

**MAQUET**  
GETINGE GROUP

VENTILATION  
SERVO-s  
EASY AND RELIABLE PATIENT CARE

CRITICAL CARE





# SERVO-s

## SIMPLY MAKES SENSE

### MAQUET – THE GOLD STANDARD



**Leading the way:** MAQUET is a premier international provider of medical products for intensive care and operating rooms. A firm commitment to investment in research and development ensures that MAQUET products continue to make significant contributions to improving patient care.

MAQUET draws on many years' experience in supplying leading edge ventilator systems. Since the introduction of the first SERVO ventilator in 1971, MAQUET has delivered over 100 000 units and SERVO has become the world's number one ventilation brand.

MAQUET SERVO ventilators set the standard for the field of critical care. Based on proven SERVO technology, SERVO-s® offers leading edge mechanical ventilation in a straightforward package. It is reliable, sensitive to patient effort and ideal for both pediatric and adult patients in a variety of hospital ventilatory care settings. Easy-to-use, dependable, adaptable – discover all the reasons SERVO-s simply makes sense.

MAQUET – The Gold Standard.

## FLEXIBLE CARE THAT GIVES YOU OPTIONS

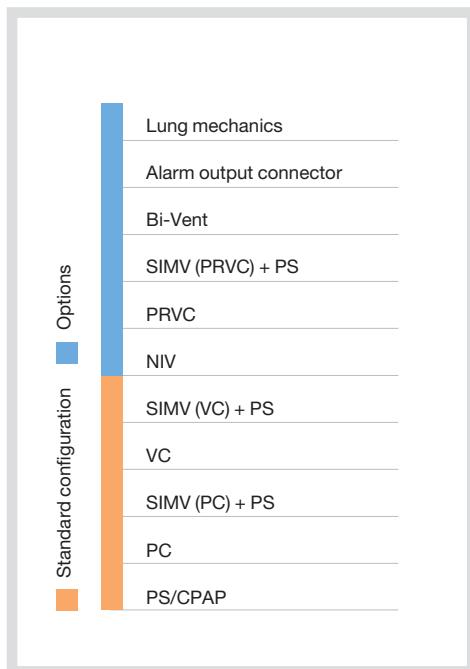
The SERVO-s ventilator's simplicity of use makes it easier to provide high quality ventilation bedside, giving you more time to focus on patient care. It features a wide range of ventilation modes that can be tailored to specific clinical situations. The large intuitive user interface provides valuable decision support information. Waveforms with diagnostic quality and an array of lung mechanics parameters make it easy to follow patient progress and enable clinical evaluations to tailor the treatment.

SERVO-s in combination with Compressor Mini offers SERVO quality ventilation, independent of central gas installations. The quiet and compact compressor supplies dry, filtered compressed air and is ideal for bedside use. Compressor Mini can also be used as a reliable back-up that automatically takes over if the central gas supply fails.

**A cost effective solution:** SERVO-s is the cost-effective ventilator that is easy to use and tailor to your clinical needs.

- Same system for invasive and non-invasive ventilation, bedside and during transport within the hospital
- Adaptable to mobile cart, shelf or pendant
- A one-piece, cleanable and interchangeable expiratory cassette, so the system can instantly be made ready for the next patient
- Quick automatic pre-use check of the entire system including breathing circuit
- Bedside upgrade of software
- 1 year/5 000 hours planned maintenance interval
- Non consumable ultrasonic O<sub>2</sub> sensor
- Maximize your uptime with MCare remote services™

### SERVO-s ventilatory configurations



### Key to abbreviations

<b>SIMV</b>	Synchronized Intermittent Mandatory Ventilation
<b>PRVC</b>	Pressure Regulated Volume Control
<b>CPAP</b>	Continuous Positive Airway Pressure
<b>NIV</b>	Non-Invasive Ventilation
<b>VC</b>	Volume Control
<b>PS</b>	Pressure Support
<b>PC</b>	Pressure Control



## ADAPTIVE VENTILATION FOR BETTER PATIENT INTERACTION

**Individual quality care one patient at a time:** MAQUET's years of research in ventilator design and close cooperation with leading clinical researchers have shown the importance of improving flow delivery in relation to the unique needs of individual patients.

The SERVO Feedback Control System immediately responds to patient needs in terms of pressure and flow changes. Even the smallest deviations from set values are sensed, fed back to the servo-controlled valves and regulated – several hundred times per second. This ensures precise gas delivery, securing better patient interaction and improved lung protection.



The SERVO-s has further been designed to minimize the work of breathing during both the beginning and the end of a breath to provide patient comfort. This is achieved with a sensitive inspiratory flow trigger and with an optimized opening of the expiratory valve at the beginning of expiration to minimize work of breathing while maintaining PEEP.

