

B. Braun Avitum

Water Treatment Systems



Aquaboss Dialysis Water Purification Specs

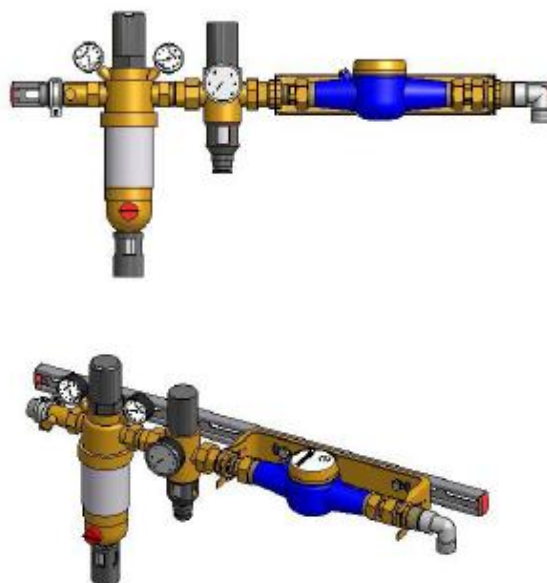
1. Pre-treatment equipment

Pretreatment

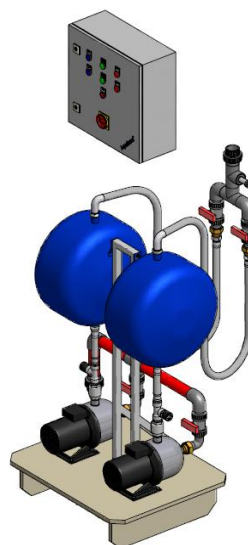
Aquaboss · Pre-Stage 1"

The Aquaboss · Pre-Stage is a complete pre-assembled unit for protection of drinking water against backflow and the succeeding stages of water treatment, consisting of:

- pipe disconnecter according DIM 1988 / DVGW
- backwashable preliminary filter with stainless steel filter 105 µm according DIM 1988 / DVGW
- pressure reducer
- manometer for indication of raw water pressure
- water meter for registration and documentation of the total water consumption of dialysis water treatment
- subbase



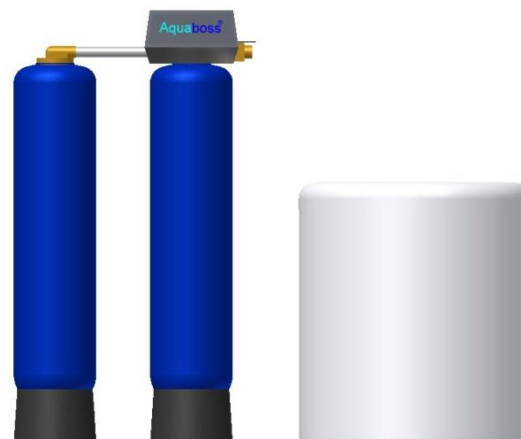
Aquaboss Booster pump unit DEH Duo



Duplex Water Softening System

Duplex water softening system for a continuous soft water production without any breakdown

- The self containing operation method makes it possible for an emergency supply, also at power failure (for approx. 6 hours max.)
- Water-/brine change in brine-tank for hygiene assurance
- Designed to an individual demand
- Regeneration geared to the consumption



2 x Activated Charcoal filter stage

Aquaboss· AK I – ZG

For pretreatment and removal of free chlorine and organics on activated charcoal filter base

- Automatic control functions need only low personnel
- Self sufficient running makes an emergency supply possible even at power failure
- Automatic backwash by time controller
- Designed to an individual demand

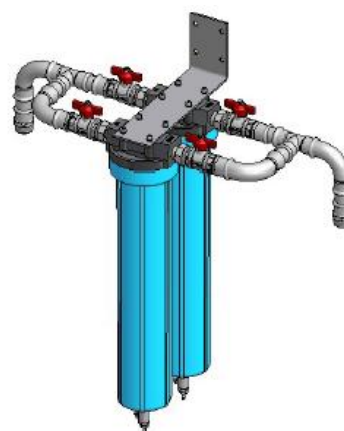


Pre-filter system

Combination filter unit 20" DUO Mapress

Double Filter unit 20" to protect reverse osmosis system against pollution from the incoming raw or soft water, parallel arrangement, separate lockable to exchange filter cartridges during operation, different cartridge types available:

- 100µm
- 10µm
- 5µm
- 1µm
- 0,2µm (additional costs)
- activated carbon (additional costs)



2. Reverse Osmosis

Double Stage Reverse Osmosis System

Aquaboss® RO Dia II – C 1600 l/h

C - Conductivity controlled

Medical Device Class IIb according

- Annex IX regulation 9 of the Directive of the Council no. 93/42/EEC on Medical Devices

