

We understand water.



Filters | GENO-fine filter FM/FM-WW/FM-KW

Operation manual

grünbeck

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Translation of the original operation manual

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Table of contents

1	About this manual.....	4	5.1	Starting up the product	19
1.1	Other applicable documents	4	5.2	Handing over the product to the owner/user	20
1.2	Target group	4	6	Cleaning, inspection, maintenance.....	21
1.3	Storage of documents.....	4	6.1	Cleaning	21
1.4	Symbols used	4	6.2	Intervals	21
1.5	Typographical conventions	5	6.3	Inspection	22
1.6	Validity of the manual	5	6.4	Maintenance	22
1.7	Type plate	6	6.5	Consumables.....	27
2	Safety	7	6.6	Spare parts	27
2.1	Safety measures	7	6.7	Wearing parts	27
2.2	Technical safety instructions.....	8	7	Troubleshooting.....	28
2.3	Regulations	8	8	Disposal	29
2.4	Responsibilities of the qualified specialist and/or the specialist company	8	8.1	Packaging	29
2.5	Responsibilities of the owner/user	9	8.2	Product	29
2.6	Product-specific safety instructions	9	9	Technical specifications	30
2.7	Shipping and storage.....	9	9.1	Pressure loss curves	31
3	Product description	10	10	Operation log.....	32
3.1	Intended use	10	10.1	Start-up log	32
3.2	Foreseeable misuse	10	10.2	Maintenance	33
3.3	Product components.....	11	Notes	37	
3.4	Functional description	12	Notes	38	
3.5	Accessories	12			
4	Installation	13			
4.2	Requirements regarding the installation site.....	15			
4.3	Checking the scope of supply	16			
4.4	Installing the product.....	17			
5	Start-up	19			

1 About this manual

1.1 Other applicable documents

The following documents shall be deemed as applicable documents for the GENO-fine filters FM:

- The manuals of all accessories used.

1.2 Target group

This manual is intended for qualified specialists and owners/users.

1.3 Storage of documents

Keep this manual 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 chapter 10 of the operation log.

1.4 Symbols used



This symbol identifies instructions that you must comply with for your own personal safety as well as to avoid damage to property.



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 may only be carried out by a qualified specialist. 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).



This symbol identifies work that may only be performed by Grünbeck's technical service/authorised service company or by qualified specialists trained by Grünbeck.

1.5 Typographical conventions

The following typographical conventions are used in this manual:

Designation	Depiction
Instruction Single-step instruction or chronological sequence of actions does not matter	▶ Action
Instruction Multi-step instruction and chronological sequence of actions is important	<ol style="list-style-type: none"> 1. First action <ol style="list-style-type: none"> a first step b second step 2. Second action
Result following an instruction	» Result
Lists	<ul style="list-style-type: none"> • Listed item <ul style="list-style-type: none"> • Listed sub-item
Menu paths	Status level>Menu level>Submenu
Display texts	Display text
Operating elements	Button/key

1.6 Validity of the manual

This manual applies to the following products:

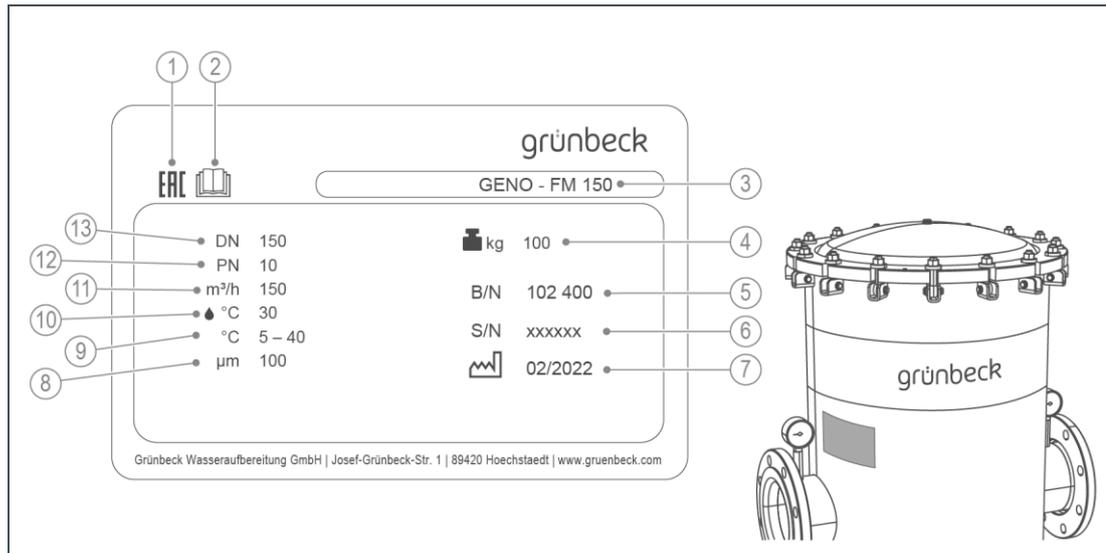
- GENO-fine filters FM/FM-WW/FM-KW 150
- GENO-fine filters FM/FM-WW/FM-KW 200

1.7 Type plate

The type plate is located on the side of the inlet pipe (raw water inlet).

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

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



Item	Designation	Item	Designation
1	EAC mark	2	Observe operation manual
3	Product designation	4	Operating weight
5	Order no.	6	Serial no.
7	Date of fabrication	8	Pore size
9	Ambient temperature	10	Max. water temperature
11	Nominal flow (at Δp 0.2 bar)	12	Nominal pressure
13	Nominal connection diameter		

- Product designation: GENO-fine filter _____
- Order no.: 102 _____
- Serial no.: _____

2 Safety



WARNING: Contamination of drinking water due to improper 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.
- Only operate the product if all components are installed properly.
- Only have persons working on your product that have read and understood the present manual and that are qualified to do such work due to their vocational training.
- Comply with the hygiene instructions in chapter 6. Failure to comply can result in microbiological contamination of your drinking water installation.
- Keep your product permanently connected to the water supply.
- Safety equipment must never be removed, bridged or otherwise tampered with.
- Observe the maintenance intervals (refer to chapter 6.2). Failure to comply can result in microbiological contamination of your drinking water installation.
- Children are not allowed to play with the product.
- This product can be used by children over 8 years of age and persons with limited abilities or lack of experience if they are supervised or instructed in the safe use of the product and understand the resulting hazards.
- Cleaning and maintenance must not be carried out by children.

2.2 Technical safety instructions

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



CAUTION: Type and source of danger.

- Possible consequences
 - ▶ Preventive measures
-

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

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

2.4 Responsibilities of the qualified specialist and/or the specialist company

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

- Only perform activities described in this manual.
- 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.

- Inform the owner/user about possible dangers that can arise during the operation of the product.
- Fill in the operation log (refer to chapter 10).

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 this manual.
- Do not carry out any activities that are explicitly designated for a qualified specialist.
- Only use this product as intended.
- Make sure that the required inspection and maintenance work is carried out.
- Keep this manual.

2.6 Product-specific safety instructions



WARNING: If the intervals for inspection and replacement are not observed, the filter element will become excessively polluted.

- Health risk due to contamination of the drinking water.
- ▶ Observe the intervals and recommendations for inspection and replacement of the filter elements.

2.7 Shipping and storage

Transport

- ▶ Only transport the filters in their original packaging.

