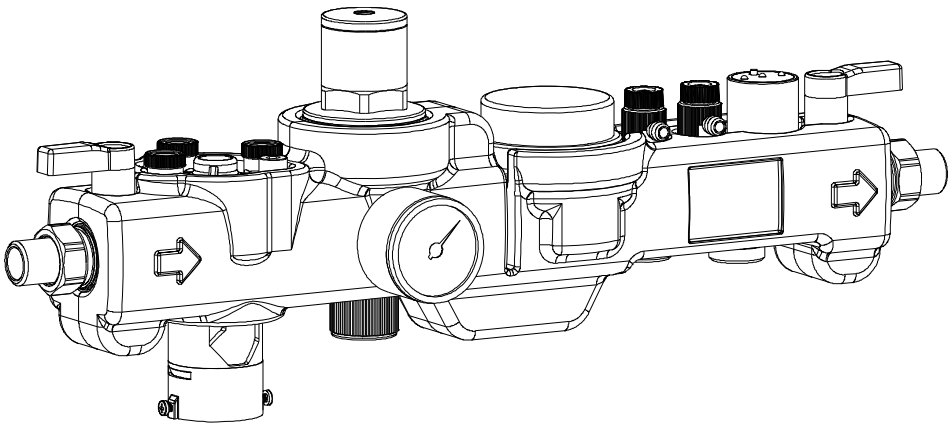
grünbeck

Operation Manual

GENO-therm® Filling Device
Basic, Komfort



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A General

1 | Preface

Thank you for choosing a Grünbeck product. Backed by decades of experience in the area of water treatment, we provide solutions for all kind of processes.

Drinking water is classified as food and requires particular care. Therefore, always ensure the required hygiene in operating and maintaining systems for drinking water treatment. This also applies to the treatment of water for industrial or domestic use if repercussions for the drinking water cannot completely be excluded.

All Grünbeck systems and devices are made of high-quality materials. This ensures reliable operation over many years, provided you treat the systems with the required care. The operation manual assists you with important information. . Please read the operation manually carefully before installing, operating or maintaining the system.

Customer satisfaction is our prime objective and providing customers with qualified advice is crucial. If you have any questions concerning this system, possible extensions or general water and waste water treatment, our customer service staff as well as the experts at our headquarters in Hoechstaedt, are available to help you.

Advice and assistance

For advice and assistance please contact your local representative (refer to www.gruenbeck.com) or get in touch with our service centre which can be reached during office hours:

Tel.: +49 9074 41-333
Fax: +49 9074 41-120
Email: service@gruenbeck.de

We can connect you with the appropriate expert more quickly if you provide the required system data. In order to keep this data handy at all times, please copy it from the type designation plate into the overview in chapter C-1.

2 | How to use this operation manual

This operation manual is intended for the operators of our GENO-therm® filling device. It is divided into several chapters (a letter is assigned to each of them) which are listed in the Table of contents on page 2 in alphabetical order. In order to find the specific information you are looking for, check for the corresponding chapter on page 2.

The headers and page numbers with chapter information make it easier to find your way around in the manual.

3 | General safety information

3.1 Symbols and notes

Important notes in this operation manual are characterised by symbols. Please pay particular attention to these notes in order to ensure a danger-free, safe and productive system operation.

Danger! Failure to adhere to these notes will cause serious or life-threatening injury, extreme damage to property or inadmissible contamination of drinking water.

Warning! Failure to adhere to these notes may cause injury, damage to property or contamination of the drinking water.

Attention! Failure to adhere to these notes may result in damage to the system or other objects.

Note: This symbol characterises notes and tips to make your work easier.

Tasks with this symbol may only be performed by Grünbeck's technical service or by persons expressly authorised by Grünbeck.

Tasks with this symbol may only be performed by qualified electrical experts according to the VDE guidelines or according to the guidelines of a similar local institution.

Tasks with this symbol may only be performed by water companies or approved installation companies. In Germany, the installation company must be registered in a water company installation directory as per §12(2) AVBWasserV (German Ordinance on General Conditions for the Supply of Water).

3.2 Operating personnel

Only people who have read and understood this operation manual are permitted to work with the GENO-therm® filling devices Basic, Komfort. The safety instructions are to be strictly adhered to.

3.3 Designated application

In order to prevent possibly polluted and therefore health endangering water from flowing back from the heating system, the installation of a GENO-therm® filling device with integrated system separator is essential. The correct use of the system separator is governed by the European standard DIN EN 1717: “Protection against pollution of drinking water installations and general requirements on devices to prevent pollution by backflow”.

3.4 Protection from water damage

Warning! In order to properly protect the installation site from water damage:

a) a sufficiently dimensioned floor drain system must be available or

b) safety device (see chapter C Optional accessories) must be installed.

Warning! Floor drains that are discharged to a lifting systems do not work in case of power failures.

