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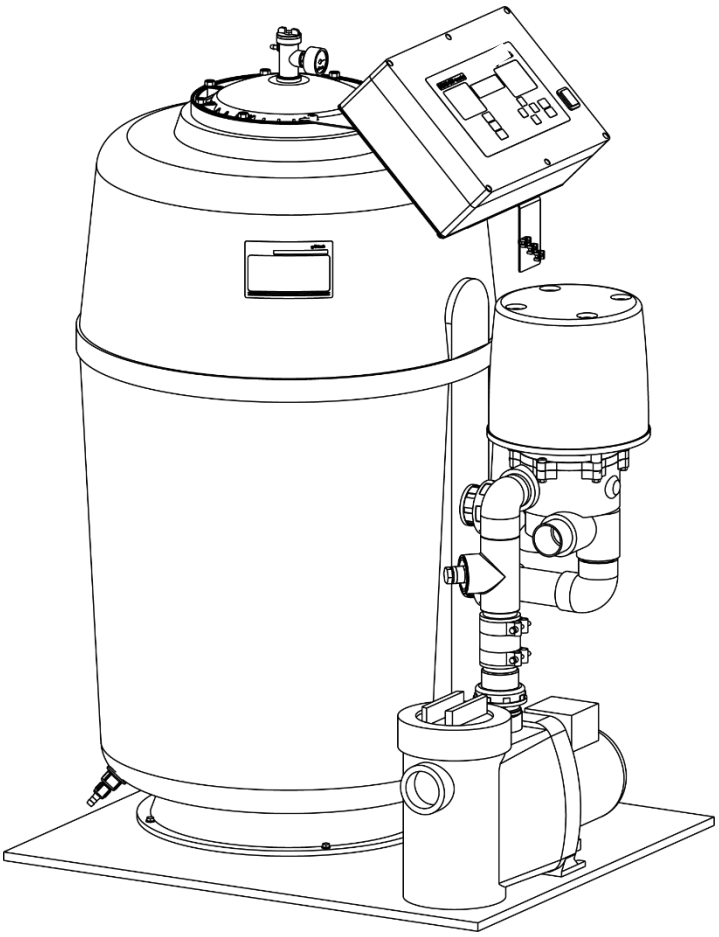
Operation manual
GENO-mat filter system
F 500/600/610 A; three-phase current/AC
with GENO-BW-tronic



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CE

EC declaration of conformity

We hereby declare that the system specified below complies with the basic health and safety requirements of the applicable EU directives on the basis of the design and construction as well as the model that we have put onto the market. This certificate will become invalid if the system is modified in a way not approved by us.

Manufacturer:	Grünbeck Wasseraufbereitung GmbH Josef-Grünbeck-Straße 1 89420 Hoechstaedt/Germany
Responsible for documentation:	Markus Pöpperl
System designation:	Filter system
System type:	GENO-mat F 500/600/610 A; three-phase current/AC
Serial no.:	Refer to type plate
Applicable directives:	Machinery Directive (2006/42/EC) EMC (2014/30/EU)
Applied harmonised standards, in particular:	DIN EN 61000-6-1:2007-10, DIN EN 61000-6-2:2006-03, DIN EN 61000-6-3:2011-09, DIN EN 61000-6-42011-09, DIN EN ISO 12100:2011-03
Applied national standards and technical specifications, in particular:	DIN EN 1717:2011-08
Location, date and signature:	Höchstädt, 04.10.2018 i. V. Markus Pöpperl Dipl. Ing. (FH)
Function of signatory:	Head of Technical Product Design

A General information

1 | Preface

Thank you for opting for 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 involved in the drinking water supply. This also applies to the treatment of water for industrial 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 your water treatment system with the required care. This operating manual assists you with important information. Therefore, please read the entire operation manual 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 field 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 (see www.gruenbeck.de). or get in touch with our service centre which can be reached during office hours:

Phone: +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 have the required data handy at all times, please copy it from the type designation plate to the overview in chapter C.

2 | Notes on using the operation manual

This operation manual is intended for operators of our systems. It is divided into several chapters (a letter is assigned to each of them) that are listed in the “Table of contents” on page 2 in alphabetical order. Check for the corresponding chapter on page 2 in order to find the specific information you are looking for.

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 information in this operation manual is characterised by symbols. Please pay particular attention to this information to ensure the hazard-free, safe and efficient handling of the system.

Danger! Failure to adhere to this information will cause serious or life-threatening injuries, extreme damage to property or inadmissible contamination of the drinking water.

Warning! Failure to adhere to this information may cause injuries, damage to property or contamination of the drinking water.

Caution! Failure to adhere to this information may result in damage to the system or other objects.

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

Tasks with this symbol may only be performed by the technical customer service/authorised service company or by persons who have been expressly authorised by Grünbeck.

Tasks with this symbol may only be performed by trained and 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 allow persons who have read and understood this operation manual to work with the system. Strictly observe the safety guidelines.

3.3 Designated use

The system may only be used for the purpose outlined in the product description (chapter C). The guidelines in this operation manual as well as the applicable local guidelines concerning drinking water protection, accident prevention and occupational safety must be adhered to. In addition, appropriate application also implies that the system may only be operated when it is in proper working order. Any faults must be repaired at once.

3.4 Protection from water damage

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

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

b) a water stop device (see chapter C, Optional accessories) must be installed.

Warning! Floor drains leading to a lifting system do not work in case of a power failure.

3.5 Indication of specific dangers

Danger due to electrical energy! → Do not touch electrical parts with wet hands! Disconnect the system from mains before starting work on electrical parts of the system! Have qualified experts replace damaged cables immediately.

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 specialist company. The operating manual must be strictly observed! Ensure that there is sufficient flow. The pertinent guidelines must be followed for starting-up after extended 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

Caution! The system 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 system next to objects which radiate a lot of heat.

5 | Disposal

Observe the applicable national regulations.

5.1. Packaging

Dispose of the packaging in an environmentally sound manner.

5.2. Product

If this symbol (crossed out waste bin) is on the product, this product or the 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.
Use the collection points available to you for disposing 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.com

B Basic information

1 | Laws, regulations, standards

DIN-EN 16713 describes the treatment of swimming and bathing water in private swimming pools.

The requirements of DIN-EN 16713 must be complied with in order to ensure good water quality and thus protect heath. This also applies to the requirements on the quality of the filling water. Separate treatment of the filling water is required in case of:

- Iron values ≥ 0.10 mg/l
- Copper values ≥ 0.20 mg/l
- Manganese values ≥ 0.05 mg/l
- Polyphosphate as phosphor ≥ 0.01 mg/l
- Nitrate values ≥ 0.50 mg/l
- Ammonium values ≥ 0.50 mg/l
- Increased concentration in humic substances (potential for the formation of THMs)
- Increased concentration in dissolved organic carbon (DOC)

Among other things, the regulations stipulate that
- only approved companies are permitted to make major modifications to water supply facilities
- and that tests, inspections and maintenance on installed devices are to be performed at regular intervals.

2 | Bathing water parameters

2.1 pH value

The pH value of the water is a measurement number indicating how acid or alkaline the reaction of water is. Maintaining the pH value is essential for disinfection to function correctly. It should be in the neutral range, since most of the disinfection products that are used work optimally within this range. This means the disinfectant effect of some water treatment products (e.g. chlorine) drops if the pH value is elevated.

Note: The ideal pH value for disinfection with chlorine without using flocculants is pH 6.8 – 7.4.

The ideal pH value for disinfection with bromine without using flocculants is pH 6.8 – 7.6.

The ideal pH value for disinfection with chlorine or bromine while using aluminium-based flocculants in general is pH 6.8 – 7.2.