Storage

- ▶ Protect the product from:
 - Damp, moisture, environmental impacts such as wind, rain, snow, etc.
 - Frost, direct sunlight, severe heat exposure
 - Chemicals, dyes, solvents and their vapours

3 Product description

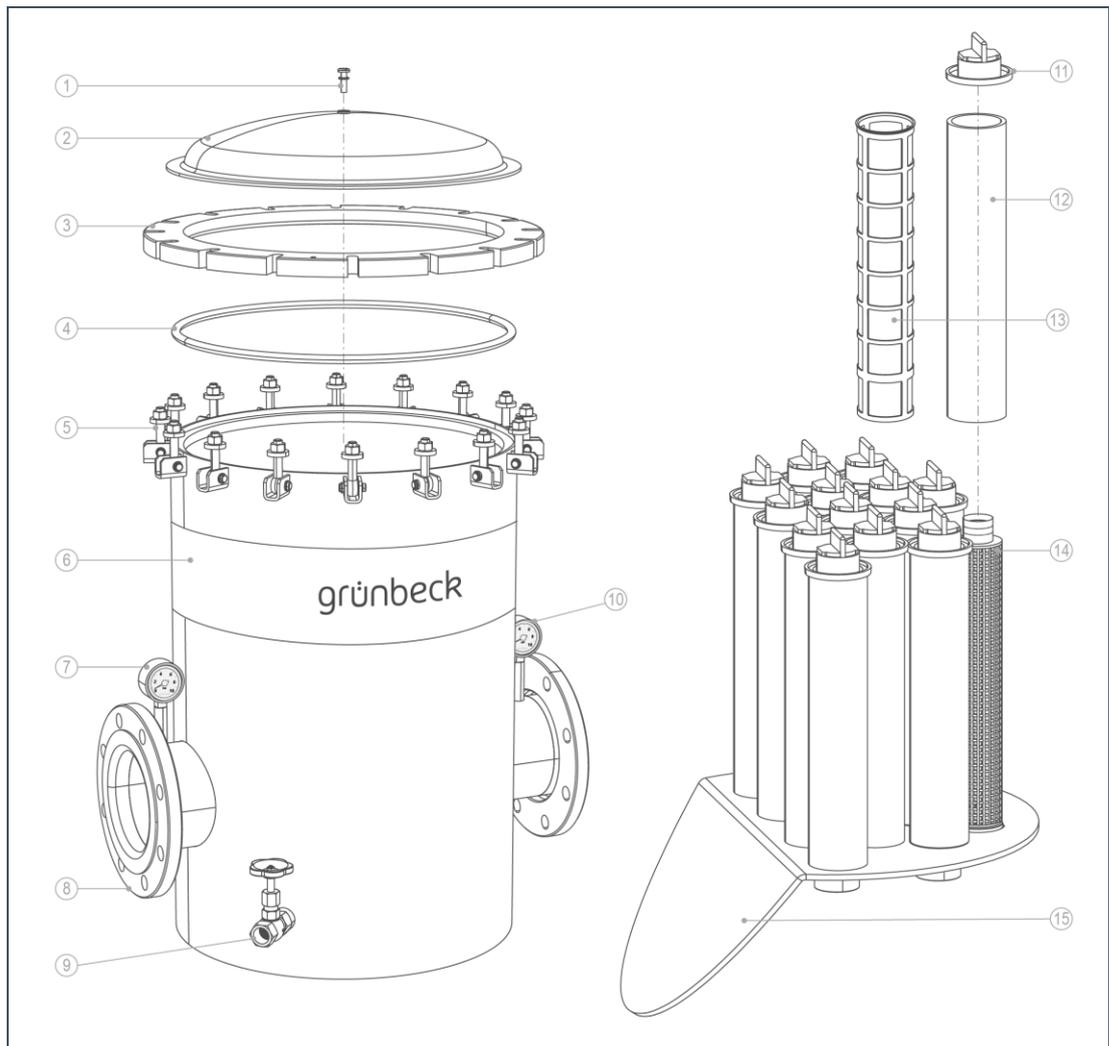
3.1 Intended use

- The GENO-fine filters FM are designed for the filtration of drinking and well water.
- The FM-WW filters are suitable for the filtration of process and boiler feed water - in partial flow only - and as warm water filters for water temperatures up to 90 °C.
- The FM-KW filters are suitable for the filtration of cooling and air conditioning water – in partial flow only - and for water temperatures up to 90 °C.
- The filters can be used for positive and negative pressure applications.
- The filters are designed according to the stipulations of DIN EN 13443-1 and DIN 19628 and are intended for installation into drinking water pipes according to DIN EN 806-2.
- The filters protect the water pipes and connected water-carrying system parts from malfunctions and corrosion damage due to undissolved impurities (particles), such as rust particles, sand, etc.

3.2 Foreseeable misuse

- The filters are not suitable for circulation water that has been treated with chemicals.
- The filters are neither suitable for oils, greases, solvents, soaps and other lubricating media, nor for the separation of water-soluble substances.
- The filters must not be installed in vertical water pipes.

3.3 Product components



Item	Designation	Item	Designation
1	Deaerator	2	Cover
3	Cover ring	4	O-ring
5	Screws	6	Filter housing
7	Pressure gauge for inlet pressure	8	Flange
9	Draining valve	10	Pressure gauge for outlet pressure
11	Cap nut	12	Filter element (50 µm)
13	Filter element (100 µm)	14	Support mesh
15	Retaining plate		

3.4 Functional description

The unfiltered drinking water flows into the filter from the inlet side and then passes through the filter elements to the pure water outlet.

In the course of this process, foreign particles > 80 µm in size (standard) for FM 150, > 50 µm (standard) for FM 200 and > 500 µm for FM-KW are retained.

Depending on their size and weight, the foreign particles either stick to the filter element or fall straight down where they accumulate at the lowest point of the filter.

Due to the growing load of the filter elements, the differential pressure between the raw water inlet and the pure water outlet increases.

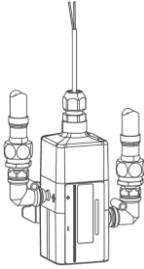
If the differential pressure of 0.8 bar at the flow rate of the filter is exceeded, the filter elements must be replaced.

3.5 Accessories



You can retrofit your product with additional accessories. Please contact your local Grünbeck representative or Grünbeck's headquarters in Hoechststedt for more details (refer to www.gruenbeck.com).

Designation	Order no.	Order no.
Filter element	DN 150	DN 200
5 µm	103000020001	103000030001
100 µm	103 110	103 150
50 µm	103 070	103 153
500 µm	103 111	103 151

Illustration	Product	Order no.
	Differential pressure switch With electric contactor, continuously adjustable for visual or acoustic remote signal.	102 870
	Hose extension kit for differential pressure switch	102 850
	Parallel piping of two GENO-fine filters	Subject to project