3.5 Indication of specific dangers

Danger due to mechanical energy! System parts may be subject to overpressure. Danger of injury and damage to property due to escaping water and unexpected movement of system parts. → Check pressure pipes regularly. Depressurise the system before starting repair or maintenance work on the system.

Hazardous to health due to contaminated drinking water! → The system may only be installed by a qualified company. The operation manual must be strictly adhered to! Ensure that there is sufficient flow. The pertinent guidelines must be followed for starting-up after long periods of standstill. Inspections and maintenance must be performed at the intervals specified!

Note: By concluding a maintenance contract, you ensure that all of the required tasks are performed on time. You may perform the interim inspections yourself.

4 | Shipping and storage

Attention! The GENO-therm® filling device and its content may be damaged by frost or high temperatures.
In order to avoid damage of this kind:
Protect from frost during transportation and storage! Do not install or store the GENO-therm® filling device next to objects which radiate a lot of heat.

5 | Disposal of used parts and materials

Used parts and materials are to be disposed of, or made available for recycling purposes, according to the applicable local guidelines.

If a material is subject to specific regulations, adhere to the notes indicated on the packing.

If in doubt, contact your local waste disposal authority or the manufacturer for more information.

B Basic information

1 | Laws, guidelines, standards

In the interest of good health, rules cannot be ignored when it comes to the processing of drinking water. This operation manual takes the applicable German guidelines into account and provides all the information you need to safely operate your GENO-therm® filling device.

Among others, the regulations stipulate

- that only approved specialist companies are permitted to make major modifications to water supply systems
- and that tests, inspections and maintenance on installed devices are to be performed at regular intervals.

2 | Classification of hazard categories

Heating water without inhibitors corresponds to category 3, but corresponds to category 4 with inhibitors (LD50 value over 200 mg/kg body weight).The system separator integrated in the GENO-therm® filling device is suitable up to category 4 and thus sufficiently protects the drinking water from modified drinking water (DIN EN 1717 and DIN 1988-100).

Category 3 Liquids that represent a health risk due to the presence of one or several poisonous or particularly poisonous substances.

Examples:
Ethylene glycol, copper sulphate solution, heating water without additives.

Category 4 Liquids that represent a health risk due to the presence of one or several poisonous or particularly poisonous substances or one or several radioactive, mutagenic or carcinogenic substances.

Examples:
Disinfectant, fertiliser, heating water without additives.

C Product description

1 | Type designation plate

The type designation plate is located at the housing of the filling device's insulating shell. Your inquiries or orders can be proceeded more quickly if you indicate the data given on the type designation plate of your system when contacting Grünbeck. Therefore, please complete the table below in order to have the required data handy at all times.

GENO-therm® filling device

Serial no.: ☐☐☐☐☐☐/☐

Order no.: ☐☐☐ ☐☐☐

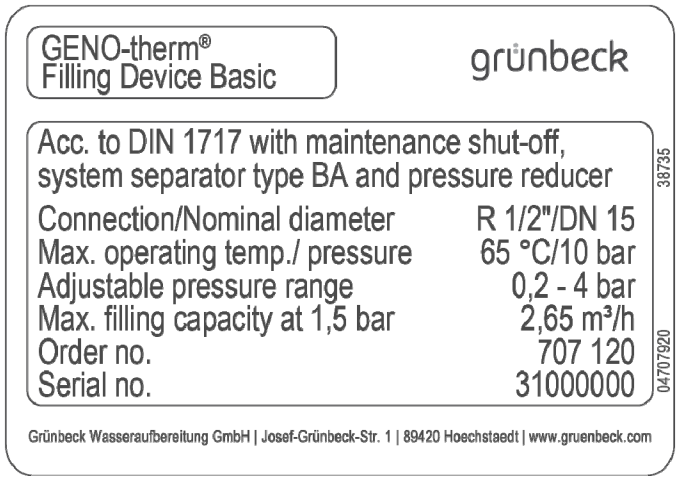


Fig. C-1: Type designation plate of GENO-therm® filling device Basic

2 | Functional description

The GENO-therm® fitting filling consists of an insulated housing in which at the same time a system separator, a pressure reducer, a water meter and connections for all products of our heating water program for full demineralisation or - as an option - for softening products as well are housed. The water to fill the heating system flows through the dirt trap (400 µm) on the inlet side into the system separator area.

The drain connection is designed as per DIN EN 1717 and ensures the required “free fall distance“. At the same time, it discharges the waste water without splashes. A DN 40 waste water pipe (not included in the scope of supply) needs to be connected to the drain connection by which the waste water is discharged without backwater. The pressure reducer following downstream features a pressure indication which facilitates the adjustment.

The system’s filling pressure can be set by means of an adjusting screw before the filling of the system is started. In addition, a maintenance gate valve is integrated below the pressure reducer which - together with the gate valve on the inlet side – makes sure that maintenance can be performed quite easily.

