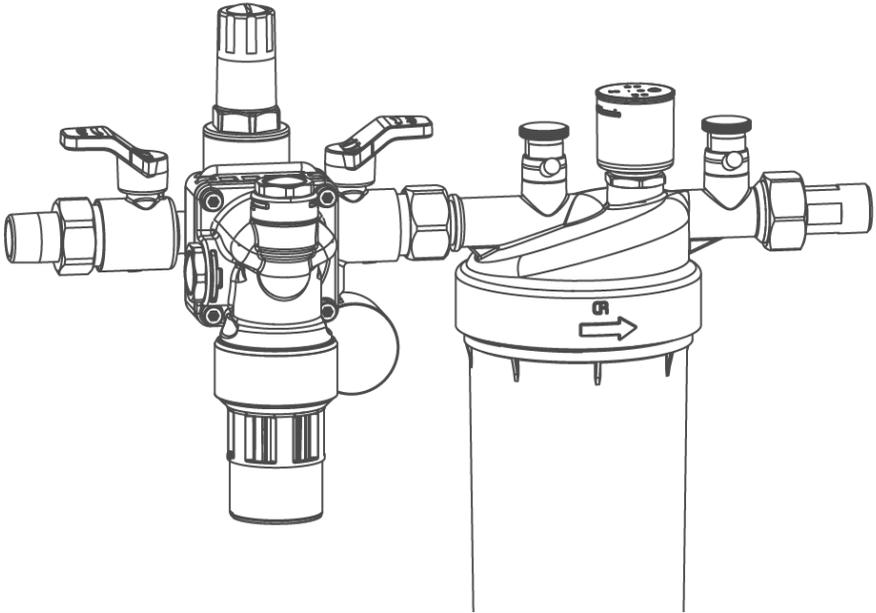


We understand water.



Filling section | thermaliQ:FB2

Operation manual

grünbeck

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Germany**

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Availability

Monday to Thursday

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Friday

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Your local point of contact: see
accompanying list of
representatives

Subject to technical modifications.

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Original operation manual

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1 About this instruction

1.1 Other applicable documents

The following documents also apply in the case of the filling section thermalIQ:FB2:

- The manuals of all accessories used.

1.2 Target group

The intended audience for this manual is comprised of qualified specialists and owner-users.

1.3 Storage of the documents

Keep this instruction and all other applicable documents, so that they are available when needed. Make sure that your qualified specialist enters the proper start-up and annual maintenance in the operation log in chapter 11.

1.4 Symbols used



This symbol identifies instructions that you must comply with for your personal safety.



This symbol identifies instructions that you must comply with in order to avoid damage to property.



This symbol identifies important information about the product or its handling.



This symbol identifies work that is only allowed to be carried out by qualified specialists. In Germany, the installation company must be registered in an installation directory of a water supply company acc. to §12(2) AVB Wasser V (German Ordinance on General Conditions for the Supply of Water).

1.5 Typographical conventions

The following typographical conventions are used in this instruction:

Description	Depiction
Handling instruction One-step or chronological sequence of steps does not matter	▶ Action
Multi-step and chronological sequence of action steps important	1. First action a first step b second step 2. Second action
Result after a handling instruction	» Result
Lists	● List item • List sub-item
Menu paths	Status level>Menu level>Submenu
Display texts	Display text
Operating elements	Button/key

1.6 Validity of the instruction

This instruction applies to the following products:

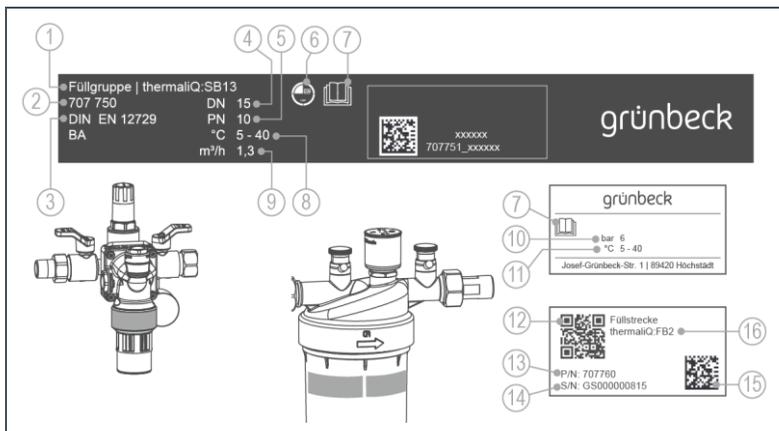
- Filling section thermalIQ:FB2

1.7 Type plate

The type plate is located on the treatment unit.

Please specify the data shown on the type plate in order to speed up the processing of your enquiries or orders.

- ▶ Enter the necessary information in the table below to have it readily available whenever necessary.



Item	Designation	Item	Designation
1	Product designation filling group	2	Order no. filling group
3	DIN for system separator	4	Nominal diameter
5	Nominal pressure	6	DVGW test mark
7	Observe operation manual	8	Ambient temperature
9	Nominal flow	10	Max. operating pressure
11	Ambient temperature	12	QR code
13	Order no. filling section	14	Serial no. filling section
15	Data matrix code	16	Product designation filling section

- Product designation: Filling section thermalIQ:FB2
- Order no.: 707 760
- Serial no.: _____

2 Safety



Warning: Contamination of drinking water due to incorrect handling.

- Risk of infectious diseases.
 - ▶ Have the installation, start-up and annual maintenance carried out by qualified specialists only.
-

2.1 Safety measures

- Carefully read this manual before operating your product.
- Install the product in a frost-free room. Otherwise, the product may suffer irreparable damage. The consequence may be water damage.
- Only use genuine spare parts for maintenance or repair. If unsuitable spare parts are used, the warranty for your product will be void.
- Only have persons working on your product who have read and understood this manual and that are qualified to do such work on account of their vocational training.
- Only operate the product if all components are installed properly.
- Safety devices must never be removed, bridged or otherwise tampered with.