The possibility to adjust inspiratory rise time i.e. how fast maximum flow delivered during inspiration is reached, and to adjust when a spontaneous breath begins expiration, makes it possible to tailor the ventilation to each patient's specific needs.



## VENTILATION THE EASY WAY WITH INTELLIGENT TIME-SAVING FEATURES

**User interaction:** SERVO-s is easy to learn and operate, making it ideal for ventilatory care in a variety of clinical settings.

The user interface is designed by clinicians for clinicians – the intuitive menu system is accessed through the touch screen, main rotary dial or direct access knobs, providing secure control of vital settings such as PEEP, O<sub>2</sub> concentration, respiratory rate and volume/pressure.

**Convenience right from the start:** The automated pre-use check gives easy-to-follow instructions on the screen and takes just a few minutes. It tests vital functions and offers useful information about ventilator and patient circuit, making sure everything is ready before connecting a patient.

### Simple to operate:

- High-resolution waveforms with diagnostic quality
- Volume/Pressure and Flow/Volume loops
- Continuous 24 hours storage of trend data of measured parameters and events
- User defined start-up configuration
- Previous Mode functionality, easy to switch back to latest mode with latest settings
- Suction Support with possibility to set pre- and post-oxygenation level
- Menus have been streamlined into just two main levels for fast access to all settings

**Lung Mechanics parameters** such as resistance and compliance can be displayed, aiding in the understanding of the patient's respiratory condition and the adjustment of settings. Weaning parameters P0.1, Shallow Breathing Index and Work of Breathing are also available, giving clinicians indications of when to start weaning the patient off the ventilator.



24 hour trend of vital parameters



Direct access to vital settings

## A WIDE RANGE OF VENTILATION MODES

**Volume Control (VC)** on the SERVO-s does more than just deliver a set flow as in a traditional volume control mode. It senses if a patient demands a higher flow during inspiration and with flow adaptation delivers a flow profile according to the patient's immediate needs. The set tidal volume is delivered as a minimum, or a higher tidal volume if demanded by the patient.

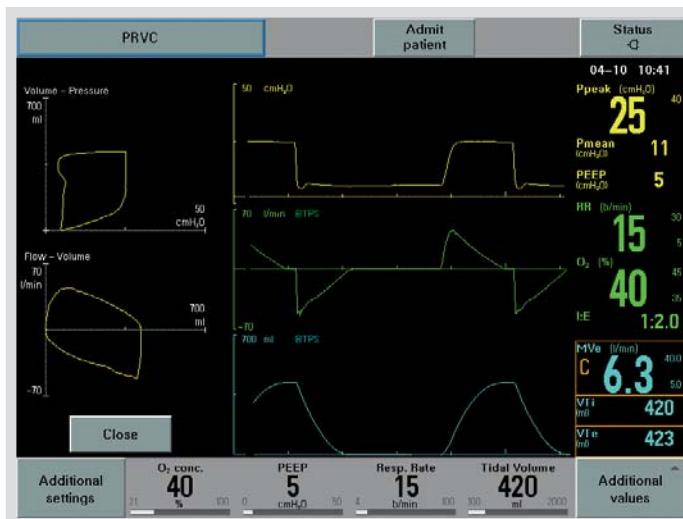
For precise control of the tidal volume, the flow adaptation can be turned off. Decelerating flow is another option in the VC mode and is designed to reduce peak pressures in patients with e.g. ARDS.

**Pressure Control (PC)** with Late Inspiratory Recruitment keeps pressure constant at set levels throughout the inspiration time, ensuring an even gas distribution. If it appears that previously collapsed alveoli are beginning to open, indicated by a pressure drop, they are opened further by a precise increase in flow.

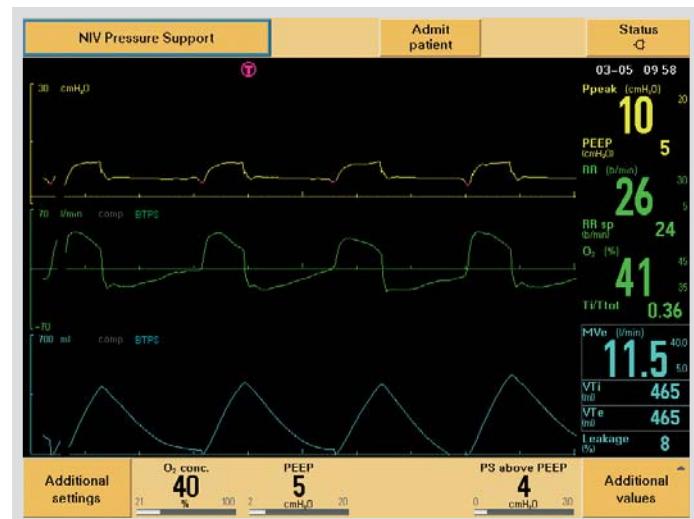
**Pressure Regulated Volume Control (PRVC)** combines the advantages of volume and pressure controlled ventilation, allowing SERVO-s to deliver the preset tidal volume with the lowest pressure possible.

