

LigoGuard[®] 7

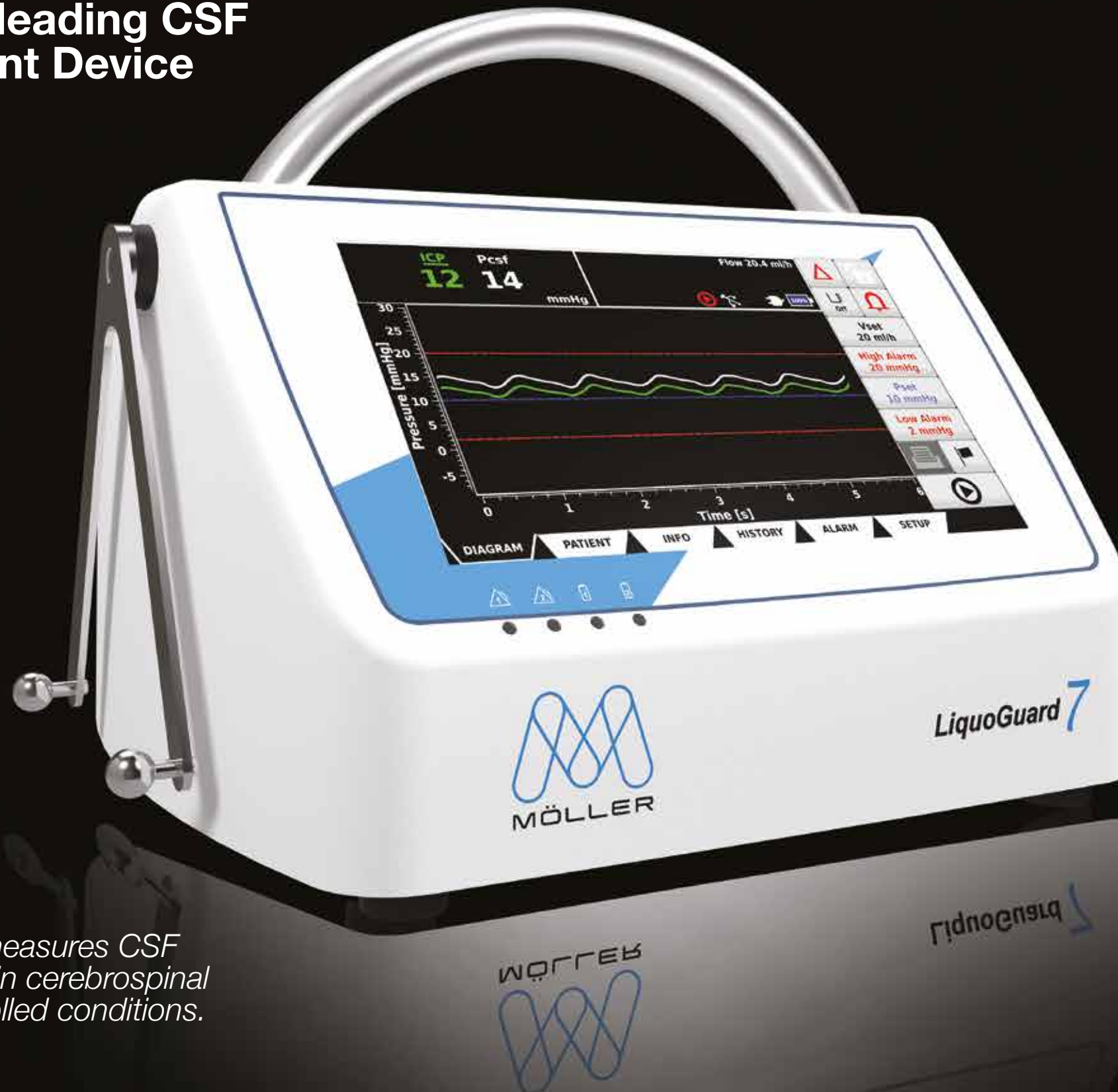
Amazing what's possible.