2.2 Technical safety instructions

This manual contains instructions that you must comply with for your personal safety as well as to avoid damage to property. The information and instructions are highlighted by a warning triangle and have the following structure:



CAUTION: Type and source of danger

- Possible consequences
 - ▶ Measures for avoidance
-

The following signal words are defined depending on the degree of danger, and can be used in this manual:

- **DANGER** means that death or serious injury will result.
- **WARNING** means that death or serious injury can result.
- **CAUTION** means that minor bodily injuries can occur.
- **NOTE** (without warning triangle) means that property damage can occur.

2.3 Regulations

When installing and starting up the system, amongst others, comply with the following regulations and guidelines:

- Statutory regulations on environmental protection
- Provisions of the employers' liability insurance companies
- DIN EN 806 Specifications for installations inside buildings conveying water for human consumption
- VDI 6023 Part 5 – 7 Specifications for installations inside buildings conveying water for human consumption
- DIN EN 1717 Protection against pollution of potable water installations and general requirements of devices to prevent pollution by backflow
- VDI 2035 Prevention of damage in water heating installations - Water-side corrosion

2.4 Responsibilities of the qualified specialist

Comply with the following instructions to ensure the proper and safe functioning of the product:

- Only perform activities described in these instructions.
- Perform all activities in accordance with all applicable standards and regulations.
- Brief the owner/user on the function and operation of the product.
- Advise the owner/user of the maintenance of the product.
- Instruct the owner-user about possible dangers that can arise during operation of the product.

2.5 Responsibilities of the owner-user

Comply with the following instructions to ensure the proper and safe functioning of the product:

- Arrange for a qualified specialist to carry out installation, start-up and maintenance.
- Have the product explained to you by the qualified specialist.
- Only perform activities described in these instructions.
- Do not carry out any activities that are explicitly marked for a qualified specialist.
- Only use this product as intended.
- Make sure that the required inspection and maintenance work is carried out.
- Keep this instruction.

3 Product description

3.1 Intended use

The thermalIQ:FB2 filling section is used for safely connecting a heating system to a drinking water installation in accordance with the standards.

The filling section protects the drinking water against backflow of water from the heating circuit.

The pressure reducer of the filling section regulates the filling pressure.

The filling section is used for the complete desalination of raw water for the first filling or replenishment of heating systems.

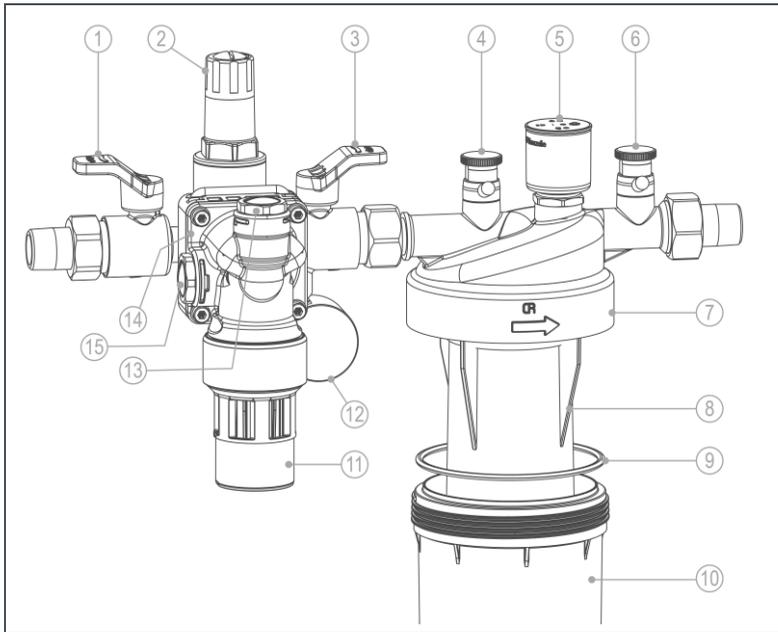
The filling section is only allowed to be installed in horizontal pipes.

The filling group (system separator) may be installed together with the treatment group in horizontal pipes or separate in vertical pipes.

3.2 Predictable misuse

Installation of the treatment group (filling cartridge) in vertical pipes.

3.3 Product components



Item	Designation	Item	Designation
1	Shut-off valve (inlet)	2	Pressure reducer
3	Shut-off valve (outlet)	4	Vent valve (inlet)
5	Conductivity measuring cell	6	Vent valve (outlet)
7	Type plate	8	Filling cartridge
9	O-ring	10	Plastic bell housing
11	Drain funnel	12	Pressure gauge
13	Test connection inlet pressure zone	14	Rotary flange (system separator)
15	Test connection intermediate pressure zone		

3.4 Accessories

Figure	Product	Order no.
	Filling cartridge desaliQ:HB4 with bottle adapter	707 150
	For the full demineralisation of water for heating systems.	
	Filling cartridge desaliQ:HB4 without bottle adapter	707 155
	desaliQ connecting adapter	707 276
	Adapter for connecting the filling cartridge desaliQ:HB4 to the treatment group thermalIQ:HB2.	
	desaliQ hose set	707 850
	2 connection hoses with a length of 1.5 m, for connecting upright full demineralisation units with the treatment group thermalIQ:HB2.	
	Fine filter pureliQ:K20	101 220
	The fine filter pureliQ:K filters the drinking water and protects the domestic water installation according to DIN EN 806.	
	Safety device protectliQ	126 400
	The safety device protectliQ is a product for the protection from water damage in one- and two-family homes.	
Without illustration	Service set	132 095
	Service set for the maintenance of system separators.	

3.5 Functional description

The filling section thermalIQ:FB2 consists of a filling group and a treatment group.

In the filling group the raw water for filling the heating system flows through the inlet shut-off valve and the dirt trap into the system separator unit.

After the system separator unit, the water flows through the pressure reducer. The pressure reducer ensures that the filling pressure in the heating system is not exceeded. The filling pressure is displayed on the pressure gauge.

In the treatment group the water is demineralised by means of the mixed bed resin in the filling cartridge. The conductivity measuring cell monitors the water quality.

3.5.1 System separator

The system separator BA according to DIN EN 12729 is a safety valve and protects the drinking water from contamination up to category 4.