Thanks to the water meter, the exact amount of demineralised or softened water which has been filled in can be read off. This value must be documented in the system log. Downstream of the water meter, the connection for all products of the GENO-therm® heating program is located.

The GENO-therm® filling device Komfort is equipped with the GENO-therm® conductivity measuring cell which is activated by a key stroke and then continuously measures the conductivity of the water flowing into the heating system for the duration of 45 minutes.

Display of the conductivity measuring cell:

- The green LED flashes up to 10 µS/cm,
- the yellow LED flashes between 10 µS/cm and 50 µS/cm
- the red LED flashes above 50 µS/cm, signalling that the full desalination unit has to be changed.

Note: For a safe operation, it is essential to bleed the GENO-therm®filling device prior to start-up.

3 | Components of the GENO-therm® filling devices Basic, Komfort

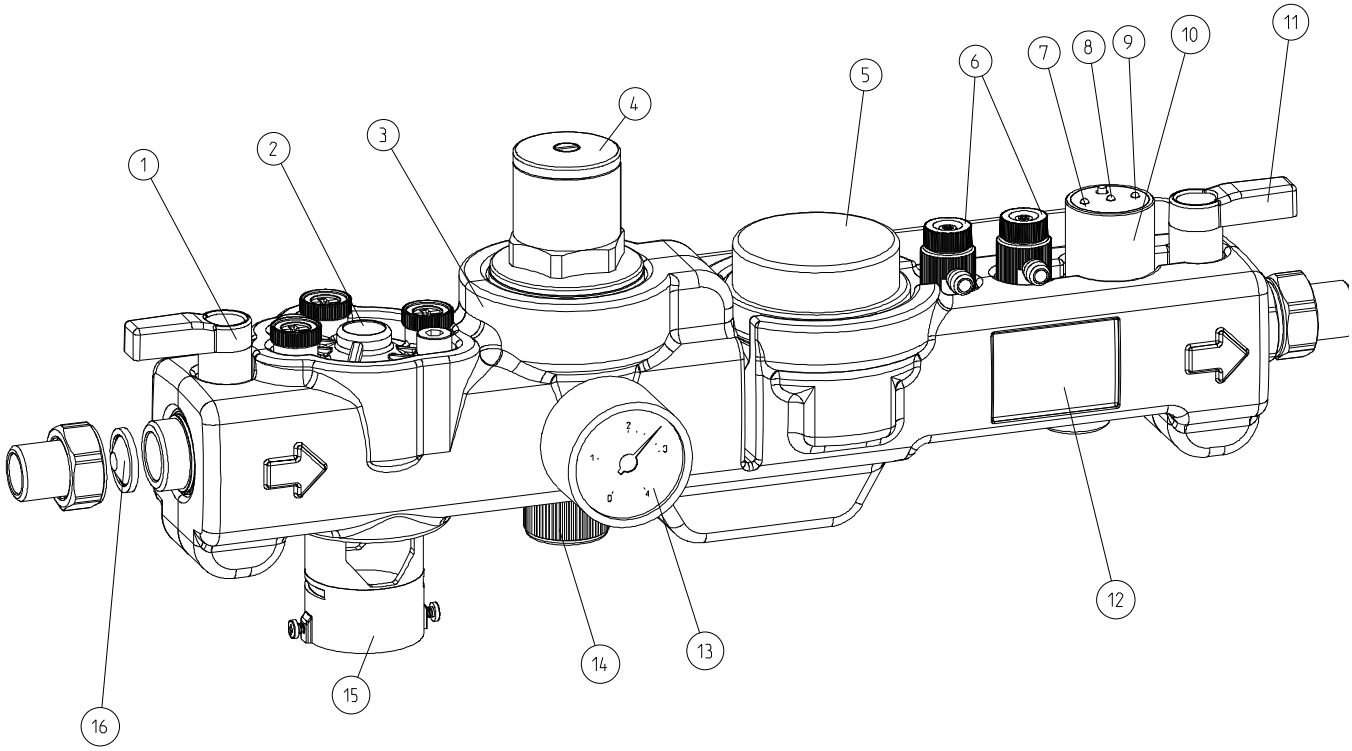


Fig. C-2: Position drawing of GENO-therm® filling device Komfort

① Inlet shut-off valve
② System separator
③ Insulation
④ Pressure reducer with set screw
⑤ Water meter analogue /digital
⑥ Bleeding screws
⑦ Green LED
⑧ Yellow LED
⑨ Red LED
⑩ GENO-therm® conductivity measuring cell
⑪ Outlet shut-off valve
⑫ Type designation plate
⑬ Pressure gauge
⑭ Maintenance gate valve
⑮ Drain connection
⑯ Primary screen