LigoGuard[®] 7 – CSF Management Device
The new way to manage CSF in Aortic Repairs

LiquoGuard®7
**Helps improve Spinal Perfusion and
 reduce the risk of Spinal Cord Injury.**



LiquoGuard®7
**MÖLLER's leading CSF
 management Device**



*Simultaneously measures CSF
 pressure and drain cerebrospinal
 fluid under controlled conditions.*

Technology

Documented Treatment

Patient Safety Concept

Comfort

Improves surgical and
 post-surgical safety

Full control of CSF
 pressure and flow

Application

Vascular surgery and Anesthesiology

- Perioperative monitoring of neurological status
- Pressure controlled CSF drainage

Neurosurgery, emergencies, and orthopedics

- Ventricular drainage
- Lumbar drainage
- Pressure controlled drainage
- Volume controlled drainage

Diagnostic and therapeutic support

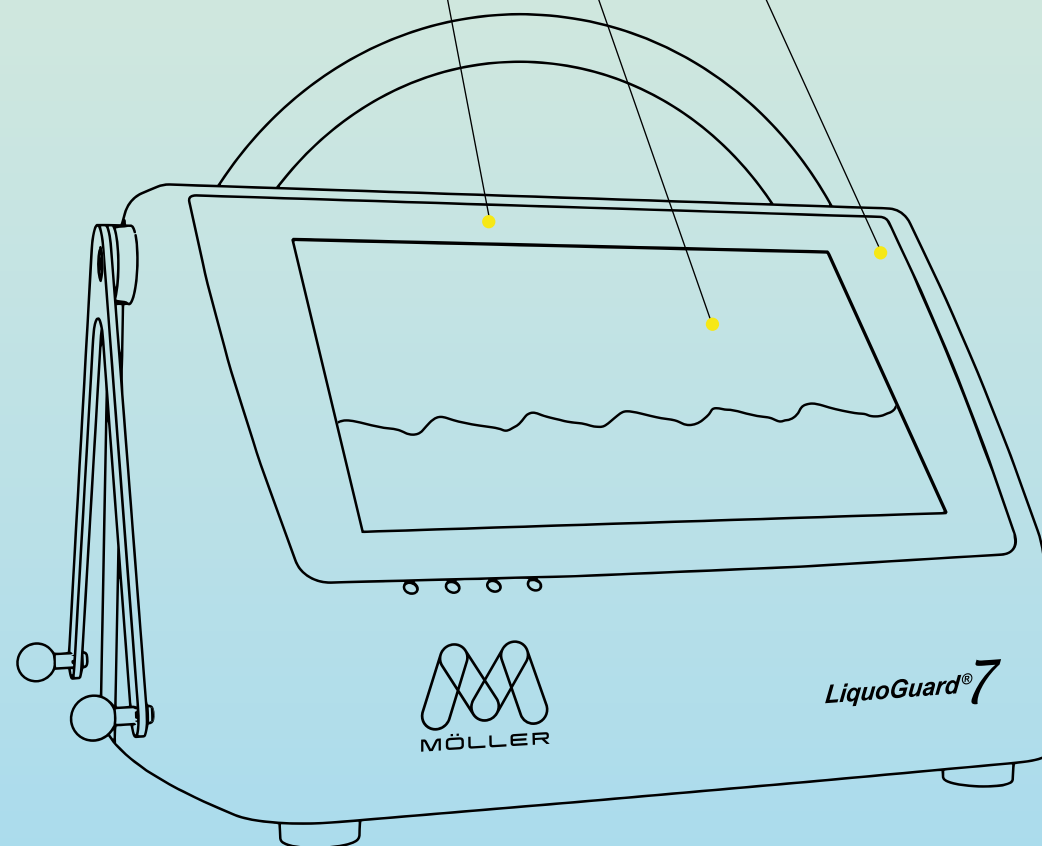
- Katzman Test (lumbar infusion for NPH diagnosis)
- Determination of shunt opening pressures and possible suitable shunt settings
- Control of shunt settings and functionality
- Tap Test

*Please note:
 Indications are not approved in all countries.*

Meticulous management of lumbar drains is required to help prevent uncontrolled CSF drainage when using traditional gravity-based drip chambers.

Continuous monitoring and instant alerts lower the burden of supervision which frees up cardiovascular surgical teams to focus on other critical patient needs, as well as not having to worry about CSF drainage complications.

