



AQUAboss

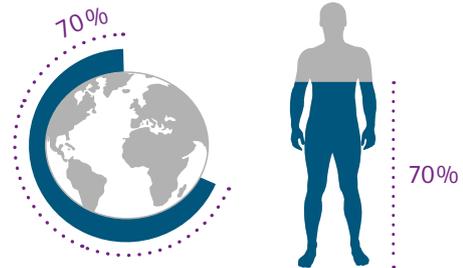
PURITY FOR LIFE



THE ESSENCE OF LIFE

THE COMMON DENOMINATOR OF ALL LIVING THINGS

H₂O – a simple chemical formula with profound significance. A compound uniquely intertwined with our understanding of life, purity, and vitality, it is the prerequisite for and the common denominator to all life on Earth. Water covers some 70% of the Earth's surface, and almost the same percentage can be found in every single one of us.



WHY IS PURE WATER SO IMPORTANT FOR DIALYSIS?

During hemodialysis treatment, patients are exposed to large quantities of dialysis fluid, which is 99.3% water, separated from the patient's blood solely by a very thin, semi-permeable dialyzer membrane. Clinical studies have revealed that contaminants in dialysis water are contributory factors for both acute and chronic morbidity and are responsible for serious complications in hemodialysis patients.¹ Consequently, water quality is a key factor in modern dialysis.

Because it's so crucial to your patients' health and wellbeing, there's just no substitute for the highest possible level of water purity for dialysis treatment. At B. Braun, we can look back at over 25 years of experience in dialysis water purification and have evolved over the years into a world leader in this field. Our new AQUAbase reverse osmosis purification unit was designed with the same philosophy of quality, customer value and safety that goes into everything we manufacture.

¹ Cannata-Andia JB, Fernández-Martin JL. The clinical impact of aluminium overload in renal failure. *Nephrol Dial Transplant* 17 [Suppl 2]: 9-12, 2002 | Usuda K, Kono K, Yoshida, Y. The effect of hemodialysis upon serum levels of fluoride. *Nephron* 75:175-178, 1997 | Calderaro RV, Heller L. Outbreak of hemolytic reactions associated with chlorine and chloramine residuals in hemodialysis water. *Rev Saude Publica* 35:481-486, 2001 | Yamagami S, Adachi T, Sugimura T, Wada S, Kishimoto T, Maekawa M, Yoshimura R, Niwa M, Terano Y, Shaldon S. Detection of endotoxin antibody in long-term dialysis patients. *Int J Artif Organs* 13:205-210, 1990

AQUAboss

DISCOVER THE POSSIBILITIES

AQUAboss RO devices are manufactured to the highest quality using stainless steel. For you, this means enhanced reliability and durability. Thanks to their innovative technology, AQUAboss RO devices reduce water consumption during daily operation and standby periods. This helps reduce costs over the complete system lifetime.

WATER PURIFICATION AT THE HIGHEST LEVEL

- Available as single- or double-stage reverse osmosis device
- Double stage device performs as a fully redundant system
- Dead-space-free design concept for the entire installation (AQUAstream)
- High water recovery rates up to 85% (geared-to-consumption)
- Impulse backwashing for cleaner and long-lasting membrane modules
- Durable stainless steel design
- Complete heat-on-demand disinfection (Hot Rinse Smart)







PREMIUM WATER PURIFICATION

A CLEAN SOLUTION FOR MORE HEALTH

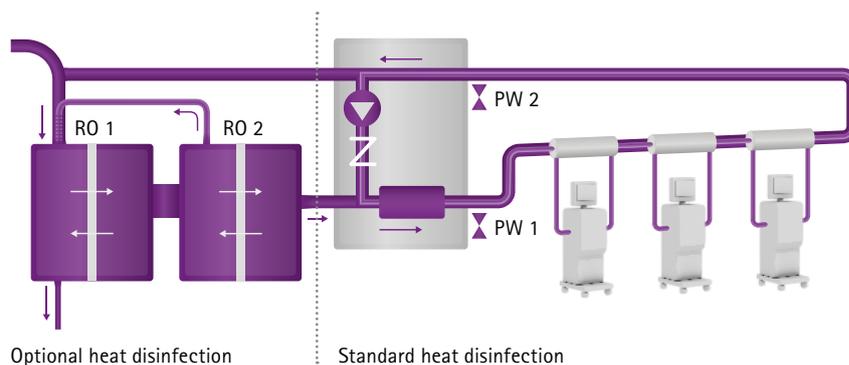
Research has shown that water quality is crucial to the health and wellbeing of dialysis patients. That's why we made every effort to ensure that the AQUAboss gives you just that: pure water.