4 | Technical specifications

Table C-1: Technical specifications		**GENO-therm® filling device**	
		Basic	**Komfort**
Connection data			
Nominal connection diameter	[DN]	15	
Threaded connection (male thread)	[R]	½“	
Performance data of system separator (family A, type B acc. to EN 12729)			
Noise emission class		I	
Filter fineness of integrated dirt trap (inlet side)	[µm]	400	
Performance data of pressure reducer			
Max. operating pressure	[bar]	10	
Setting range	[bar]	0.2 – 4	
Factory-setting	[bar]	1.5	
Display accuracy	[bar]	± 0.15	
Range of pressure gauge	[bar]	0 – 4	
Mesh size of dirt trap integrated in pressure reducer	[µm]	280	
Filling capacity at 1.5 bar (without GENO-therm® filling cartridge 110 or mixed-bed cartridge)	[m³/h]	2.65	
Dimensions and weights			
A Installation length with screw connections	[mm]	495	
B Installation length without screw connections	[mm]	447	
C Drain connection HT pipe	[mm]	40	
D Height above centre of pipe connection	[mm]	102	
E Height below centre of pipe connection	[mm]	80	
F Total height	[mm]	182	
G Distance to wall	[mm]	87	
H Space above centre of pipe connection (e. g. for maintenance purposes)	[mm]	300	
Empty weight approx.	[kg]	3.8	
Test mark/Certification mark			
DVGW registration number (only for system separator)		NW-6305BW0355	
Ambient data			
Max. water/ ambient temperature	[°C]	65/40	
Equipment			
Water meter		analogue	analogue
Conductivity measuring cell		-	yes
Order no.		**707 120**	**707 130**

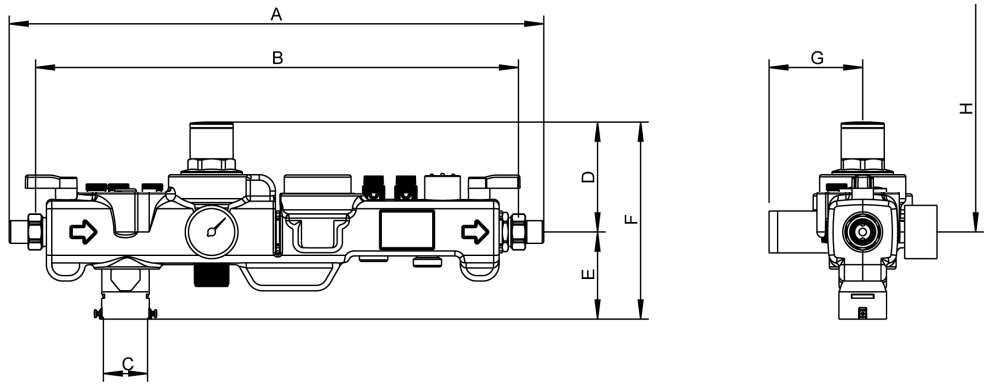


Fig. C-3: Dimensional drawing of GENO-therm® filling devices Basic, Komfort

5 | Designated application

The GENO-therm® filling devices were developed for the easy and comfortable initial filling and make-up feed of closed heating systems.

By means of the filling cartridges and mixed-bed cartridges listed under optional accessories (refer to chapter C, item 6. 2), fully demineralised water is generated. In view of scaling and corrosion, fully demineralised water is optimally suited for the filling of heating systems according to VDI 2035 sheet 1 and 2.

The ambient temperature and the water temperature at the filling devices must not exceed 65 °C.

The shut-off valves of the GENO-therm® filling device should be closed after each filling process to prevent it refilling in an uncontrolled manner.

Attention! Optional accessories that are connected to the filling device demand lower ambient/water temperatures (refer to item 4 Technical specifications). Always comply with the lowest temperatures indicated.

The filling devices may only be operated after proper installation of all components. Under no circumstances safety devices must be removed, bridged or otherwise rendered useless. The designated application also requires that the instructions given in this operation manual and the local safety regulations will be respected and the maintenance and inspection intervals be observed.

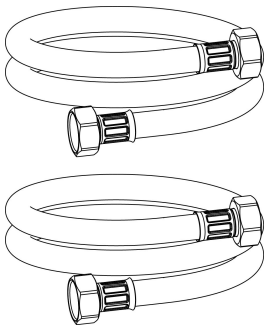
6 | Scope of supply

6.1 Standard equipment

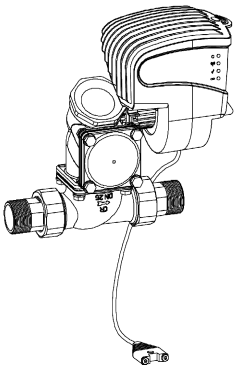
- GENO-therm® filling device
- Operation manual.

6.2 Optional accessories

Note: It is possible to retrofit existing GENO-therm® filling devices with optional components. For more detailed information, please contact your local Grünbeck representative or Grünbeck's headquarters.



GENO-therm® hose set 707 850
consisting of: two drinking water hoses (DVGW and KTW-A tested),1.5 m in length. The raw and pure water hose each feature two 3/4" union nuts (nickel-plated brass).