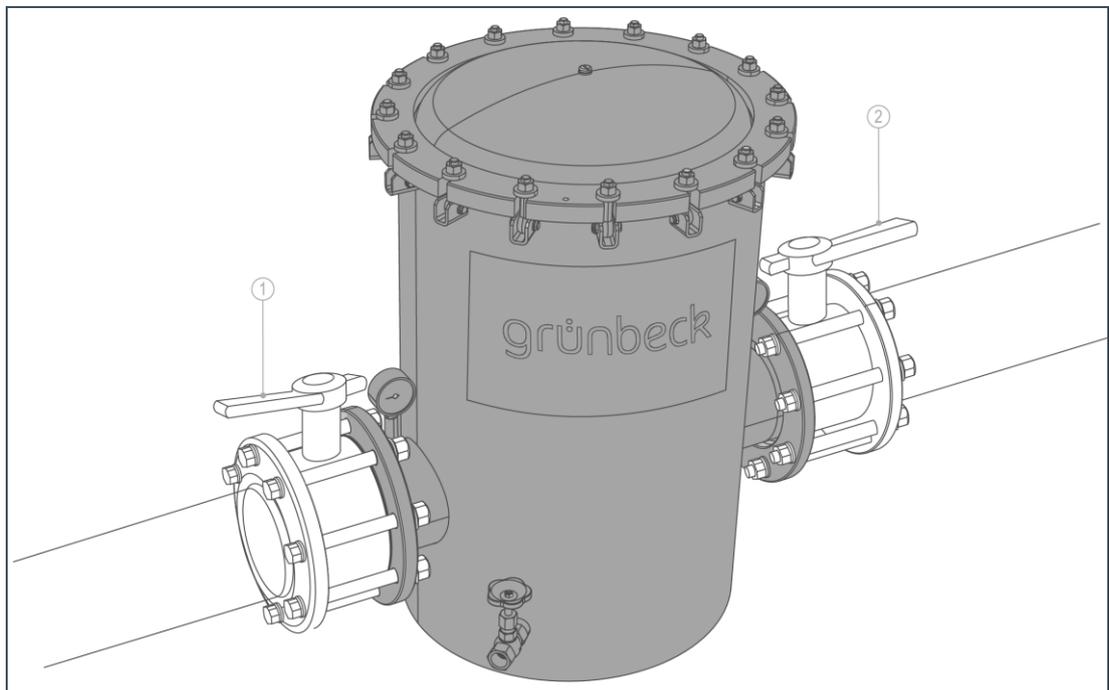
4 Installation



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

Installation in the drinking water system

In accordance with DIN EN 806-2 and DIN EN 1717, the product is installed in the water pipe downstream of the water meter and upstream of distribution pipes or the systems to be protected.

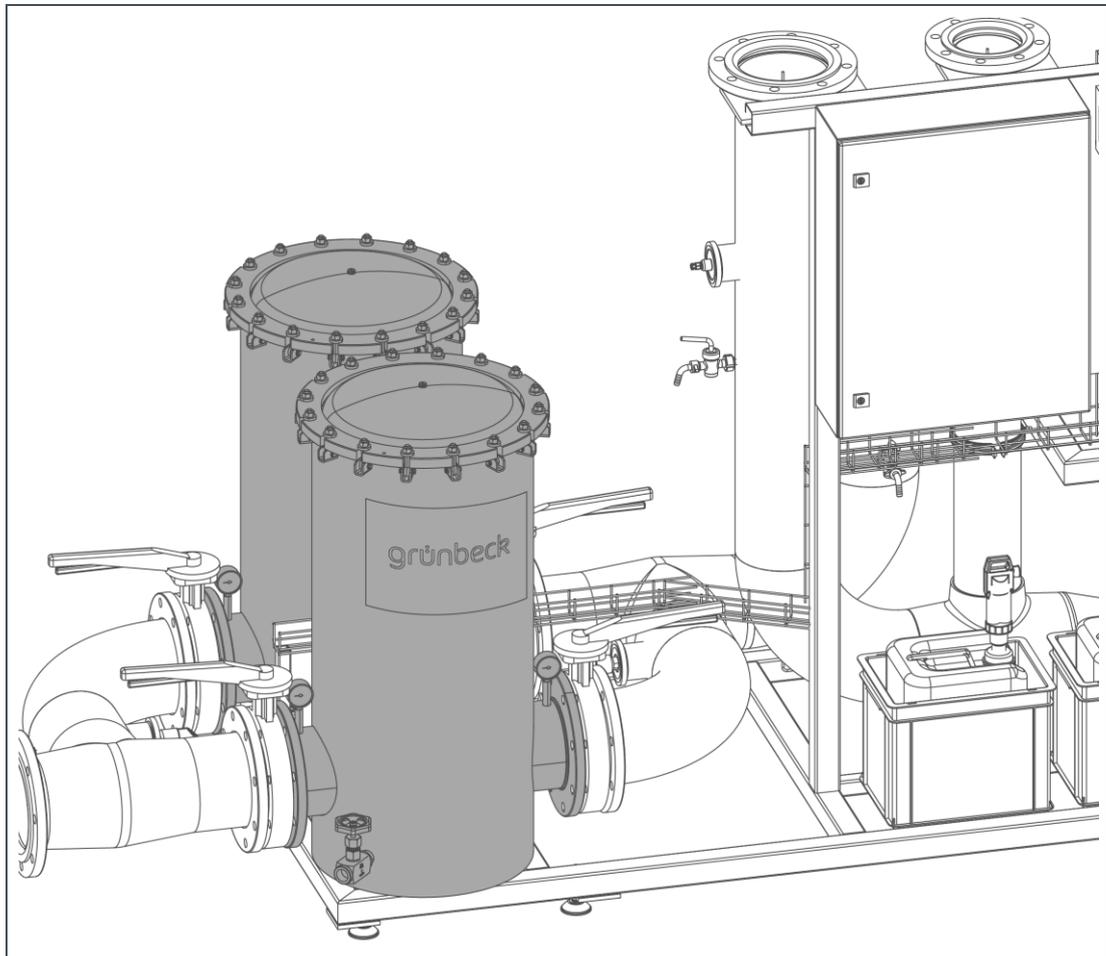


Item	Designation	Item	Designation
1	Inlet shut-off valve	2	Outlet shut-off valve

Install shut-off valves upstream and downstream of the filter.

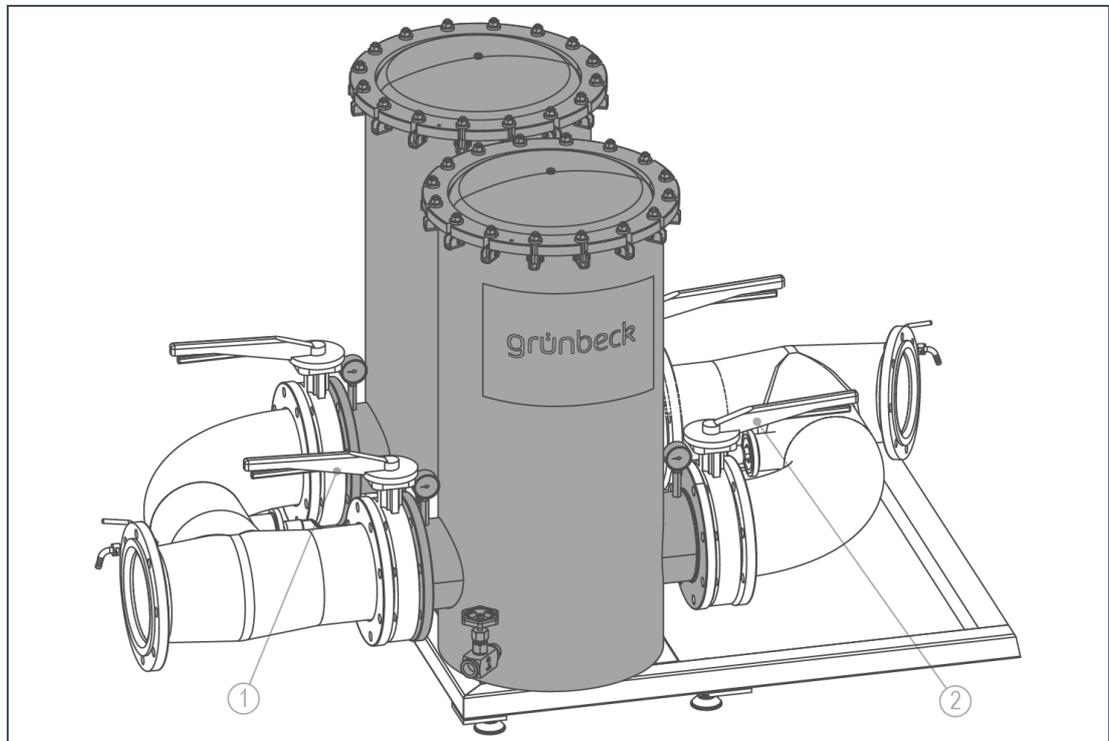
Installation into systems

It is possible to use the filter in the partial flow.



Parallel piping

Parallel piping of 2 GENO-fine filters for the filtration of process, boiler feed, cooling and air conditioning water in order to ensure an uninterrupted operation even during the replacement of filter elements.



