

We understand water.



Mixed bed cartridge | desaliQ:BA/PA/BA VARIO mini

Operation manual

grünbeck

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1 Introduction

This manual is intended for owners/operating companies, operators/users as well as qualified specialists and ensures the safe and efficient handling of the product. The manual is an integral part of the product.

- ▶ Carefully read this manual and the included manuals on the components before you operate your product.
- ▶ Obey all safety and handling instructions.
- ▶ Keep this manual and all other applicable documents, so that they are available when needed.

Illustrations in this manual are for basic understanding and can differ from the actual design.

1.1 Validity of the manual

This manual applies to the products below :

Mixed bed cartridges of the **desaliQ:BA** product series with green marker tape.

- Mixed bed cartridge desaliQ: BA 6, BA 12, BA 13, BA 16, BA 20

Mixed bed cartridges of the **desaliQ:PA** product series with blue marker tape.

- Mixed bed cartridge desaliQ:PA 6, PA 12, PA 13, PA 16, PA 20

Mixed bed cartridges of the **desaliQ BA VARIO mini** product series without marker tape.

- Mixed bed cartridge desaliQ:BA 12 VARIO mini, BA 16 VARIO mini

1.2 Other applicable documents

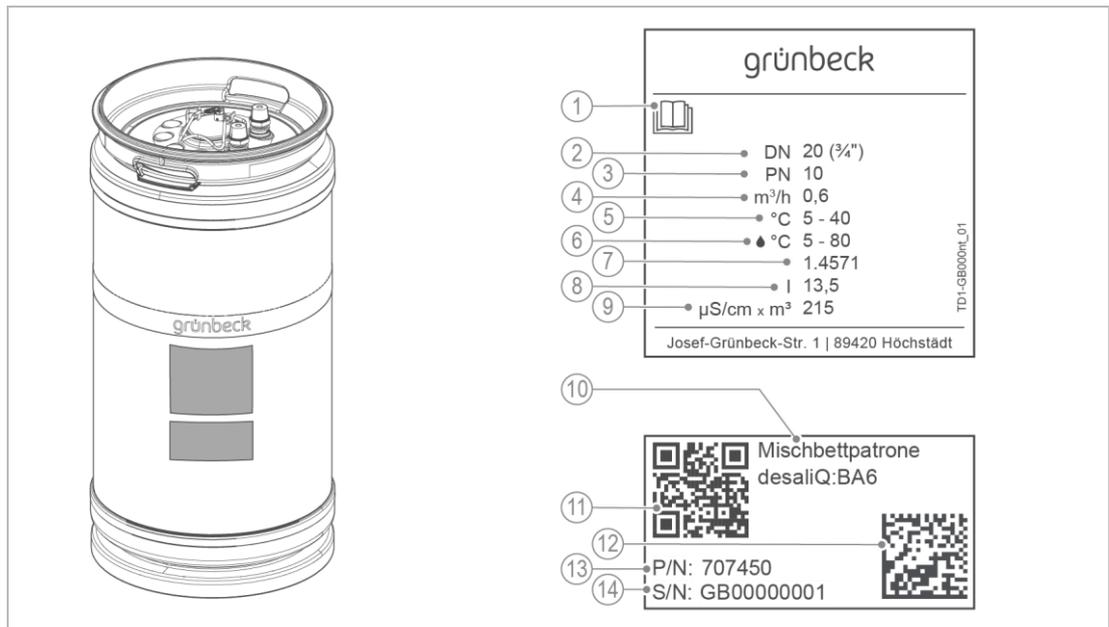
- Manuals of accessories used
- Operation manual of the respective filling section thermalIQ:FB

1.3 Product identification

You can identify your product based on the product designation and the order no. indicated on the type plate.

- ▶ Check whether the products given in chapter 1.1 correspond to your product.

The type plate is located at the front of the mixed bed cartridge desaliQ.



Designation	
1	Obey the operation manual
2	Nominal connection diameter
3	Nominal pressure
4	Nominal flow
5	Ambient temperature
6	Water temperature
7	Material

Designation	
8	Volume of cartridge
9	Capacity
10	Product designation
11	QR code
12	Data matrix code
13	Order no.
14	Serial no.

1.4 Symbols used

Symbol	Meaning
	Danger and risk
	Important information or requirement
	Useful information or tip
	Written documentation required
	Reference to further documents
	Work that must be carried out by qualified specialists only
	Work that must be carried out by qualified electricians only
	Work that must be carried out by technical service personnel only

1.5 Depiction of warnings

This manual contains information and instructions that you must obey for your personal safety. The information and instructions are highlighted by a warning symbol and are structured as shown below:



SIGNAL WORD	Type and source of hazard
• Possible consequences	
▶ Preventive measures	

The following signal words are defined subject to the degree of danger and might be used in the present document:

Warning symbol and signal word	Consequences if the information/instructions are ignored	
 DANGER		Death or serious injuries
 WARNING	Personal injuries	Possible death or serious injuries
 CAUTION		Possible moderate or minor injuries
NOTE	Damage to property	Possible damage to components, the product and/or its functions, or an object in its vicinity

1.6 Demands on personnel

During the individual phases of the service life of the product, different people work on the product. The respective tasks require different skills.

1.6.1 Qualification of personnel

Personnel	Requirements
Operator/user	<ul style="list-style-type: none"> No special expertise required Knowledge of the tasks assigned Knowledge of possible dangers in case of incorrect behaviour Knowledge of the required protective equipment and protective measures Knowledge of residual risks
Owner/operating company	<ul style="list-style-type: none"> Product-specific expertise Knowledge of statutory regulations on work safety and accident prevention
Qualified specialist <ul style="list-style-type: none"> Electrical engineering Sanitary engineering (HVAC and plumbing) 	<ul style="list-style-type: none"> Professional training Knowledge of relevant standards and regulations Knowledge of detection and prevention of potential hazards Knowledge of statutory regulations on accident prevention
Transport	
Technical service (Grünbeck's technical service/ authorised service company)	<ul style="list-style-type: none"> Extended product-specific expertise Trained by Grünbeck

1.6.2 Authorisations of personnel

The table below describes which tasks may be carried out by whom.

	Operator/ user	Owner/ operating company	Qualified specialist	Technical service
Transport and storage		X	X	X
Installation and mounting			X	X
Start-up/Commissioning			X	X
Operation and handling	X	X	X	X
Cleaning	X	X	X	X
Inspection	X	X	X	X
Maintenance semi-annually		X	X	X
Troubleshooting		X	X	X
Repair			X	X
Decommissioning and restart/recommissioning			X	X
Dismantling and disposal			X	X

1.6.3 Personal protective equipment

- ▶ As an owner/operating company, make sure that the required personal protective equipment is available.

The components below fall under the heading of personal protective equipment (PPE):



Protective gloves



Protective footwear



Protective overall



Protective goggles

2 Safety

2.1 Safety measures

- Only operate your product if all components are installed properly.
- Obey the local regulations on drinking water protection, accident prevention and occupational safety.
- Do not make any changes, alterations, extensions or program changes on your product. Only use genuine spare parts for maintenance or repair.
- Keep the premises locked against unauthorised access to protect imperilled or untrained groups of persons from residual risks.
- Comply with the maintenance intervals (refer to chapter 8.2).

2.1.1 Mechanical hazards

- You must never remove, bridge, or otherwise tamper with safety equipment.
- Risk of slipping due to escaping water.
- Risk of tripping due to hoses on the floor. Route the hoses away from traffic routes.
- Make sure that the product is set up in a way that it cannot tip over and that the stability of the product is guaranteed at all times.

2.1.2 Pressure-related hazards

- Components can be under pressure. There is a risk of injuries and damage to property due to escaping water and unexpected movement of components. Check the system's pressure lines for leaks at regular intervals.
- Before starting repair and maintenance work, make sure that all affected components are depressurised.

2.1.3 Groups of persons requiring protection

- This product is not designed to be used by persons (including children) with reduced capabilities, lack of experience or lack of knowledge.
- Cleaning and maintenance must not be carried out by children.
- Children must not play with the product.

2.2 Product-specific safety instructions



WARNING

Contact with ion exchanger resin due to the formation of dust or chemical reactions

- Serious eye irritation, irritation of the respiratory tract and the skin
- Serious bodily injury due to explosive reaction when mixing the ion exchange resin with nitric acid or other oxidising agents.
- ▶ Send in the mixed bed cartridge to Grünbeck's technical service for regeneration or refilling – do not regenerate the ion exchange resin of the mixed bed cartridge yourself.
- ▶ Use personal protective equipment.
- ▶ Obey the safety data sheets and strictly follow the instructions in case of an emergency.



CAUTION

Hot surfaces and hot heating water when used during ongoing heating operation

- Burns due to hot surfaces of up to 55 °C
- Scalding due to escaping heating water of up to 80 °C
- ▶ Only move the mixed bed cartridge using the carrying handles.
- ▶ Use suitable protective gloves.
- ▶ Let the mixed bed cartridge and the system parts affected cool down to ≤ 30 °C first before you do any work on the components.



NOTE

Floor drains that discharge to a lifting system do not work in case of a power failure.

- Possible flooding of rooms if no floor drain is available.
- ▶ Check that there is a floor drain in the installation room.
- ▶ Install a safety device with water stop function.

NOTE

Mechanical damage to the mixed bed cartridge due to corrosion.

- Danger due to escaping water and unexpected movement of system parts.
- Functional impairment of components.
- ▶ Eliminate corrosion with suitable means, for instance by polishing – do not use any chlorine or cleaning agents containing chlorine.
- ▶ Eliminate the cause of corrosion or replace a damaged mixed bed cartridge.
- ▶ Only use undamaged mixed bed cartridges.

Labels on the product



Hot surface



The affixed information and pictograms must be clearly legible.

They must not be removed, soiled or painted over.

- ▶ Obey all warnings and safety instructions.
- ▶ Immediately replace illegible or damaged symbols and pictograms.

2.3 Conduct in emergencies

2.3.1 In case of water leaks

1. Close the shut-off valves upstream and downstream of the product.
2. Locate the leak.
3. Eliminate the cause of the water leak.

3 Product description

3.1 Intended use

The mixed bed cartridge desaliQ:BA/PA/BA VARIO mini are designed for the generation of highly pure water and are devised for filling or make-up water feed of heating systems, for instance.

The mixed bed cartridge desaliQ:PA is designed for the generation of ultra-pure water of the highest quality with a purity of $< 0.1 \mu\text{S}/\text{cm}$.

The mixed bed cartridges can be used in the fields below:

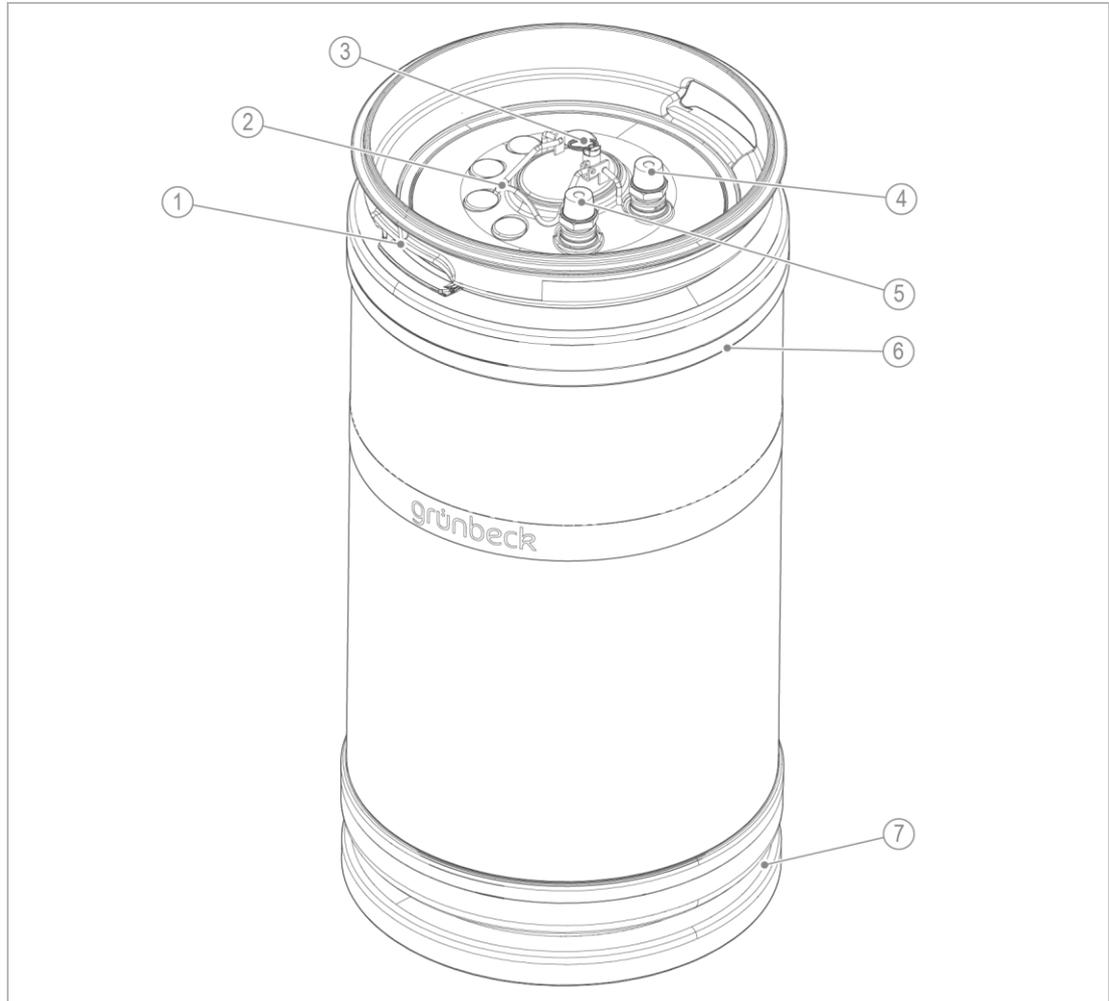
- Full demineralisation of raw water of drinking water quality
- Residual demineralisation of partially demineralised water (permeate) originating from reverse osmosis systems

3.2 Foreseeable misuse

- Treatment of raw water to be used as drinking water
- Operation with gas cushions
- Regenerating or refilling the mixed bed cartridge yourself is not permitted (refer to chapter 2.2).
 - Regeneration of the quality mixed bed resin in mixed bed cartridges desaliQ:BA and desaliQ:BA VARIO mini must only be carried out at the factory by technical service personnel.
 - Refilling the ultra-pure water mixed resin (disposable resin) in mixed-bed cartridge desaliQ:PA must only be carried out at the factory by technical service personnel.

