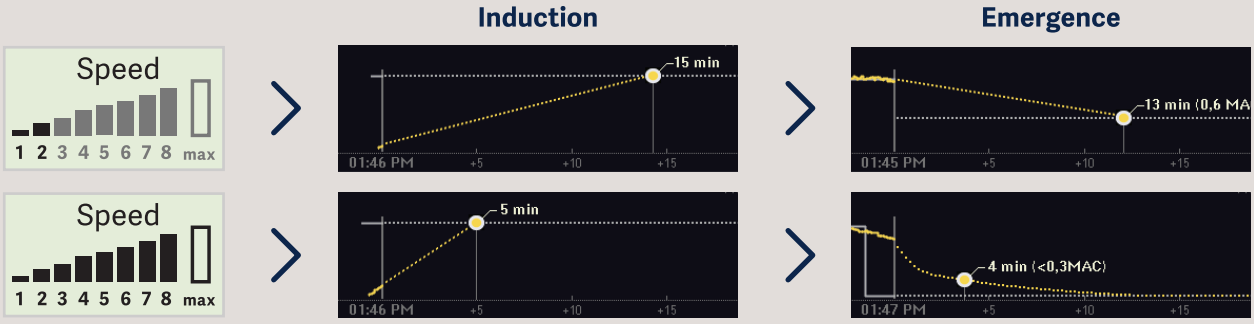
A unique real-time EtAA speed control and prediction tool makes it easy to determine time to end-tidal target, enabling more efficient gas delivery. It also helps to avoid inadequate depth of anesthesia.

Significant cost savings

AGC enables a major reduction in consumption of expensive anesthetic agents. In 2015, Maria Middelares hospital in Belgium changed to Flow-i with AGC. The following year, the net agent consumption was 42% lower compared to previous year. For the hospital, this has resulted in savings of over €106,000 per year in anesthetic agent expenses.[7]*

Reduced environmental footprint

Greenhouse gases, such as anesthetic agents, are main drivers of climate change. The anesthesia practice in a midsize hospital has an environmental effect comparable to that of up to 1,200 cars per year.[8] Using AGC anesthetists can confidently run lower gas flows to reduce the agent consumption, which in turn will reduce the climate footprint.



Unique speed selection tool to help plan OR procedures

Complex becomes routine

- easy steps to lung recruitment

Lung-protective ventilation can make a big difference to reduce treatment-related complications and improve patient outcome. And it is simpler than you may think.

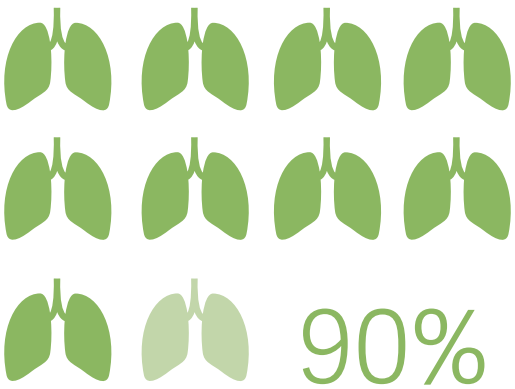
90% affected by atelectasis

Whenever a patient is anesthetized, there is a risk of postoperative complications caused by a collapse of the alveoli. In fact, atelectasis affects over 90%[10] of patients undergoing surgery, regardless of gender, age, health condition or length of surgery.

Far from being only a short-time side effect, atelectasis has been shown to persist in patients' lungs long after they leave the operating room.[11] Patients run the risk of inflammatory response, and the hospital's costs can be increased unnecessarily.

Gentle steps against atelectasis

Lung recruitment maneuvers have become the tool of choice to counter atelectasis, to improve oxygenation and help to prevent postoperative complications. What once was considered complex and time consuming is now seamlessly integrated into your workflow.