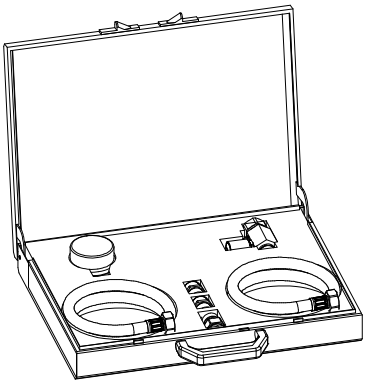


GENO-STOP® 1“ 126 875

GENO-STOP® for optimum protection from water damage.

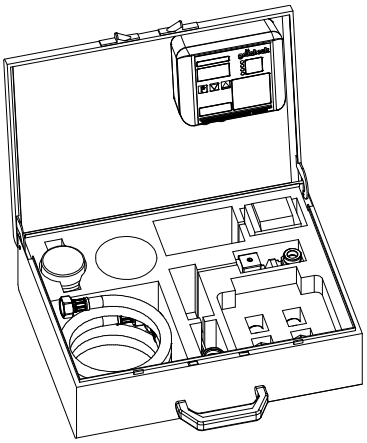
The safety device GENO-STOP® provides reliable and comprehensive protection from water damage. The GENO-STOP® can be equipped with up to 2 wired water sensors.

For additional models, please inquire.



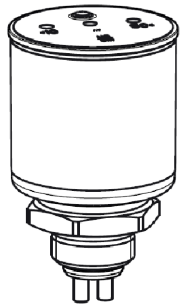
GENO-therm® case Basic 707 160
consisting of:

- Grey Sortimo case.
- GENO-therm® hose set.
- Water meter with connection accessories.
- GENO-therm® conductivity measuring cell with adapter.



GENO-therm® case Premium 707 170
consisting of:

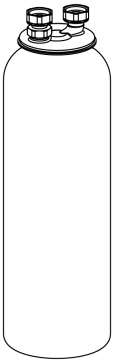
- Grey Sortimo case.
- GENO-therm® hose set.
- Water meter with connection accessories.
- Conductivity meter GENO®-Multi-LF with adapter (incl. conductivity measuring cell and media-contacting temperature sensor).
- Solenoid valve



GENO-therm® conductivity measuring cell 707 025

Upon activation of the measuring cell by keystroke, the GENO-therm® conductivity measuring cell continuously measures the conductivity for one hour and indicates by means of a green, a yellow and a red LED whether the conductivity is below or above 50 µS/cm.

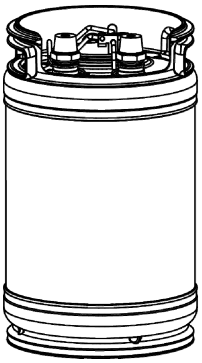
Green LED is flashing:	**conductivity < 10 µS/cm**
Yellow LED is flashing:	**conductivity 10 µS/cm up to 50 µS/cm**
Red LED is flashing:	**conductivity > 50 µS/cm**



GENO-therm® filling cartridge 110 with adapter 707 150

GENO-therm® filling cartridge 110 without adapter 707 155

The disposable GENO-therm® cartridge is either available with or without adapter. It generates fully demineralised water and is suitable for the make-up feed of heating systems or for the initial filling of small heating systems.



Mixed-bed cartridge desaliQ:BA6 **707 450**
Mixed-bed cartridge desaliQ:BA12 **707 460**
Mixed-bed cartridge desaliQ:BA13 **707 470**
Mixed-bed cartridge desaliQ:BA16 **707 480**
Mixed-bed cartridge desaliQ:BA20 **707 490**

The desaliQ:BA mixed-bed cartridge of different sizes generates fully demineralised water and can be used fort he initial filling of heating systems of any size.

6.4 Wearing parts

The seals used are subject to a certain wear and tear and should be replaced at regular intervals by Grünbeck's technical customer service/authorised service company.

Note: Although these components are considered to be wearing parts, we grant a limited warranty period of 6 months. The same applies for electrical components.

D Installation and start-up

1 | General installation information

The installation site must offer adequate space and the filling device must always be accessible The required connections must be provided before the system is installed. Please refer to table C-1 for dimensions and connection data.

Attention! Dirt and corrosion particles may cause malfunctions or damage the GENO-therm® filling device. Rinse the inlet pipe prior to start-up.

1.1 Water installation

Binding rules

The installation of a GENO-therm® filling device is a major interference with the drinking water installation and therefore may only be performed by an approved sanitary and heating company.