LiquoGuard®7 allows early ambulation for patients without interrupting CSF drainage. This can help lead to faster recoveries and reduced costs related to staffing and extended patient stays.



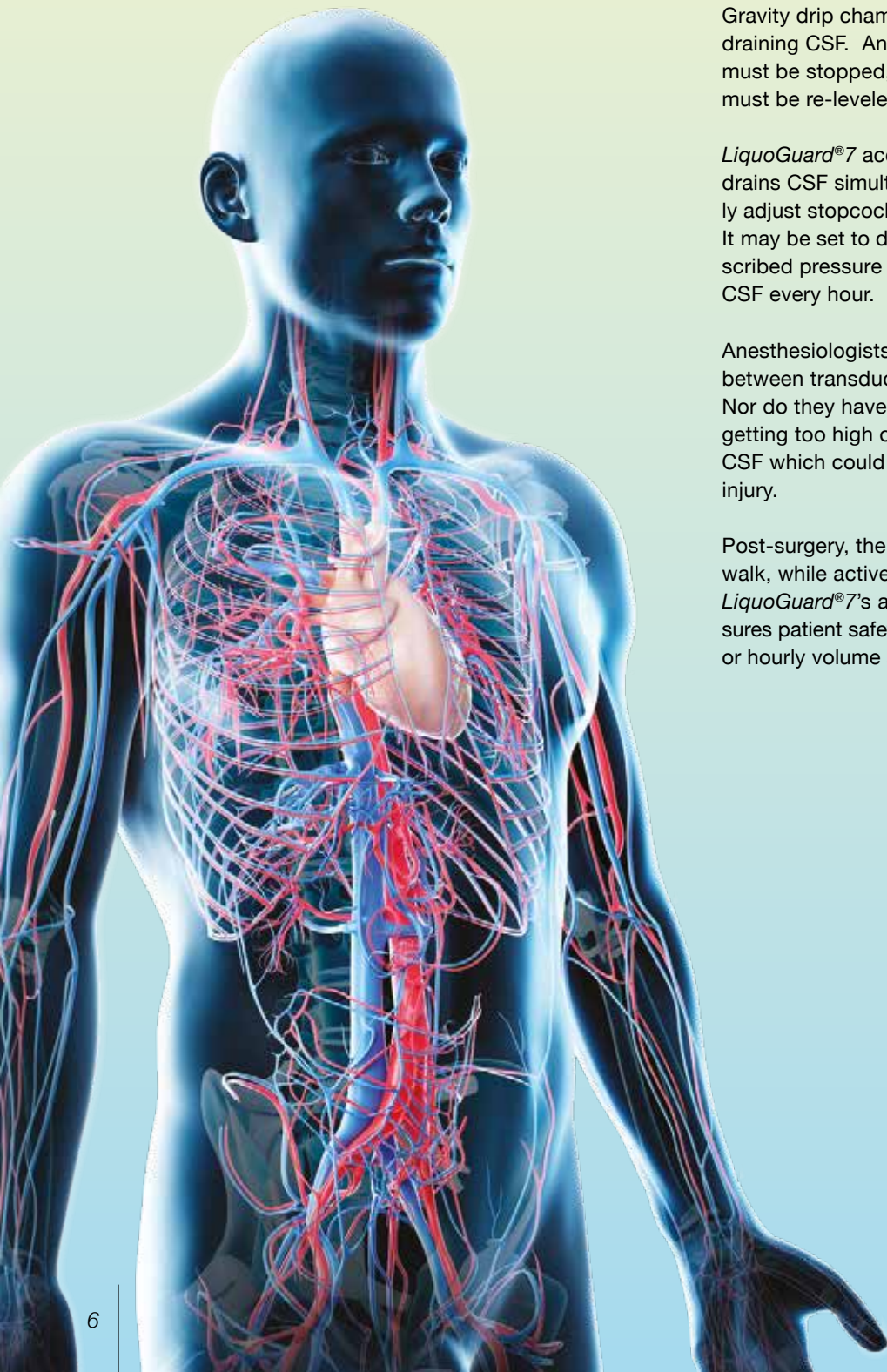
LiquoGuard®7 helps cardiovascular surgical teams avoid common adverse events inherent with lumbar drains such as CSF over- or underdrainage and associated risks to patient safety.