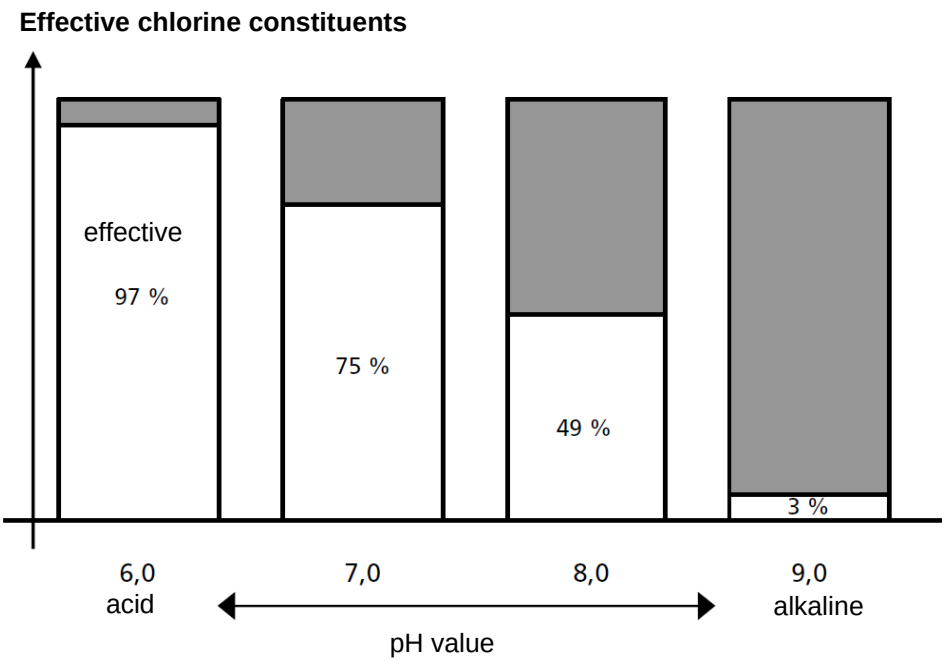


Fig. B-1: Chlorine effectiveness

2.2 Chlorine process

Because of its high effectiveness, chlorine is probably the most widely used disinfection product. Total chlorine is made up of the free and bound chlorine. Bound, i.e. consumed chlorine (also referred to as chloramine) is responsible for the typical "swimming pool smell". Free chlorine is still available for disinfection. Chlorine products are available in a liquid or solid form, granulated or as tablets. Bound chlorine can be reduced by adding fresh water, changing 3 to 5 % of the pool water volume should be changed weekly.

Note: The ideal free chlorine content is between 0.3 mg/l and 0.6 mg/l.

2.3 Bromine process

Elementary bromine (only permitted in private swimming pools) is, like chlorine, a halogen and thus excellently suitable for disinfecting pool water. Differently from the chloramines (bound chlorine), the bromines are odourless and there is no noticeable swimming pool smell. Bromine has a similar disinfecting effect to chlorine.

Note: The ideal bromine content in a private swimming pool is between 1.5 mg/l and 2.0 mg/l.

2.4 Water hardness

In order to prevent scale deposits in the pool and to reduce the precipitation of scale in the heating system, we recommend using softened water for the filling or the make-up water feed of the swimming pool.

Note: We recommend installing a water softener if the water hardness is > 14 °dH, in order to have a sufficient buffer effect, the hardness should not fall below 7 °dH.

3 | Process description

GENO-mat F 500/600/610 A filter systems are configured as multi-layer filters and are used for filtering and heating pool water in private swimming pools with a pool volume up to approx. 35 m³, 70 m³ or 100 m³. The circulation pump pumps the pool water out of the raw water tank or via the skimmer to the filter system in which dirt particles are filtered out. Following that, the heated pool water is returned to the pool. The automatic multi-way valve sets the various functions of filtering, backwashing, first filtrate / rinsing and draining fully automatically.

4 | Function

4.1 Filtration

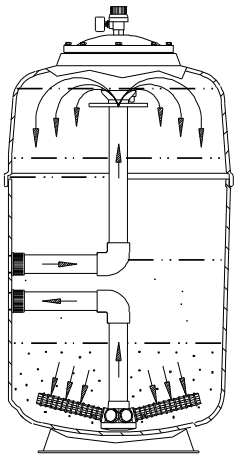


Fig. B-2: Filtration GENO-mat F 600

The pool water sucked in by means of a circulation pump is delivered into the filter via the distribution system at the top. The water flows through the filter layers contained in the filter from top to bottom, and the top and the bottom distribution systems make sure that the water flows through the filter material equally. While flowing through the filter layers, even the finest dirt particles are being filtered from the water. The filtered water flows through the bottom distribution system which is equipped with small slots to allow the cleaned pool water to pass, and the filter material remains in the filter container.

4.2 Backwashing

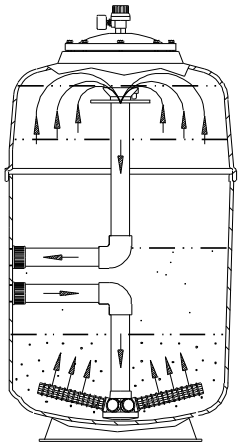


Fig. B-3: Backwashing GENO-mat 600

The filter material retains the dirt from the pool water, meaning that the flow resistance rises as a result of the accumulated dirt. This means the value shown on the pressure gauge increases while the flow rate decreases. If the pressure increases by 0.2 – 0.3 bar above the initial pressure or if the flow rate drops below the required flow rate, then the filter must be backwashed; however backwashing should be performed at least once a week. Furthermore, we recommend a backwash before and after longer periods of standstill.

A backwash is initiated through the appropriate setting at the automatic multi-way valve. The automatic multi-way valve deviates the pool water in a way that it flows into the filter via the bottom distribution system. This involves raising the various layers of the filter and flushing out dirt particles. The dirt is lighter than the filter material, meaning that it is flushed out through the upper distribution system through the automatic multi-way valve into the drain. The backwash water flowing from the tank can be monitored through a transparent piece of pipe in the drain line. The backwashing procedure is completed as soon as no more dirt particles are contained in the water.

4.3 Rinsing / first filtrate

After each backwashing procedure, fine dirt particles (abrasion of the filter material) can build up on the lower distribution system. These dirt particles are removed into the drain by rinsing (first filtrate).

4.4 Draining

By means of the circulation pump, the pool volume is delivered to the drain. If there is no dry-running protection installed for the circulation pump, then the circulation pump must be switched off by hand at the correct time.

C Product description

1 | Type designation plate

In order to speed up the processing of your inquiries or orders, please specify the data shown on the type designation plate of your filter system when contacting Grünbeck. Please add the necessary information to the table below to have it readily available whenever necessary.