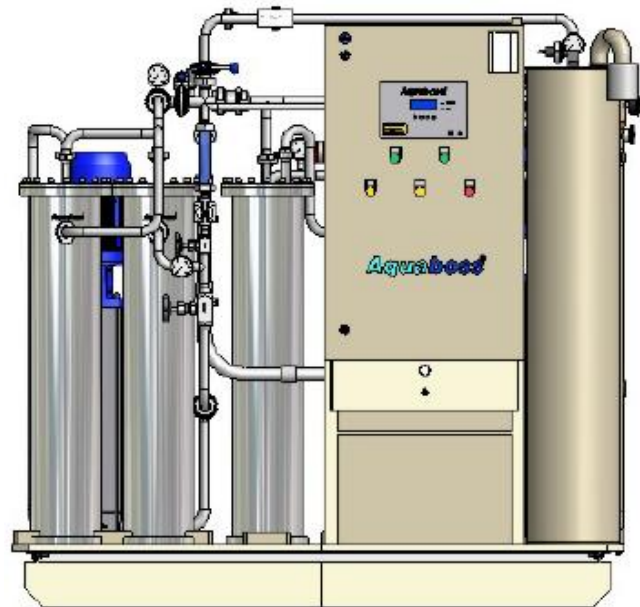
Medical Device Class III according

- Medical Device Regulations (Canada Gazette Part II, Vol 132 No. 11)

Approval(s) / Assurance / Certificates:

- **EC-Type Examination according Annex III** of the Directive 93/42/EEC.
- **Medical Device Licence (# 73514** Health Canada)
- **EC Declaration of Conformity**, self-declaration
- **Full Quality Assurance System according Annex II** section 3 of the Directive 93/42/EEC (EC Certificate G1 06 09 31095 025 TÜV-PS)
- **QM System according Annex V** of the Directive 93/42/EEC (EC Certificate G2 08 05 31095 031 TÜV-PS).
- **Quality Management System ISO 9001:2008** (12 100 15128 TMS TÜV Süd Management Service GmbH)
- **Quality Management System ISO 13485:2003** (S 951 03 1850 TÜV Süd America Inc.)
- **Electrical Assurance IEC 61010-** (CB-Test certificate CH3598 M1/04-EL-0033.xx Electro-Suisse)
- **Electromagnetic Compatibility (EMC) EN 60601-1-2** Class B) Montena-Suisse certificate: 14'106A -2006.7348
- **cETLus Authorization** (according UL-Standard; CAN/CSA C22.2 № 61010-1. Control Number: 3134491 Intertek Testing Service NA Inc.)
- **TÜV Mark Z1 08 09 31095 034 TÜV PS**

The **double reverse osmosis facility (Aquaboss® RO Dia II)** cleans the permeate of the first RO-stage a second time by a second RO-stage and can therefore be described as **ultra pure water**. Endotoxines as well as the pyrogenes can be reduced until a veritable limit. A further benefit is, that in case of a break-down of one reverse osmosis stage the other reverse osmosis stage continues dialysis with high quality



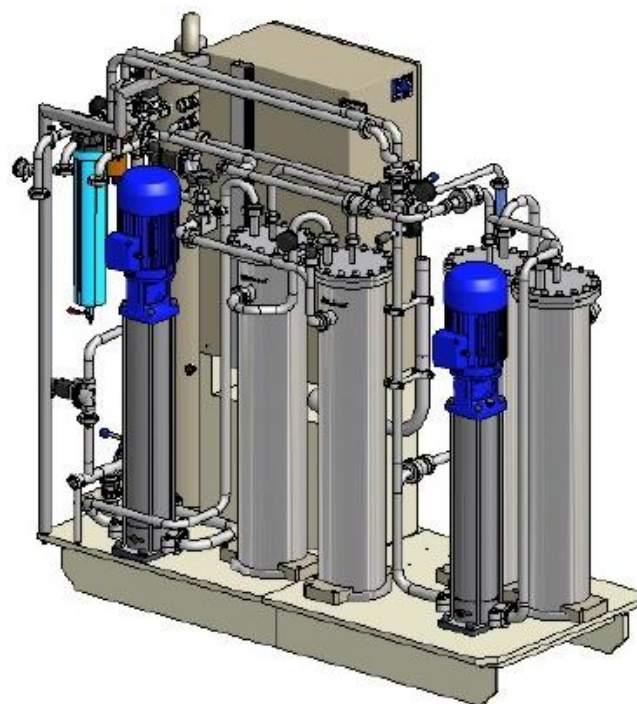
water. Emergency dialysis with questionable soft water could be avoided.