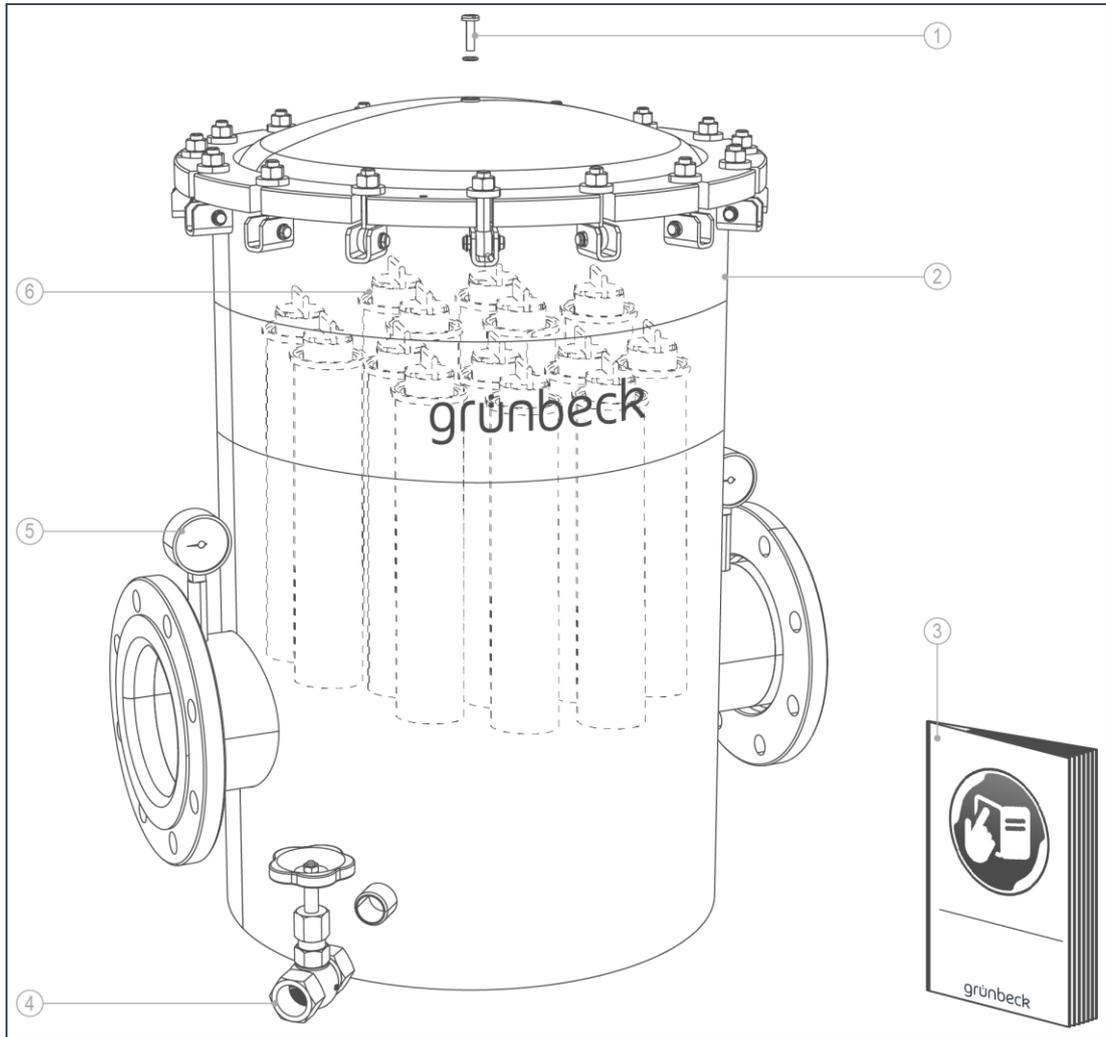
Item	Designation	Item	Designation
1	Inlet shut-off valve	2	Outlet shut-off valve

4.2 Requirements regarding the installation site

Observe local installation directives, general guidelines and technical specifications.

- The installation site must be frost-proof and ensure the filter's protection from chemicals, dyes, solvents, vapours and direct sunlight.
- The installation room must provide an adequately dimensioned floor drain. If no floor drain is available, an appropriate safety device must be installed in order to prevent water damage.
- The installation site must be easily accessible for maintenance purposes.

4.3 Checking the scope of supply



Item	Designation	Item	Designation
1	Deaerator	2	GENO-fine filter with flange connection according to DIN EN 1092-1
3	Operation manual	4	Draining valve
5	Pressure gauge (2 pieces)	6	Filter elements

► Check the scope of supply for completeness and damage.

4.4 Installing the product

The filter comes with loose parts. These individual parts must be installed on site by the client according to the area of application.

- ▶ Check the flow direction prior to assembling the individual parts.
- ▶ Install the individual parts in accordance with the direction of flow.



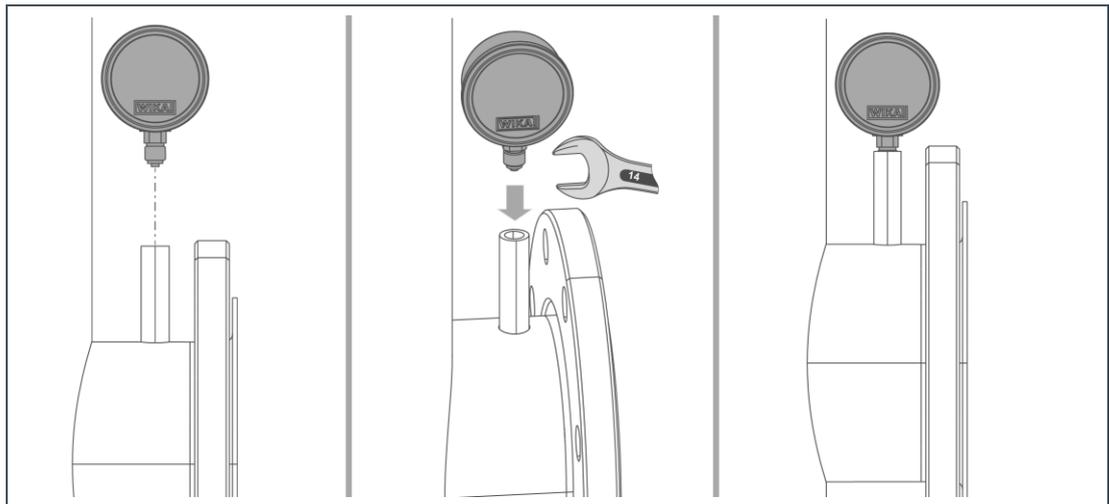
NOTE: Seal loose parts during assembly.

- Leakage at the filter.
- ▶ Seal the pressure gauge components on site with e.g. hemp; Teflon tape.