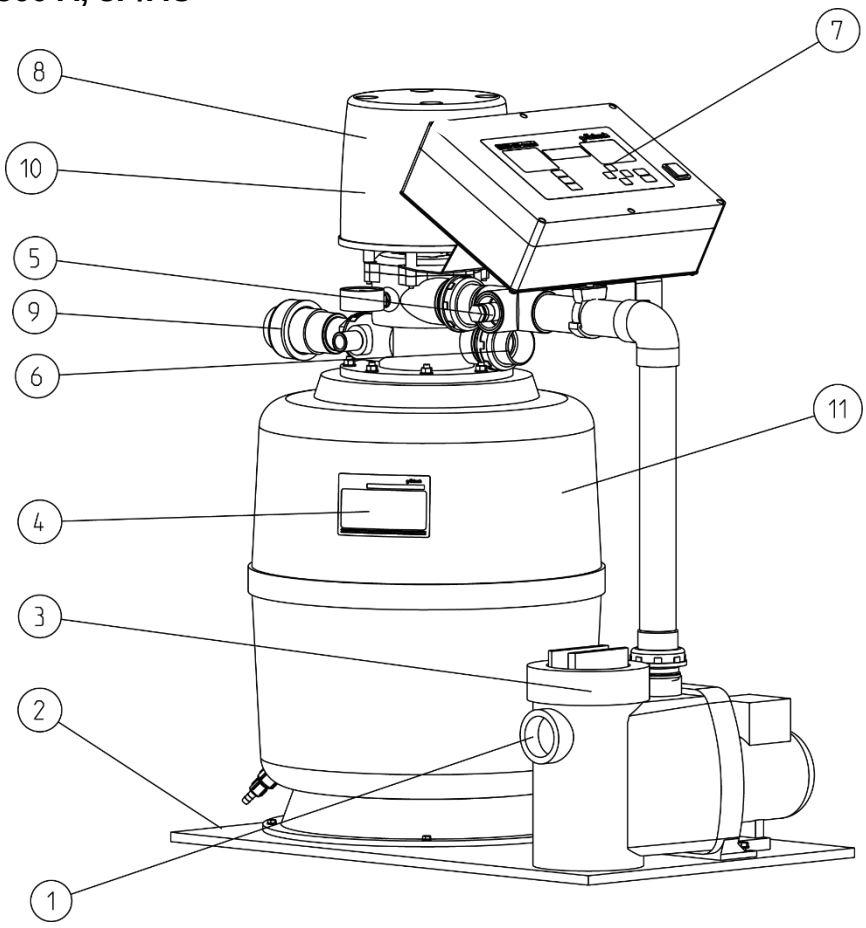
GENO-mat F 500 A filter system	
Automating current pump (AC)	**Three-phase pump (3P)**
Order number: 240 470	**Order number: 240 450**
Serial number: ☐☐☐☐☐☐	**Serial number:** ☐☐☐☐☐☐

GENO-mat F 600 A filter system	
Automating current pump (AC)	**Three-phase pump (3P)**
Order number: 241 470	**Order number: 241 450**
Serial number: ☐☐☐☐☐☐	**Serial number:** ☐☐☐☐☐☐

GENO-mat F 610 A filter system	
Automating current pump (AC)	**Three-phase pump (3P)**
Order number: 242 470	**Order number: 242 450**
Serial number: ☐☐☐☐☐☐	**Serial number:** ☐☐☐☐☐☐

2 | Filter system components

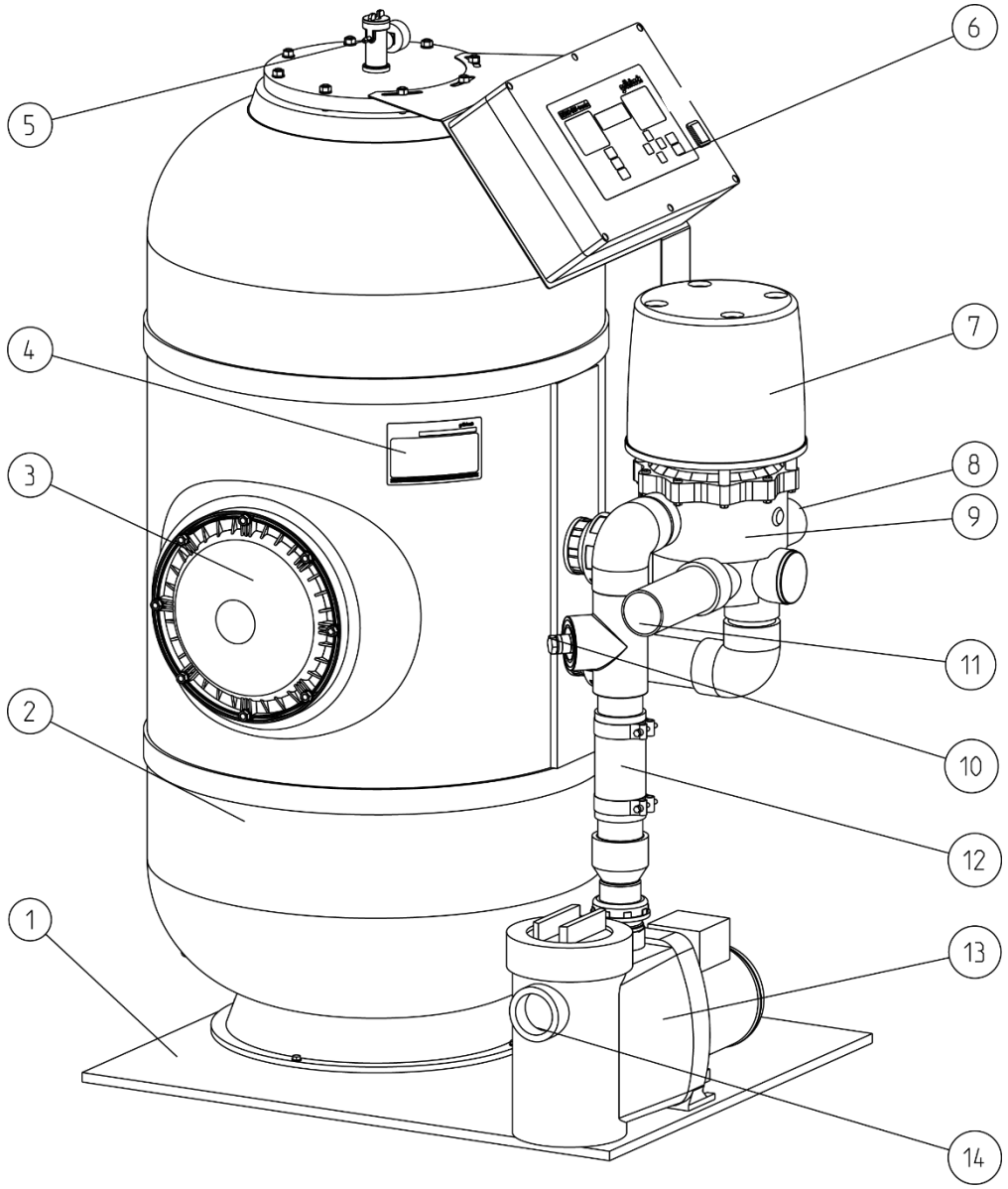
2.1 GENO-mat F 500 A, 3P/AC



①	From pool	⑤	Measuring water sampling	⑨	To drain
②	Mounting plate	⑥	To pool	⑩	Automatic multi-way valve
③	Circulation pump	⑦	Control unit GENO-BW-tronic	⑪	Filter tank
④	Type designation plate	⑧	Automatic actuator		

Fig. C-1: Components of GENO-mat F 500 A filter systems

2.2 GENO-mat F 600/610 A, 3P/AC



①	Mounting plate	⑥	Control unit GENO-BW-tronic	⑪	To pool
②	Filter tank	⑦	Automatic actuator	⑫	Flexible hose
③	Inspection opening (only F 610)	⑧	To the drain	⑬	Circulation pump
④	Type designation plate	⑨	Automatic multi-way valve	⑭	From pool
⑤	Deaeration device	⑩	Measuring water sampling		

Fig. C-2: Components of GENO-mat F 600/610 A filter systems

3 | Technical specifications

GENO-mat F 500/600/610 A filter systems are suitable for private swimming pools with a pool volume of up to approx. 35 m³, 70 m³ or 100 m³, and are supplied with an automatic multi-way valve.
The external and internal PVC piping is configured with DN 40 or DN 50.
The filter material should be renewed about every 5 years in order to ensure perfect filtration performance.