The system separator consists of inlet pressure, middle pressure and outlet pressure zones. If pressure fluctuations occur in the system and the primary pressure thus drops below the outlet pressure, the middle pressure zone is emptied via the relief valve.

This prevents water from flowing back into the drinking water system.

3.5.2 Pressure reducer

The pressure reducer reduces the pressure on the inlet side (primary pressure) to the desired pressure on the outlet side (back pressure).

3.5.3 Treatment group

Physical

The raw water passes through the shut-off valve into the filling cartridge desaliQ:HB2. The water flows through the mixed bed of the filling cartridge from top to bottom. The water is demineralised by the ion exchange process.

The demineralised water passes through the conductivity measuring cell and flows into the heating system.

A non-return valve at the outlet of the treatment group prevents water from flowing back from the heating system.

Chemical

The mixed-bed resins consist to one part of a highly acid cation exchanger resin and to the other part of a highly alkaline anion exchanger resin. In the mixed-bed cartridges, the two components are completely mixed.

The cation exchanger resin removes all positively charged ions, the so-called cations, from the raw water. All cations contained in the raw water such as calcium, magnesium or sodium are exchanged for H⁺ ions.

The anion exchanger resin is used in full demineralisation to filter off negatively charged ions, the so-called anions. All anions such as nitrate, phosphate, sulphate, chloride and hydrogen carbonate contained in the raw water are exchanged for OH^- ions.

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 H_2O . The result of the full demineralisation is pure water.

4 Installation



The installation of a filling section represents a major intervention into the drinking water system and may only be performed by a qualified specialist.

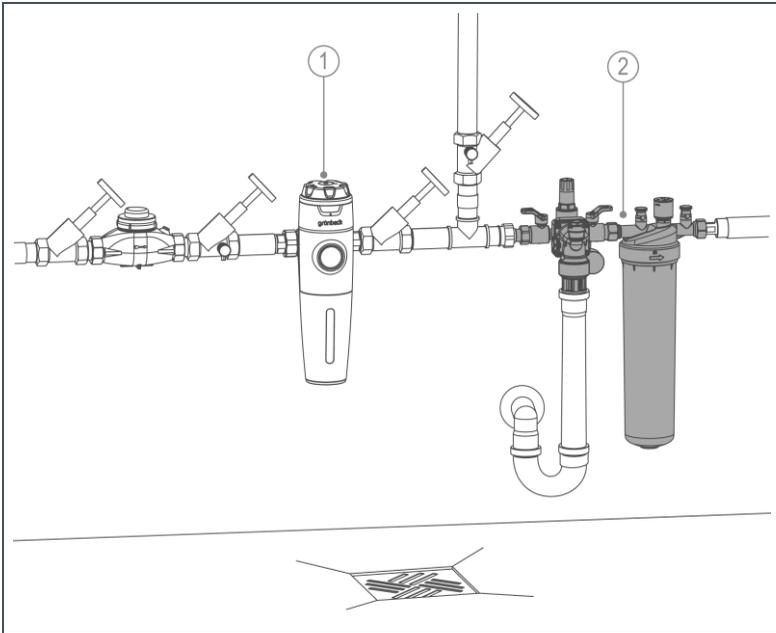
The filling section thermalIQ:FB2 can be mounted as follows:

- Filling group and treatment group as a combination in horizontal water pipes
- Filling group separate from the treatment group in vertical water pipes



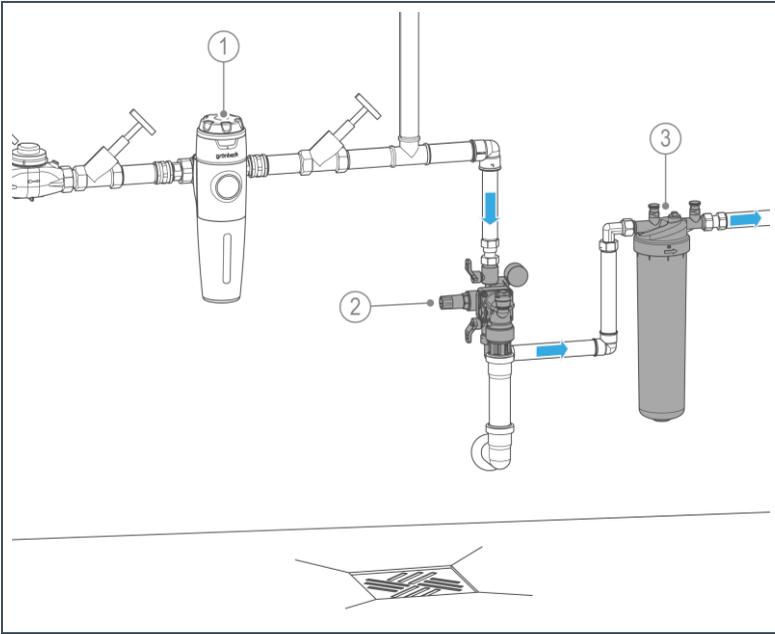
In case of separate installation additional screw fittings must be supplied on site.

Installation example I (combination)



Item	Designation
1	Drinking water filter pureIQ:KD
2	Filling section: Filling group and treatment group as a combination

Installation example II (separate)



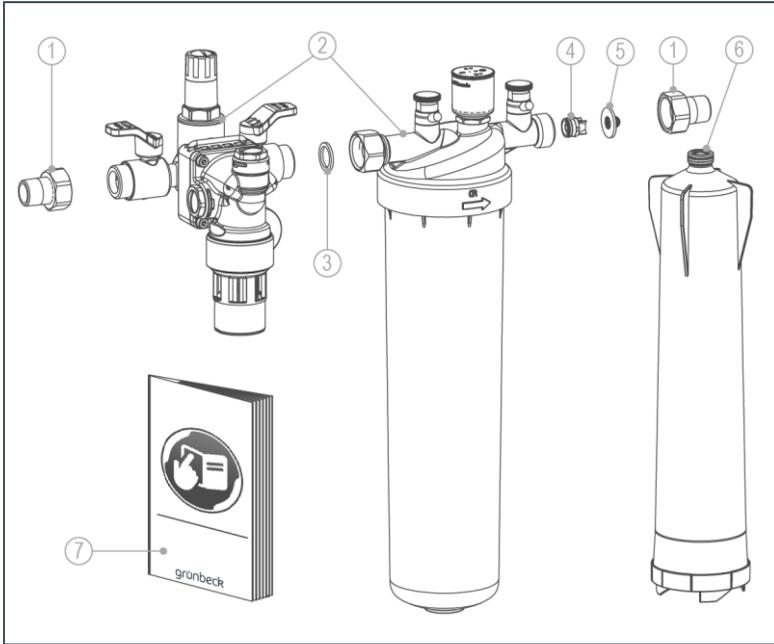
Pos.	Bezeichnung
1	Drinking water filter pureliQ:KD
2	Filling group in vertical water pipe
3	Treatment group in horizontal water pipe