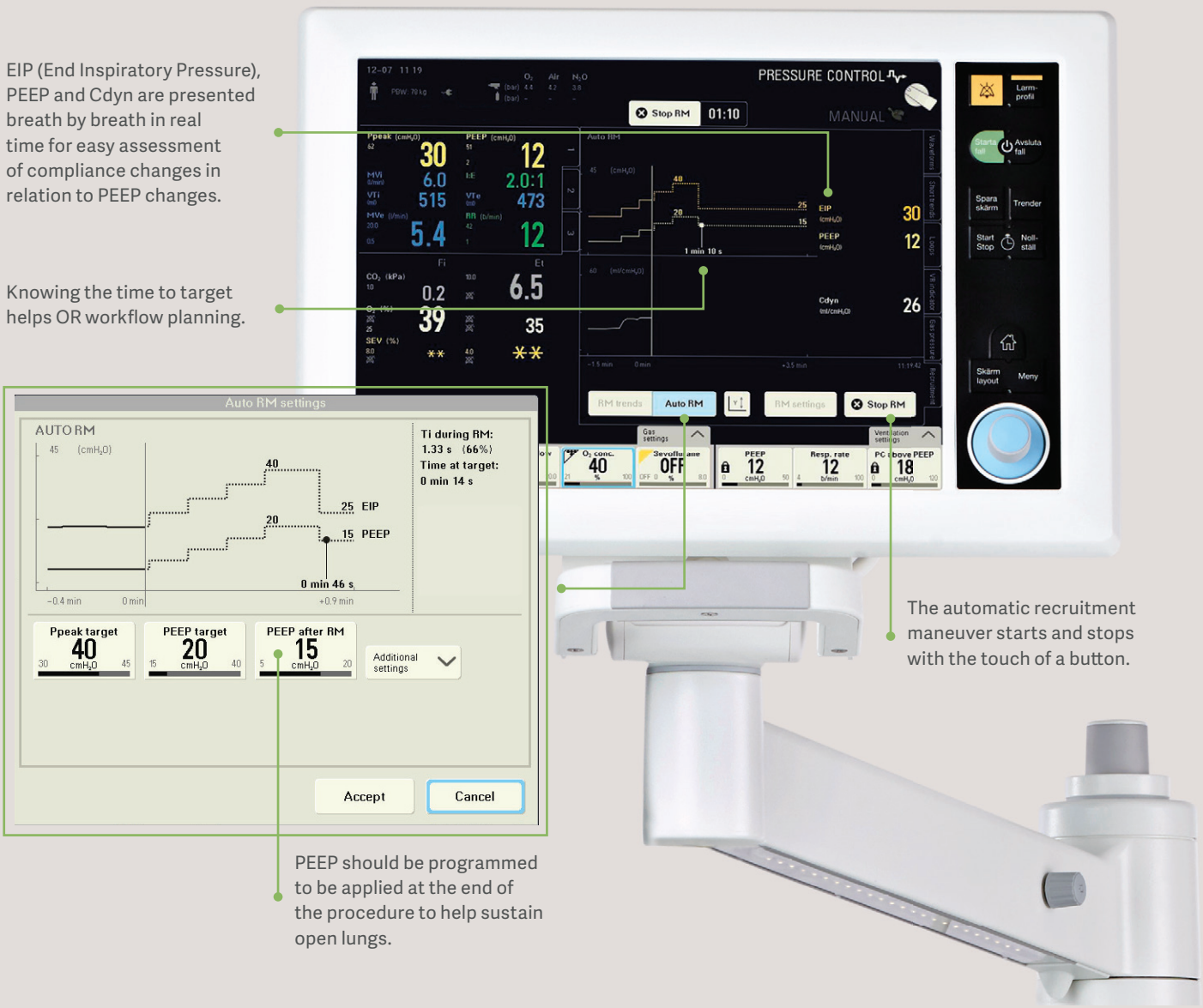


90%

are affected by atelectasis

EIP (End Inspiratory Pressure), PEEP and Cdyn are presented breath by breath in real time for easy assessment of compliance changes in relation to PEEP changes.

Knowing the time to target helps OR workflow planning.



The automatic recruitment maneuver starts and stops with the touch of a button.

PEEP should be programmed to be applied at the end of the procedure to help sustain open lungs.

How it works

The Recruitment Manuever (RM) tool allows you to select between automatic or manual maneuver. Whichever you choose, the recruitment will be stepwise, with the aim of gently opening the alveoli.

In the automatic RM, pressure is increased stepwise for a time period set by you. EIP, PEEP and Cdyn are displayed breath by breath in real time, making it easy to assess your patients' compliance changes and identify the optimal lowest PEEP to keep the lungs open.

Trends are stored, which means you can tailor the settings for each patient and also perform lung recruitment manually.

»It's simple, it's safe and it's efficient, and it gives really good feedback in terms of the advantages conferring on the patient.«

Dr. Martin Shields, Belfast, UK

Easy to capture screen shots and record events. Tiltable and rotatable screen for optimal positioning.

Configurable quick access presets for key functions such as agent, oxygen and FGF adjustments.

Designed to make every day flow

More than just a machine, your anesthesia system is the key to your workflow. Smart design features give you the best possible user experience.

Easy to learn. Simple to use.

A user-friendly interface helps to reduce training demands and minimize the risk of errors. The clear and colorful touch display gives you one point of control for all functions. Tools are right where you want them, so you can work in an ergonomic and comfortable position.

Pause for full control

The pause button stops all gas and agent flows, alarms and ventilation to allow you to focus on the patient. End the pause, and everything resumes from where you left off.

Automated system check

The routine system check is made easier by an automated workflow that requires minimal manual interactions. The vaporizers are also included in the system check.