Caution! Electrically operated automatic multi-way valve. In case of a power failure during the backwash or rinsing / first filtrate, water may enter the drain. In the event of power failure, check the filter system and shut-off the water supply, if necessary.

All filter system data is summarised in table C-1. The data given refers to standard filter systems. Possible deviations in case of special versions are communicated separately, if applicable.

Warning! Lengthy shut-down periods can result in germ growth in the filter system. Prior to reuse, it is essential for the filter to be backwashed automatically at least twice (approx. 5 to 8 minutes).

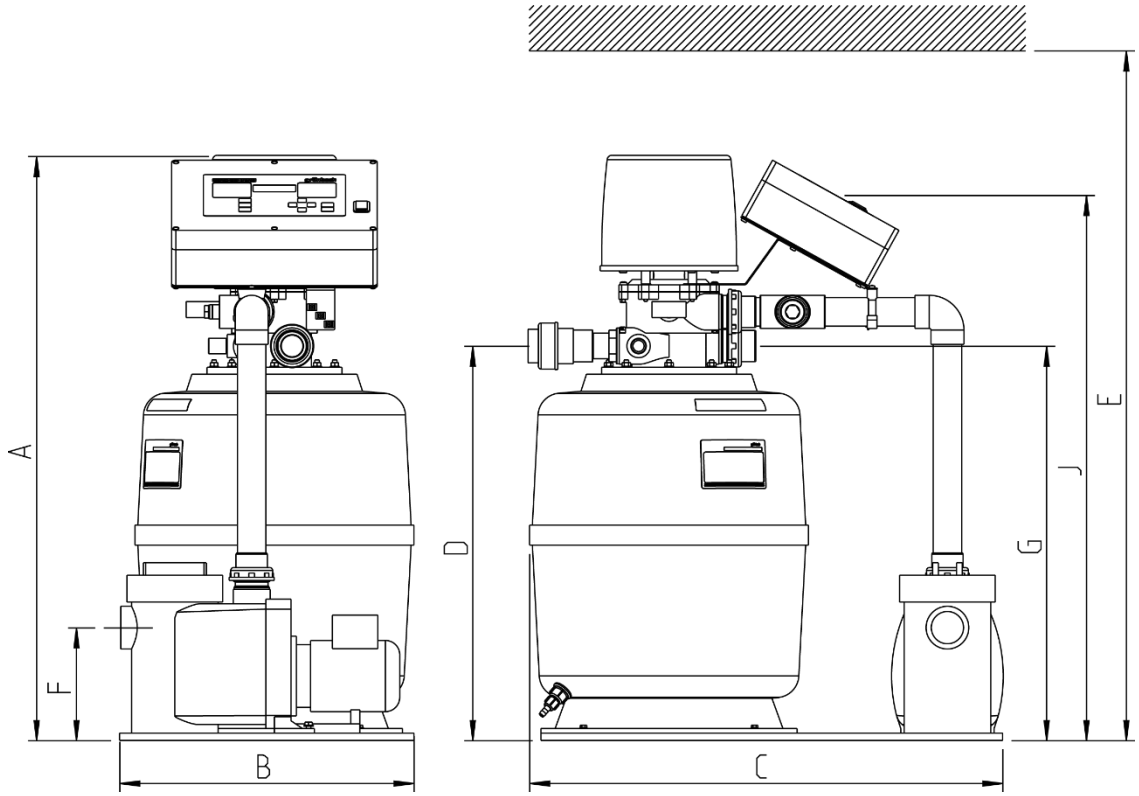


Fig. C-3: Dimensional drawing of GENO-mat F 500 A filter system

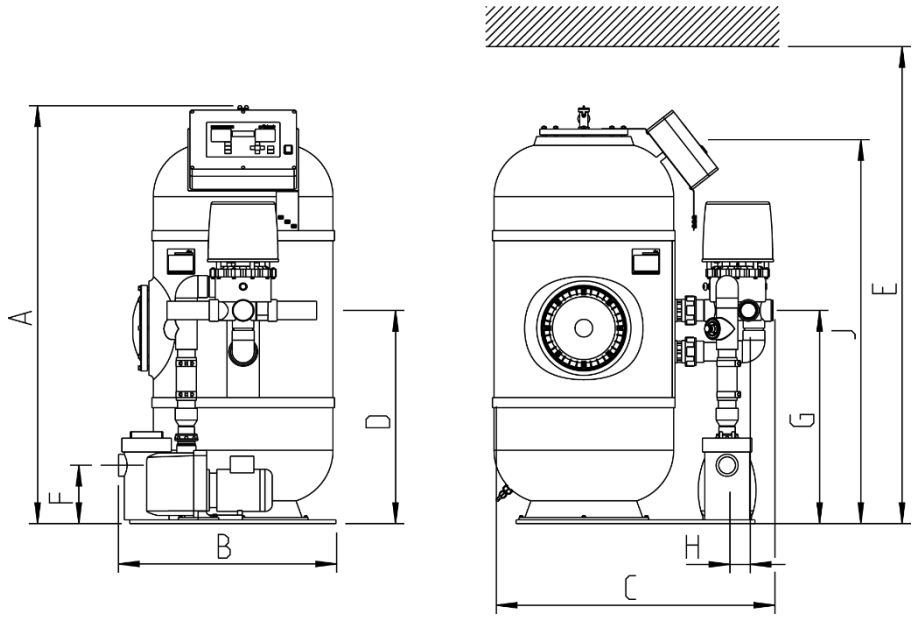


Fig. C-4: Installation: GENO-mat F 600/610 A filter system

Technical specifications / Dimensions		Filter system GENO-mat F					
		500 A; RC	**500 A; AC**	**600 A; 3P**	**600 A; AC**	**610 A; 3P**	**610 A; AC**
Connection data							
Nominal connection diameter for bathing water		R 2“ / DN 40				R 2" / DN 50	
Nominal diameter of drain connection		DN 100					
Filter pump		GENO-Top 8		GENO-Top 14		GENO-Top 20	
Power supply	V/Hz]	400 / 50	230 / 50	400 / 50	230 / 50	400 / 50	230 / 50
Protection / protection class		IP 54/ ⏚					
Power input of motor	kW]	0.48	0.58	0.90	0.97	1.32	1.37
Current input*	A]	1.2	3.2	2.1	5.7	3.0	7.4
Fuse protection by others	A]	10					16
Performance data							
Max. nominal pressure	bar]	2					
Filter / backwash capacity	m³/h]	6/8		12/15		15/20	
Pump capacity (at 8 mWC)	m³/h]	8.5		14		20	
Max. pool volume	m³]	35		70		100	
Max. suction height	m]	3					
Max. inlet height on suction side of pump	m]	3					
Dimensions and weights							
A Height of filter system	mm]	1025		1250		1420	
B Width of filter system	mm]	517		700		741	
C Depth of filter system	mm]	831		915		946	
D Height of drain connection	mm]	692		523		723	
E Min. room height	mm]	1200		1600		1800	
F Height of suction connection	mm]	198					
G Height of pool return	mm]	692		523		723	
H / Offset suction connection pool return	mm]	-		71		71	
J Operating height	mm]	960		1160		1300	
Empty weight	kg]	41		50		58	
Filter tank ∅	mm]	510		630			
Ambient data							
Water temperature	°C]	5-40					
Ambient temperature	°C]	5-35					
Max. humidity of air (non-condensing)	%]	90					
Order no.		**240 450**	**240 470**	**241 450**	**241 470**	**242 450**	**242 470**

* According to the standards, the nominal flow rate of pumps (< 1.3 kW) may be 20 % above the indications by the manufacturer (indicated on the type designation plate);
this tolerance has been taken into consideration in the control unit and in table C-1.