4.2 Requirements for the installation site

Observe local installation directives, general guidelines and technical specifications.

- The installation site must be frost-proof and ensure the product is protected from chemicals, dyes, solvents and vapours.
- The installation room must have a drain connection (DN 40).
- 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.
- A drinking water filter must be installed upstream of the product.

4.3 Checking the scope of supply



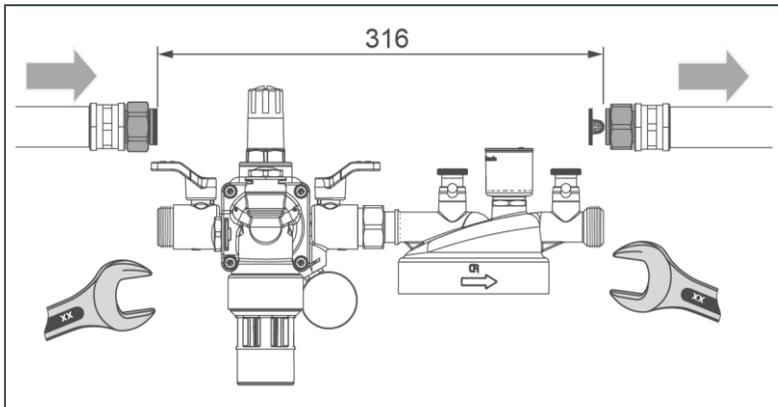
Item	Designation	Item	Designation
1	Water meter screw fittings	2	Filling section
3	Flat seal	4	Non-return valve
5	Flat gasket with cap sieve	6	Filling cartridge desaliQ:HB2
7	Operation manual		

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

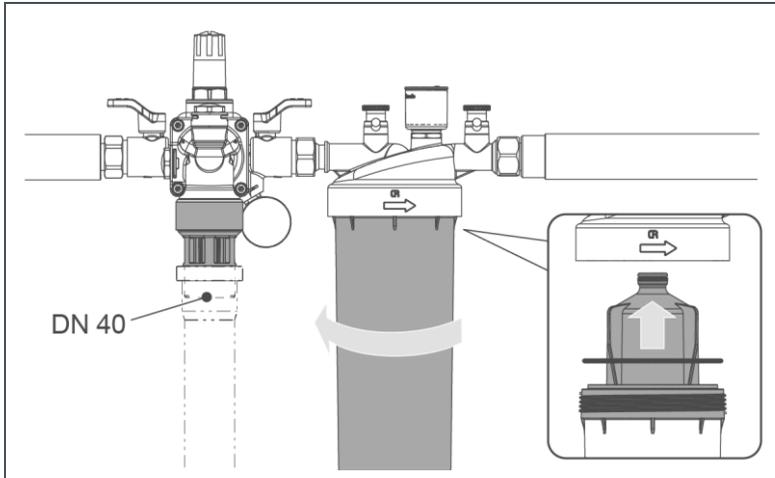
4.4 Installing the product

Assembly of the filling section as a combination

1. Assemble the filling group with the treatment group.
Observe the flow direction (flow direction arrow is located under the shut-off valves).



2. Flush the pipeline.
3. Install the water meter screw connection into the pipe.
4. Install the filling section into the pipe without stresses.
Use the flat gasket on the inlet side and the flat gasket with cap sieve on the outlet side.
5. Turn the system separator unit on the rotary flange so that the outlet funnel points vertically downwards.



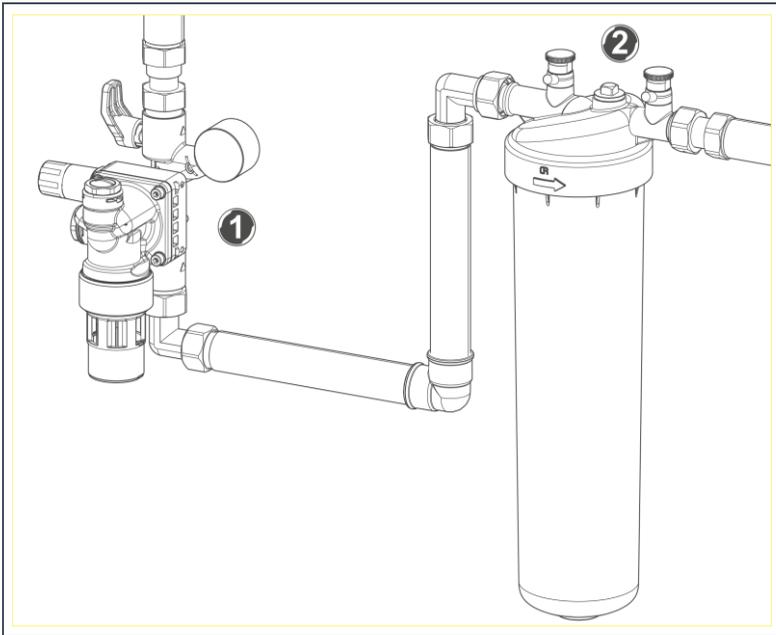
6. Install a DN 40 drain connection (not included in the scope of supply). Make sure there is a free outlet.
7. Mount the filling cartridge and the plastic bell housing.
 - » The product is installed.