See the bigger picture

– ownership with less stress and easier flow

Minimizing your long-term costs

The purchase price is just a one part of the total cost of owning an anesthesia machine. So we have designed Flow-i to minimize cost of ownership. From an intuitive interface that optimizes workflows and minimizes staff training time, to innovations that reduce consumption of anesthetic agents.

Getinge Care: protecting your investment

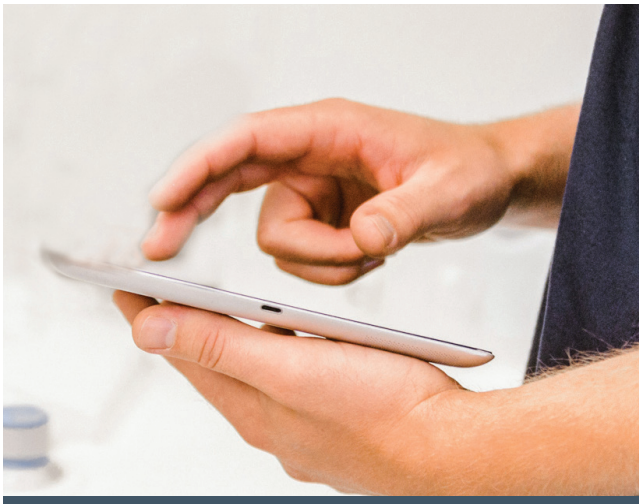
Optimizing uptime is an excellent way to boost productivity and reduce costs. A Getinge Care service plan ensures your equipment always performs to its full potential, allowing you to focus on saving lives.

Smart fleet management reduces risks

We make it easy to manage a large fleet. Getinge Online gives you fleet overview and can be accessed from any device.

Extensive training programs

Keeping skills updated improves patient outcomes, reduces risks and boosts productivity. We tailor training to meet your needs, which includes e-learning in addition to hands-on training courses.



Getinge Online

Getinge Online gives you access to real-time information about your Flow-i machines, e.g. agent consumption, running hours, next preventive maintenance. Through the portal a service technician can resolve most issues remotely, saving time and costs.

Connectivity with MSync

MSync makes it easy to connect the Flow-i to patient monitor, HIS and patient data management system. Patient data is transferred via HL7 (MSync) in real time to support decision-making.

Flow-i at a glance

Advanced anesthesia for all situations

reddot design award
honourable mention 2011

15" tiltable touch screen
Flexible and intuitive to use

Open architecture
Customize to match your needs

Rotatable arm
With integrated LED light

Electronic vaporizers in double slots
Fast and precise delivery of anesthetic agents. Lightweight and possible to fill during use. Holds 300 ml. No heating time for Desflurane.

Multipurpose rails
Extensive mounting options

Next-generation Flow core technology

Reduces the need for an ICU ventilator in the OR:

- Servo gas modules deliver up to 200 l/min inspiratory flow and adjusts pressure and flow continiously within every breath.
- Innovative Volume Reflector rebreather ensures accurate and precise gas delivery.
- Small system volume (2.7 l) allows fast wash-in and wash-out, saving time and agent consumption.

Lung recruitment (option)

- Automated and stepwise, or manual.
- EIP, PEEP and Cdyn displayed in real time.

Low-flow anesthesia

- Fresh Gas Flow (FGF) limit: 0.1 l/min
- VRI (Volume Reflector Indicator) displays FGF and minute volume ratio to optimize rebreathing fraction
- Automatic Gas Control (AGC) option.

Active hypoxic guard

- O_2Guard actively intervenes when there is risk of hypoxia, providing added safety at low flows.

Pause function

- Temporarily stops gas flows and ventilation, giving you time to focus on the patient.

Battery backup and size

- 90 minutes for added safety in case of power failure.
- Footprint: 99 x 69 cm

Easy cleaning and service

- Just 7 parts need to be dismantled for cleaning, saving costs and supporting infection control.
- Preventive maintenance is optimized to reduce complexity with few and easily accessible parts, only changed every two years.

Low cost of ownership

- Modern, easily upgradable platform.
- Maintenance free components, the oxygen and flow sensors are non-consumptive.
- Lower anesthesic agent consumption.
- Reduced training requirements.

Designed around your needs

Flow-i C20
2-3 drawers

Flow-i C30
1 drawer
Height adjustable

Flow-i C40
1-2 drawers
Ceiling mounted

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GETINGE

Getinge is a global provider of innovative solutions for operating rooms, intensive care units, sterilization departments and for life science companies and institutions. Based on our firsthand experience and close partnerships with clinical experts, healthcare professionals and medtech specialists, we are improving the everyday life for people – today and tomorrow.

This document is intended to provide information to an international audience outside of the US. The assertions stated by the physician are strictly those of the physician and do not necessarily reflect the views of Getinge. Flow-i may be pending regulatory approvals to be marketed in your country. Contact your Getinge representative for more information.

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