4 | Intended use

Filter systems of the GENO-mat F series are designed for filtering pool water in private swimming pools. The circulation pump pumps the pool water out of the raw water tank or via the skimmer to the filter system in which dirt particles are filtered out. Following that, the heated pool water is returned to the pool. The fully automatic multi-way valve sets the various functions of filtering, backwashing, first filtrate / rinsing and draining fully automatically. The locally applicable installation regulations and technical specifications listed in the manual must be complied with, as must the application limits.

Only operate the filter system if all system components are properly installed. Safety devices must never be removed, bridged or otherwise rendered ineffective.

Appropriate application of the device also implies that the information contained in this operation manual and all safety guidelines applying at the installation site be observed. Furthermore, the maintenance and inspection intervals have to be observed.

5 | Application limits

Use of the filter system is restricted by the following limit conditions:

- Free chlorine: max. 1.4 mg/l
  (short chlorine shock up to 20 mg/l).
- Chloride content: max. 500 mg/l.
- Do not operate the filter pump with seawater or salt water, and do not allow it to run dry.
- The filter system is not allowed to be used with a salt water electrolysis process, and must be protected from direct sunlight and frost.
- The filter system is not allowed to be used with ozone disinfection.

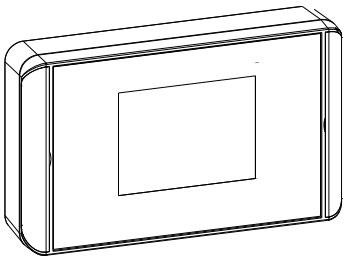
6 | Scope of supply

6.1 Standard equipment

- Complete filter system assembled, ready to connect, piping.
- Operation manual.

6.2 Accessories

Note: It is possible to retrofit existing filter systems with accessories. Please contact the representative responsible for your region and or Grünbeck's head office for further information.



Remote control or remote display of all components relevant for the swimming pool to interconnect the GENO-BW-tronic controller and the GENO-CPR-tronic 02 family automatic measuring and control system. Interconnection between the devices is via RS 485 serial port.

Touch panel 5,7“ 203 545

For automatic release of a demand-dependent backwash (setting range 0.16 - 1.6 bar).

Differential pressure switch Please inquire

6.3 Consumables

Only use genuine consumables to ensure the reliable operation of your filter system.

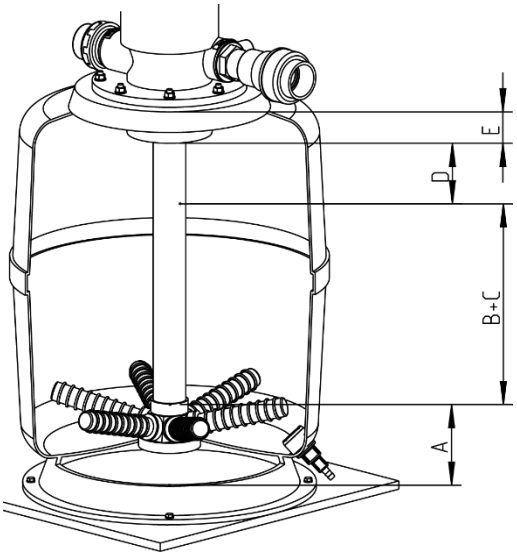


Fig. C-5: Filling diagram for GENO-mat F 500

Quartz sand filter filling F 500 200 840

(A) Support layer 25 kg (grain size 1.0 to 2.2 mm)

(B+C) Filter layer 37.5 kg (grain size 0.4 to 0.8 mm)

(D+E) Freeboard (no filter material)

AFM filter filling F 500 (glass granulate) 240 180

(A) Support layer 21 kg (grain size 1.0 to 2.0 mm)

(B+C) Filter layer 32 kg (grain size 0.5 to 1.0 mm)

(D+E) Freeboard (no filter material)

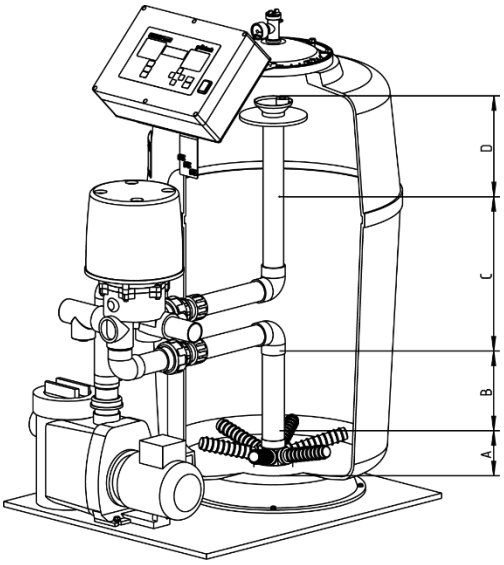


Fig. C-6: Filling diagram for GENO-mat F 600 A

Quartz sand filter filling F 600 200 560

(A) Support layer 50 kg (grain size 3.0 to 5.6 mm)

(B) Filter layer 75 kg (grain size 1.0 to 2.2 mm)

(C) Filter layer 75 kg (grain size 0.4 to 0.8 mm)

(D) Freeboard (no filter material)

Hydro-anthracite filter filling F 600 200 565

(A) Support layer 50 kg (grain size 3.0 to 5.6 mm)

(B) Filter layer 75 kg (grain size 1.0 to 2.2 mm)

(C) Filter layer 50 l (anthracite 1.4 to 2.5 mm)

(D) Freeboard (no filter material)

AFM Filter filling F 600 (glass granulate) 241 800

(A) Support layer 42 kg (grain size 1.0 to 2.0 mm)

(B+C) Filter layer 105 kg (grain size 0.5 to 1.0 mm)

(D) Freeboard (no filter material)

Quartz sand filter filling F 610	242 185
(A) Support layer 50 kg (grain size 3.0 to 5.6 mm)	
(B) Filter layer 75 kg (grain size 1.0 to 2.2 mm)	
(C) Filter layer 200 kg (grain size 0.4 to 0.8 mm)	
(D) Freeboard (no filter material)	
Hydro-anthracite filter filling F 610	242 190
(A) Support layer 50 kg (grain size 1.0 to 2.2 mm)	
(B) Filter layer 125 kg (grain size 0.4 to 0.8 mm)	
(C) Filter layer 100 l (anthracite 1.4 to 2.5 mm)	
(D) Freeboard (no filter material)	
AFM filter filling F 610 (glass granulate)	242 180
(A) Support layer 63 kg (grain size 1.0 to 2.0 mm)	
(B+C) Filter layer 147 kg (grain size 0.5 to 1.0 mm)	
(D) Freeboard (no filter material)	

6.4 Spare parts

You may order spare parts and consumables from your local Grünbeck representative (refer to www.gruenbeck.de).

6.5 Wearing parts

The filter fills or seals are subject to a certain amount of wear and must be checked regularly during the inspection and maintenance, and renewed if necessary.

Note: Although these are wearing parts, we offer a limited warranty period of 6 months.

D Installation

1 | General installation information

The installation location must offer sufficient size and a foundation of adequate size and load carrying capacity must be provided.
The technical room must have ventilation and a drainage connection, in addition the technical room must be free from frost. The required connections must be provided prior to the installation. For dimensions and connection data, please refer to table C-1.