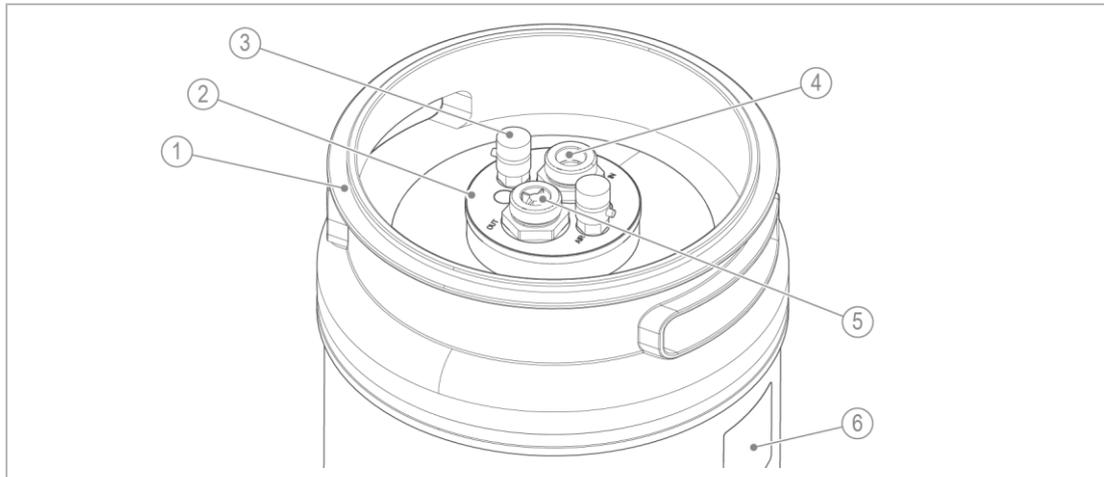
3.3 Product components

3.3.1 Mixed bed cartridge desaliQ:BA/PA/BA12 VARIO mini



Designation	Designation
1 Neck of the mixed bed cartridge with carrying handles	5 Raw water inlet (marked by inscription)
2 Locking clip of the lid	6 Marking tape
3 Vent valve with ring eyelet	7 Base of the mixed bed cartridge
4 Pure water outlet	

3.3.2 Mixed bed cartridge desaliQ:BA16 VARIO mini



Designation	
1	Neck of the mixed bed cartridge with carrying handles
2	Threaded lid with removable riser pipe
3	Vent valves with knurled screws

Designation	
4	Pure water outlet (OUT)
5	Raw water inlet (IN)
6	Mixed bed cartridge with base

3.4 Accessories



You can retrofit your product with additional accessories. Please contact your local Grünbeck representative or Grünbeck's headquarters in Hoechstädt/Germany for details.

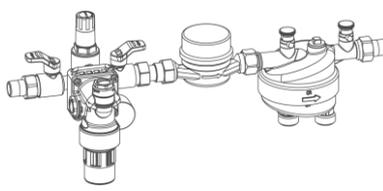
Illustration	Product	Order no.
	desaliQ hose kit DN 12 2 Connection hoses, 1.5 m in length, with hose fittings and 3/4" union nuts. To connect upright full demineralisation units with filling sections thermalIQ:FB2 or thermalIQ:FB13i.	707 850
	Filling section thermalIQ:FB13i For full demineralisation of water of drinking water quality for easy and quick initial filling or make-up water feed of closed heating systems. Consisting of: • Filling group with system separator thermalIQ:SB13 • Water meter with double screw connection • Treatment group thermalIQ:HB2 with connection adapter	707 770

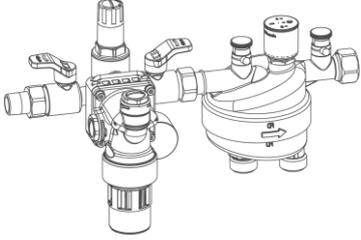
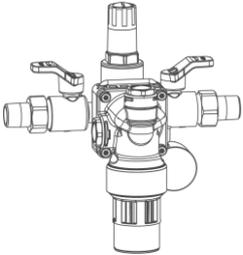
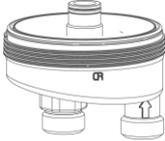
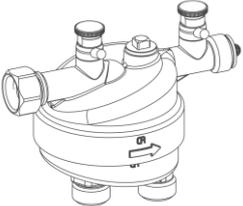
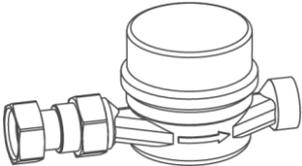
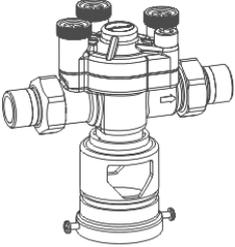
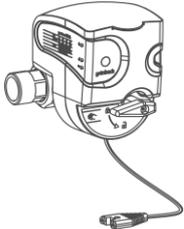
Illustration	Product	Order no.
	<p>Filling section thermaliQ:FB2</p> <p>For full demineralisation of water of drinking water quality for easy and quick initial filling or make-up water feed of closed heating systems.</p> <p>Consisting of:</p> <ul style="list-style-type: none"> • Filling group with system separator thermaliQ:SB13 • Treatment group thermaliQ:HB2 with connection adapter 	<p>707 760</p>
	<p>Filling group thermaliQ:SB13</p> <p>For drinking water protection in accordance with DIN EN 1717 during initial filling or make-up water feed of closed heating systems.</p>	<p>707 750</p>
	<p>desaliQ connection adapter</p> <p>Adapter to connect the mixed bed cartridge to the treatment group thermaliQ:HB2.</p>	<p>707 276</p>
	<p>Connection block with adapter</p> <p>The connection block with adapter is used in the heating sector for filling cartridges or mixed bed cartridges of the desaliQ product series.</p>	<p>707475000100</p>
	<p>Water meter</p> <p>Water meter with connection material and double screw connection for connection to the raw water inlet pipe by 3/4" male thread.</p>	<p>702 845</p>
	<p>Euro system separator GENO-DK 2-Mini</p> <p>Euro system separators prevent the backflow, back pressure and back siphonage of modified drinking water into the public drinking water network in accordance with DIN EN 1717.</p>	<p>133 100</p>
	<p>Safety device protectliQ:A20</p> <p>The protectliQ safety device is a product to protect against water damage in one- and two-family homes.</p>	<p>126 400</p>

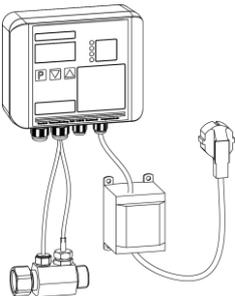
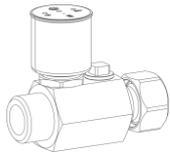
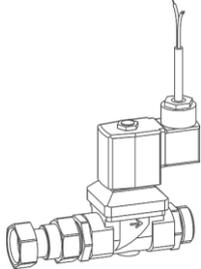
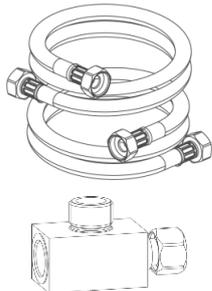
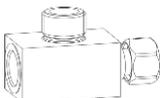
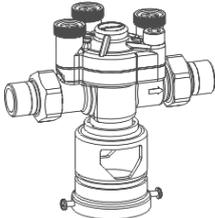
Illustration	Product	Order no.
	<p>Fine filter pureliQ:KD25</p> <p>The fine filter pureliQ:KD filters the drinking water and protects the domestic water system in accordance with DIN EN 806.</p>	<p>101 275</p>
	<p>GENO-therm case Premium</p> <p>Sortimo case containing:</p> <ul style="list-style-type: none"> • desaliQ hose kit • Water meter with connection material • Conductivity meter GENO-Multi-LF 	<p>707 170</p>
	<p>GENO-therm analysis case</p> <p>Sortimo case containing: Water test kits for pH value, conductivity, total hardness and molybdenum concentration</p>	<p>707 190</p>
	<p>Combined measuring device for pH and conductivity – complete</p> <p>To measure pH value and conductivity</p>	<p>170000010000</p>
<p>without illustration</p>	<p>Digital manual measuring device</p> <p>To measure pH value, Redox value, temperature and conductivity</p>	<p>170 185</p>
	<p>Conductivity meter GENO Multi LF</p> <p>The conductivity meter is used to measure the conductivity of fully demineralised water (demi water).</p>	<p>702 842</p>

Illustration	Product	Order no.
	thermaliQ conductivity measuring cell II with adapter By means of the conductivity measuring cell, the capacity of the filling cartridge or mixed bed cartridge can be monitored easily and reliably.	707 015
	GENO-therm solenoid valve, complete The solenoid valve (closed in de-energised state) interrupts the pure water line when the set conductivity limit value has been exceeded.	707 055

3.4.1 Accessories for membrane technology

Illustration	Product	Order no.
	desaliQ connection kit desaliQ connection kit to connect the mixed bed cartridge Consisting of: - 2 Flexible connection hoses DN 20, 1.5 m in length - Connection adapter 3/4" made of PP for conductivity meter	703 575
	desaliQ adapter 3/4" Adapter for conductivity meter	703 576
	Euro-system separator GENO DK 2-Mini Euro system separators prevent the backflow, back pressure and back siphonage of modified drinking water into the public drinking water network in accordance with DIN EN 1717.	133 100
without illustration	Conductivity meter D 100 LED (0 – 100 µS)	703 530
without illustration	Conductivity meter D 10 AN (0 – 10 µS)	703 545
	Conductivity meter D 100 AN (0 - 100 µS)	703 535
	Conductivity meter D 10 ANR (0 – 10 µS)	703 555
	Conductivity meter D 100 ANR (0 – 100 µS)	703 540

3.5 Functional description

3.5.1 Physical

Via an internal distribution system, a mixed bed resin is steadily flown through from top to bottom. Thanks to a collection element at the bottom of the mixed bed cartridge, the fully demineralised water (demi water) is directed to the pure water outlet of the mixed bed cartridge via a riser pipe.

3.5.2 Chemical

Mixed bed resins consist of a highly acid cation exchanger resin and a highly alkaline anion exchanger resin. In the mixed bed cartridges, these two components are present in a completely mixed state.

The cation exchanger resin removes all positively charged ions (cations) from the raw water. All cations contained in the water, such as calcium, magnesium and sodium, are exchanged for hydrogen cations (H⁺).

In the demineralisation process, the anion exchanger resin is used to filter off the negatively charged ions (anions). All anions contained in the water, such as nitrate, phosphate, sulphate, chloride and hydrogen carbonate, are exchanged for hydroxide ions (OH⁻).

Full demineralisation removes almost all undesired components from the inlet water. Thanks to the highly alkaline anion exchanger resin, silicic acid and carbon dioxide are also filtered off. The H⁺ and OH⁻ ions generated during the exchange process combine to H₂O. This results in pure water.

3.5.3 Demineralisation of raw water

The desaliQ mixed bed cartridge is mainly used for the full demineralisation of raw water. The mixed bed cartridge desaliQ:PA, filled with ultra-pure water mixed bed resin, generates fully demineralised water of the highest quality with a purity of < 0.1 µS/cm.