1.2 Preliminary works

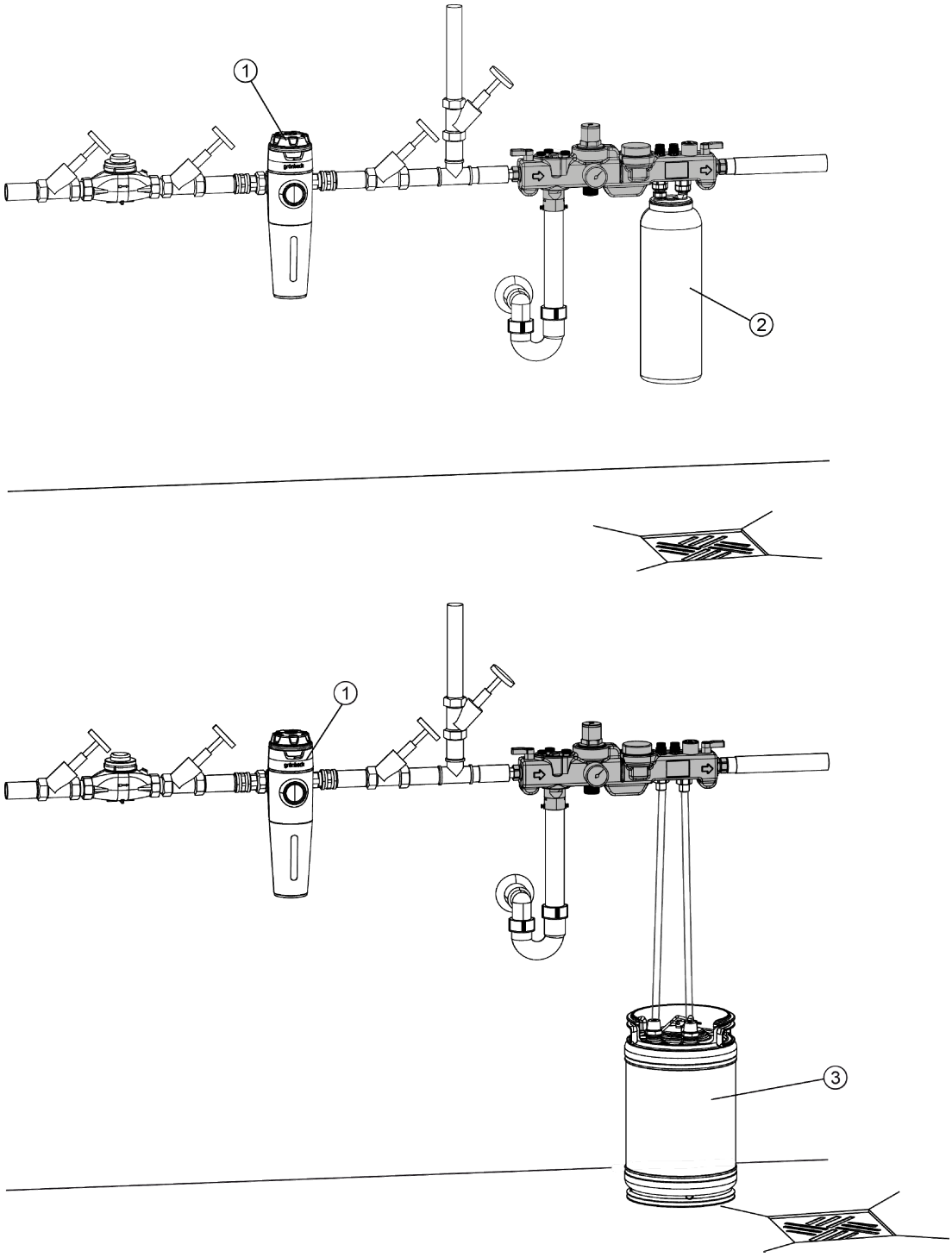
1. Unpack all components of the GENO-therm® filling device.
2. Check for completeness and soundness.
3. Make the installation according to the installation drawing (fig. D-1).
   - Make sure that installations upstream and downstream do not extend into the filling device and damage interior components.
   - Install a drinking water filter, e. g. pureliQ, upstream.

Attention! Observe the direction of flow.

4. Only install the GENO-therm® filling device in a horizontal position and make sure there are no strains and stresses.
5. Provide a drain connection DN 40.
6. Ensure a free outlet (air gap) and a discharge without backwater.

Warning! The installation room must feature a floor drain. If no floor drain is available, a corresponding water stop device must be installed (refer to Optional accessories (see chapter C-6.2)).

Warning! Floor drains that are discharged to a lifting systems do not work in case of power failures.