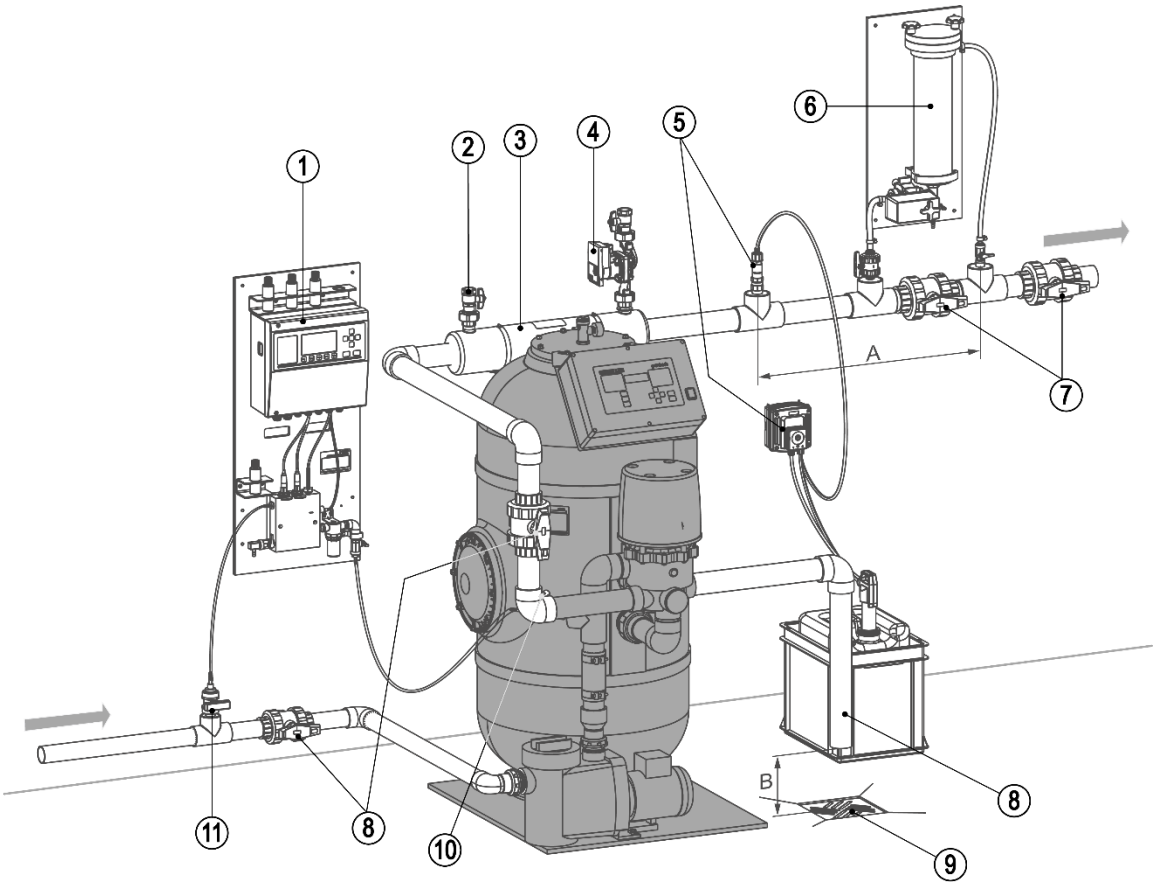
Note: Regarding the installation of filter systems with accessories (see chapter C, 6.2), also observe the operation manuals that have been supplied with such accessories.

2 | Preliminary work

1. Unpack the filter system.
2. Check for completeness and soundness.
3. Set up the filter system at the intended site.

Place the filter system on a suitable foundation; the installation room must be adequately ventilated and is not allowed to be at risk of flooding. The filter system should be easily accessible for maintenance and repair purposes. A minimum room height of approx. 1200 mm, 1600 mm or 1800 mm is required for changing the filter material with the GENO-mat F 500/600/610 A. The filter system should be set up below the water surface (max. 3m). In exceptional cases, the filter system can be installed max. 3 m above the water surface.

3 | Hydraulic installation



① Measuring and control system GENO-CPR-tronic 02 family
② Heating return
③ GENO-WT-K compact heat exchanger
④ Heating flow including heating pump
⑤ GENO-Schlauflex pH dosing system
⑥ Chemical dosing unit GENO-mat Standard
⑦ Shut-off valves provided by the client
⑧ Backwash line (Drain)
⑨ Floor drain
⑩ Measuring water sampling
⑪ Measuring water return

A Dosing gap (> 0.5 m)
B Free outflow according to DIN-EN 1717

Fig. D-1: GENO-mat F 610 A water connection

The filter system is not allowed to be used as a fixed point for pipelines under any circumstances. The suction line diameter should be at least equal to the diameter of the suction pipe and must withstand the resulting negative pressure, i.e. do not use pressure hoses but vacuum hoses if required. The suction line must be leak-tight and as short as possible. Avoid sudden changes in direction because this can increase the flow resistance in the pipelines and impair the delivery rate of the pump.

Caution: The filter pump offers a connection possibility for the raw water connection on the front side of the pump's housing. The connection of the on-site suction line on the connection of the suction side of the circulation pump must be made with the provided adapter fitting with O-ring sealing or with a PVC fitting with a PVC transition piece with conical thread and sealing/Teflon tape. Carefully tighten the connection and avoid excessive tightening as this would damage the connection thread. For pipe dimensions, please refer to the installation diagram or installation example.

If long pipelines are required with many changes of direction due to the structural conditions, then the diameter of the line must be increased. At the output of the automatic multi-way valve, it is possible to connect the measuring water feed for an automatic measuring and control system; the connection is sealed with a 3/8" dummy plug at the factory.

Binding rules

The installation of a filter system represents a major interference with the sanitary installation. Therefore, only authorised experts may install such systems.

- Observe the local installation guidelines and general regulations.

Note: The drain connection must be routed vertically downwards in accordance with DIN EN 1717. Make sure that the drain connection is unobstructed so as to avoid the possibility of re-contamination from the drain.

- Provide a drain connection (minimum DN 100) to discharge the backwash water.
- The installation room must have a floor drain (DN 100). If no floor drain is available, a corresponding water stop device has to be installed.

Warning! Floor drains leading to a lifting system do not work in case of a power failure.

4 | Filter fills

4.1 GENO-mat F 500 A filter system

Note: Remove automatic multi-way valve, check filter nozzles are undamaged and before filling the filter, seal the riser pipe with the supplied filling and centring aid made of cardboard. Fill the filter container up to approx. 1/3 with water, which has the effect of distributing the filter material more evenly and protecting the filter nozzles at the bottom.

Note: Delivery quantity of filter layer does not equal filling quantity. Observe the indicated filling quantity.

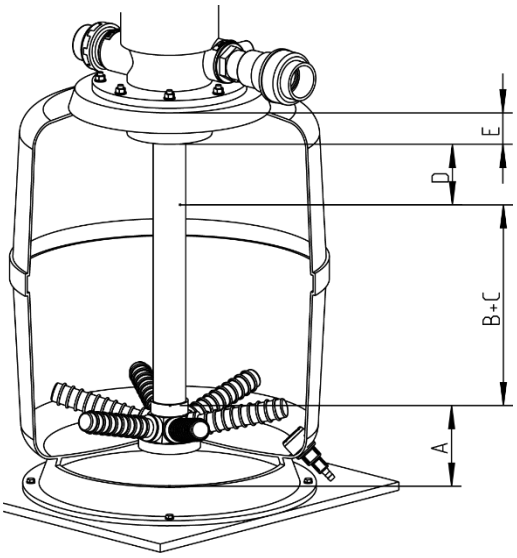


Fig. D-2: Filling diagram for GENO-mat F 500

Quartz sand filter filling F 500	200 840
(A) Support layer 25 kg (grain size 1.0 to 2.2 mm)	
(B+C) Filter layer 37.5 kg (grain size 0.4 to 0.8 mm)	
(D+E) Freeboard (no filter material)	
AFM filter filling F 500 (glass granulate)	240 180
(A) Support layer 21 kg (grain size 1.0 to 2.0 mm)	
(B+C) Filter layer 32 kg (grain size 0.5 to 1.0 mm)	
(D+E) Freeboard (no filter material)	

Note: Remove the filling and centring aid from the riser pipe, clean the sealing surface and grease the O-ring. Make sure that the automatic multi-way valve is tightened evenly, diagonally across, after filling.