The raw water is directed to the inlet of the mixed bed cartridge via an optional system separator and a fine filter.

3.5.4 Secondary treatment of permeate

The residual demineralisation of permeate originating from reverse osmosis systems represents an additional application. The mixed bed cartridge is installed downstream of the reverse osmosis system. Thanks to residual demineralisation, the conductivity of the permeate can be further reduced.

4 Transport, placing and storage

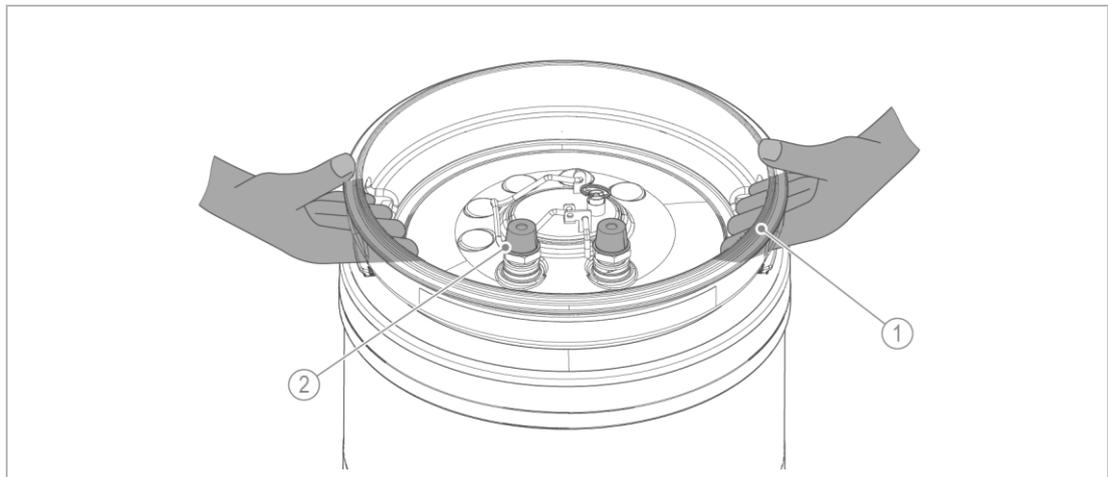
4.1 Shipping/Delivery/Packaging

The product is packed in a cardboard box.

- ▶ Upon receipt, immediately check the product for completeness and transport damage (refer to chapter 5.2).
- ▶ In case of visible transport damage, proceed as follows:
 - Do not accept the delivery or only accept it under reserve.
 - Record the extent of damage on the transport documents or on the delivery note of the carrier.
 - Initiate a complaint.
- ▶ Transport the product in its original packaging only.
- ▶ Dispose of the packaging material in an environmentally sound and appropriate manner only after installation of the product.

4.2 Transport/Placing

- ▶ Transport the mixed bed cartridge in an upright position – do not tilt it.



Designation

1 Carrying handle

Designation

2 Plastic caps

- ▶ Use both carrying handles for transport.



Do not dispose of the yellow plastic caps of the cartridge's lid.

- ▶ Use these plastic screw caps as protection in case of possible periods of standstill or during transport.

4.3 Storage

- ▶ Protect the product from the impacts below when storing it:
 - Dampness, moisture
 - Environmental impacts such as wind, rain, snow, etc.
 - Frost, direct sunlight, severe heat exposure
 - Chemicals, dyes, solvents and their vapours

5 Installation

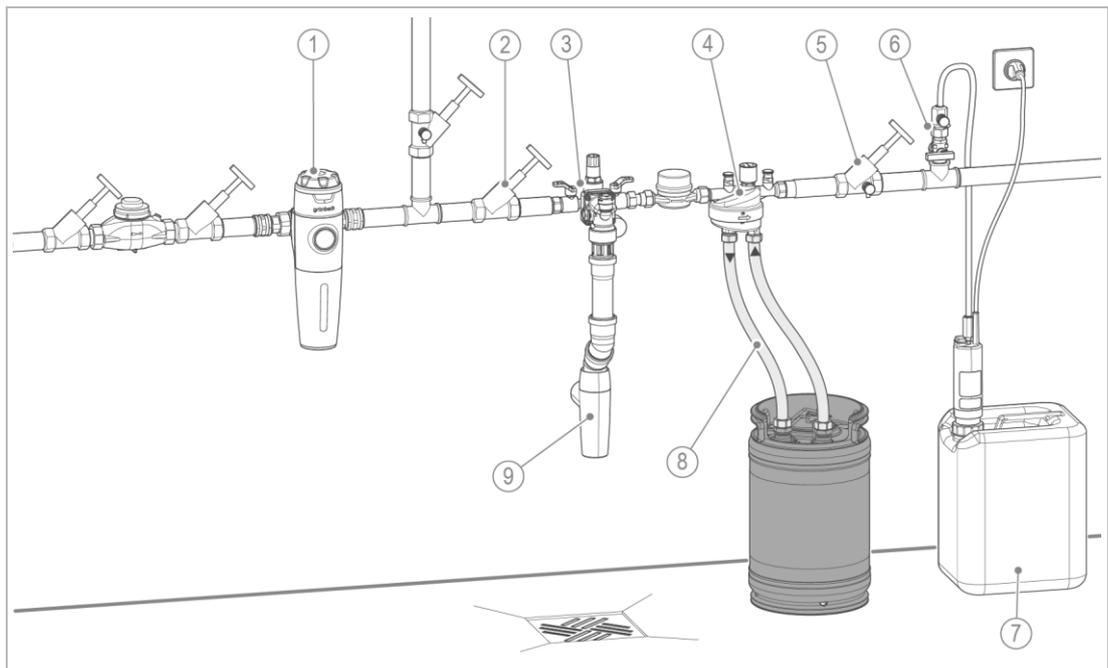


The installation must be carried out by a qualified specialist only.

NOTE

Risk of contaminated drinking water if there is no system separator present.

- The mixed bed cartridges are not intrinsically safe.
- ▶ Install a system separator upstream of the mixed bed cartridge.



Designation	
1	Drinking water filter, e.g. pureliQ
2	Inlet shut-off valve
3	Euro system separator GENO-DK 2-Mini of filling section thermalIQ:FB13i
4	Connection block with adapter and optional conductivity measuring cell
5	Outlet shut-off valve

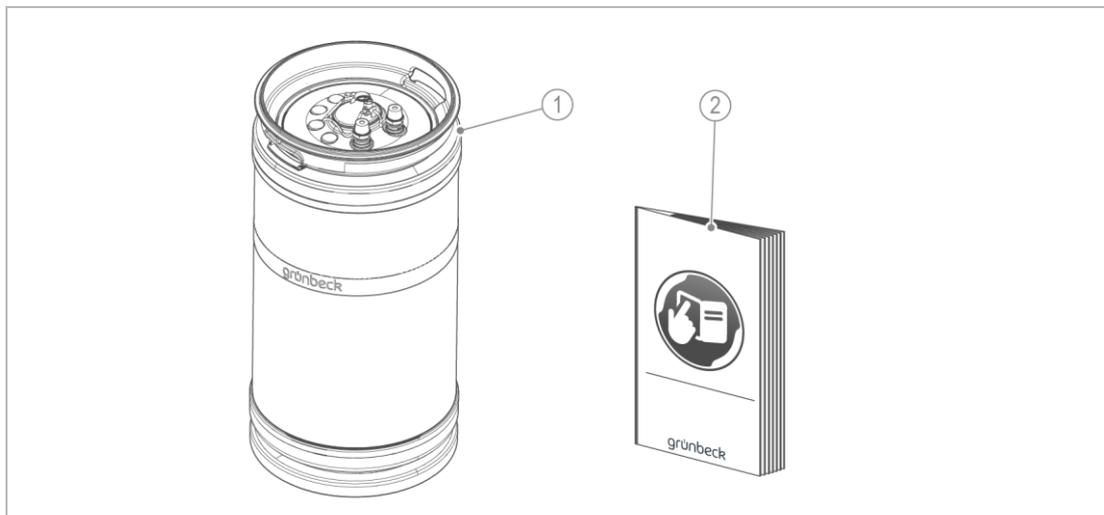
Designation	
6	KFE shut-off valve with injection point for thermalIQ filling pump
7	Dosing solution for heating protection thermalIQ safe or cleaning agent for heating systems thermalIQ clean
8	desaliQ hose kit
9	Drain connection DN 50 with integrated siphon in accordance with DIN EN 1717

5.1 Requirements for the installation site

Observe local installation directives, general guidelines and technical specifications.

- The installation site must be frost-proof and protect the product from chemicals, dyes, solvents and their vapours.
- The installation site must be adequately illuminated and ventilated.
- A floor drain suitable for the system size must be available at the installation site or a protection device, e.g. protectliQ, or a protection device with water stop of the same quality must be installed.
- The sufficiently dimensioned installation surface for the product must be even (level) and have sufficient strength and load-bearing capacity to ensure the product's stability/tilt resistance.
- Always install a drinking water filter and, if required, a pressure reducer (e.g. fine filter pureliQ:KD) upstream of the product.
- A Euro system separator must be installed upstream of the product.

5.2 Checking the scope of supply



Designation

1 Filled mixed bed cartridge

Designation

2 Operation manual

- ▶ Check the scope of supply for completeness and damage.

5.3 Installing the product



The mixed bed cartridge is pre-filled with resin at the factory. Therefore, it is not necessary to fill the mixed bed cartridge for initial installation.



CAUTION System parts may be subject to overpressure.

- Risk of injury due to escaping water and unexpected movement of system parts.
- ▶ Install a suitable pressure reducing device in the pressurised line upstream of the mixed bed cartridge.
- ▶ Install a safety valve in the pressurised line upstream of the mixed bed cartridge which is approved for the specified pressure range.
- ▶ Make sure that the opening pressure set on the safety valve does not exceed the maximum permissible operating pressure indicated on the type plate.



CAUTION Hot surfaces and hot heating water when used during ongoing heating operation.



- Burns due to hot surfaces of up to 55 °C
- Scalding due to escaping heating water of up to 80 °C
- ▶ Only move the mixed bed cartridge using the carrying handles.
- ▶ Use suitable protective gloves.
- ▶ Let the mixed bed cartridge and the system parts affected cool down to ≤ 30 °C first before you do any work on the components.



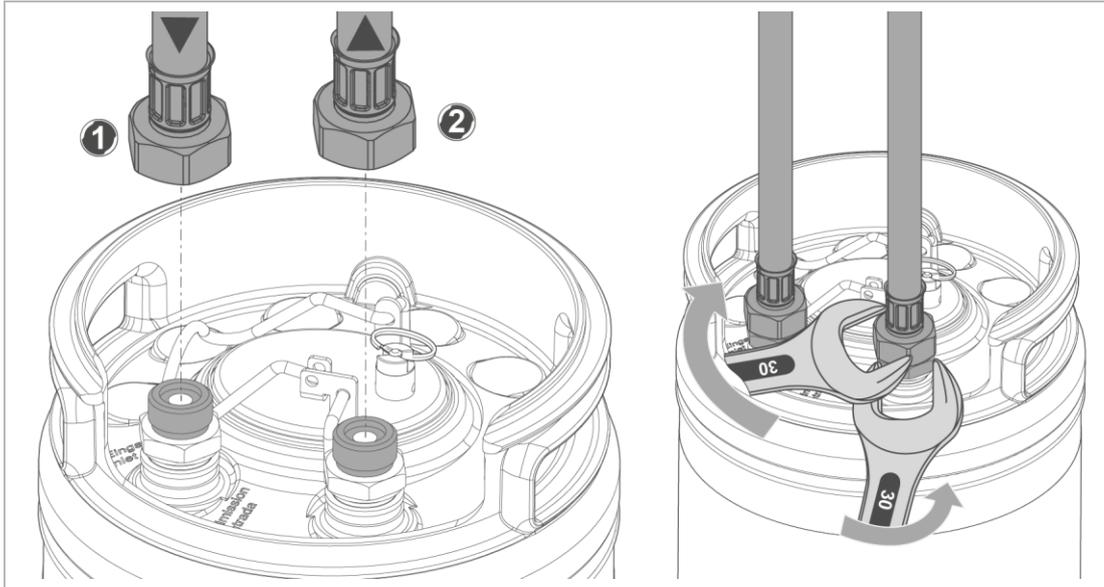
The mixed bed cartridge does not have a non-return valve. If the connection hoses (inlet and outlet) are connected incorrectly, the mixed bed cartridge cannot achieve the desired performance – malfunction.