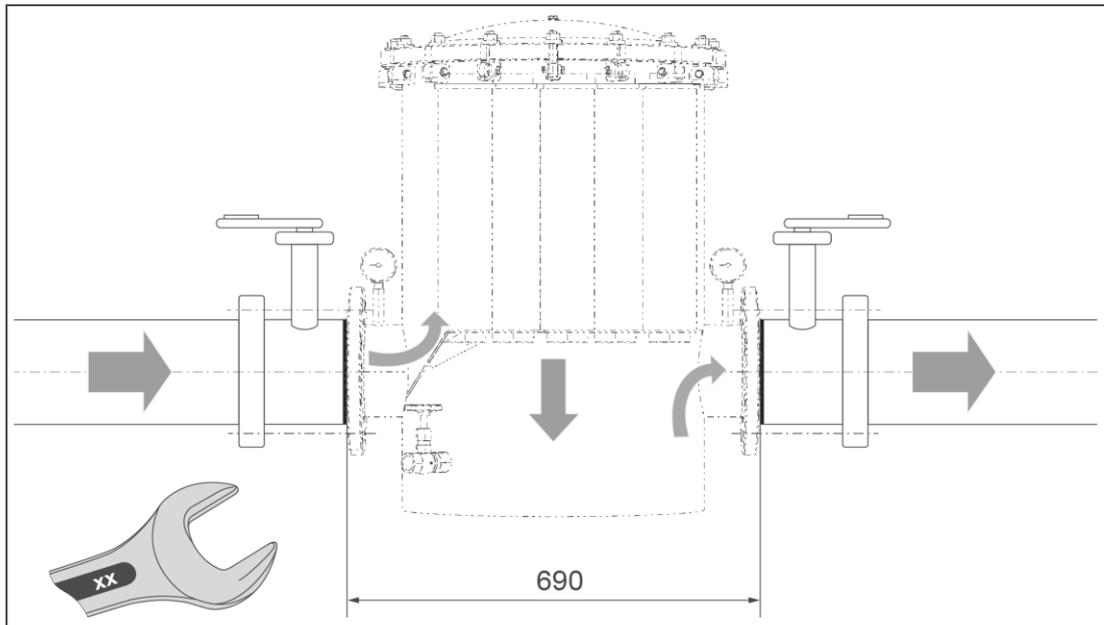
Only install the GENO-fine filter FM horizontally and without mechanical stress.

4.4.1 Installing the pressure gauges



1. Screw the pressure gauges to the flanges at the top of the support pipe.

4.4.2 Installation of the filter in the pipe



1. Prepare the pipe with flange connection according to DIN EN 1092-1 (the distance between the two seals must be 690 mm).
2. Check the flow direction given on site.
3. By way of the screw connections, screw the filter to the flanges without any mechanical stress.

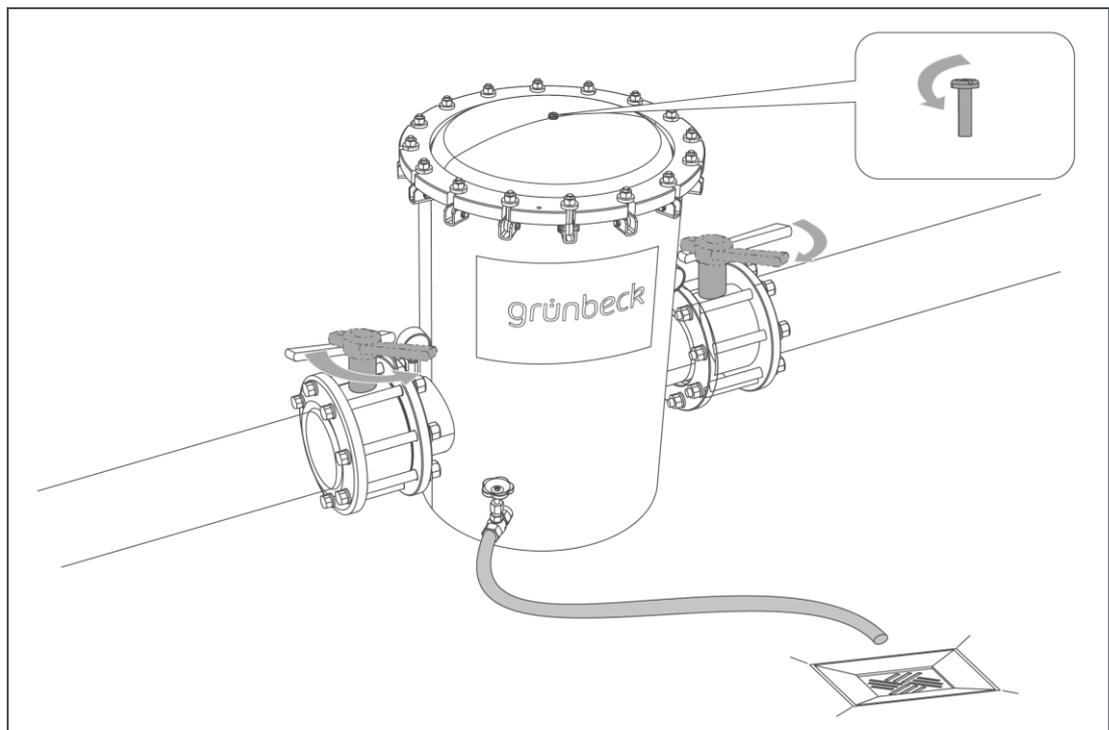
5 Start-up

5.1 Starting up the product

- ▶ Carry out the following steps after installation and any maintenance.



In order to drain the filter, a hose fitting with male thread must be mounted at the draining valve by the client on site (female thread of draining valve 1 inch).



- ▶ Make sure that the draining valve is closed.
1. Open the deaerator.
 2. Slowly open shut-off valve 1 (inlet).
 3. Close the deaerator when no more air is escaping.
 - » The filter is vented.
 4. Slowly open shut-off valve 2 (outlet).
 5. Check the filter for tightness.
 - » The filter is in operation.

5.2 Handing over the product to the owner/user

- ▶ Explain to the owner/user how the product works.
- ▶ Use the manual to brief the owner/user and answer any questions.
- ▶ Inform the owner/user about the need for inspections and maintenance.
- ▶ Hand over all documents to the owner/user for keeping.
- ▶ Enter the initial start-up in the operation log (refer to chapter 10.1).

6 Cleaning, inspection, maintenance



WARNING: Danger of contaminated drinking water if the work is not carried out properly.

- Risk of infectious diseases.
- ▶ Pay attention to hygiene when working on the product.

Inspection and maintenance of a filter is prescribed in the DIN EN 806-5 standard. Regular maintenance ensures trouble-free and hygienic operation.



By concluding a maintenance contract, you ensure that all maintenance work is carried out on time.

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

6.1 Cleaning

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



NOTE: Do not clean the filter with cleaning agents that contain alcohol or solvents.

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

6.2 Intervals

Task	Interval	Execution
Inspection	2 months	Visual/functional check, reading off the pressure
Maintenance	6 months	Replacing the filter elements
	Annually	Checking the O-ring for wear and tear, checking for tight fit
Maintenance	2 years	Recommended: replacing the O-ring

6.3 Inspection

According to DIN EN 806-5, the owner/user must inspect the filters every 2 months.

To conduct an inspection, proceed as follows:

1. Check the installation for leaks.
2. Open several water withdrawal points (generate max. flow).
3. Read off the inlet and outlet pressure at the pressure gauges.
4. Calculate the differential pressure: inlet pressure (upper pressure gauge) – outlet pressure (lower pressure gauge) = differential pressure (max. 0.8 bar).
5. Replace the filter elements if the differential pressure is > 0.8 bar.
6. If the differential pressure of the device cannot be reduced by replacing the filter elements, there is a malfunction.

6.4 Maintenance



WARNING: If the intervals for inspection and replacement are not observed, the filter elements will become excessively polluted.