4.2 GENO-mat F 600 A filter system

Note: Remove the black container lid, check the filter nozzles are undamaged and seal the upper funnel before filling the filter (e.g. study plastic bag). Fill the filter container up to approx. 1/3 with water, which has the effect of distributing the filter material more evenly and protecting the filter nozzles at the bottom.

Note: Water hydro-anthracite N for at least 24 hours prior to start up.

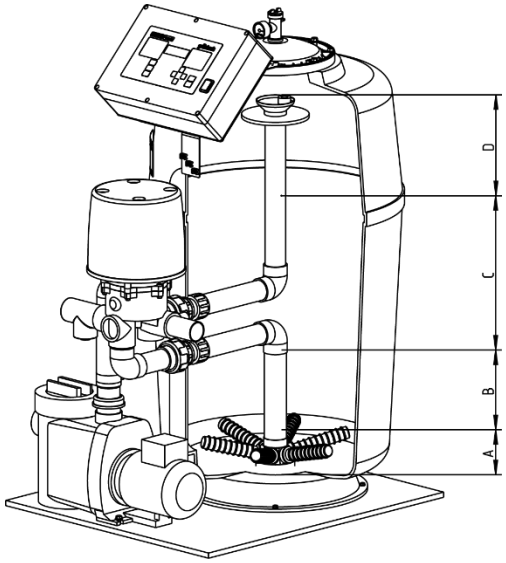


Fig. D-3: Filling diagram for GENO-mat F 600 A

Quartz sand filter filling F 600 200 560

(A) Support layer 50 kg (grain size 3.0 to 5.6 mm)

(B) Filter layer 75 kg (grain size 1.0 to 2.2 mm)

(C) Filter layer 75 kg (grain size 0.4 to 0.8 mm)

(D) Freeboard (no filter material)

Hydro-anthracite filter filling F 600 200 565

(A) Support layer 50 kg (grain size 3.0 to 5.6 mm)

(B) Filter layer 75 kg (grain size 1.0 to 1.2 mm)

(C) Filter layer 50 l (anthracite 1.4 to 2.5 mm)

(D) Freeboard (no filter material)

AFM filter filling F 600 (glass granulate) 241 800

(A) Support layer 42 kg (grain size 1.0 to 2.0 mm)

(B+C) Filter layer 105 kg (grain size 0.5 to 1.0 mm)

(D) Freeboard (no filter material)

Note: Remove the bag from the upper funnel, clean the sealing surface and grease the O-ring. Make sure that the container lid is tightened evenly, diagonally across, after filling.

4.3 GENO-mat F 610 A filter system

Note: Remove the black container lid, check the filter nozzles are undamaged and seal the upper funnel before filling the filter (e.g. study plastic bag). Fill the filter container up to approx. 1/3 with water, which has the effect of distributing the filter material more evenly and protecting the filter nozzles at the bottom.

Note: Water hydro-anthracite N for at least 24 hours prior to start up.

Quartz sand filter filling F 610	242 185
(A) Support layer 50 kg (grain size 3.0 to 5.6 mm)	
(B) Filter layer 75 kg (grain size 1.0 to 2.2 mm)	
(C) Filter layer 200 kg (grain size 0.4 to 0.8 mm)	
(D) Freeboard (no filter material)	
Hydro-anthracite filter filling F 610	242 190
(A) Support layer 50 kg (grain size 1.0 to 2.2 mm)	
(B) Filter layer 125 kg (grain size 0.4 to 0.8 mm)	
(C) Filter layer 100 l (anthracite 1.4 to 2.5 mm)	
(D) Freeboard (no filter material)	
AFM filter filling F 610 (glass granulate)	242 180
(A) Support layer 63 kg (grain size 1.0 to 2.0 mm)	
(B+C) Filter layer 147 kg (grain size 0.5 to 1.0 mm)	
(D) Freeboard (no filter material)	

Note: Remove the bag from the upper funnel, clean the sealing surface and grease the O-ring. Make sure that the container lid is tightened evenly, diagonally across, after filling.

5 | Electrical installation

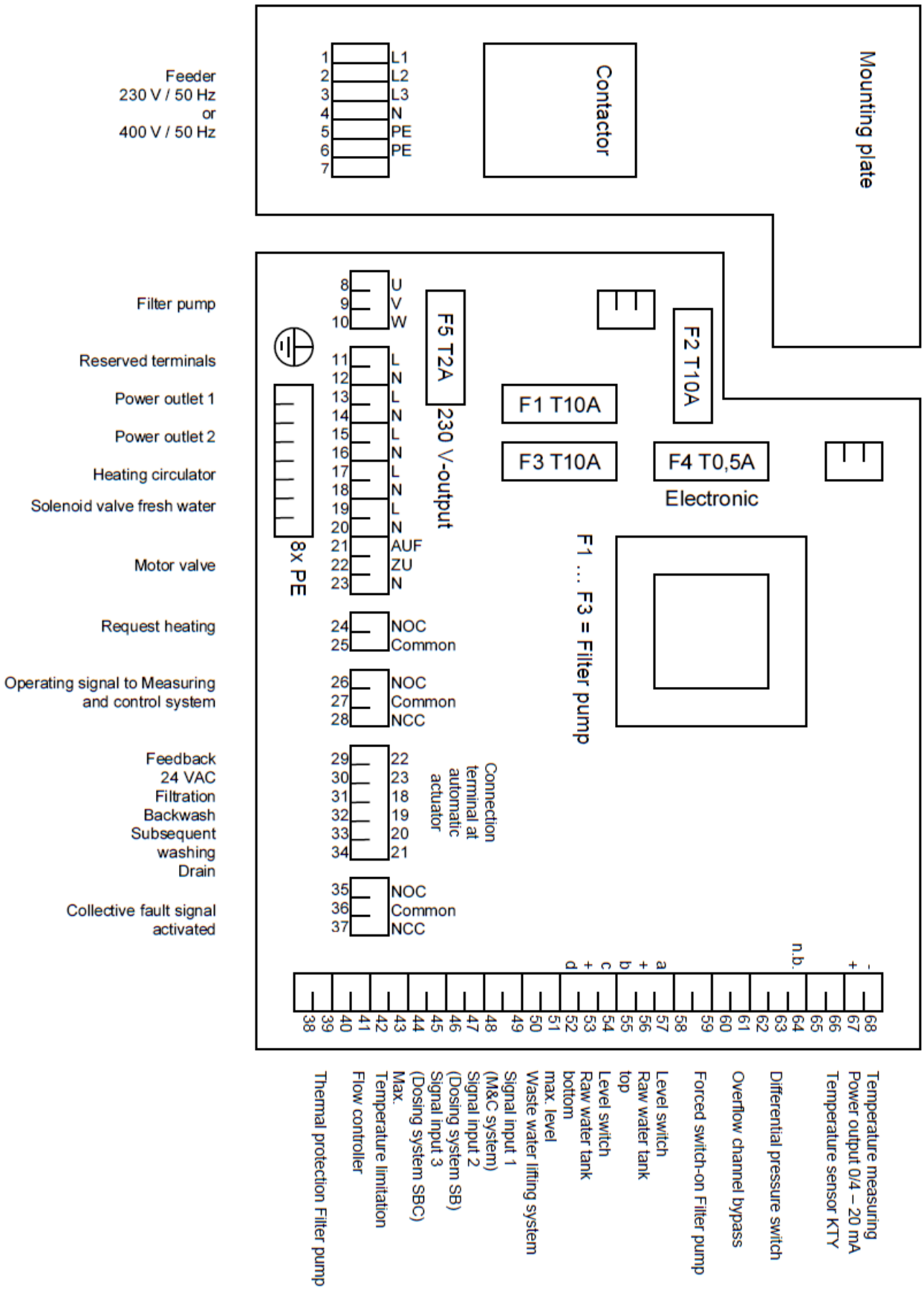
The electrical installation is only allowed to be carried out by an authorised electrician in accordance with the regulations of the electrical utility and the applicable VDE regulations. The client must provide an AC/DC sensitive ground fault circuit interrupter (trip current 30 mA). The electrical connection is made via a 230V/50Hz alternating current system or 400V/50Hz three-phase system.