- ▶ Make sure to properly connect inlet and outlet on the mixed bed cartridge (refer to the marking on the mixed bed cartridge).
- ▶ Close the shut-off valves on the raw and pure water side.
- ▶ Only place the mixed bed cartridge in an upright position at a solid/level location.
- ▶ Secure the mixed bed cartridge at the wall to prevent it from tipping over, if necessary (e.g. in case of the high mixed bed cartridge desaliQ:BA16 VARIO mini)

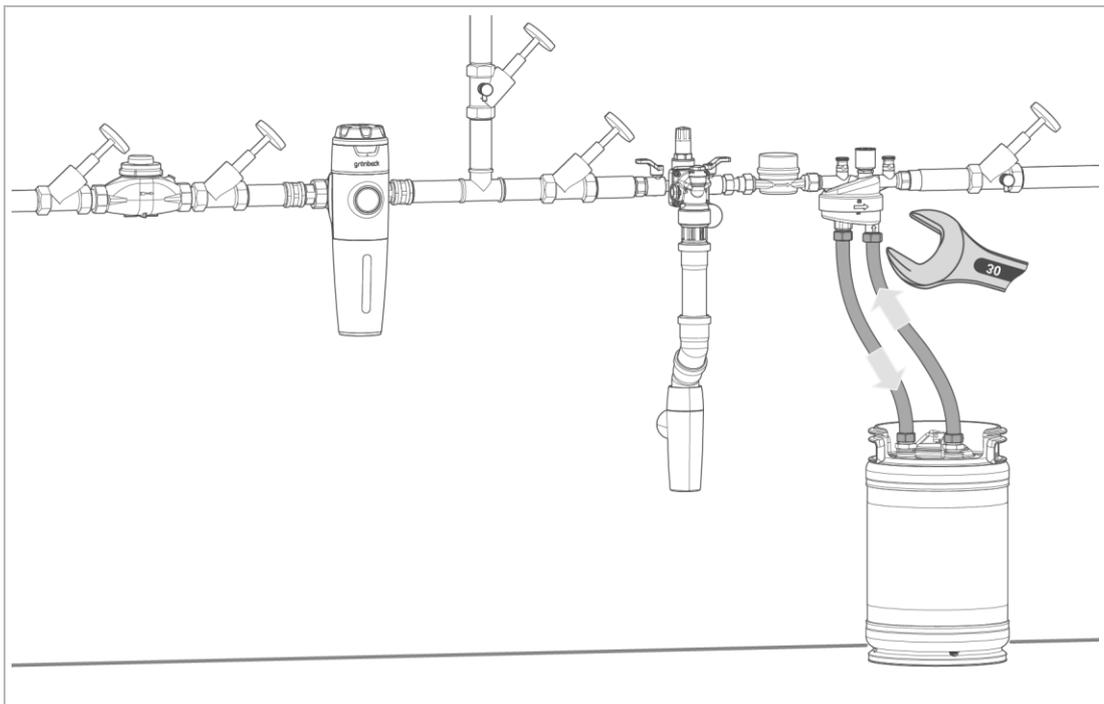
NOTE

Screw on the connection hoses to the double nipples in a way that they cannot turn.

- A turning double nipple that is screwed in too far can damage the product.
- ▶ Secure the double nipple against turning when screwing on the connection hoses.



1. Connect the raw water hose to the raw water connection (inlet) of the mixed bed cartridge.
2. Connect the pure water hose to the pure water connection (outlet) of the mixed bed cartridge.



3. Connect the connection hoses to the raw water and pure water connection of the fitting.

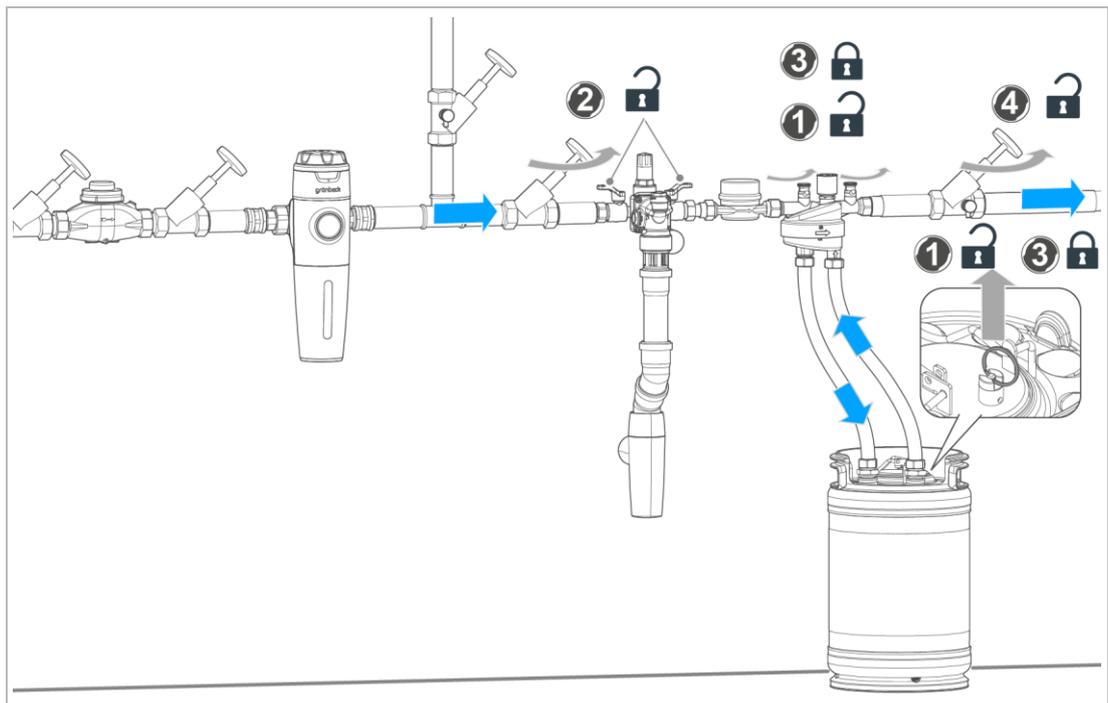
6 Start-up/Commissioning

6.1 Filling and venting the mixed bed cartridge



Obey the operation manual of the filling section thermalIQ:FB.

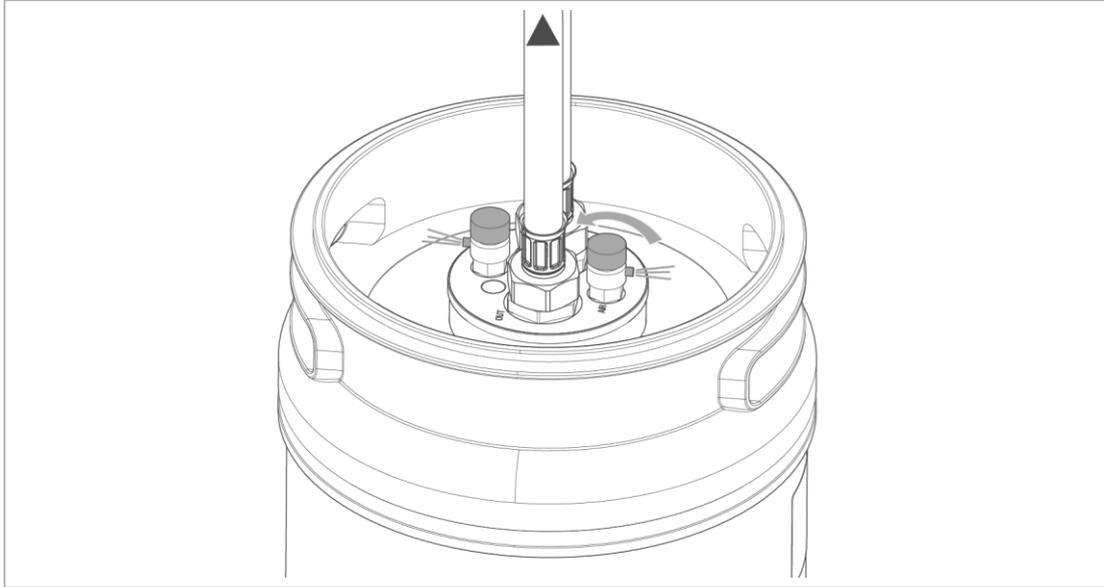
6.1.1 Variant: desaliQ:BA/PA/BA12 VARIO mini



1. Open the venting devices.
 - a Pull the ring eyelet on the venting device of the mixed bed cartridge and turn the ring eyelet by 90°.
 - b Open the venting device on the filling section thermalIQ:FB.
 - c Leave the venting devices open until the installation is completely filled with water.
2. Slowly open the shut-off valves of the water inlet on the raw water side.
 - » The mixed bed cartridge fills with water and the installation is vented.
3. Close the venting devices as soon as water escapes.
 - a Turn the ring eyelet by 90° and let the ring eyelet snap into the cavity.
 - b Close the venting device on the filling section thermalIQ:FB.
4. Open the shut-off valve on the raw water side.

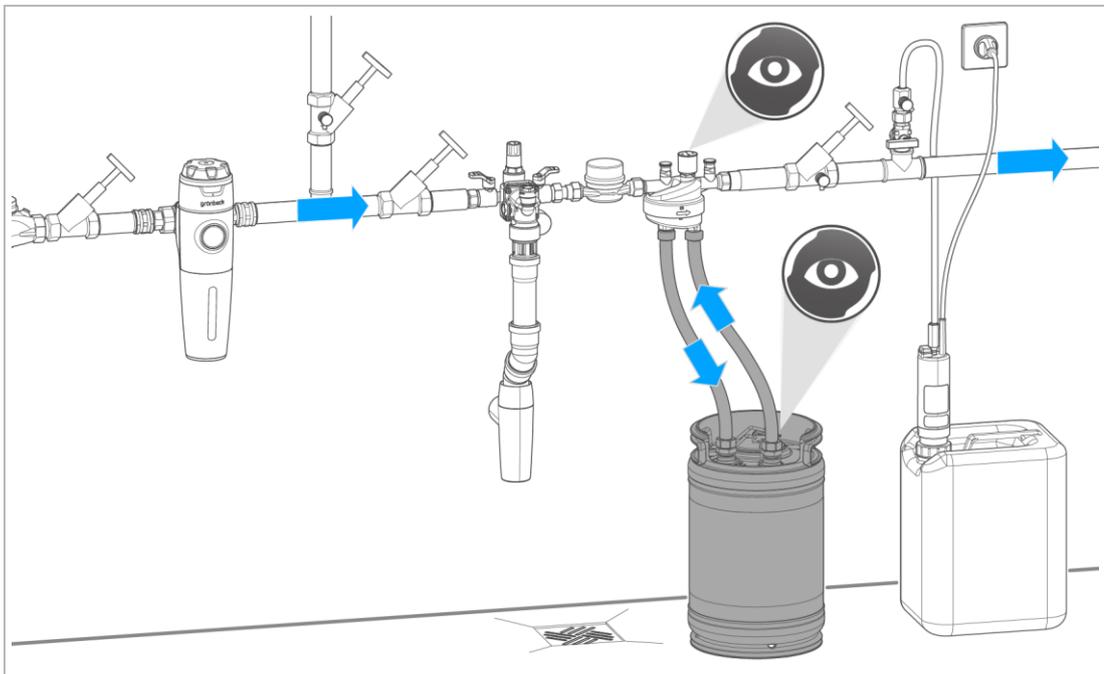
6.1.2 Variant: desaliQ:BA16 VARIO mini

Venting process



- ▶ Slowly open both knurled screws of the vent valves.
- ▶ Close both knurled screws as soon as water escapes.

6.2 Checking the mixed bed cartridge



1. Let the mixed bed cartridge run in normal operation for a short time.
 - a Listen for air in the lines.

2. Vent the mixed bed cartridge and the installation again if you still hear air in the lines.
3. Check all line connections and the entire installation for leaks.
 - » No water must be leaking.

6.3 Measuring the conductivity and determining the flow rate



Pay attention to the capacity of the respective mixed bed cartridge (refer to chapter 12).

Calculation example 1:

- Conductivity of the filling water: 500 $\mu\text{S}/\text{cm}$
- Mixed bed cartridge used: Mixed bed cartridge desaliQ:BA 6
- $215/500 = 0.43 \text{ m}^3$ (corresponds to 430 litres at 10 $\mu\text{S}/\text{cm}$)
- $340/500 = 0.68 \text{ m}^3$ (corresponds to 680 litres at 50 $\mu\text{S}/\text{cm}$)

Calculation example 2:

- Conductivity of the filling water: 300 $\mu\text{S}/\text{cm}$
 - Mixed bed cartridge used: Mixed bed cartridge desaliQ:BA 13
 - $1040/300 = 3.47 \text{ m}^3$ (corresponds to 3470 litres at 10 $\mu\text{S}/\text{cm}$)
 - $1650/300 = 5.50 \text{ m}^3$ (corresponds to 5500 litres at 50 $\mu\text{S}/\text{cm}$)
- Measure the residual conductivity of the treated water on the pure water side with an optional conductivity meter (refer to chapter 3.4).
- If the maximum conductivity limit value is undershot, start-up/commissioning can be completed.