Assembly of the filling section separately

Please observe the following when mounting the filling section separately:



- ▶ Mount the single components according to the installation of the filling section as a combination.
- ▶ Use the additionally required on site screw fittings.



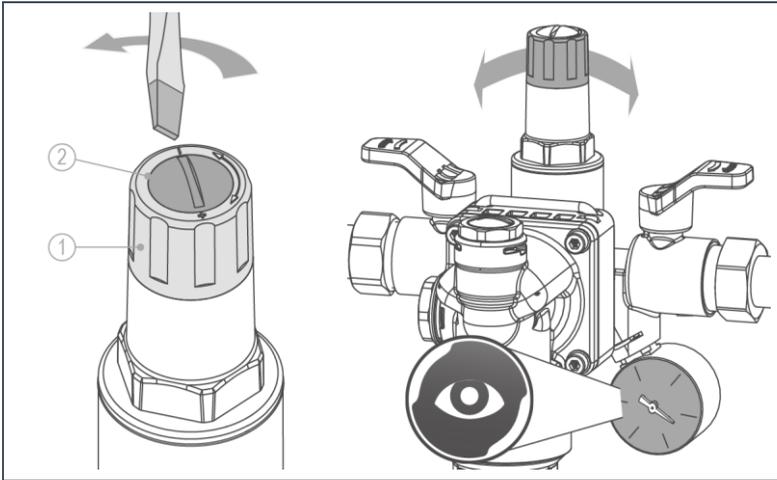
8. Mount the filling group in the vertical water pipe.
 9. Mount the treatment group in the horizontal water pipe.
- ▶ Mount the drain connection DN 40 (not included in the scope of supply). Make sure there is a free outlet.

5 Start-up

5.1 General procedure

1. Check the correct installation of the filling group, the treatment group, and the filling cartridge.
2. Adjust the filling pressure of the heating circuit at the pressure reducer.
3. Open the on-site shut-off valves of the drinking water inlet.

5.2 Setting the pressure reducer



Item	Designation	Item	Designation
1	Adjusting handle	2	Screws

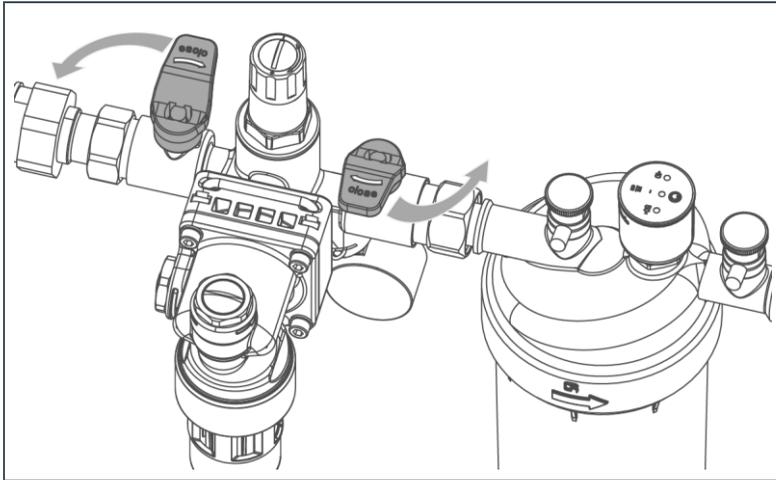


The pressure reducer can be adjusted between 0.5 – 4 bar.
Factory set to 1.5 bar.

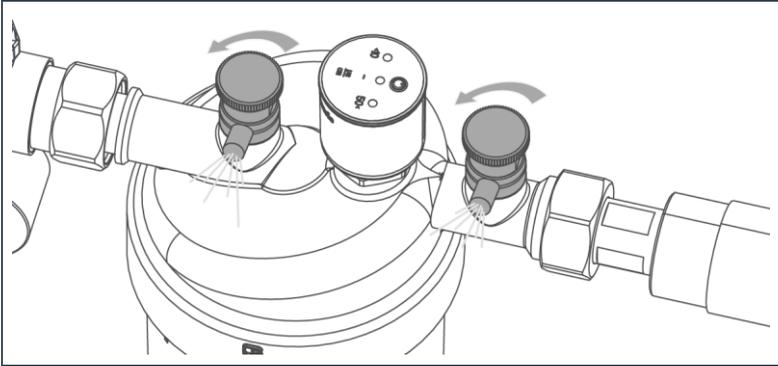
The pressure reducer can be adjusted as follows:

1. Loosen the screw.
2. Adjust the filling pressure at the adjusting handle.
 - a Turn to the left  to lower the pressure.
 - b Turn to the right  to increase the pressure.
3. Tighten the screw.

