



**Aquarius™ System**  
with **PLATINUM** Software and  
Automated Total Fluid Loss Management

CVVH

CVVHD

CVVHDF

SCUF

TPE

Hemoperfusion

**Aquarius**

# Safeguarding your patients – Reducing your workload

**The Aquarius™ System** integrates dual control and protection system processors that work continuously to help safeguard your patients. Alarm hierarchies alert clinicians if an out-of-range condition occurs and the Aquarius™ system responds simultaneously and automatically to help ensure patient safety.

## The Aquarius™ System: patients' safeguarding features

- **Automated Total Fluid Loss Management** automatically compensates fluid balance deviations. Intelligent compensation software now includes anticoagulant volumes and accurately regulates pumped fluid.
- **Actual Renal Dose** displays minute-by-minute delivery of effective treatment. Daily adjustments to patient weight and treatment are shown as Prescribed and Delivered renal dosage.
- **Rotating head** with clear white LCD screen, intuitive status lights visible from both sides, reliable selector, wipe-clean soft keys.
- **Clinician friendly interface** with real-time clinical information messaging, updated alarm guidance and nursing help.
- **Integrated fluid warmer** 'always on' background operation, normothermia maintenance up to 6L/h, adjustable setting.
- **Minimal intervention** with self-correcting alarms, automated fluid warming and degassing, rotating scales for up to four bags, and extended treatment duration up to 100h.
- **Battery backup** during power failure.
- **Network:** the Aquarius™ system can download treatment data to external clinical information systems via an optical port.
- **Wheels:** twin castor stabilised, independent braked wheels improve mobility around the bed space.



Safeguarding your patients –

## Delivering your prescription

### Fluid balance management & Renal dose

#### Total Fluid Loss Management – Principle

A balance alarm occurs when a +/- 50 g difference (+/- 20 g for low volume patients) is detected between the target ultrafiltration volume and the actual ultrafiltration volume. The volume discrepancies are automatically compensated by the system when the pumps are reactivated by pressing the Balance Start/Stop key.



**Fluid balance** is a key aspect of the Continuous Renal Replacement Therapy (CRRT) prescription. The possibility of making fluid balance errors during CRRT has been identified since the beginning of CRRT<sup>1</sup>.

With the automated Total Fluid Loss Management (TFL) feature, the Aquarius™ system provides total control over fluid balance and automatically corrects fluid balance variance back to zero, so that fluid balance discrepancies are eliminated. The TFL feature helps to reduce risks by avoiding fluid imbalance accumulation over time due to multiple balance alarms.

#### Renal Dose

The Aquarius™ system displays on the main screen the actual delivered dose in mL/kg/h. This allows the physician to review and adjust the programmed dose to achieve the desired treatment dose.

This useful tool demonstrates, rather than estimates, effective therapy delivery through proficient management. The user is fully aware of the dose of treatment given to the patient.

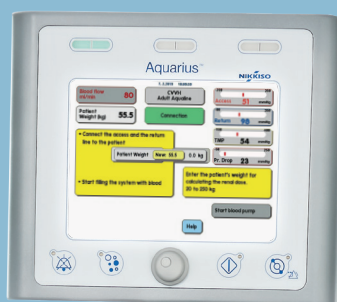
#### Actual Renal Dose Display – Principle

At the start of treatment or after a programmed value change, the prescribed renal dose is displayed for the first 2 minutes.

After 2 minutes of uninterrupted therapy, the delivered renal dose is displayed based on the actual pump rates.

During treatment, patient weight can be modified at any time.