6.3.2 High conductivity value

- If the maximum conductivity limit is not undershot considerably immediately, operate the mixed bed cartridge without consumers for a few minutes.
- a Meanwhile, measure the residual conductivity several times.
- » The values of the residual conductivity should be decreasing continuously.
- If the desired conductivity is not achieved, contact technical service.

6.4 Handing over the product to the owner/operating company

- ▶ Explain to the owner/operating company how the product works.
- ▶ Use the manual to brief the owner/operating company and answer any questions.
- ▶ Inform the owner/operating company about the need for inspections and maintenance.
- ▶ Hand over all documents to the owner/operating company for keeping.

6.4.1 Disposal of packaging

- ▶ Dispose of packaging material as soon as it is no longer needed (refer to chapter 11).

6.4.2 Storage of accessories

- ▶ Keep the accessories supplied with the product (e.g. plastic caps for connections).

7 Operation

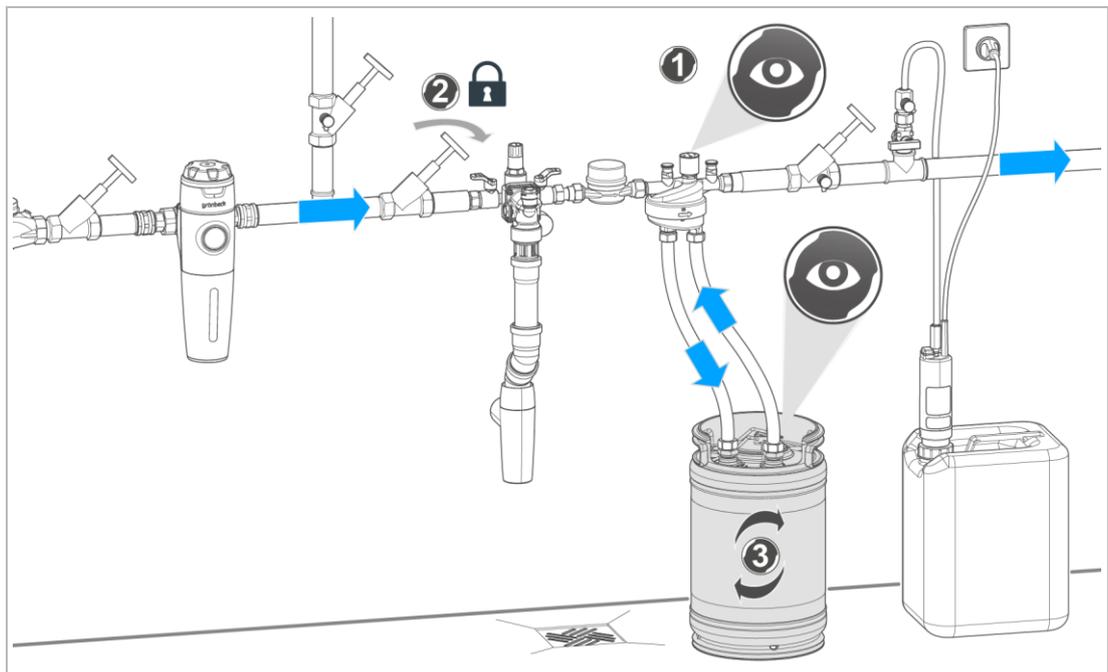


CAUTION

Hot surfaces and hot heating water when used during ongoing heating operation.



- Burns due to hot surfaces of up to 55 °C
- Scalding due to escaping heating water of up to 80 °C
- ▶ Only move the mixed bed cartridge using the carrying handles.
- ▶ Use suitable protective gloves.
- ▶ Let the mixed bed cartridge and the system parts affected cool down to ≤ 30 °C first before you do any work on the components.

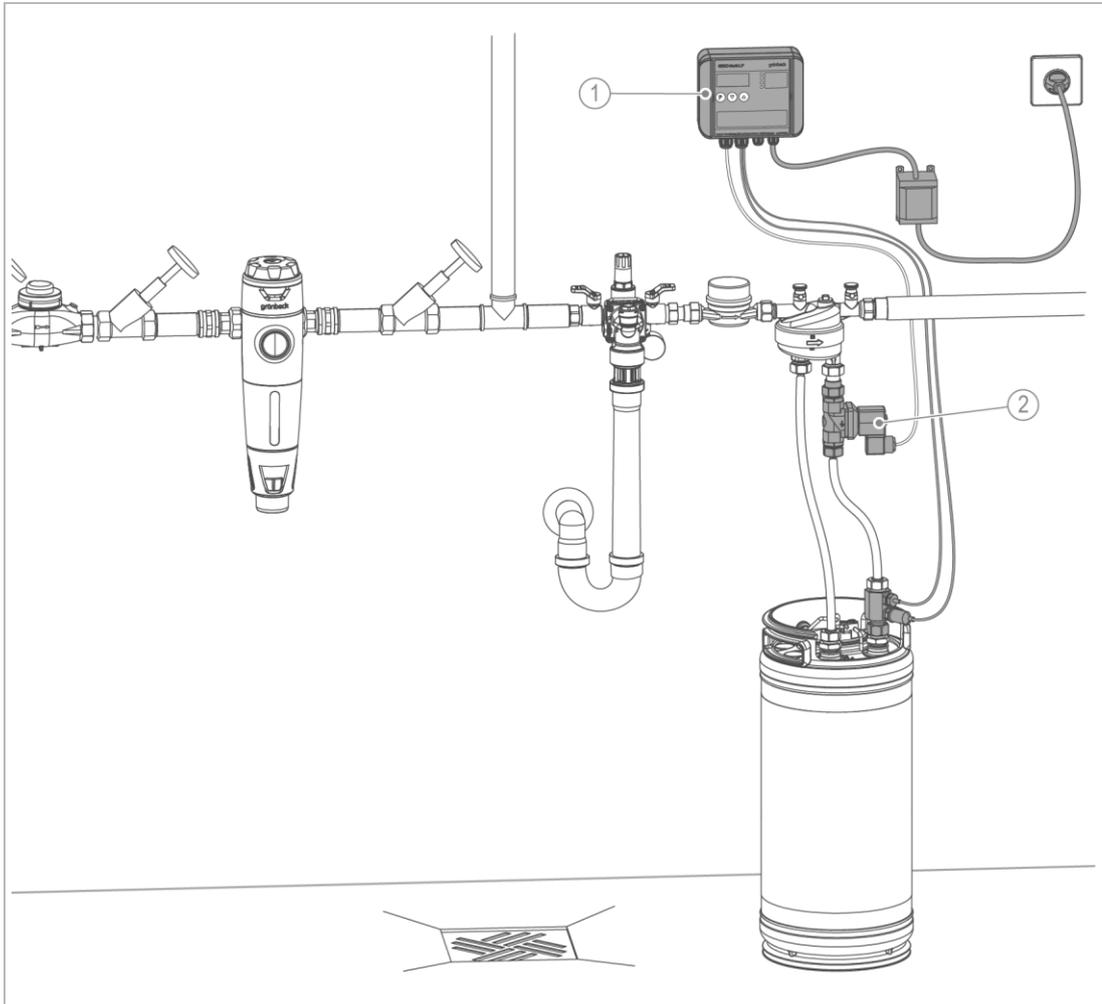


1. Check the conductivity of the pure water at regular intervals.
 - a Measure the residual conductivity of the pure water using a conductivity meter or read it off if a conductivity measuring sensor is installed.
2. Close the raw water shut-off valve after the filling process has been completed.
3. Replace the mixed bed cartridge as soon as the conductivity value is too high.

Installation with accessories



Obey the manuals of the accessories Conductivity meter GENO-Multi-LF and GENO-therm solenoid valve.



Designation

1 Conductivity meter GENO-Multi-LF

Designation

2 GENO-therm solenoid valve

1. Read off the residual conductivity on the GENO-Multi-LF.
 - » The solenoid valve interrupts the pure water line when the set conductivity limit value has been exceeded.
 - Adhere to the intervals for inspection and maintenance (refer to chapter 8.2).

8 Maintenance and repair

Maintenance and repair includes cleaning, inspection and maintenance of the product.



The responsibility for inspection and maintenance is subject to local and national requirements. The owner/operating company is responsible for compliance with the prescribed maintenance and repair work.



By concluding a maintenance contract you make sure that all maintenance work will be carried out on time.

- ▶ Only use genuine spare and wearing parts from Grünbeck.

8.1 Cleaning



Have the cleaning work only carried out by persons who have been instructed on the risks and dangers that can arise from the product.

NOTE

Do not clean the product with cleaning agents containing alcohol/solvents.

- These substances damage the plastic components.
- ▶ Use a mild/pH-neutral soap solution.
- ▶ Use personal protective equipment.
- ▶ Only clean the outside of the product.
- ▶ Do not use any strong or abrasive cleaning agents.
- ▶ Wipe the surfaces with a damp cloth.
- ▶ Dry the surfaces with a cloth.

8.1.1 Eliminating corrosion

- ▶ Eliminate corrosion with suitable means, for instance by polishing – do not use any chlorine or cleaning agents containing chlorine.
- ▶ Replace a badly corroded mixed bed cartridge.

8.2 Intervals



By way of regular inspections and maintenance, malfunctions can be detected in time and system failures might be avoided.

- ▶ (As owner/operating company) Determine which components must be inspected and maintained at which intervals (load-dependent). This is subject to the actual conditions such as: water condition, degree of impurities, environmental impacts, consumption, etc.

The interval table below shows the minimum intervals for the activities to be carried out.

Task	Interval	Task
Inspection	2 months	<ul style="list-style-type: none"> • Visually check for leaks • Read off or measure the conductivity value
Maintenance	6 months	<ul style="list-style-type: none"> • Check for function and leaks • Measure the conductivity value • Check the components for damage and corrosion • Clean the outside of the product
Repair	5 years	<ul style="list-style-type: none"> • Recommendation: Replace wearing parts

8.3 Inspection

You as owner/operating company can carry out the regular inspections yourself.

- ▶ Carry out an inspection at least every 2 months:
 1. Visually check the mixed bed cartridge and the connections for leaks.
 2. Read off or measure the conductivity value of the pure water.
 3. Contact technical service if the maximum permissible conductivity limit value is exceeded.

8.4 Maintenance

Regular work is required in order to ensure the proper functioning of the product in the long term. DIN EN 806-5 recommends regular maintenance to ensure trouble-free and hygienic operation of the product.

8.4.1 Semi-annual maintenance

Proceed as follows to carry out the semi-annual maintenance, :

1. Check the mixed bed cartridge and the connections for leaks.
2. Measure the conductivity value of the pure water.

- a Replace the mixed bed cartridge as soon as the conductivity value is too high.



An exhausted mixed bed cartridge can be regenerated or refilled at the factory by the technical service personnel (refer to chapter 8.5).

- 3. Check the components for damage and corrosion.
- 4. Clean the outside of the product (refer to chapter 8.1).

8.5 Consumables

Product		Order no.
Regeneration of quality mixed bed resin for	desaliQ:BA6	707 450ak
	desaliQ:BA12	707 460ak
	desaliQ:BA13	707 470ak
	desaliQ:BA16	707 480ak
	desaliQ:BA20	707 490ak
Refilling of ultra-pure water mixed bed resin for	desaliQ:PA6	703 655ak
	desaliQ:PA12	703 665ak
	desaliQ:PA13	703 675ak
	desaliQ:PA16	703 685ak
	desaliQ:PA20	703 695ak

8.6 Spare parts

For an overview of the spare parts, refer to our spare parts catalogue at www.gruenbeck.com. You can obtain the spare parts from your local Grünbeck representative.

8.7 Wearing parts



Wearing parts must be replaced by qualified specialists only.

Wearing parts are listed below:

- Seals
- Flow stabiliser

9 Troubleshooting



CAUTION

Hot surfaces and hot heating water when used during ongoing heating operation.



- Burns due to hot surfaces of up to 55 °C
- Scalding due to escaping heating water of up to 80 °C
- ▶ Only move the mixed bed cartridge using the carrying handles.
- ▶ Use suitable protective gloves.
- ▶ Let the mixed bed cartridge and the system parts affected cool down to ≤ 30 °C first before you do any work on the components.