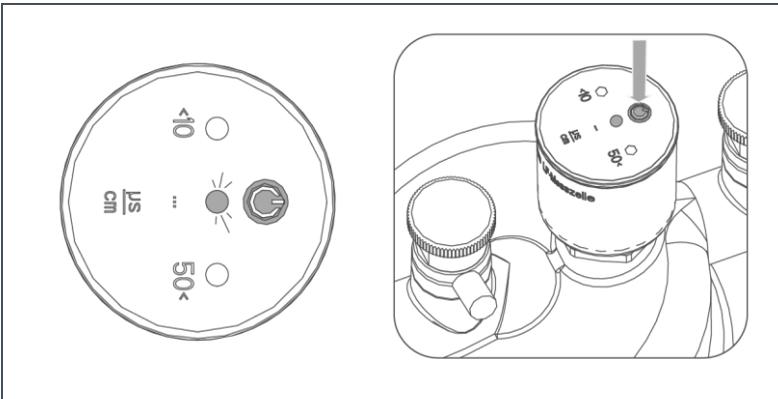
5.3 Filling the heating



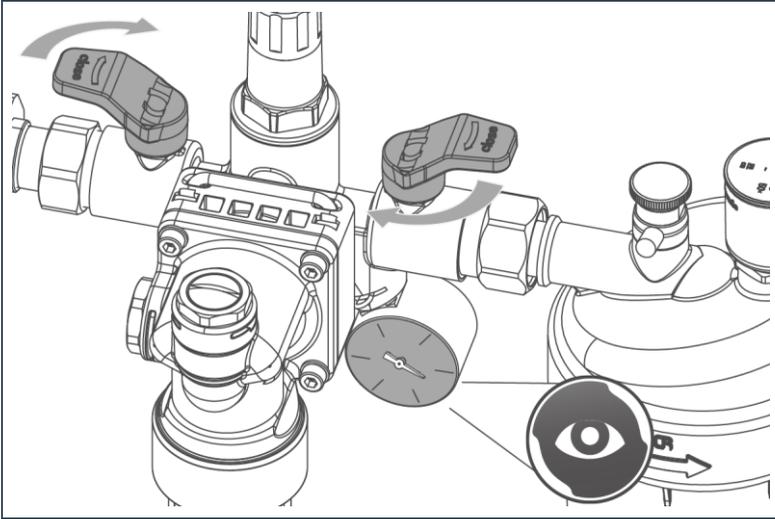
4. Slowly open the shut-off valve for drinking water (inlet).
 5. Slowly open the shut-off valve for the pressure reducer (outlet).
- » The filling process begins.



6. Open the vent valves.
 - » The filling section with demineralisation unit is vented.
7. Close the vent valves when no more air is escaping.
8. Check for leaks.



9. Press the button of the conductivity measuring cell.
 - » The LED of the conductivity measuring cell flashes, the conductivity measuring cell is activated.



- 10.** Close both shut-off valves after filling.
 - » The filling process is completed.
- 11.** Read off the pressure at the pressure gauge and correct it if necessary (see chapter 5.2).

5.4 Handing over the product to the owner/user

Proceed as follows during the handover of the product:

1. Inform the owner/user how the product works.
2. Hand over all documents to the owner/user for storage.
3. Use the manual to brief the owner/user, and answer any questions.
4. Inform the owner/user about the need for inspections and maintenance.

6 Operation

6.1 Functional check of the conductivity measuring cell

- ▶ Press the button of the conductivity measuring cell.
- » The conductivity measuring cell is activated.
- » An LED flashes after activation.



The conductivity measuring cell switches off after 45 minutes.

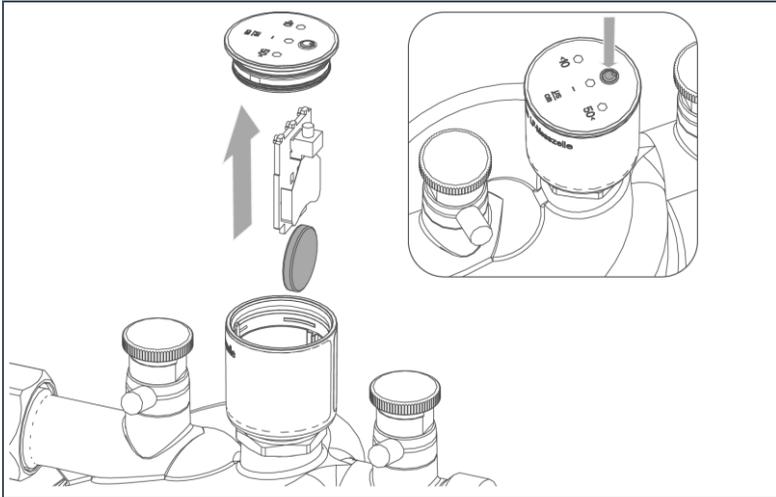
Display of the conductivity measuring cell

LED is flashing	Conductivity of water
Green	$< 10 \mu\text{S}/\text{cm}$
Yellow	$10 < \dots < 50 \mu\text{S}/\text{cm}$
Red	$> 50 \mu\text{S}/\text{cm}$



If the LED flashes red, the filling cartridge is exhausted.

6.2 Replacing the conductivity measuring cell battery

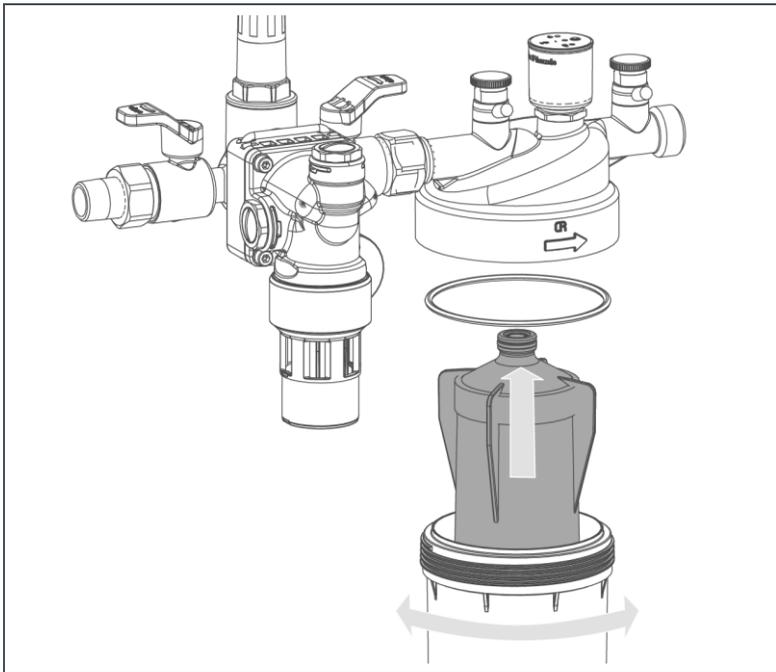


1. Pull the cover of the conductivity measuring cell off.
2. Remove the circuit board.
3. Remove the used battery.
4. Insert a new battery.
5. Close the cover of the conductivity measuring cell.
6. Press the button of the conductivity measuring cell.
 - » The conductivity measuring cell is ready for operation.

6.3 Installation/replacement of filling cartridge

Proceed as follows to replace the filling cartridge:

1. Close the inlet shut-off valve.
2. Open the vent valves.
 - » The filling section is unpressurised.



3. Remove the plastic bell housing (anticlockwise direction of rotation).
4. Replace the exhausted cartridge with a new one.
5. Mount the plastic bell housing (clockwise direction of rotation).
 - » The filling section is ready for operation.
6. Put the filling section into operation (refer to chapter 5).