- Health risk due to contamination of the drinking water.
 - ▶ Observe the intervals for inspection and replacement of the filter elements.
-

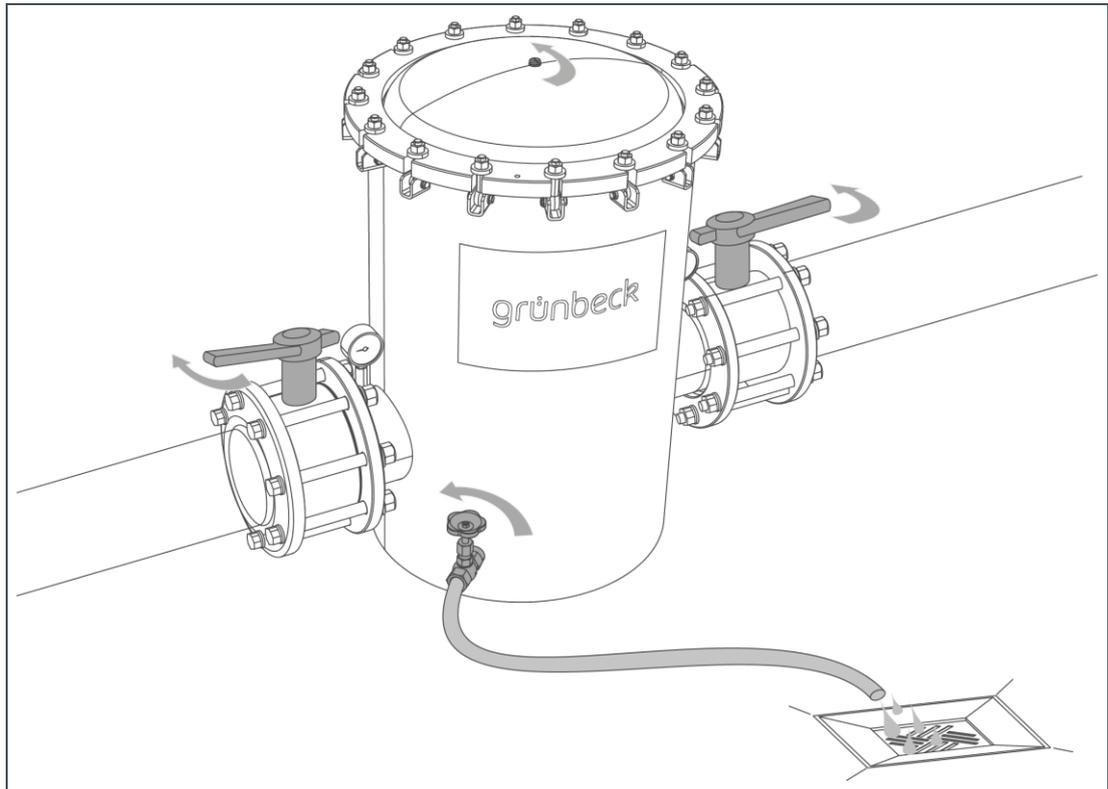
Some regular work is necessary in order to ensure the proper functioning of the product in the long term. For this purpose, DIN EN 806-5 recommends a semi-annual and an annual maintenance.



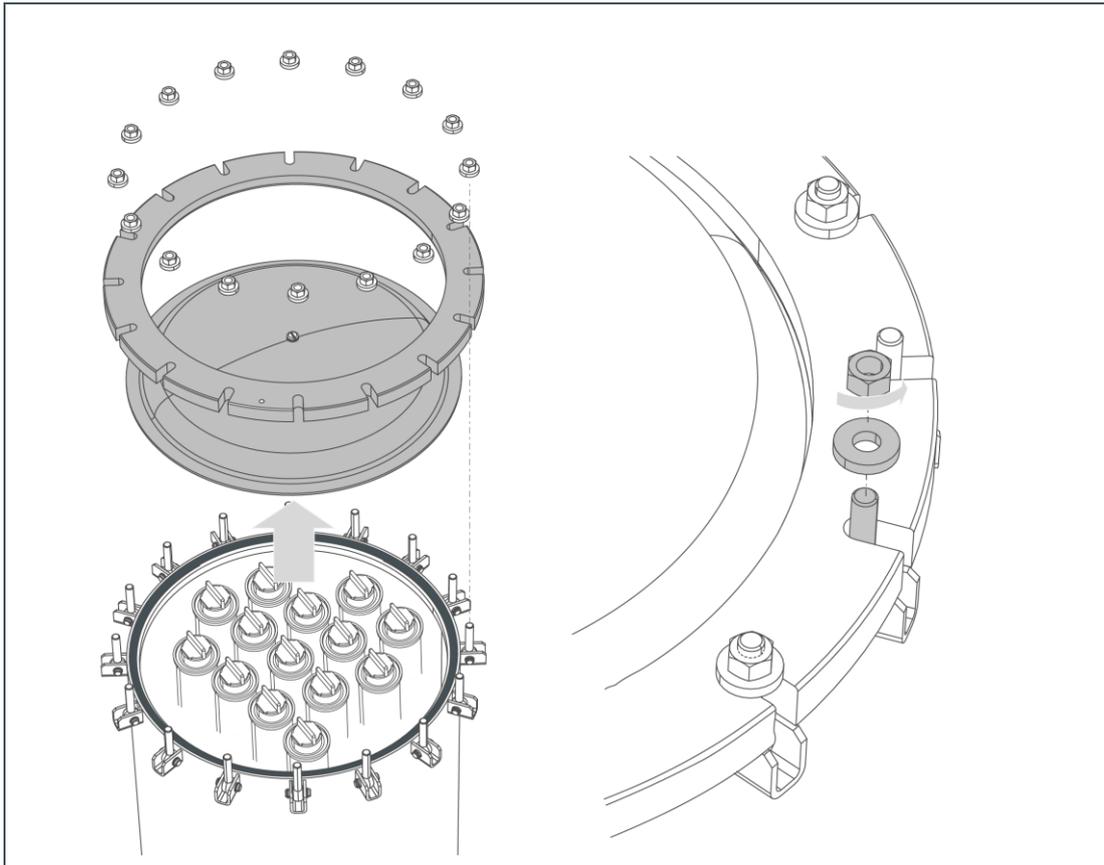
The filter elements must be replaced every 6 months for hygiene reasons, in line with DIN EN 806-5. We recommend replacing the O-ring of the cover every 2 years.

6.4.1 Semi-annual maintenance

Preparations for the replacement of the filter elements

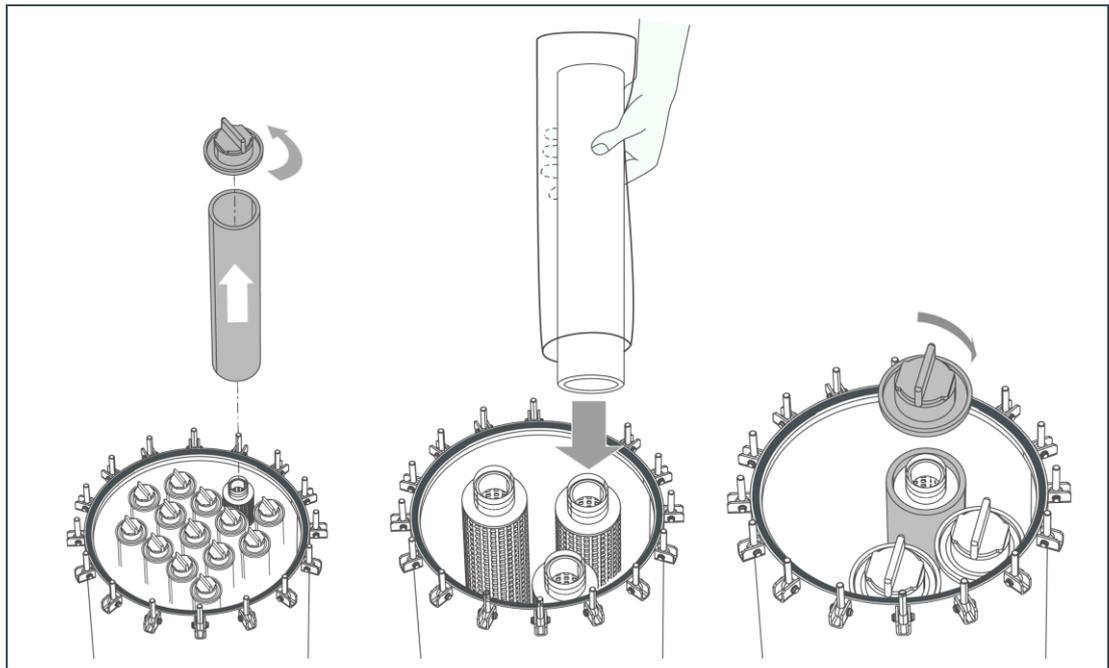


1. Install a hose fitting with male thread at the draining valve on site.
2. Direct a waste water pipe towards the sewer.
3. Close shut-off valves 1 inlet and 2 outlet.
4. Open the deaerator.
5. Open the handle of the draining valve and allow the water to drain completely.
 - » The filter is drained.