Malfunction	Explanation	Remedy
No flow	The shut-off valves are not fully open	▶ Fully open all shut-off valves
	desaliQ:BA16 VARIO mini only Inlet and outlet lines have been mixed up. The non-return valve blocks the water flow	▶ Swap connections
Exchanger capacity low	A water softener or a phosphate system is installed upstream	▶ Connect the mixed bed cartridge directly to the raw water network
	Raw water is loaded with sealing or soldering grease	▶ Install an activated carbon filter upstream, if required
	Contaminated raw water	▶ Install a filter upstream and wait until the lines have been flushed
	Raw water quality has changed	▶ Use a more powerful mixed bed cartridge (size)
	Pipe break/pipe repair	▶ Put the mixed bed cartridge out of operation ▶ Thoroughly flush the lines prior to restart
	The mixed bed cartridge has not been fully vented	▶ Fully vent the mixed bed cartridge
	The mixed bed cartridge is used up, the resin is exhausted	▶ Contact technical service and arrange for a regeneration or refilling ▶ or replace the mixed bed cartridge
	Inlet water too hot	▶ The inlet water may only be 80 °C max. – for desaliQ:BA/BA VARIO mini ▶ The inlet water may only be 30 °C max. – for desaliQ:PA
The residual conductivity increases rapidly after a long period of operational downtime	Re-ionisation has occurred	▶ Let the water run off unused until the conductivity decreases

Malfunction	Explanation	Remedy
The flow is very low	The hose line is kinked	▶ Reinstall hose line
	The hose line is clogged	▶ Disconnect the hoses from the system and thoroughly flush them
	The iron content in the raw water is high	▶ Contact technical service
The flow is very high	The flow stabiliser in the raw water connection is defective	▶ Contact technical service and have the flow stabiliser replaced
	desaliQ:BA20/PA20 only	▶ Reduce the flow via the shut-off valve on the raw water side
The residual conductivity has exceeded the limit value	The mixed bed cartridge is used up, the resin is exhausted	▶ Contact technical service and arrange for a regeneration or refilling ▶ or replace the mixed bed cartridge
High conductivity despite new resin bags	Resin bags were inserted incorrectly	▶ Correctly insert the resin bags
	The flow is too high	▶ See "flow very high"
Increased conductivity is indicated at higher temperatures	The conductivity meter is not temperature-compensated; use in heating operation with higher temperatures (max. 65 °C)	▶ Check the conductivity when the temperature is in the normal range (max. 25 °C).
Conductivity meter does not work	Batteries are depleted	▶ Replace batteries



If a malfunction cannot be eliminated, the technical service personnel can take further measures.

- ▶ Contact technical service (refer to inner cover sheet for contact data).

10 Decommissioning

1. Close all shut-off valves upstream and downstream of the mixed bed cartridge.
2. Open the vent valves and vent the mixed bed cartridge as well as the installation.
3. Wait for a few minutes until the pressure in the mixed bed cartridge has been relieved.
4. Remove the connection hoses from the mixed bed cartridge.
5. Close the vent valves.
6. Leave the mixed bed resin in the mixed bed cartridge – do not open the lid of the mixed bed cartridge.
7. Screw the yellow plastic caps onto the connections.
8. Protect the mixed-bed cartridge from mechanical damage and environmental impacts when storing it (refer to chapter 4).
9. Send in the exhausted mixed bed cartridge to technical service.

10.1 Restart

- ▶ Put the regenerated or new mixed bed cartridge into operation again (refer to chapters “Installing the product” 5.3 and “Start-up/commissioning” 6).

11 Disposal

- ▶ Obey the applicable national regulations.

Mixed bed resin



Obey the safety information and disposal regulations stated in the safety data sheet of the mixed bed resin.

Packaging

NOTE

Danger to the environment due to incorrect disposal

- Packaging materials are valuable raw materials that can be reused in many cases.
- Incorrect disposal can cause hazards to the environment.
 - ▶ Dispose of packaging materials in an environmentally sound manner.
 - ▶ Obey the local disposal regulations.
 - ▶ If necessary, commission a specialist company with the disposal.

Product



If this symbol (crossed-out wheellie bin) is on the product, it means that this product or its electrical and electronic components must not be disposed of as household waste.

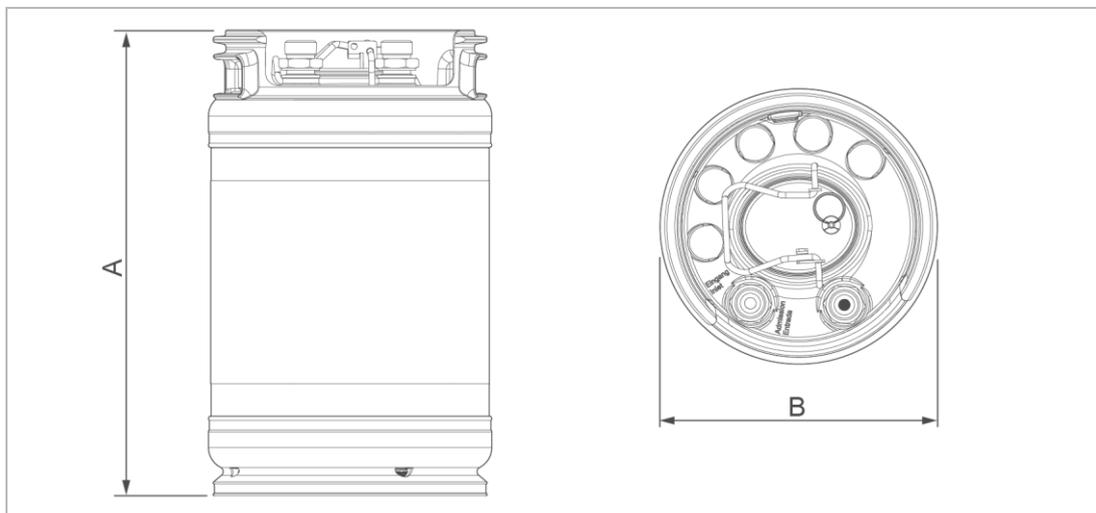
- ▶ Find out about the local regulations on the separate collection of electrical and electronic products.
- ▶ Make use of the collection points available to you for the disposal of your product.



For information on collection points for your product contact your municipality, the public waste management authority, an authorised body for the disposal of electrical and electronic products or your waste disposal service.

12 Technical specifications

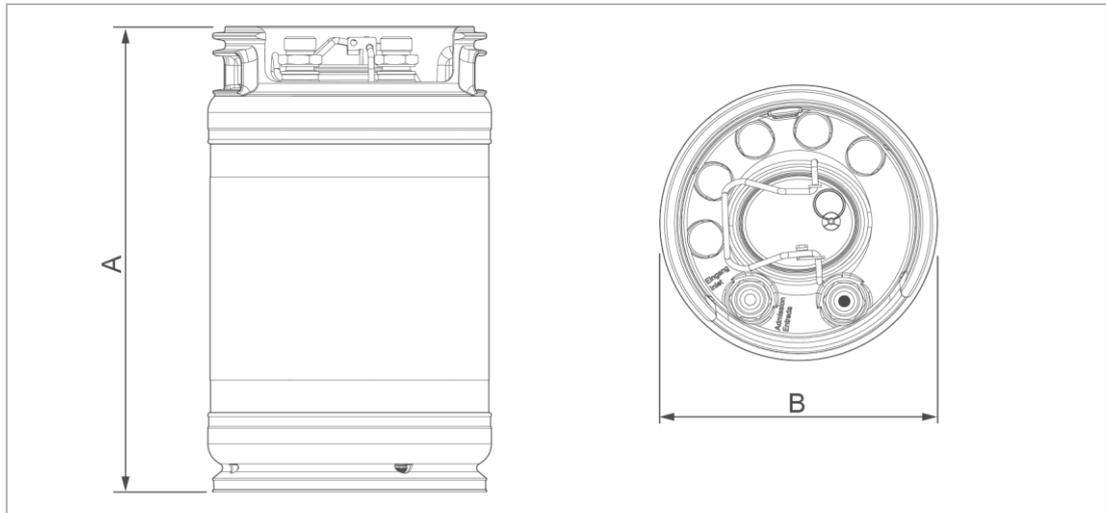
12.1 Mixed bed cartridge desaliQ:BA



		desaliQ:BA					
Dimensions and weights		6	12	13	16	20	
A	Height	mm	400	755	605	820	1065
B	Diameter	mm	240	240	410	410	410
	Shipping weight	kg	~ 12	~ 23	~ 48	~ 68	~ 89
	Volume of cartridge	l	13.5	28.5	58.7	85	115
	Filling volume of mixed bed resin	l	12.5	25	50	75	100
Connection data		6	12	13	16	20	
	Nominal connection diameter	DN 20 (¾")					
Performance data		6	12	13	16	20	
	Nominal pressure	PN 10					
	Operating pressure	≤ 10					
	Nominal flow	m³/h	0.6	1.2	1.3	1.6	2.0
	Flow at Δp 1 bar	l/h	480	850	1050	1080	1200
	Capacity at a desired residual conductivity of < 10 μS/cm	μS/cm x m³	215	460	1040	1560	2080
	Capacity at a desired residual conductivity of < 50 μS/cm	μS/cm x m³	340	800	1650	2475	3300
General data		6	12	13	16	20	
	Water temperature *	°C 5 – 80					
	Ambient temperature	°C 5 – 40					
	Order no.	707 450	707 460	707 470	707 480	707 490	

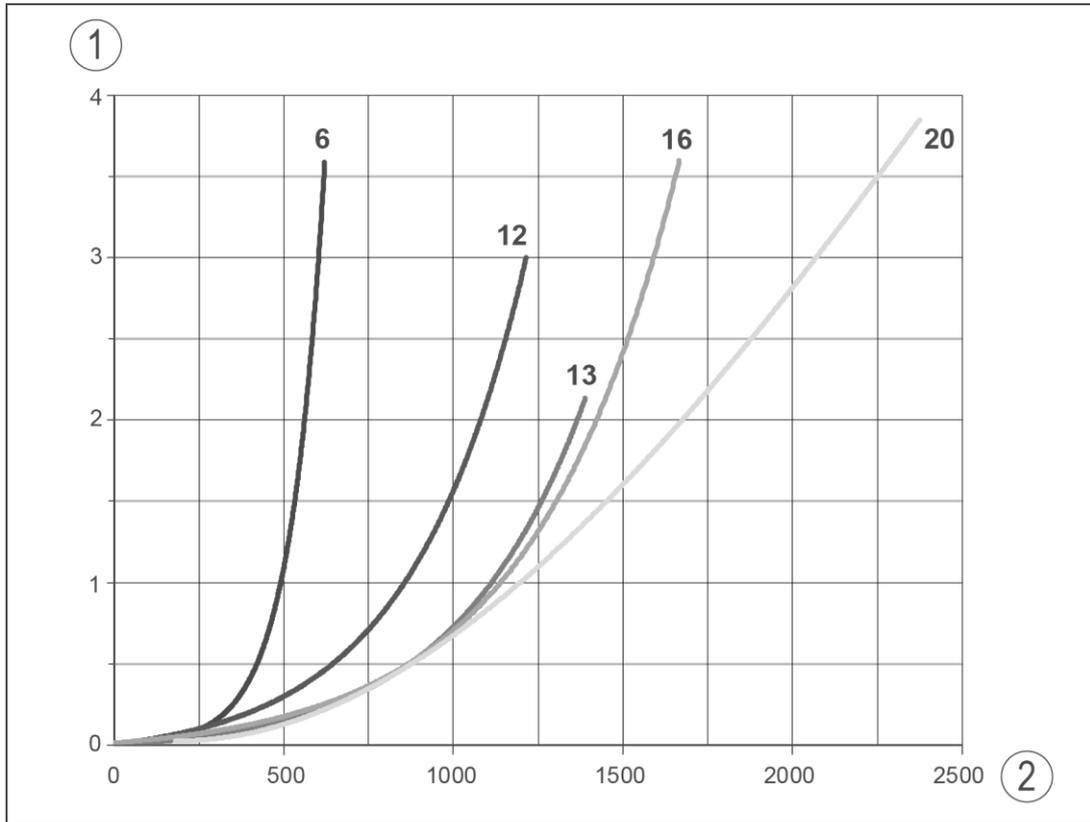
* Prolonged periods of use with water temperatures exceeding 60 °C can damage the resin. Regeneration is no longer possible then.