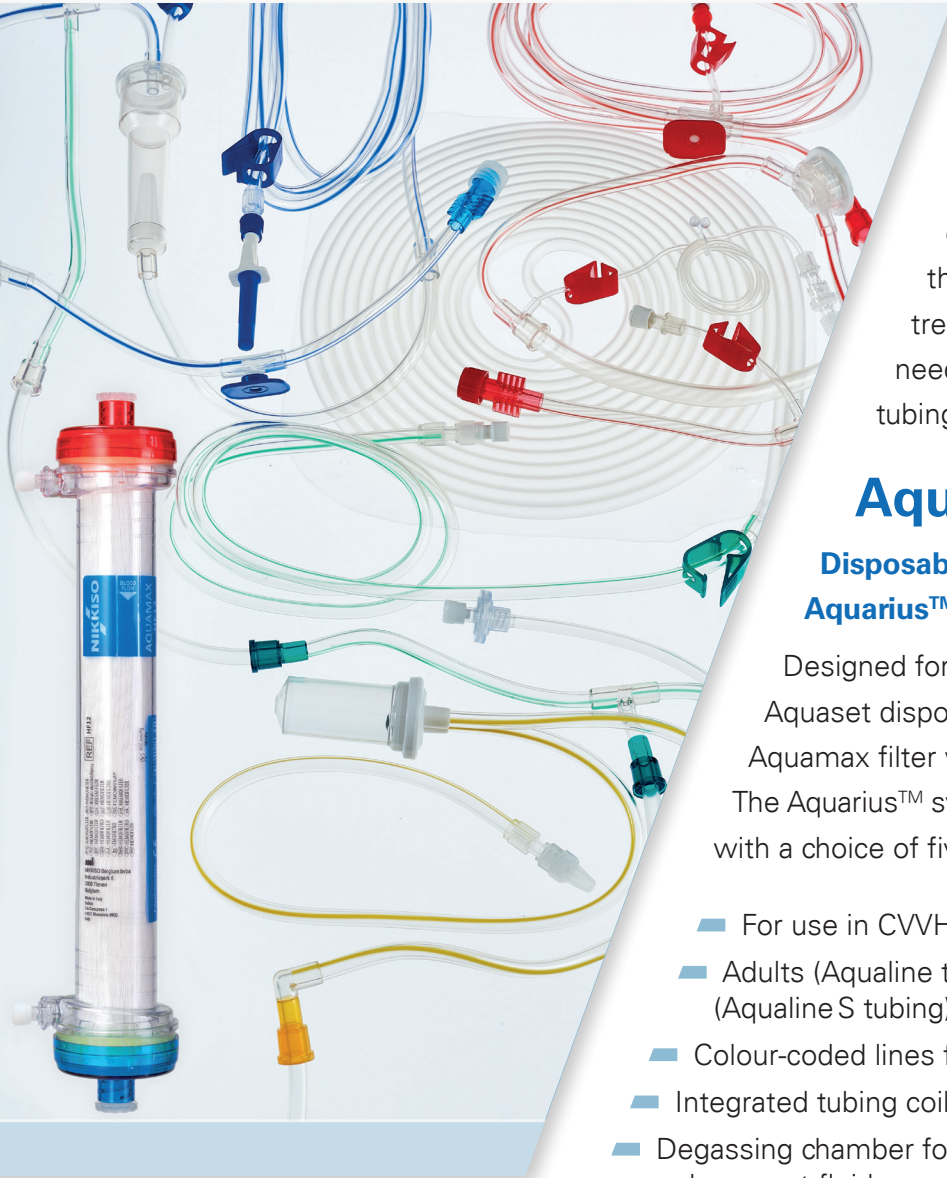
Renal dose mL/kg/h 31.6





## Simplified Disposables –

# Reducing your inventory



## Aqualine

### One tubing set for all therapies

Aqualine tubing set for adults and AqualineS tubing for low volume patients can be used for all therapies performed by the Aquarius™ system. Therefore during the treatment, patient's prescription and therapy needs can be altered without changing the tubing set.

## Aquaset

### Disposables exclusively designed for Aquarius™ System (GE-F096-00)<sup>2,3</sup>

Designed for use on the Aquarius™ system, Aquaset disposables conveniently combine an Aquamax filter with an Aqualine tubing. The Aquarius™ system provides prescription flexibility with a choice of five sets.

- For use in CVWH, CVHD, CVHDF, SCUF
- Adults (Aqualine tubing) and low volume patients (AqualineS tubing)
- Colour-coded lines for safe and easy set-up
- Integrated tubing coil for the heating of replacement fluid
- Degassing chamber for the removal of gas from warm replacement fluid
- Package includes an empty 2 litre priming bag and a 5 litre effluent bag

Products	Sets for Low Volume Patients		Sets for Adults		
	AQUASET 03LV	AQUASET 07PLV	AQUASET 07P	AQUASET 12	AQUASET 19
Aquamax® filter	HF03	HF07 <sup>+</sup>	HF07 <sup>+</sup>	HF12	HF19
Bloodline	AqualineS	Aqualine S	Aqualine	Aqualine	Aqualine
Bloodline blood volume	61 mL	61 mL	100mL	100mL	100mL
Ancillaries	1 effluent bag 5 litre + 1 empty priming bag 2 litre + 1 two-way connector				



# Aquarius™ System & Support –

## More than just the CRRT machine

### Full range of products

Nikkiso offers fully individualised treatment options with everything you need for a therapy.