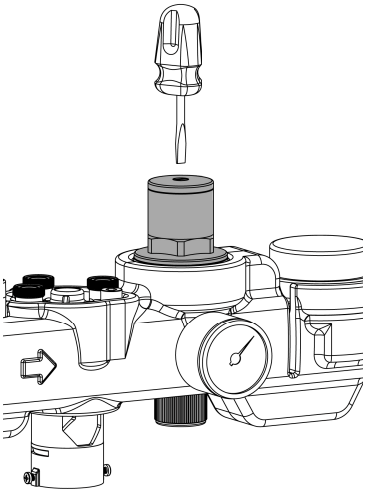
① Drinking water filter (e.g. pureliQ KD) ② GENO-therm® filling cartridge 110

③ Mixed-bed cartridge desaliQ:BA

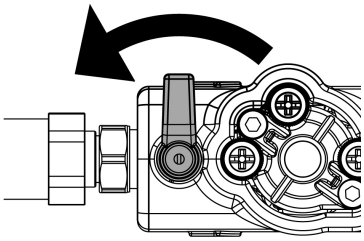
Fig. D-1: Installation examples for a GENO-therm®filling device

E Start-up

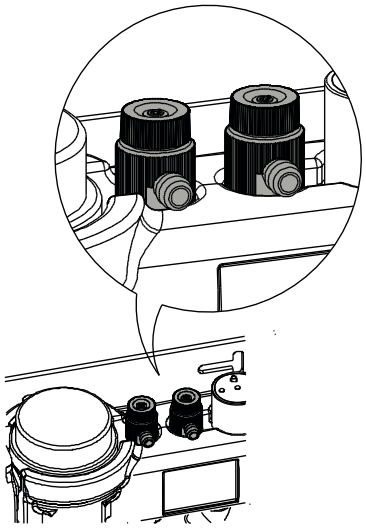
1 | How to start up the GENO-therm® filling device



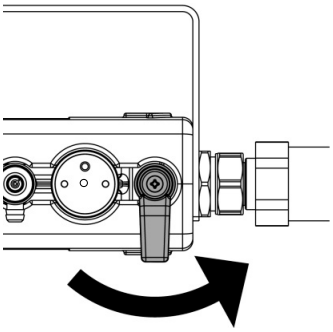
1. Preset the filling pressure of the heating system at the set screw of the pressure reducer.
2. Connect the GENO-therm® product of your choice at the filling device.



3. Slowly open the shut-off valve (inlet) upstream of the filling device. The filling device then moves into the operating position.



4. Completely bleed the GENO-therm® filling device by opening the bleeding screws. Also bleed the connected GENO-therm® product, if a separate bleeding device is provided at said product.
5. Perform a visual inspection. Make sure that no water leaks from the system anywhere.
   Observe the operation manual of the product!



6. Slowly open the shut-off valve downstream of the filling device. Now, the heating system may be filled.
7. When using a GENO-therm® conductivity measuring cell (available as optional accessory or integrated in the GENO-therm® filling devices Komfort), activate it by pressing the corresponding key.

Warning! After completion of the initial filling/make-up feed, the shut-off valves upstream and downstream must be closed in order to prevent uncontrolled filling and resulting damage to property in case leakages occur in the cycle downstream.

2 | Functional check of the system separator

Close the water supply at a shut-off valve upstream of the filling device. Leave the inlet shut-off valve (fig. C-2, item 1) open. Depressurise the primary pressure zone by opening the water withdrawal point (fig. D-1, item 2).

Note: The GENO-therm® filling device must then move to the separation position and at the same time drain the middle pressure zone (water emerges at fig. C-2, item 14).

Afterwards, close the water withdrawal point again and slowly open the shut-off valve. The GENO-therm® filling device must then return to the operating position and be completely tight.

3 | Functional check of the conductivity measuring cell

Functional check of the conductivity measuring cell (only for Komfort). The measuring cell is activated by pressing the switch-on button. After activation one of the LED should be blinking as an indication that the conductivity measuring cell is ready for operation. Only when the medium flows does the conductivity measuring cell measure the conductivity of the water flowing through the cartridge and thus reliably display the state of exhaustion.

F Troubleshooting

Even carefully designed and manufactured technical systems that are operated properly may experience malfunctions.

The table below provides an overview of possible problems that may occur during the operation of the GENO-therm® filling device and indicates the causes and their elimination.

Attention! Short-term, undefined water leakages at the drain valve of the system separator are no malfunctions but regular control actions of the system separator caused by pressure fluctuations on the inlet side of the water supply net.

1 | Troubleshooting at the pressure reducer

Table F-1: Troubleshooting

This is what you see	This is the cause	This is what to do
High pressure during the filling resp. make-up feed of the heating system	• Defective pressure gauge	Check with a different pressure gauge; replace in case of defect
	• Defective pressure reducer	Impurities on the seal seat of the pressure reducer; → shut off the heating cycle form the GENO-therm® filling device → put into operation and observe the pressure at the outlet side; if the pressure increases although the GENO-therm® filling device is not connected to the heating cycle, check the pressure reducer for impurities, replace it – if necessary – or replace the cartridge. If no pressure increase can be detected, the error might be caused by a defective non-return valve in the warm water cycle.

2 | Troubleshooting at the system separator

Note: In case of malfunctions such as continuous leakages at the drain valve, please perform the following test steps:
No matter what kind of malfunction has occurred, you can determine its cause by systematically performing the individual steps.

Test step 1

Close shut-off valve on outlet side.