12.2 Mixed bed cartridge desaliQ:PA



		desaliQ:PA					
Dimensions and weights		6	12	13	16	20	
A	Height	mm	400	755	605	820	1065
B	Diameter	mm	240	240	410	410	410
Shipping weight		kg	~ 12	~ 23	~ 48	~ 68	~ 89
Volume of cartridge		l	13.5	28.5	58.7	85	115
Filling volume of mixed bed resin		l	12.5	25	50	75	100
Connection data		6	12	13	16	20	
Nominal connection diameter		DN 20 (¾")					
Performance data		6	12	13	16	20	
Nominal pressure		PN 10					
Operating pressure		bar ≤ 10					
Nominal flow		m³/h	0.6	1.2	1.3	1.6	2.0
Flow at Δp 1 bar		l/h	480	850	1050	1080	1200
Capacity at a desired residual conductivity of < 10 μS/cm		μS/cm x m³	215	460	1040	1560	2080
Capacity at a desired residual conductivity of < 50 μS/cm		μS/cm x m³	340	800	1650	2475	3300
Capacity between 2 regenerations (at an inlet conductivity of the water of 20 μS/cm and an outlet conductivity of the water of < 5 μS/cm)		l	7,200	15,400	47,000	70,000	94,000
General data		6	12	13	16	20	
Water temperature		°C 5 – 30					
Ambient temperature		°C 5 – 30					
Order no.		703 655	703 665	703 675	703 685	703 695	