Hospitals around the world use LiquoGuard®7 – the leading automated CSF management device – to accurately measure CSF pressure and drain CSF simultaneously.

Technical data	
Dimension (W x H x D)	238.1 x 145 x 212.8 mm
Weight	3.7 kg
Voltage	100-240 VAC
Battery operation	Up to 2h
Pressure sensor Accuracy	± 0.375 mmHg (range of 0-75 mmHg)
Drift	<1 mmHg in long-term tests
Display accuracy	± 2 mmHg
Interfaces	USB (Memory stick, printer), parenchymal sensor, patient monitor



LiquoGuard[®]7
Maintain a safe CSF Perfusion
Pressure with ease



CSF drainage helps protect against spinal cord injury in thoracic and abdominal aortic aneurysm repairs. The main goal is to maintain a safe spinal perfusion pressure during and 24-48 hours after surgery.

Gravity drip chambers cannot measure pressure while draining CSF. Anytime the patient moves, drainage must be stopped, and the drip chamber transducer must be re-leveled.

LiquoGuard[®]7 accurately measures pressure and drains CSF simultaneously without the need to manually adjust stopcocks, re-zero or re-level a transducer. It may be set to drain CSF based on a surgeon-prescribed pressure or set to drain a specific volume of CSF every hour.

Anesthesiologists and nurses no longer have to decide between transducing pressure or draining CSF. Nor do they have to worry about the pressure getting too high or too low, or the risk of “dumping” CSF which could result in permanent spinal cord injury.

Post-surgery, the patient can sit up in bed and/or walk, while actively draining CSF. *LiquoGuard*[®]7's automation helps save time and ensures patient safety. Simply preset a desired pressure or hourly volume and *LiquoGuard*[®]7 handles the rest.

LiquoGuard[®]7
Get Alerted to CSF Drainage
Issues Immediately

When it comes to gravity-based drains, nurses are typically not aware there is a problem with the drainage process until after it occurs.

LiquoGuard[®]7 is designed to continually monitor for CSF drainage problems. It is a proactive system, unlike gravity-based drains which cannot actively monitor and detect issues.

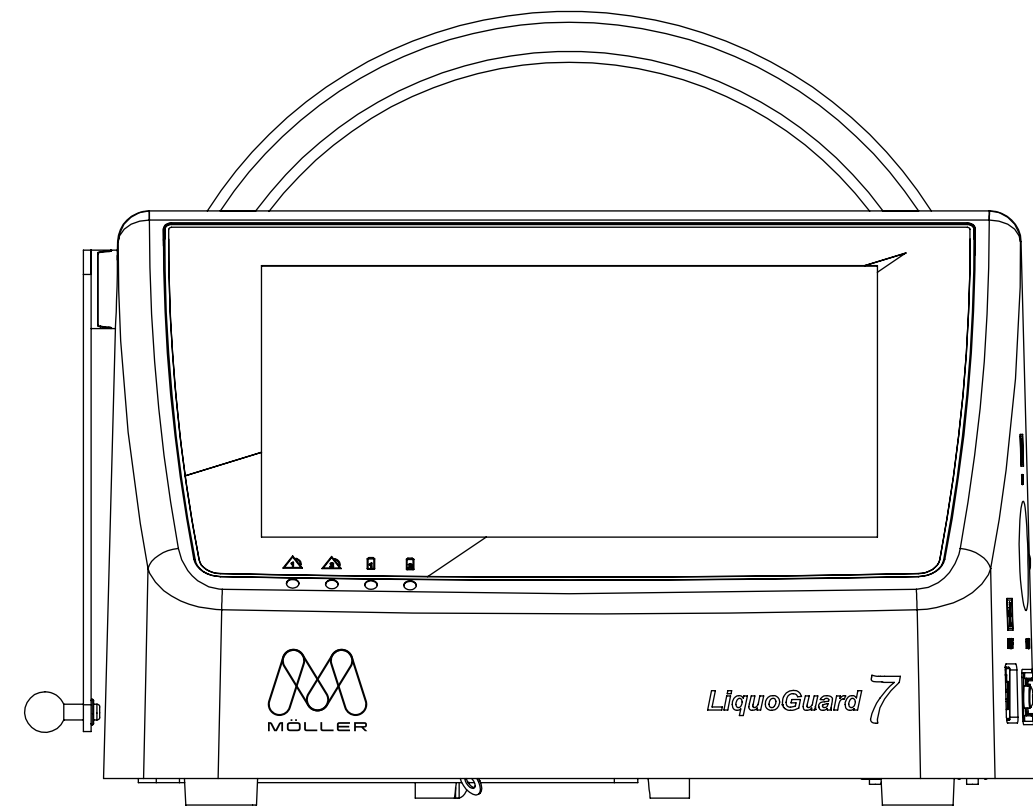
LiquoGuard[®]7 will notify staff immediately when there is an occlusion, pressure discrepancies, catheter disconnections or leaks in the drainage line.