7 Cleaning, inspection, maintenance

Inspection and maintenance of a filling section is stipulated in DIN standard DIN EN 806-5. Regular maintenance ensures trouble-free, hygienic operation. The filling section must be serviced by a qualified specialist at least once a year. Proper operation and maintenance of the product are essential for trouble-free and hygienic operation.



A maintenance contract ensures that all the required maintenance work will be performed in due time.

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

7.1 Cleaning

1. Only clean the outside of the product.
2. Do not use any strong or abrasive cleaning agents.
3. Wipe the housing with a damp cloth.



NOTE: Do not clean the product with alcohol or cleaning agents containing solvents!

- These substances will damage plastic components.
 - ▶ Use a mild/pH-neutral soap solution.
-

7.2 Intervals

Grünbeck recommends a semi-annual inspection and an annual maintenance according to DIN EN 806-5.

Operation	Interval	Execution
Inspection	6 months	Visual/functional check, leak test
Maintenance	12 months	Clean dirt trap and outlet funnel, check system separator for function, check resting/flow and differential pressure of the system separator

7.3 Inspection



Regular inspection increases the operational reliability of your product. DIN EN 806 Part 5 recommends that an inspection be carried out at least every 6 months.

To conduct an inspection, proceed as follows:

Visual/functional check

1. Check all water-bearing parts for leaks.
2. Check all components for possible damage and corrosion.
3. Check that the shut-off valves and connections are easy to operate.
4. Check that the drainage system can absorb the discharge water and that free drainage via the vertical outlet funnel is ensured.

Check for leaks

1. Open the shut-off valve (inlet and outlet).
2. Open a downstream withdrawal point (e.g. tap for heating replenishment).
 - » No water is allowed escape from the system separator to the outlet funnel.
3. Close the shut-off valve at the outlet and at the withdrawal point.
4. Close the shut-off valve at the inlet.
 - » No water is allowed escape from the system separator to the outlet funnel.

7.4 Maintenance



Regular maintenance increases the operational reliability of your product. DIN EN 806 Part 5 recommends that maintenance be carried out at least every 12 months.

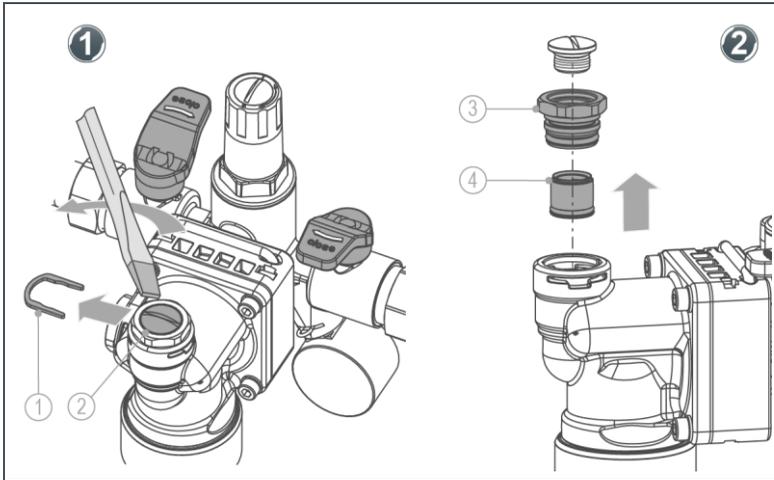


This is only allowed to be carried out by a qualified specialist.

1. Check the function of the conductivity measuring cell (refer to chapter 6.1).
2. Check the connected full demineralisation unit and renew it if necessary.
3. Service the filling group with the service set for maintenance of system separators (order no. 132 095).

In addition to the semi-annual inspection, the following work needs to be done:

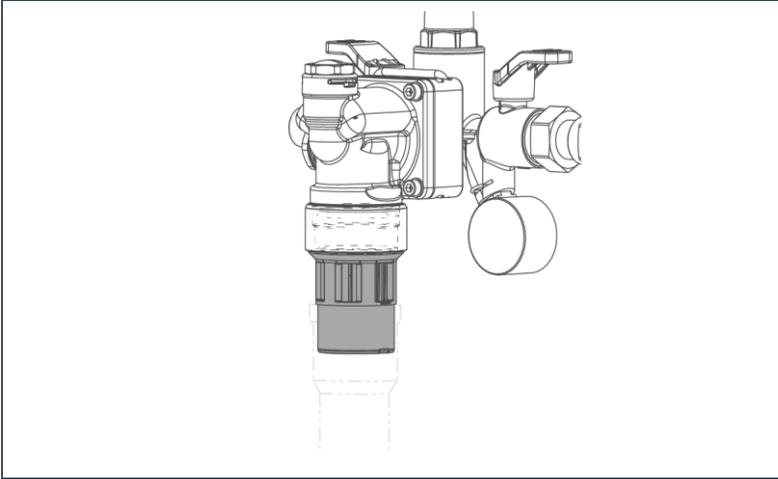
Cleaning the dirt trap



Item	Designation	Item	Designation
1	Retaining clip	2	Screw plug inlet pressure zone
3	Brass insert	4	Dirt trap

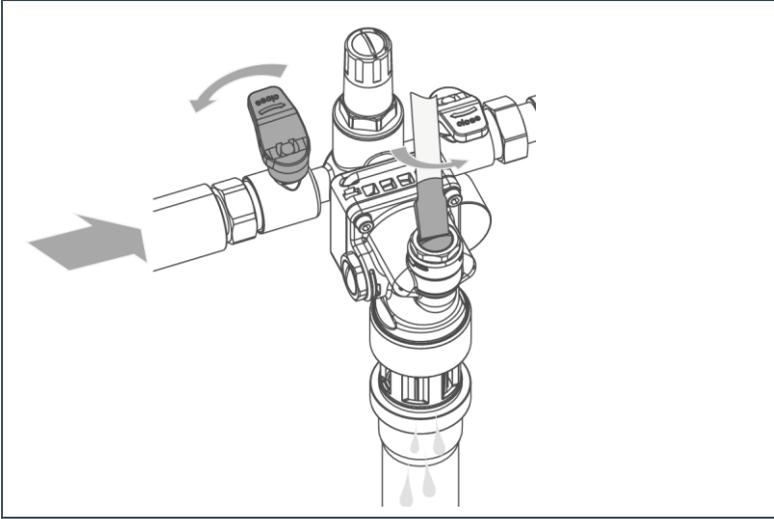
1. Close both shut-off valves.
2. Loosen the screw plug on the test connection.
 - » The filling combination is depressurised at the test connection of the inlet pressure zone.
3. Remove the safety clip and remove the brass insert.
4. Remove the internal dirt trap and clean it.
5. Mount the dirt trap and brass insert.
6. Insert the safety clip.
7. Tighten the screw plug.
 - » The dirt trap has been cleaned and installed.