The design of the AQUAboss eliminates all dead space within the piping and membrane housing, while an advanced impulse backwashing system inhibits biofilm deposition. In addition, AQUAboss features a highly effective heat disinfection system. Taken together, these state-of-the-art design elements improve the highest level of safety and quality for your patients.

Heat disinfection itself is nowadays often seen as an integral part of modern dialysis systems. However, heat disinfection should cover the whole water treatment system, including the distribution system to the dialysis machine and the RO device. AQUAboss RO single stage and double stage devices use the latest technological developments to also perform heat disinfection on the RO device, including all elements and parts of the system, from the break tank up to the point of use.

HOT RINSE SMART

Total heat disinfection (option) using heat-on-demand flow-through heater. No tank with stagnant water. Opportunity to operate chemical-free.

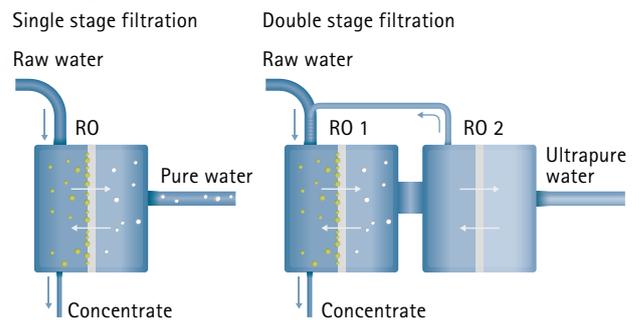




AQUAboss DETAIL HIGHLIGHTS

SINGLE- AND DOUBLE-STAGE FILTRATION

Higher water quality and efficiency plus fully redundant system functionality



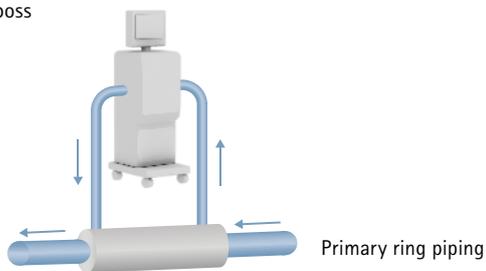
AQUAstream CONCEPT

Dead-space-free design for the entire ring main installation. Constant flow to dialysis machines using secondary ring piping technology.

Advanced AQUAboss technique

Dialysis unit

Secondary ring piping

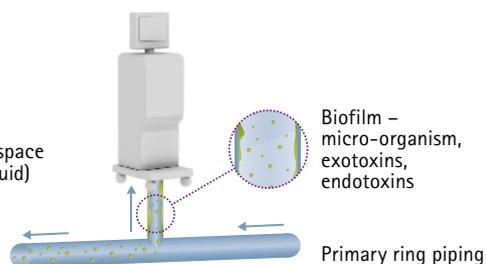


Conventional technique

Dialysis unit

Stub hose (dead space with standing liquid)

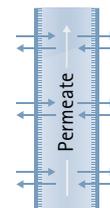
Retrograde contamination



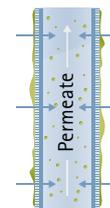
IMPULSE BACK-WASHING (ECO)

Clean, long-lasting membranes thanks to automated flushing technology

RO membrane AQUAboss technology



RO membrane conventional technology



DEAD-SPACE-FREE

Dead-space-free system design concept including membrane housing

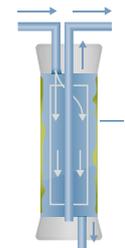
Raw water

Pure or ultrapure water



Raw water

Permeate



SPOT ON SUSTAINABILITY

AN ECONOMICAL AND ENVIRONMENTALLY SOUND CHOICE

In addition to achieving the best possible treatment outcomes, healthcare systems all over the world are under pressure to control costs and improve efficiency. Depending on the system configuration, investment costs for water treatment systems make up only about one quarter of the total lifecycle costs.

That's why it's so important to strive for reliable, innovative and flexible solutions to reduce the total lifecycle costs and ensure cost-effective dialysis.

AQUAsystem technologies are designed to consume only the minimum amount of valuable fresh water and electricity during dialysis and standby operation.



TOTAL COSTS OF OWNERSHIP

Water costs	24%
Energy costs	25%
Service and maintenance	24%
Capital costs for RO and heat disinfection system	27%



It's geared-to-consumption principle and its on-demand thermal technology contribute to the system's efficiency. With the AQUAsystem, you can save more than 40% on water consumption alone as compared to conventional water purification systems.