Clinicians know their lumbar drain patients are being monitored closely and consistently – and only need to intervene when the device senses a problem with the drainage process.

The device not only supervises the patient but also supervises itself. Any inconsistencies in the measured pressure leads to an alarm so the nurse will know immediately when a problem is detected.

Automated notifications:

- Occluded or kinked catheter
- Too high or too low CSF pressure
- Too rapid CSF drainage rate
- Disconnected or broken catheter
- Leak in drainage line



Patients connected to gravity drains cannot change their position without the risk of adversely impacting the drainage process. Various studies have shown that immobile patients tend to have longer recovery times.

Early ambulation improves post-surgical outcomes. Automated CSF drainage technology with smart sensors makes this possible.

The drainage bag of the *LiquoGuard*[®]7 is not height dependent and therefore helps reduce the potential for accidental over-drainage, a dangerous and under-reported risk of gravity drains.

LiquoGuard[®]7 controls the outflow of CSF mechanically, not by gravity. There is no need to open and close stopcocks to control CSF drainage. The patient may sit up or walk freely while actively draining without the risk of “dumping” CSF or having to depend on a nurse to adjust the stopcocks.

CSF management is not without its share of complications. Under/over-drainage can lead to paralysis.

These issues typically prolong the patient's stay and result in an increased cost to the hospital.

Investing in a smart CSF management device like *LiquoGuard*[®]7 can help your hospital avoid extended stays by significantly reducing the potential for CSF drainage complications. Medical Team time and workload are significantly reduced and simplified.





Lowered Risks

Significantly reduce accidental over and under drainage through direct fixation of the transducer to the patient.



Get Patients Moving

Earlier mobilization can result in faster patient recovery and improve the healing process.



Fully Automated

Whether a pressure event, occluded, kinked, or disconnected catheter – the sophisticated alarm system informs you about issues when they occur.



Reduce Hospital Costs

Staff time is greatly reduced and the treatment of non-critical patients no longer needs to be done in the ICU.