Our large portfolio is led by the Aquarius™ system with its range of catheters, solutions, tubing sets, hemofilters and plasmafilters.

### World-class education

Our state-of-the-art education is well-known world-wide for being tailored to each hospital's needs.

- Troubleshooting help available 24/7\*
- Tailored training packages according to your team's experience and needs
- Hands-on demonstration and practice with the Aquarius™ system

### Online education portal

Nikkiso has launched an online education portal with a library of downloadable materials about Nikkiso products and therapy areas.

Register under [www.nikkisomedical.com](http://www.nikkisomedical.com) and get access to the world of CARE.



\*in selected countries

### Technical Data

#### Adult

#### Low volume

Product Code GE-F096-00 (SW 6.02.09 or above)

#### Flow rates

Blood pump	30 to 450 mL/min for all therapies except: 30 to 250 mL/min (TPE)	10 to 200 mL/min
Pre-dilution pump	0 or 100 to 10,000 mL/h	0 or 100 to 6,000 mL/h
Post-dilution pump	0 or 100 to 10,000 mL/h	0 or 100 to 4,000 mL/h
The total flow rate resulting from the flow rates of pre-dilution and post-dilution pump must not exceed 10,000 mL/h.		
Dialysate pump	0 or 100 to 10,000 mL/h	0 or 10 to 10,000 mL/h (CVVHD) 0 or 10 to 6,000 mL/h (CVVHDF)
Filtrate pump	0 or 100 to 12,000 mL/h	0 or 100 to 11,000 mL/h
Plasma	0 or 10 to 3,000 mL/h	0 or 10 to 1,200 mL/h
Patient fluid loss rate	0 to 2,000 mL/h SCUf -100 to 2,000 mL/h CWH, CVVH, CVVHD, CVVHDF	0 or 10 to 1,000 mL/h

#### Scales

Fluid balance alarm	± 50 g	± 20 g
Substitution/Filtrate scale max. load	20 kg	20 kg

#### Fluid warmer

Adjustable setting	0 (off) or 35 °C to 39 °C by 0.5 °C
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#### Anticoagulant settings

Heparin pump accuracy	± 2 mL/h
Heparin pump settings	0 or 0.5 to 15 mL/h, by 0.1 mL/h
Heparin syringe size	50 mL
Bolus function	0 or 0.5 to 2.5 mL by 0.5 mL

#### Degassing unit

Gas removal	At least 10 mL/min
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#### Dimensions and weight

H x W x D	175 cm (without I.V. pole) x 65 cm x 75 cm
Floor space (W x D)	Approx. 55 cm x 65 cm
Weight	Approx. 90 kg

#### Power requirements

GE-F096-00 Voltage/Current	230V (alternating voltage) ± 10 %, 50/60 Hz/2.2 A with 230 V
Power consumption	350 W

#### Monitor/detection parameters

Air detector	Ultrasonic measurement; Air bubbles at a volume of 1 µL at a blood flow rate of 200 mL/min
Blood leak detector	Measurement of clouding; 2 mL blood/1,000 mL filtrate at HCT 32 %
Display monitor	10.4" TFT color

#### Pressure monitoring (in treatment mode)

Alarm	Lower Limit	Upper Limit	Units
Access Pressure	-250	+350	mmHg
Return Pressure	+20	+350	mmHg
Filtrate Pressure	-400	+450	mmHg
Prefilter Pressure	0	+450	mmHg
TMP for renal treatments	-30	+400	mmHg
TMP for TPE	-30	+100	mmHg
Pressure drop	0	+250	mmHg



Continuous Acute  
Renal Education

Access your CRRT & Aquarius  
education platform

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


<sup>1</sup> Ronco C, Fluid balance in CRRT: a call to attention! The International Journal of Artificial Organs. 2005; 28: 763–764

<sup>2</sup> Aquamax filters Instructions for Use (2015)

<sup>3</sup> Aquarius™ System Instructions for Use (2018)


CRRT (Continuous Renal Replacement Therapy), CVVH (Continuous Venovenous Hemofiltration),  
CVVHD (Continuous Venovenous Hemodialysis), CVVHDF (Continuous Venovenous Hemodiafiltration),  
SCUF (Slow Continuous Ultrafiltration), TPE (Therapeutic Plasma Exchange), Hemoperfusion (Blood Detoxification).


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