Cleaning the outlet funnel



- ▶ Clean the outlet funnel (free drain) and the ventilation openings.

Functional check of system separator



1. Open the shut-off valve at the inlet of the filling group until water pressure is applied and then close it again.
2. Slowly unscrew the screw plug at the test connection of the inlet pressure zone of the system separator by approx. $\frac{1}{2}$ turn.
 - » The relief valve must open, drain the medium pressure zone completely and water must escape to the outlet funnel.
3. Close the screw plug.
4. Open the shut-off valve at the inlet of the filling group.
 - » Filling group goes into operating position – no water outlet any more.

Testing of rest, flow and differential pressure of the system separator

The service set (refer to chapter 3.4) can be used to perform a test.



The necessary test steps can be found in the operation manual of the service set for system separator (order no. 132 945) or in accordance with DIN 12729.

- ▶ Enter all work in the operation log.

7.5 Consumables

Product	Order no.
Filling cartridge desaliQ:HB2	707 745
Battery CR2032	WZ9-790075e

7.6 Spare parts

For spare parts and consumables please contact your local representative. You can find these on the Internet at www.gruenbeck.de.

7.7 Wearing parts

Wearing parts are listed below:

- Gaskets

8 Malfunction



Short-term, undefined water leakage at the outlet funnel of the filling section does not represent a malfunction. This is a normal control behaviour of the filling section caused by pressure fluctuations on the inlet side in the water supply system.

Observation	Meaning	Remedy
LED of the conductivity measuring cell does not flash.	The battery is exhausted.	Replace the battery (refer to 6.2).
	The conductivity measuring cell is defective.	Replace the conductivity measuring cell.
LED of the conductivity measuring cell flashes red.	The filling cartridge is exhausted.	Replace the filling cartridge (refer to 6.3).
High pressure when filling or refilling the heater.	Defect on the pressure gauge.	Renew the pressure gauge.
	Contamination at the seal seat of the pressure reducer.	Check the pressure reducer for contamination.
	The pressure reducer is defective.	Renew the pressure reducer.

9 Disposal

- ▶ Comply with the applicable national regulations.

9.1 Packaging

- ▶ Dispose of the packaging in an environmentally sound manner.

9.2 Product



If this symbol (crossed out waste bin) is on the product, this product or the electric and electronic components are not allowed to be disposed of in the household waste.

- ▶ Dispose of electrical and electronic products or components in an environmentally sound manner.
- ▶ If your product contains batteries or rechargeable batteries, dispose of them separately from your product.

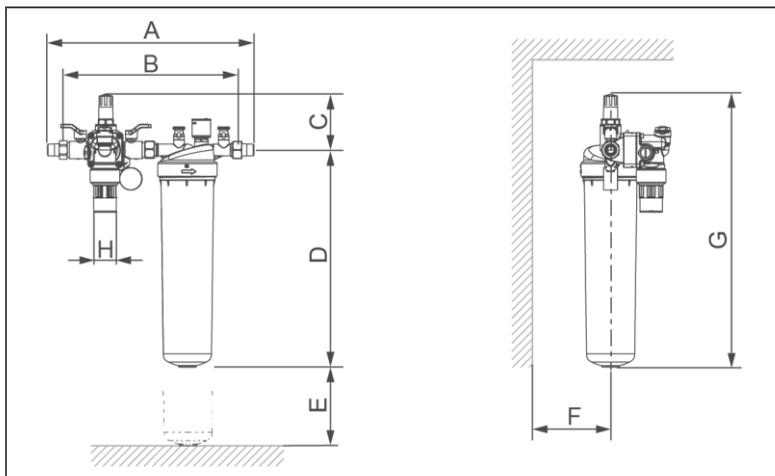


For more information on take-back and disposal, go to www.gruenbeck.com.

Dismantling before disposal

- ▶ Remove the conductivity measuring cell from the brass body.
(24 mm open-end spanner required)

10 Technical specifications



Dimensions and weights

A Installation length with screw connection	mm	372
B Installation length without screw connection	mm	316
C Height above centre of pipe connection	mm	99
D Height below centre of pipe connection	mm	380
E Clearance required for removal	mm	100
F Distance to wall	mm	70
G Total height	mm	479
H Drain connection/outlet funnel	mm	40
Operating weight, approx.	kg	3.8
Shipping weight, approx.	kg	4.5

Connection data

Nominal connection diameter	DN 15 (G ½")
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Performance data

Max. operating pressure	bar	6
Setting range pressure reducer	bar	0.5 – 4
Filling capacity at 1.5 bar	m³/h	0.2

General data

Water temperature	°C	5 – 30
Ambient temperature	°C	5 – 40
Order no.		707 760

11 Operation log

Filling section thermalIQ:FB2

Serial no.: _____



▶ Document the start-up and all maintenance activities.

11.1 Start-up log

Customer		
Name:	_____	
Address:	_____	
Installation/accessories		
Drain connection acc. to DIN EN 1717	<input type="checkbox"/> yes	<input type="checkbox"/> no
Floor drain available	<input type="checkbox"/> yes	<input type="checkbox"/> no
Safety device	<input type="checkbox"/> yes	<input type="checkbox"/> no
Remarks		

Start-up		
Installer:	_____	
Service technician:	_____	
Company:	_____	
Work time certificate (no.):	_____	
Date/signature:	_____	

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