Automated impulse backwashing cleaning and heat disinfection functions maintain consistently high system performance levels. We also offer steam sterilization (AQUAclav) for stainless steel distribution systems. This gives you a water purification system that complies with pharmaceutical industry standards.

The easy to use and long-lasting technology "made in Germany" will provide you with many years of reliable service with a reduced amount of maintenance. Nevertheless, our global service network is there for you whenever the need should arise.



AQUAboss PACKAGES

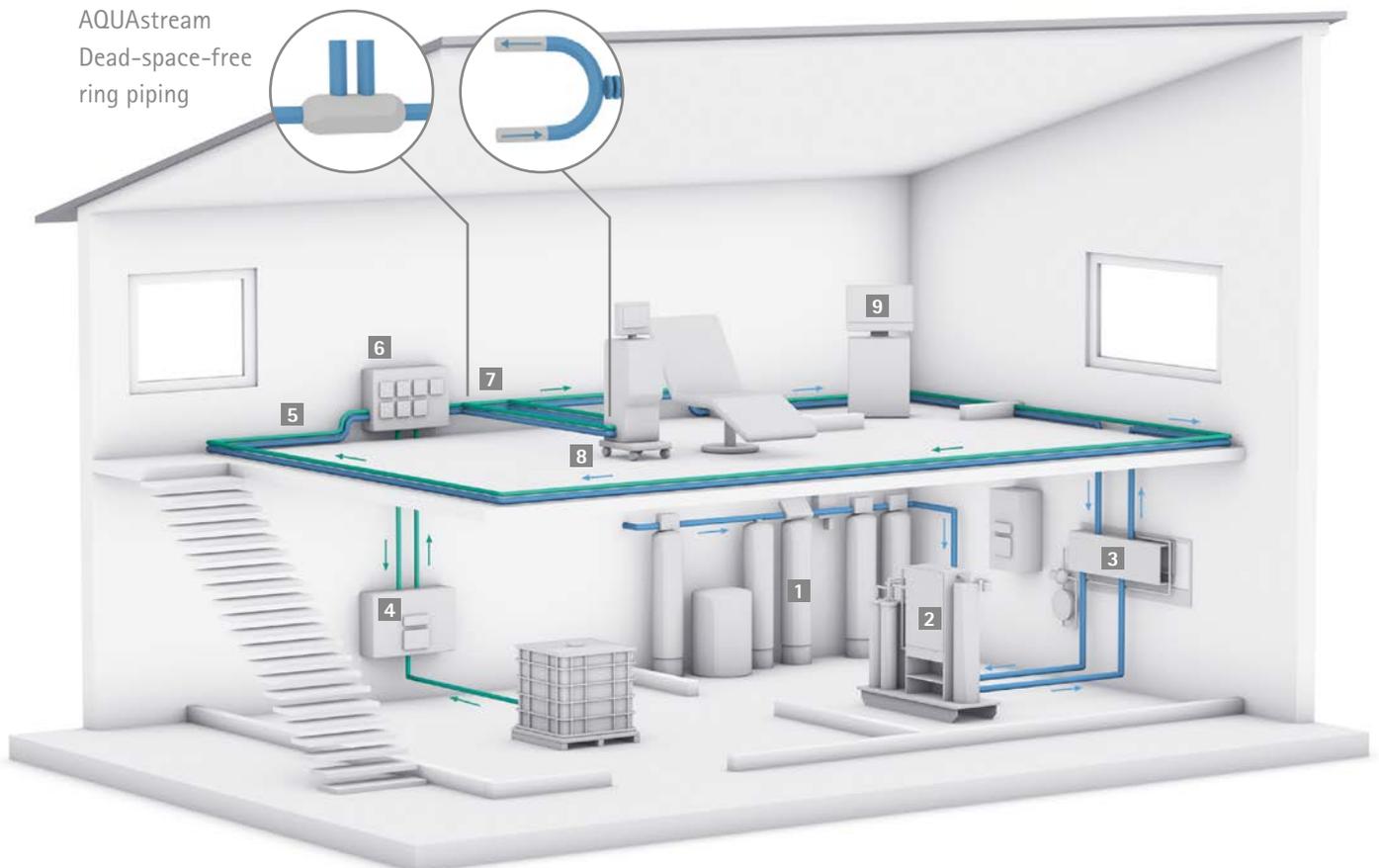
AQUAboss	AQUAboss Classic	AQUAboss Comfort	AQUAboss Premium
	Standard Package	Advanced Package	Full Package
Pretreatment equipment	Pending on raw water conditions	Pending on raw water conditions	Pending on raw water conditions
RO device series	<ul style="list-style-type: none"> AQUAboss single stage 	<ul style="list-style-type: none"> AQUAboss single- or double-stage Impulse backwashing (eco) 	<ul style="list-style-type: none"> AQUAboss double stage Impulse backwashing (eco)
Disinfection (other than chemical)	-	<ul style="list-style-type: none"> Hot Rinse Smart Ring Disinfection 	<ul style="list-style-type: none"> Hot Rinse Smart Ring Disinfection Hot Rinse Smart RO Disinfection Premium PLUS: AQUAclav
Ring main supply	<ul style="list-style-type: none"> PEX AQUAstream 	<ul style="list-style-type: none"> PEX AQUAstream 	<ul style="list-style-type: none"> Stainless steel AQUAstream
Process visualization	-	<ul style="list-style-type: none"> AQUAvision 	<ul style="list-style-type: none"> AQUAvision
Media supply center	Wide range of supply centers available	Wide range of supply centers available	Wide range of supply centers available