1. Loosen the nuts.
2. Remove the washers.
3. Remove the cover ring.
4. Remove the cover.
5. Flush the sunk dirt particles from the filter housing via the draining valve.
 - » The filter is open and flushed.

Hygienic replacement of the filter element

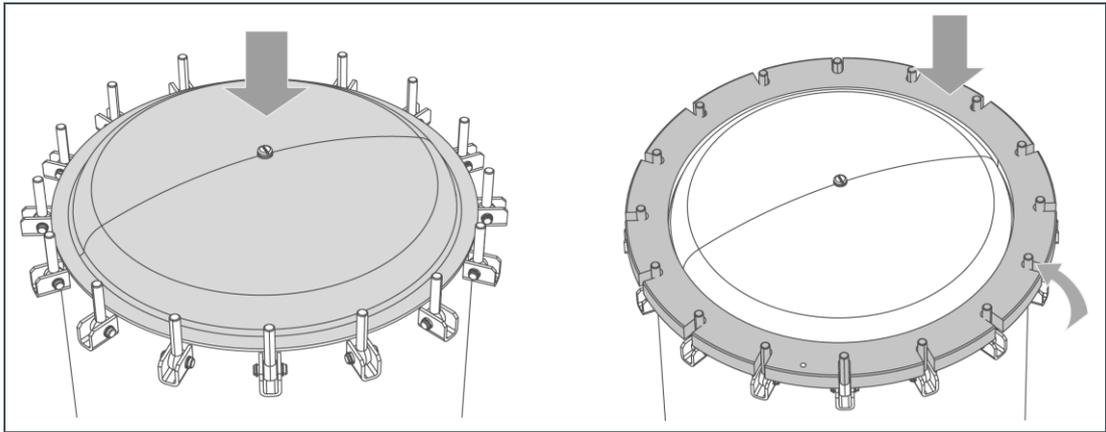


1. Unscrew the cap nut.
2. Remove the dirty filter element from the support mesh.
3. Dispose of the used filter element in accordance with local regulations.



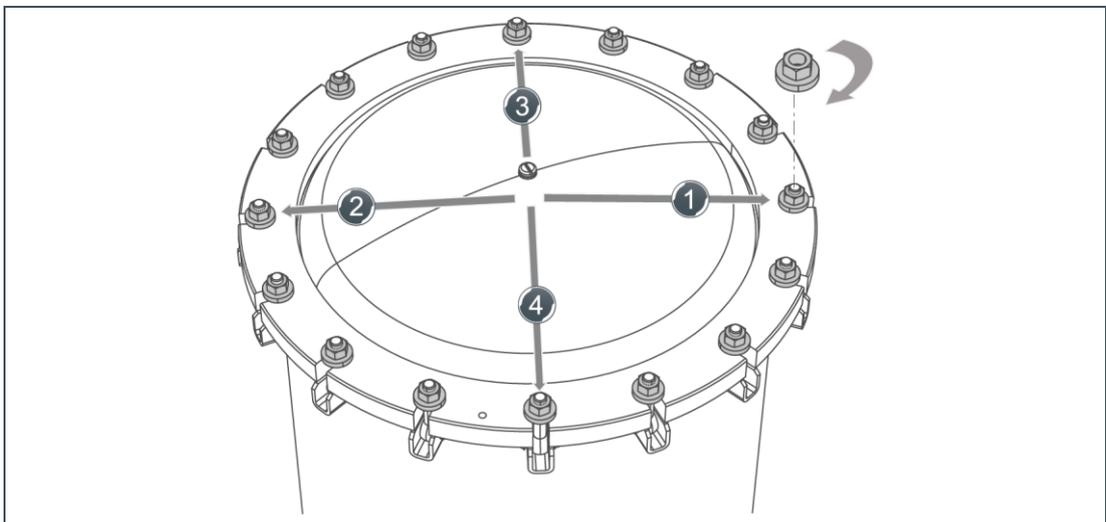
For hygienic reasons, the new filter element must not be touched with bare hands.

4. Slide the new filter element in its foil packaging over the support mesh.
5. Pull off the foil without touching the filter element.
6. Repeat the process for all filter elements.
7. Screw the cap nuts on again.
8. Check the sealing surfaces and the O-ring for cleanliness.



9. Put on the filter cover.

10. Put on the cover ring.



11. Evenly and gradually screw on the nuts with washers crosswise.

» The cover is fully tightened.

12. Put the filter into operation – refer to chapter 5.

» The filter is ready to use.

6.4.2 Annual maintenance



Carrying out annual maintenance work requires specialist knowledge. This kind of maintenance work may only be carried out by Grünbeck's technical service/authorised service company or by qualified specialists trained by Grünbeck.

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

1. Check the O-ring for wear and tear.
2. Check the filter for tight fit and leaks.

6.5 Consumables

Designation	Order no.	Order no.
Filter element	DN 150	DN 200
5 µm	103 083 (Packing unit = 2 pieces each) Required per filter: 14 pieces	–
50 µm	103 070 (Packing unit = 2 pieces each) Required per filter: 14 pieces	103 153 (Packing unit = 28 pieces each) Required per filter: 28 pieces
100 µm	10300020001 (Packing unit = 2 pieces each) Required per filter: 14 pieces	10300030001 (Packing unit = 28 pieces each) Required per filter: 28 pieces
500 µm	103 111 (Packing unit = 2 pieces each) Required per filter: 14 pieces	103 151 (Packing unit = 14 pieces each) Required per filter: 14 pieces

Number of filter elements subject to size of filter.

6.6 Spare parts

For spare parts and consumables please contact your local Grünbeck representation which you may find on the Internet at www.gruenbeck.com.

6.7 Wearing parts



Although these parts are wearing parts, we grant a limited warranty period of 6 months.

Wearing parts are listed below.

Designation	Order no.:
O-ring	102 166

7 Troubleshooting



WARNING: Danger of contaminated drinking water due to stagnation.

- Risk of infectious diseases.
- ▶ Have malfunctions remedied immediately.

▶ If you cannot remedy malfunctions with the instructions given below, contact Grünbeck's technical service/authorised service company.

▶ Have your system data (refer to chapter 1.7) handy.



Troubleshooting may only be carried out by a qualified specialist.

Malfunction	Explanation/Cause of error	Troubleshooting
The differential pressure exceeds 0.8 bar at flow capacity.	The filter elements are dirty.	Replace the filter elements.
	The shut-off valves are not open completely.	Completely open the shut-off valves.
Water escapes at the screw connections of the filter housing.	The screw connections are leaky.	Have the screw connections at the filter housing replaced by a qualified specialist.
Water escapes at the cover.	The nuts have not been tightened enough.	Tighten the nuts.
	The O-ring has not been inserted correctly into the groove.	Completely/properly insert the O-ring into the groove.
Solids in the filtered water.	Inappropriately high flow through the filter.	Check the support mesh and the filter elements for damage or leaks.
	Filter element/support mesh damaged or not installed properly.	Check the installation of the filter elements / the filter mesh and if necessary, replace them with new filter elements / support mesh / seals

8 Disposal

- ▶ Comply with the applicable national regulations.

8.1 Packaging

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



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.

Filter elements

- ▶ Dispose of used filter elements via your household waste.