- Continuous draining. → Non-return valve on inlet side or discharge valve leaky. → Remove and check. → Put filling device into operation again.
- No draining. → Put filling device into operation again.

Test step 2

Close shut-off valve upstream of the system and then open water withdrawal point (fig. D-1, item 2) (pressure measuring point).

- Discharge valve does not open; draining is minimal and takes more than one minute. → Discharge valve blocked / Aeration and deaeration clogged → Remove and check. → Put filling device into operation again.
- Discharge valve opens abruptly. Device drains within less than one minute. → Put filling device into operation again.

Test step 3

Open shut-off valve on outlet side.

- Continuous draining. → Non-return valve on outlet side leaky. → Remove and check. Put filling device into operation again.
- No draining. → Put filling device into operation again.

Note: If you cannot remedy the malfunctions, please notify your local Grünbeck customer service/Grünbeck's authorised service company.

3 | Troubleshooting at the conductivity measuring cell

Table F-2: Troubleshooting		
This is what you see	**This is the cause**	**This is what to do**
LEDs do not light up.	Battery exhausted.	Replace the battery (CR2032). • Take off the lid. • Remove the electrical boards. • Replace the battery.
	Defective conductivity measuring cell.	Replace the conductivity measuring cell.

G Maintenance and care

1 | Basic information

In order to guarantee the reliable function of the filling device over a long period of time, some maintenance work has to be performed at regular intervals. In particular with regard to safety fittings in the drinking water supply, the required measures are stipulated in standards and directives. You strictly must comply with all regulations and guidelines which apply at the installation site.

Inspection and maintenance based on the DIN EN 806-5 and W/TPW 135, appendix I.

- The semi-annual inspections must be performed by the operator or a sanitary and heating company.
- The annual maintenance must be performed by a sanitary and heating company or Grünbeck's technical service/authorised service company. Each and any inspection and maintenance work must be documented (refer to attached operation log).

Note: By concluding a maintenance contract, you ensure that all of the required maintenance work is performed on time.

2 | Inspection

2.1 System separator	**Check for tightness, visual check:** If no water is withdrawn, no water must emerge. Upon opening a withdrawal point downstream, no leakages must occur.
2.2 Pressure reducer	Yearly check of the set outlet pressure at the pressure measuring device (visual check) at zero flow and peak flow (high withdrawals) by the operator or a sanitary and heating company.
2.3 Water meter	Upon opening a withdrawal point downstream, the indicator of the water meter should move.
2.4 Conductivity measuring cell	Upon pressing the switch-on button, one of the LEDs should start blinking (depending on the conductivity of the water either the red, the yellow or the green one).

3 | Maintenance

3.1 System separator

Check for tightness, visual check:
If no water is withdrawn, no water must emerge.

Upon opening a withdrawal point downstream, no leakages must occur.

Functional check:

- Close the shut-off valve upstream of the filling device. Depressurise the primary pressure zone by opening the draining valve between the shut-off valve and the system separator.
- Drain the primary pressure zone between the closed shut-off valve and the filling device.
- The system separator must move to the separation position and the middle pressure zone must be drained completely.

3.2 Pressure reducer

Generally, pressure reducers are regulating devices with low adjusting forces and therefore, they are easily affected by impurities.

Depending on the local operating conditions, the primary screen must be cleaned and if necessary replaced every 1 to 3 years by a sanitary and heating company. The interior components must be removed, checked for soundness and replaced, if necessary.

Note: Should you detect any malfunctions during inspection or maintenance, refer to chapter F Troubleshooting for assistance.

Operation Log

Customer

Name: .....

Address:.....

.....

.....

GENO-therm® filling device Basic ☐ ½“

GENO-therm® filling device Komfort ☐ ½“

GENO-therm® filling device Premium ☐ ½“

(Please mark appropriate box)

Serial number.....

Installed by.....

Connection data:

Drain connection DIN 1988 ☐ yes ☐ no

(Please mark appropriate box)

Grünbeck Wasseraufbereitung GmbH
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GERMANY
✆ +49 9074 41-0 · 🖷 +49 9074 41-100
www.gruenbeck.com · info@gruenbeck.com

Proof of inspection, maintenance and repair work performed on the GENO-therm® filling device

Work performed		Execution confirmed
☐ Inspection ☐ Service ☐ Repair	Description: ______	Company: ...... Name: ...... Date/ Signature: ......
☐ Inspection ☐ Service ☐ Repair	Description: ______	Company: ...... Name: ...... Date/ Signature: ......
☐ Inspection ☐ Service ☐ Repair	Description: ______	Company: ...... Name: ...... Date/ Signature: ......
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Proof of inspection, maintenance and repair work performed on the GENO-therm® filling device

Work performed		Execution confirmed
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Proof of inspection, maintenance and repair work performed on the GENO-therm® filling device

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Proof of inspection, maintenance and repair work performed on the GENO-therm® filling device

Work performed		Execution confirmed
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