Containing:

Double RO-system in twinpass double cleaning version

- **Water saving controlled** / geared to consumption
- **AISI 316L stainless steel** pipework (pharmaceutical quality)
- **Control** with plain text display, menu driven
- **Dead space free** membrane module (Patent Lauer)
- **Redundancy pump function** for partial load operation (Economy-operation)
- **Leakage monitoring** / system and ring piping
- Permeate- and concentrate re-circulation for higher membrane cross flow and water saving
- **Special-safety system:** In case of breakdown of one RO-stage dialysis continues with the high quality water of the other stage; emergency dialysis with questionable soft water is avoid
- Conductivity measuring device
- **Mains separation/break tank.** Fully flown through and to be emptied completely, including sterile filter breathing.
- Fine filter / pore size 5-10 µm
- Designed for 3 bar collar thrust, **feedwater temperature of 6°C**

Upgradeable to **Aquaboss** EcoRO Dia II with patented **impulse back washing** Without pre-treatment



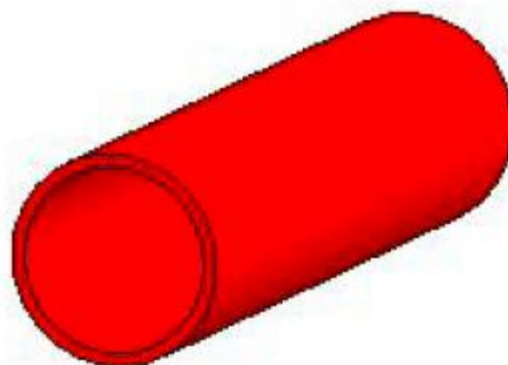
3. Ring Piping

Textile-reinforced hose AL 25 x 34mm white PUR	35287	m
Ring piping connection unit PVC with surge tank PWD 050 and flow meter	9381400	pcs
Insulation of Primary Ringpiping d28, condensation	39844	m

Permeate ring piping

Dead space free, PVC U-HP

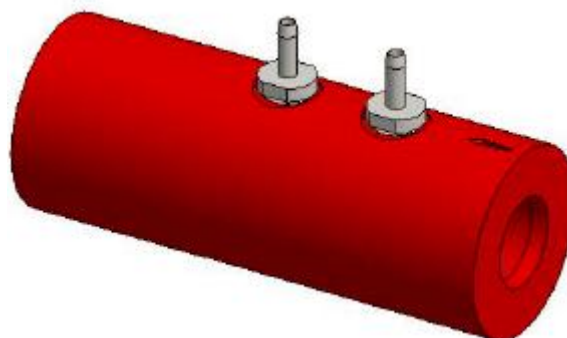
Material: primary ring PVC-U-HP (High Purity)
Incl. ring entry, ring end piece, other material and mounting, without couplings, without tubing to the HD machine



Dead space free up to HD machine (Patent Lauer)

Permeate differential pressure bulb

PVC-U red, for primary ring PVC, 2 x spout 4 mm



Permeate secondary ring piping

Material : PU / PU

Fabric, back stay

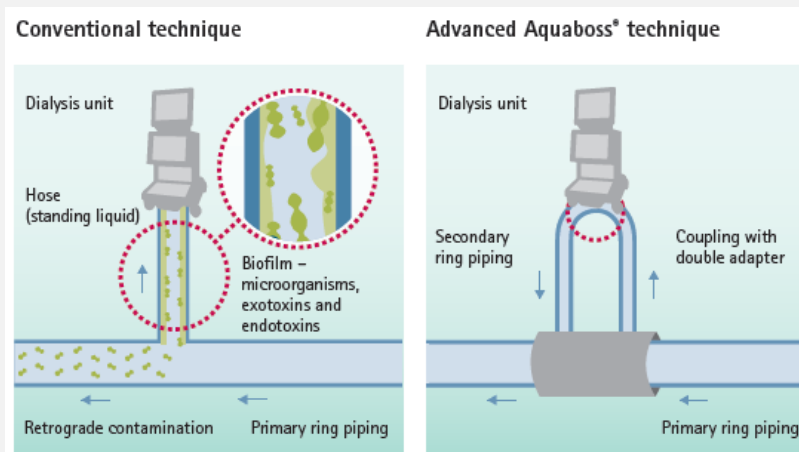
Inclusive: P-Y-double adapter, dead space free



Additional Information:

Aquaboss Dead Space Free Ring Piping

To ensure a high permeate quality it is crucial to have a complete and continuous flow in the whole water treatment system. In this case, stub hose connections from the primary ring piping to the dialysis machine are a weak point of the system, as these are dead spaces. Stagnant permeate triggers the proliferation of a biofilm, resulting in a retrograde contamination of the primary ring. The dead space free Aquaboss® secondary ring piping always ensures a constant permeate flow up to the dialysis machine.



Permeate coupling stainless steel AISI 316L

Permeate closing nipple

male, with spout

Material: 1.4571 EPDM



Raising of flow speed in ring piping

Aquaboss· impulse shear force rinsing

set for components of *Aquaboss EcoRO Dia*-system, for impulsive raising of flow velocity in primary- and secondary ring piping, containing:

- AISI 316L -stainless steel solenoid valve
- AISI 316L -pipe joint for integration in the system
- Cable with plug for connection solenoid valve / controlbox
- Program Up-date

4. Consumables

Filterelement 20", 5 µm	3-Pack
Hardness test kit, titration	
Chlorine test kit, titration	