ALL PACKAGE COMPONENTS CAN BE COMBINED INDIVIDUALLY.



IN A PERFECT FLOW

AQUAsystem – A COMPREHENSIVE SOLUTION FOR DIALYSIS WATER TREATMENT



- 1 Pretreatment
- 2 AQUAboss/AQUAbase reverse osmosis device
- 3 Heat disinfection solutions
- 4 Central concentrate supply
- 5 Ring piping solutions
- 6 Media providing centers
- 7 Pressure differential bulb
- 8 Secondary ring piping
- 9 Process visualization

Perfection is when everything fits together flawlessly. With the AQUAsystem, B. Braun Avitum strives to offer the best possible system solution by always focusing on the customer's key needs: increasing the quality of life of the patient and reducing the total cost of ownership.

This complete system can handle even the most demanding requirements. With its dead-space-free, closed circuit system, intuitive process visualization and monitoring software, it's much more than just the sum of its parts.

Together with the AQUAsystem, we offer comprehensive planning and maintenance services, as well as individually tailored service models from a single source. As always, you can rely on our years of experience in the field of dialysis, certified production processes and quality "made in Germany".

AQUAboss PACKAGES

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Media supply center	Wide range of supply centers available	Wide range of supply centers available	Wide range of supply centers available

ALL PACKAGE COMPONENTS CAN BE COMBINED INDIVIDUALLY.



AQUAsystem REVERSE OSMOSIS DEVICE SERIES

Liters/hour	200	750	1700	2650	3600
AQUAbase	250-900 l/h				
AQUAboss single stage	500-3000 l/h				
AQUAboss double stage	500-3600 l/h				
Machine supply	6	25	55	85	120



Learn more about the benefits of the new AQUAboss and our other innovative products.

For further information, download the dedicated app by scanning the QR code below.



AQUAsystem – OVERVIEW

AQUAbase

The AQUAbase is our basic, single stage water treatment system.

AQUAboss

AQUAboss offers the choice of single- or double-stage water treatment systems, our premium device series.

AQUAstream

This system offers highly hygienic, dead-space-free ring piping solutions. The unique design concept ensures constant flow to the dialysis machine connection and incorporates unique welding technology for its stainless steel tubing.

AQUAsupport

We offer customized service and support packages for planning, construction, training, service and maintenance.

AQUAvision

AQUAvision is our specially developed, network-capable process visualization and monitoring software. This intuitive user interface is designed to simplify operation, documentation and error analysis.

AQUAclav

With our steam sterilization services for stainless steel distribution systems, your water purification system complies with pharmaceutical industry standards.

AQUAsystem – CHARACTERISTICS

RELIABILITY

- Over 25 years of experience in dialysis water purification
- Medical device standard
- Durable stainless steel design
- Redundant double stage technology
- Global service and support network
- Expert pre- and post-sale consulting

SAVINGS

- High water recovery rates
- Geared-to-consumption during operation and standby
- Efficient cleaning and disinfection technologies
- Heat-on-demand
- Chemical-free disinfection solutions
- Easy service

WATER QUALITY

- Constant flow throughout the entire water treatment system
- Double stage filtration technology
- Automated membrane flushing feature (impulse backwashing)
- PLUS: AQUAclav sterilization services for water purification systems to pharmaceutical standards

B. Braun Medical N.V./S.A. | Lambroekstraat 5B | 1831 Diegem
+32 (0)2 712 86 50 | customercare.be@bbraun.com | www.bbraun.be



Learn more about the benefits of the new AQUAboss and our other innovative products.

For further information, download the dedicated app by scanning the QR code alongside.