8.2 Product



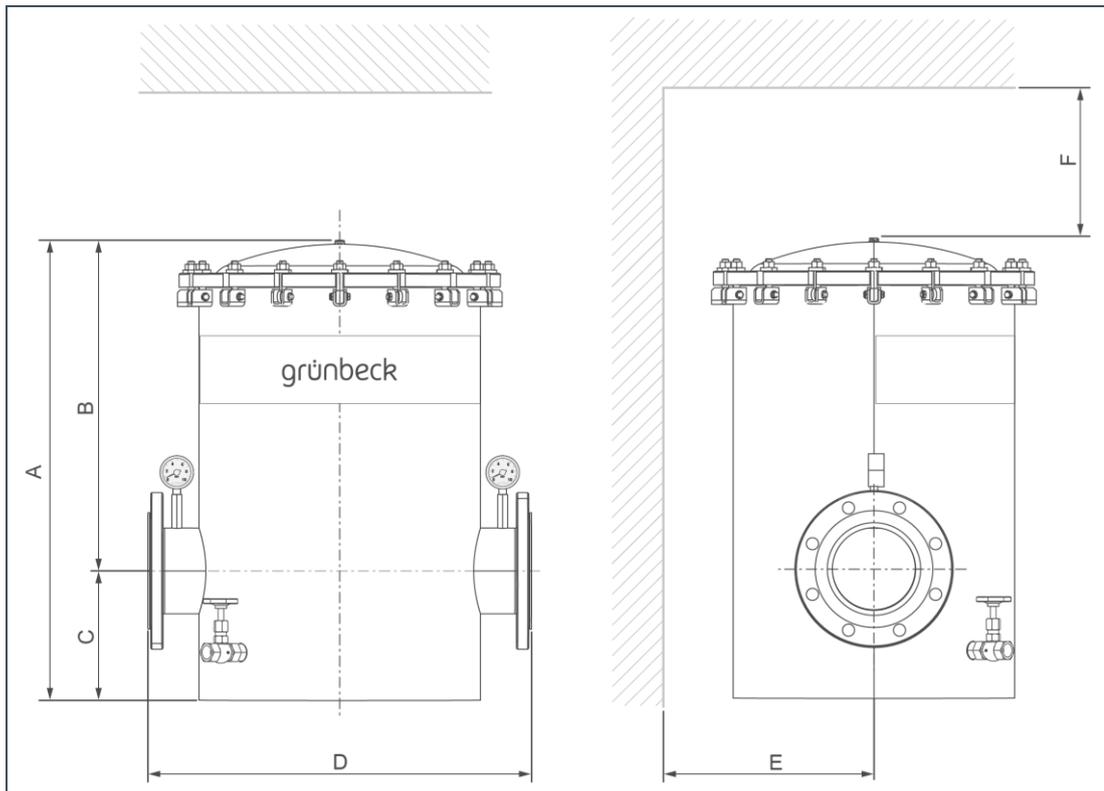
If this symbol (crossed-out whee bin) is on the product, this product or its electrical and electronic components must not be disposed of as household waste.

- ▶ Dispose of electrical and electronic products or components in an environmentally sound manner.
- ▶ 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.
- ▶ 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.de.

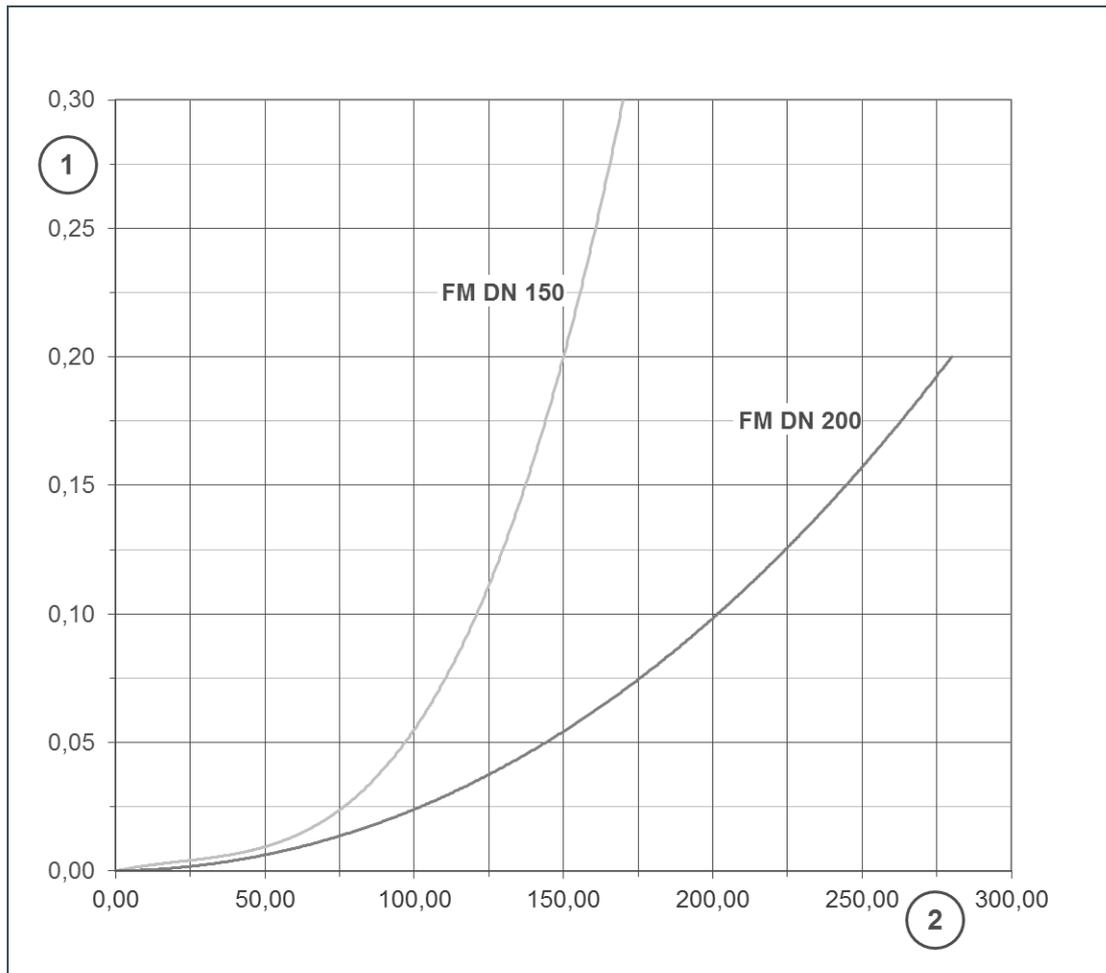
9 Technical specifications



Dimensions and weights		FM/FM-WW/FM-KW		
Nominal connection diameter		DN 150	DN 200	
A	Total height	mm	830	1190
B	Overall height above centre of connection	mm	597	956
C	Overall height lower edge of filter to centre of connection	mm	233	234
D	Installation length without counter-flanges acc. to DIN EN 1092-1	mm	690	690
E	Min. distance from wall to centre of connection	mm	300	300
F	Clearance required for replacement of filter element	mm	600	900
	Filter elements, quantity	piece(s)	14	28 (for 50/100 µm) 14 (for 500 µm)
	Operating weight, approx.	kg	255	327
	Empty weight	kg	100	124
Performance data		DN 150	DN 200	
	Flow rate at Δp 0.2 bar	m ³ /h	150	280
	Pore size drinking water (FM)	µm	100	100
	Pore size hot water (FM-WW)	µm	100	100
	Pore size cooling water (FM-KW)	µm	500	500
	Nominal pressure		PN 10	PN 6
			Drinking water (FM)	Hot water (FM-WW)
	Admissible differential pressure	bar	≤ 0.8	

General data		DN 150	DN 200
Water temperature FM	°C	≤ 30	
Water temperature FM-WW/FM-KW	°C	≤ 90	
Ambient temperature	°C	5 – 40	
Order no. (drinking water)		102 400	102 500
Order no. (warm water)		102 401	102 501
Order no. (cooling water)		102 470	102 570

9.1 Pressure loss curves



Item	Designation	Item	Designation
1	Pressure difference bar	2	Flow rate m³/h

Notes

Notes

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