**Bi-Vent** allows the clinician to combine controlled and assisted ventilation at low and high pressure levels. Timings for each pressure level are set and the patient can breathe spontaneously at both levels. Bi-Vent can also be used for Airway Pressure Release Ventilation (APRV).

**Non-invasive ventilation (NIV)** adapts to variable leakage levels to maintain the set pressure and PEEP level. And the measured Tidal and Minute volume shown on the screen are compensated for leakage so the actual volume that the patient breathes in and out is displayed. The leakage fraction is also shown, giving an indication to when the non-invasive interface may need adjustment.



Loops and waveforms displayed



NIV with automatic leakage compensation

## PROVEN RELIABILITY BASED ON A TRADITION OF QUALITY

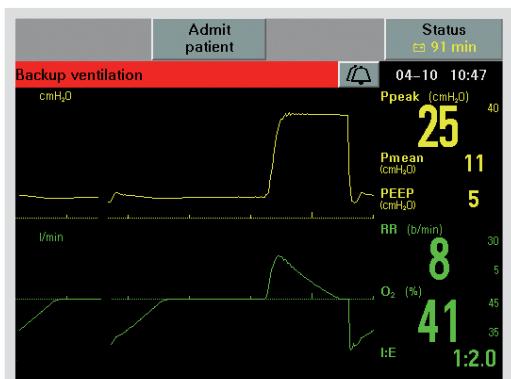
**Dependable performance:** SERVO ventilators are known for their outstanding performance, and SERVO-s is no exception. Fast pressure measurements and regulation, precise flow, clear display of patient values, ease of control, and reliable alarm and back-up systems are part of the SERVO commitment to dependable care.

In the expiratory cassette, the fast and precise ultrasonic flow transducers manage accurate measurement of the expiratory flow and reliability of alarms while ensuring the lowest possible expiratory resistance and Work of Breathing.

Intuitive controls facilitate rapid response. Battery capacity and status information for oxygen cell/sensor and expiratory cassette are shown on the display.

### Back-ups and alarms:

- Audible and visual alarms for patient safety
- Optional external alarm system
- Back-up apnea function ensures safe ventilation in pressure support
- Continuous uninterrupted single gas capacity – in case of failure in O<sub>2</sub> or air supply
- Built-in rechargeable batteries provide at least 60 minutes of back-up
- Remaining battery capacity is shown in minutes on the SERVO-s screen
- Added battery back-up time via external 12V power source
- Gas bottles can be secured directly to the back of the cart for intrahospital transports



## SERVO-s WITH MCARE SECURING PERFORMANCE FROM DAY ONE

**Features to fit every need:** MAQUET offers a wide range of accessories and consumables such as active and passive humidifiers, patient circuits and the Servo Duo Guard™ filter designed for safe use during nebulization.

MAQUET offers solutions for intermittent and continuous nebulization with reusable or disposable units. All solutions offer high performance aerosol delivery without affecting the ventilatory settings, making it possible to provide treatment for a wider range of patients.

The SERVO-s mobile cart is ergonomically designed for maximum stability and user-friendliness. Accessories such as the nebulizer, humidifier and support arm can be easily attached to the side or front of the cart column.

**MAQUET MCare®** is a holistic service concept that ensures SERVO-s will operate at peak performance throughout its lifecycle, and that your staff can take advantage of all its features in the best possible way. Beyond parts, training, service and maintenance, MCare offers innovative solutions such as unique online services and support and ongoing equipment upgrades.

**Access to the MCare portal.** The MCare portal is a unique offer from MAQUET. Your team can review their own SERVO-s systems, follow up on service and maintenance schedules, get an instant view of service and user documents and get the latest news about the system. MCare remote connection allows for quick and environmental-friendly service. The portal also provides easy access to e-learning modules.

**Cost and risk management.** At MAQUET, we understand the importance of helping facilities manage ever-escalating health care costs. With MCare services, SERVO-s owners enjoy cost certainty on consumables and even the cost of the service program for its entire duration.



SERVO Duo Guard



Aeroneb



We ensure high-quality services for your SERVO-s and your staff



MCare Portal contains information and useful documentation

# MAQUET

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