12.2.1 Pressure loss curves of mixed bed cartridges desaliQ:BA/PA



Designation

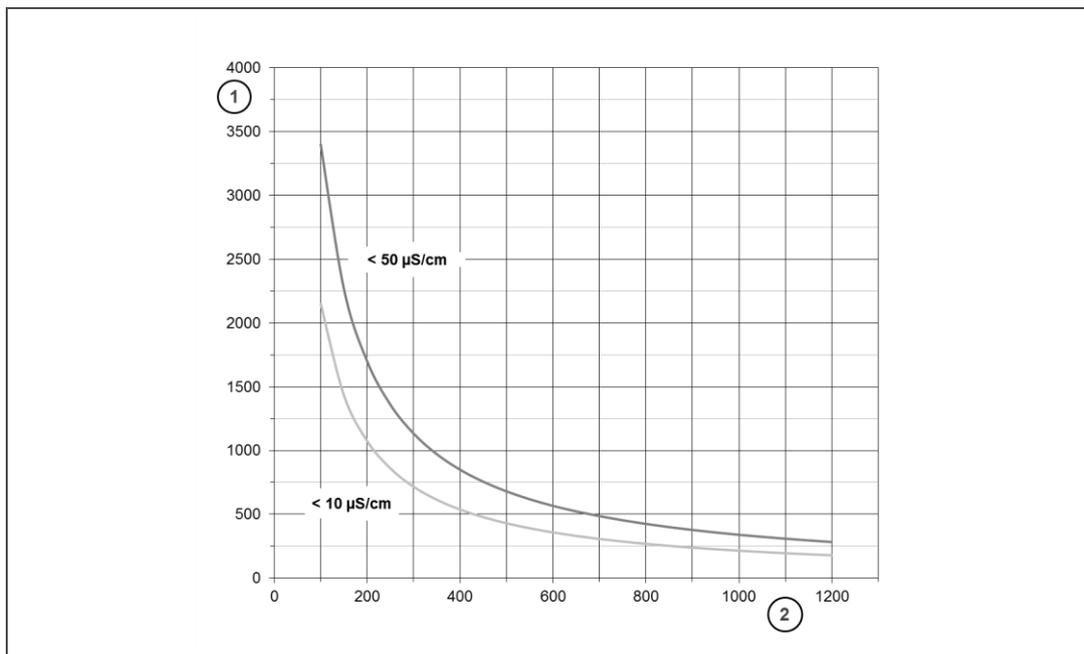
1 Pressure loss in bar

Designation

2 Flow in l/h

12.2.2 Capacity curves of mixed bed cartridges desaliQ:BA/PA

desaliQ:BA6/PA6



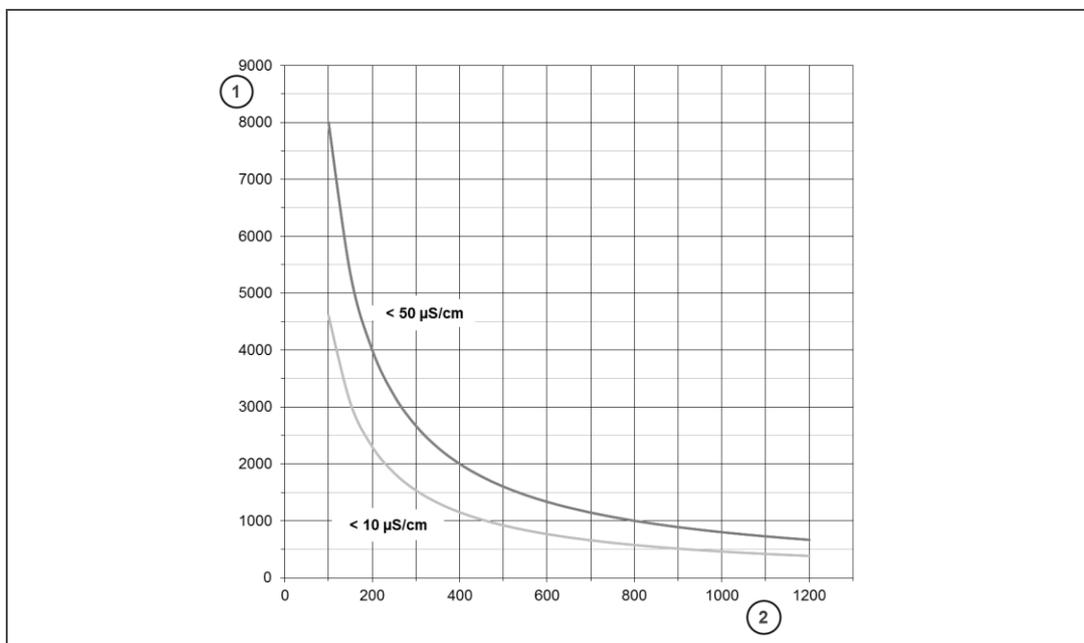
Designation

1 Volume of demineralised water in l

Designation

2 Conductivity of the raw water in $\mu\text{S/cm}$

desaliQ:BA12/PA12



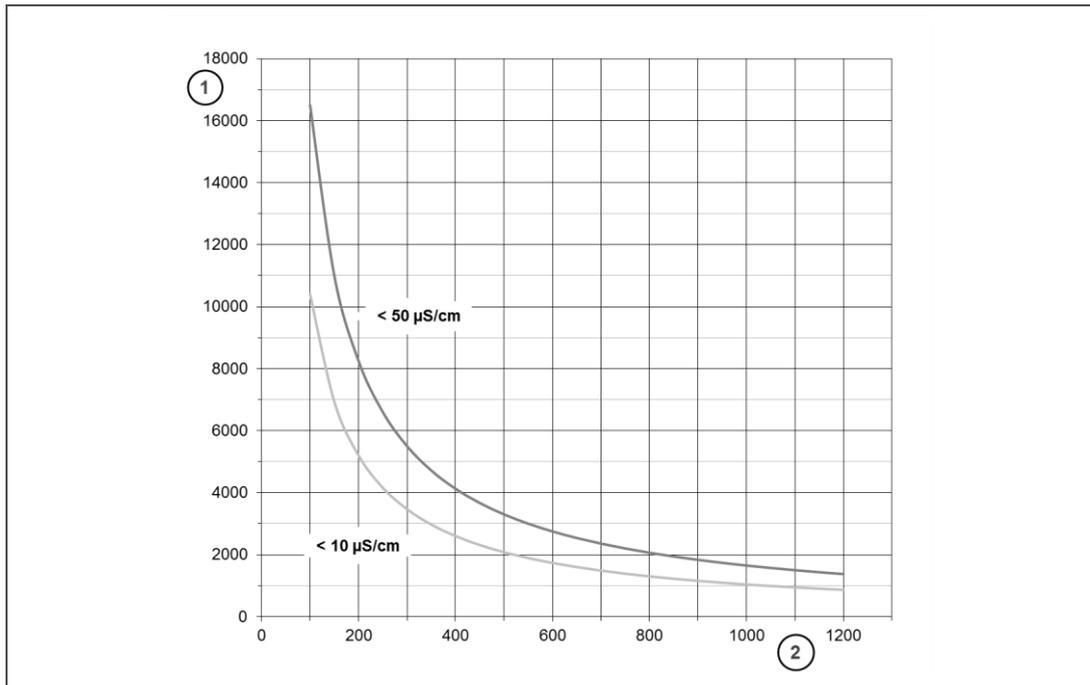
Designation

1 Volume of demineralised water in l

Designation

2 Conductivity of the raw water in $\mu\text{S/cm}$

desaliQ:BA13/PA13



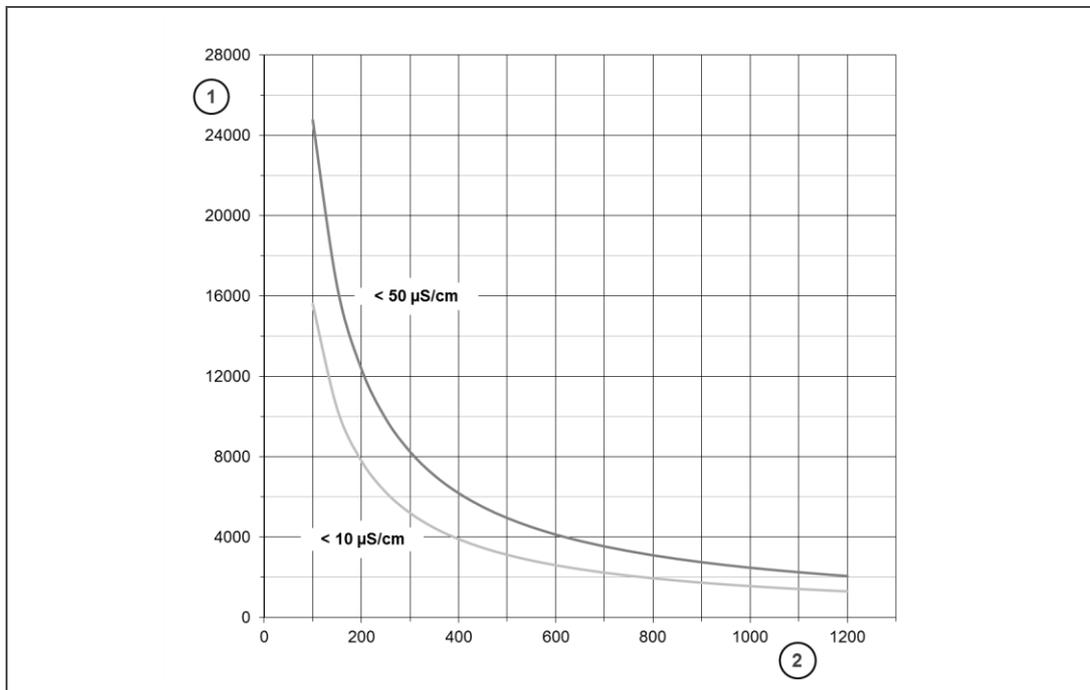
Designation

1 Volume of demineralised water in l

Designation

2 Conductivity of the raw water in µS/cm

desaliQ:BA16/PA16



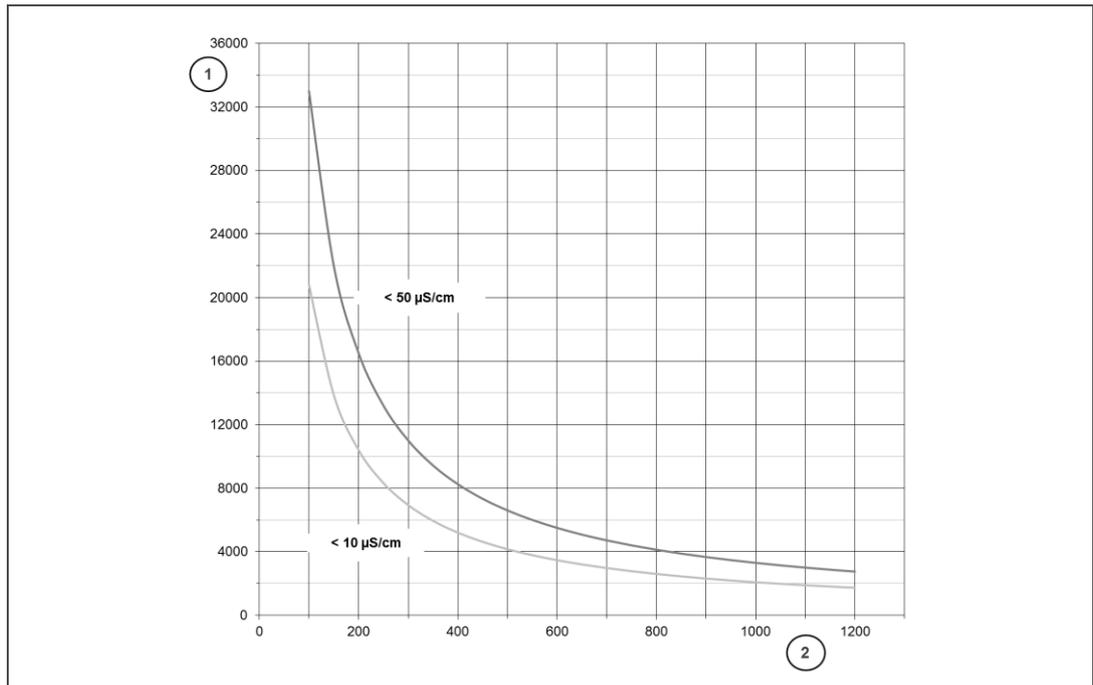
Designation

1 Volume of demineralised water in l

Designation

2 Conductivity of the raw water in µS/cm

desaliQ:BA20/PA20



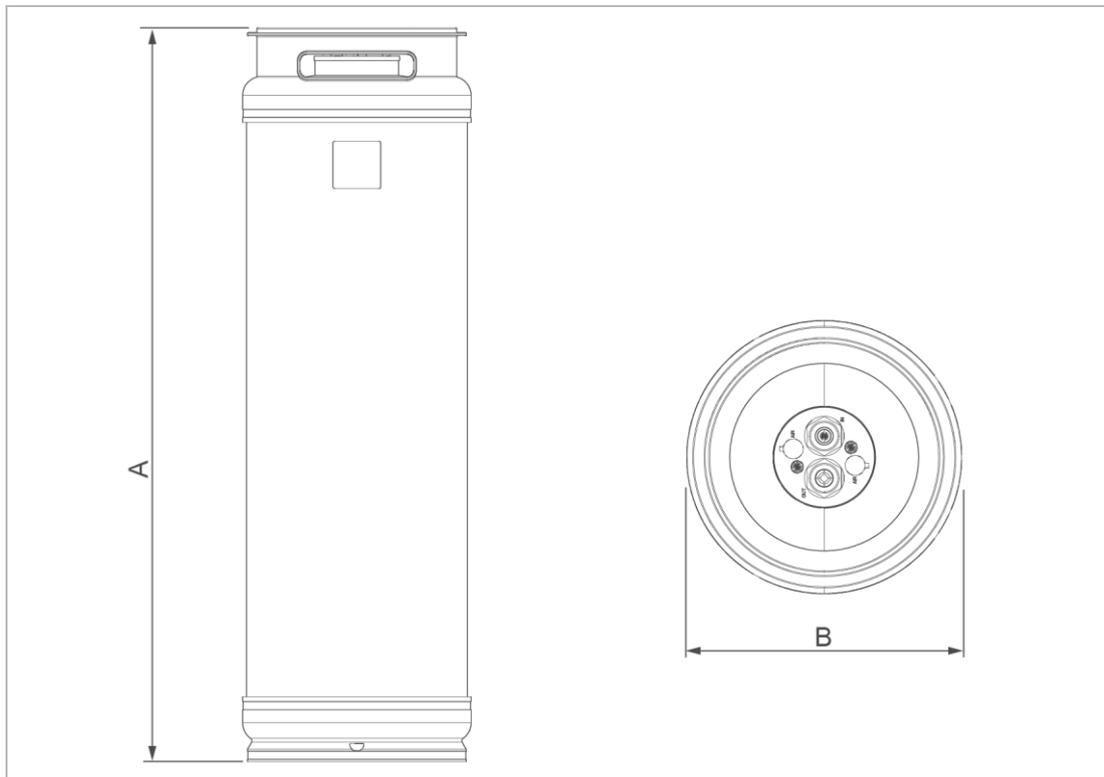
Designation

1 Volume of demineralised water in l

Designation

2 Conductivity of the raw water in µS/cm

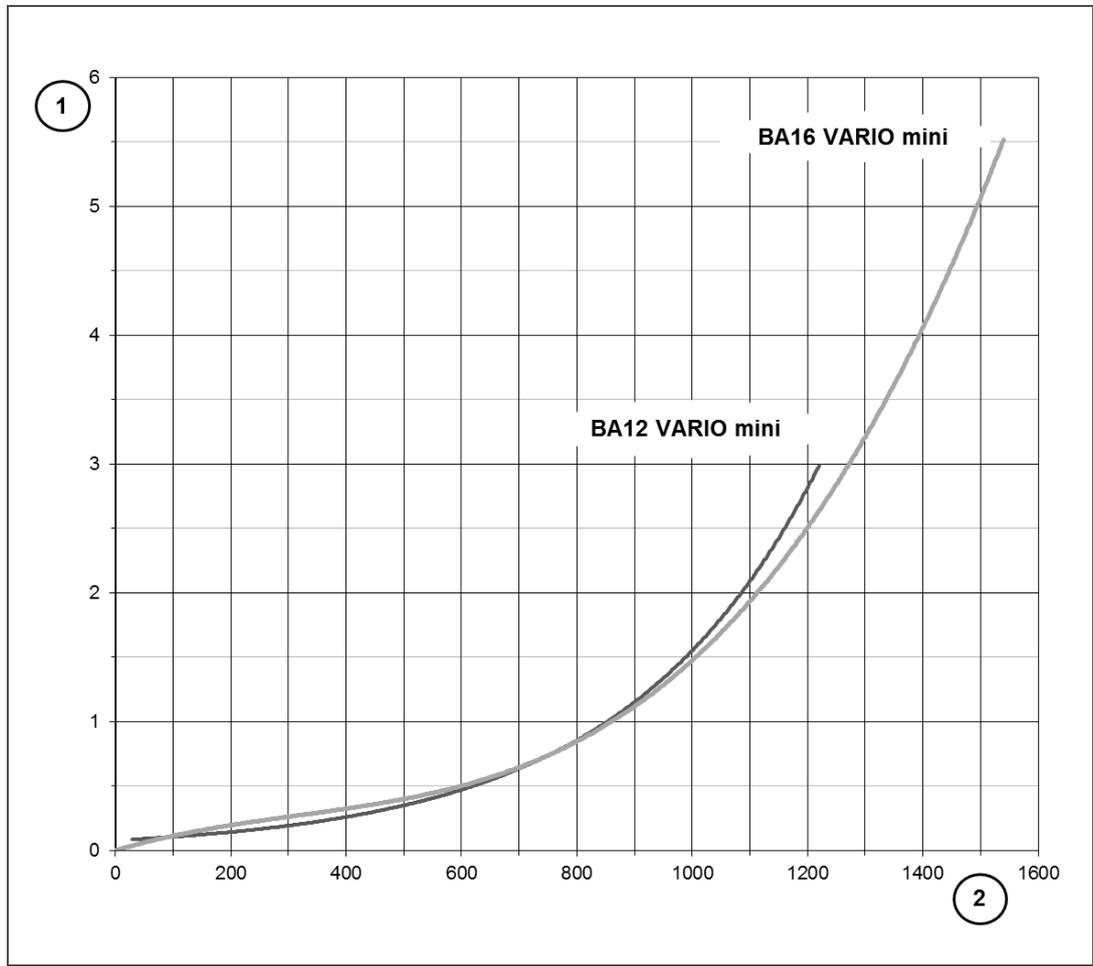
12.3 Mixed bed cartridge desaliQ:BA VARIO mini



		Mixed bed cartridge desaliQ:BA VARIO mini		
Dimensions and weights		6	12	
A	Height	mm	755	1190
B	Diameter	mm	240	240
	Shipping weight	kg	~ 23	~ 45
	Volume of cartridge	l	28.5	46.5
	Filling volume of mixed bed resin	l	25	46
Connection data		6	12	
	Nominal connection diameter	DN 20 (¾")		
Performance data		6	12	
	Nominal pressure	PN 10		
	Operating pressure	≤ 10		
	Nominal flow	m³/h	1.2	1.6
	Flow at Δp 1 bar	l/h	850	860
	Capacity at a desired residual conductivity of < 10 μS/cm	μS/cm x m³	460	1250
	Capacity at a desired residual conductivity of < 50 μS/cm	μS/cm x m³	800	1615
General data		6	12	
	Water temperature *	°C 5 – 80		
	Ambient temperature	°C 5 – 40		
	Order no.	707 465	707 485	

* Prolonged periods of use with water temperatures exceeding 60 °C can damage the resin.

12.3.1 Pressure loss curves of mixed bed cartridges desaliQ:BA VARIO mini

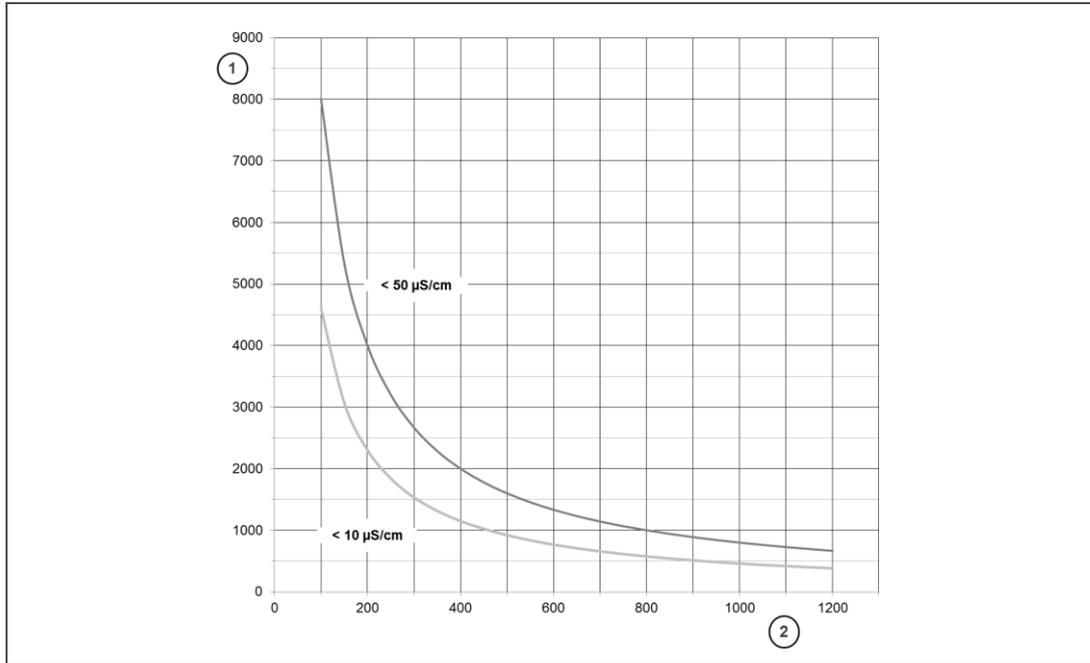


Designation
1 Pressure loss in bar

Designation
2 Flow in l/h

12.3.2 Capacity curves of mixed bed cartridges desaliQ:BA VARIO mini

desaliQ:BA VARIO mini



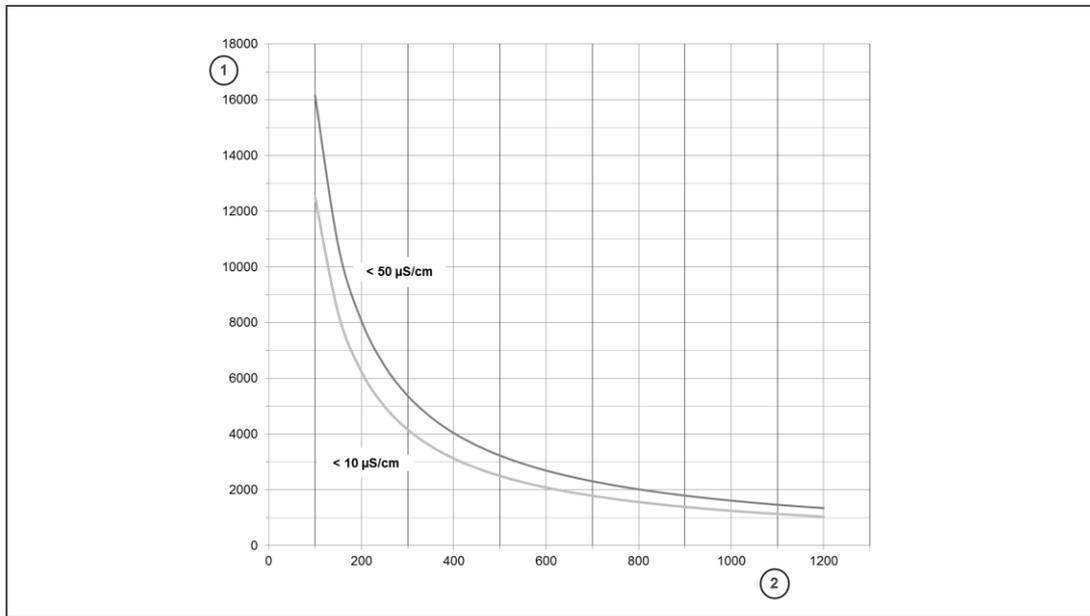
Designation

1 Volume of demineralised water in l

Designation

2 Conductivity of the raw water in $\mu\text{S/cm}$

desaliQ:BA VARIO mini



Designation

1 Volume of demineralised water in l

Designation

2 Conductivity of the raw water in $\mu\text{S/cm}$

13 Operation log



- ▶ Document the initial start-up/commissioning and all maintenance activities.
- ▶ Copy the maintenance report.

Mixed bed cartridge desaliQ: _____

Serial no.: _____

13.1 Start-up/Commissioning log

Customer		
Name		
Address		
Installation/Accessories		
Drinking water filter (make/type):		
Drain connection in accordance with DIN EN 1717	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Floor drain present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Safety device	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Operating values		
Conductivity of the inlet water	μS/cm	
Water pressure	bar	
Water meter reading	m ³	
Remarks		
Start-up/Commissioning		
Company		
Service technician		
Company		
Work time certificate (no.)		
Date/signature		

13.2 Maintenance

Work performed	
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
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	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____

Work performed

Date, signature

- Maintenance
- Repair

Company:
Name:

Date, signature

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