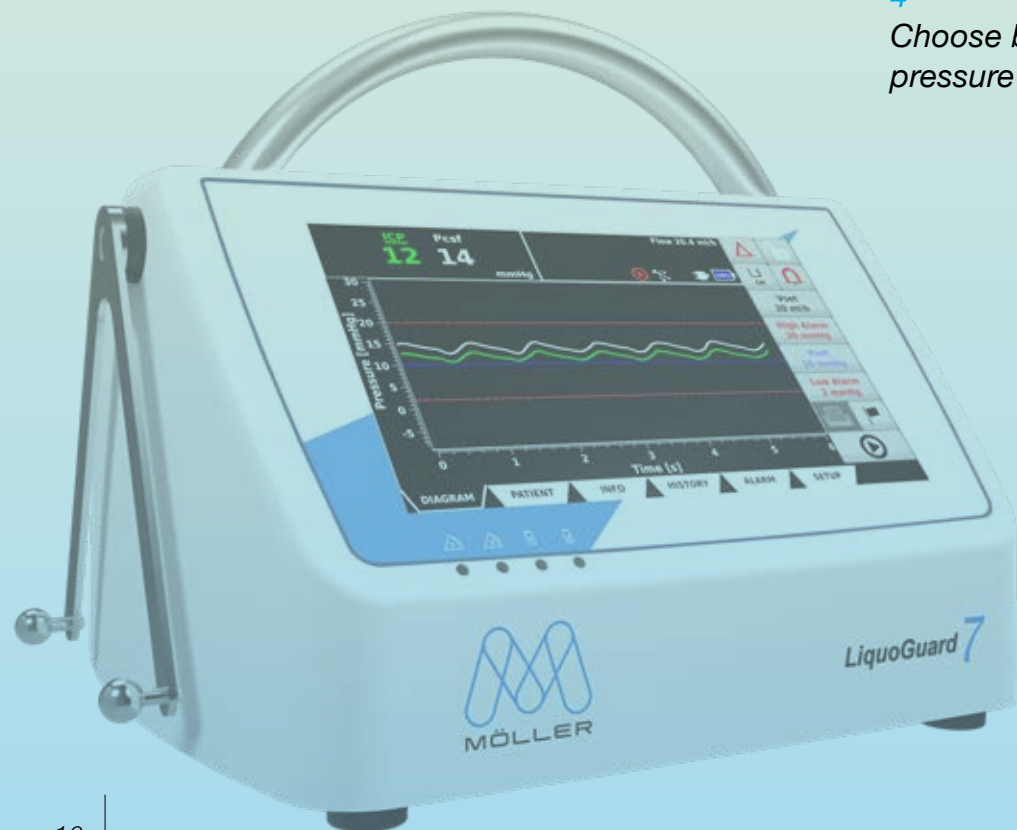
Documented Treatment

Continuous recordings of the course of treatment and integrated alarm management significantly reduce the amount of personnel required.

LiquoGuard®7 automated CSF management technology is easy to program and manage.

There is no need to:

- 1** Level a transducer each time the patient moves
- 2** Manipulate stopcocks
- 3** Keep the patient still while draining to lower the risk of over-draining CSF
- 4** Choose between measuring pressure or draining CSF



LiquoGuard®7 helps professionals prevent handling mistakes, which greatly improves patient safety and leads to faster recoveries

“CSF drainage has become a safe adjunct to our complex aortic repairs since we have started using routinely the LiquoGuard®7 device. It is a mandatory tool in the armamentarium to prevent spinal cord ischaemia, and the very accurate monitoring of pressure and volumes reduces the risks associated with CSF drainage.”

Stephan Haulon, MD
Vascular Surgeon
Aortic Centre Hôpital Marie Lannelongue
Université Paris Sud



“Cerebrospinal fluid drainage is strongly recommended as a spinal cord protective strategy in open and endovascular thoracic aortic repair for patients at high risk of spinal cord ischemic injury. Automatic drainage systems such as LiquoGuard®7 allow the speed and amount of cerebrospinal fluid drained to be programmed in a controlled and safe way according to cerebrospinal fluid pressure, and guarantee appropriate spinal perfusion.”

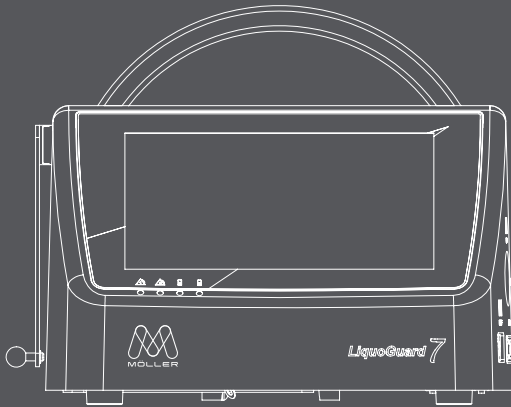
Vincente Riambau, MD
Chief of the Vascular Surgery Division
Hospital Clinic
University of Barcelona, Spain





Moeller Medical Devices USA Inc.
400 South Pearl Street
Albany, NY 12202
info@us.moeller-medical.com

Möller Medical GmbH
Wasserkuppenstrasse 29-31
36043 Fulda, Germany
info@moeller-medical.com



www.moeller-medical.com

REF: 70001353 06-2023 A