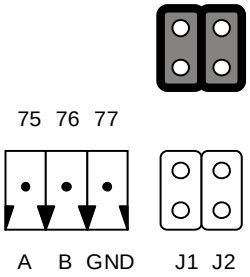
Caution! Electrical work on the circulation pump or filter system is only allowed to be carried out when the system is deenergised. The direction of rotation check (only required for three-phase pumps) of the motor must match the direction arrow on the black back wall of the pump housing, and is allowed to be carried out for a short period when the circulation pump is not filled. Check the direction of rotation by switching on briefly and switching off again. If the direction of rotation is wrong, swap over any two phases L1, L2 or L3 at the mains connection.

The work described below may only be performed by trained experts. It is recommended that the device is started up by the Grünbeck technical service / an authorised specialist company.

Warning! Before each installation / removal or intervention in the control or circulation pump, disconnect the electrical power supply.

5.1 Motherboard connection diagram (GENO-BW-tronic)



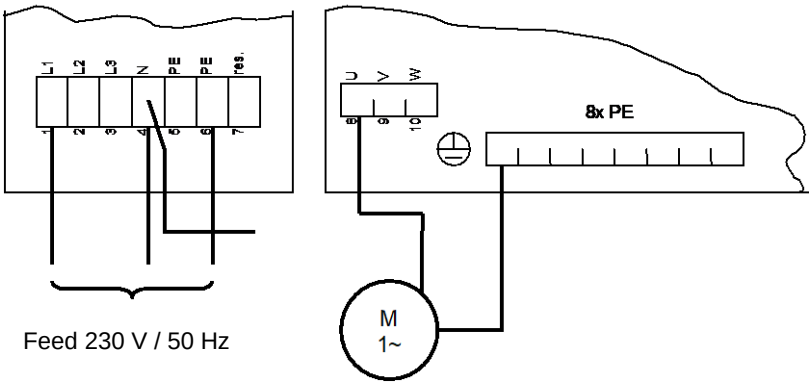


For cross-linking: Jumper set,
when BW-tronic is a mobile device

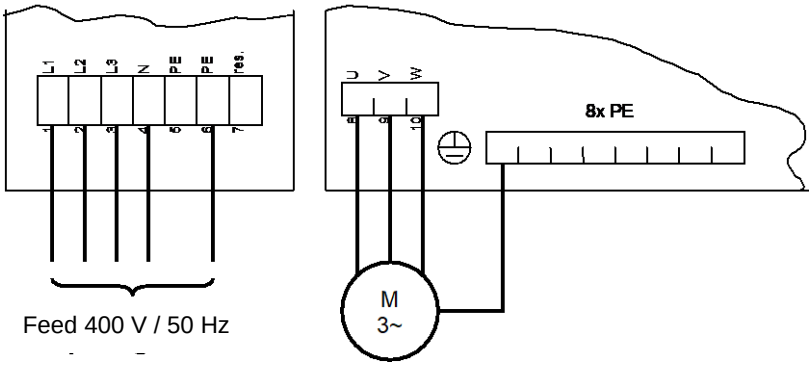
For cross-linking: Jumper open,
when BW-tronic is not a mobile device

Fig. D-4: Connection diagram of the serial interface on the display board

AC pump 230 V



Three-phase pump 400 V



AC pump 230 V with rated current > 7 A –(e.g. BADU TOP 20 WS)

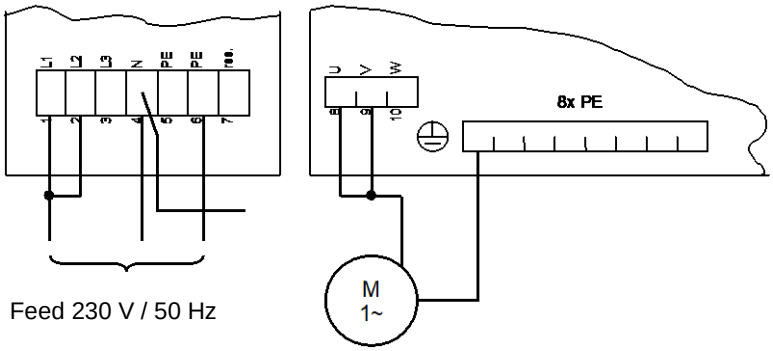


Fig. D-5: Connection examples of the circulation pump

Electrical connection

No.	Function	Note
1	Mains cable L1	Client's fuse 16 A slow-blow. In AC pumps with current consumption > 7 A, jumper terminals 1 and 2 together.
2	Mains cable L2	
3	Mains cable L3	
4	Mains cable / filter pump N	
5	Mains cable PE	
6	PE	
7	Reserved	⚠ **Warning! Under no circumstances make modifications or connect anything else!**
8	Filter pump U	The outputs for the filter pump are fused internally by fuses F1-F3 with 10 A slow-blow. In AC pumps with current consumption > 7 A, jumper terminals 8 and 9 together.
9	Filter pump V	
10	Filter pump W	
8x PE	Earth wire	Connected to terminals 5 and 6.
The 230 V~ outputs of terminals 11–22 are internally fused by fuse F5 with 2 A slow-blow.		
11	Contactor filter pump L	⚠ **Warning! Reserved for internal wiring – under no circumstances make modifications or connect anything else!**
12	Contactor filter pump N	
13	Mains output 1 L	Electrical power supply 230 V~ for disinfection, e.g. SB(C) dosing system, UV disinfection ... . The voltage is applied simultaneously with the filter pump in manual or automatic mode.
14	Mains output 1 N	
15	Mains output 2 L	Electrical power supply 230 V~ for disinfection, e.g. SB(C) dosing system, SBF... dosing system . The voltage is applied either under time control or simultaneously with the filter pump in manual or automatic mode.
16	Mains output 2 N	
17	Heating circulation pump L	Electrical power supply 230 V~ for heating circulation pump. The voltage is only available and is switched automatically if a heating unit is programmed in the Configuration menu.
18	Heating circulation pump N	
19	Freshwater solenoid valve L	Electrical power supply 230 V~ for freshwater solenoid valve for the automatic freshwater make-up water feed (only if there is a level control on terminals 52 ...57).
20	Freshwater solenoid valve N	

No.	Function	Note
21	Motorised valve L_{open}	Electrical power supply 230 V~ for a motorised valve. The output can be used either for channel cleaning or in small raw water storage tanks for backwashing, see "Configuration" menu.
22	Motorised valve L_{closed}	
23	Motorised valve N	
The voltage-free contacts of terminals 24–28 and 35–37 have a maximum load capacity of 230 VAC, 4 A.		
24	Voltage-free contact request heating NO contact	Enable signal for a heater. The function is only available if a heating unit and a temperature sensor are programmed in the Configuration menu. The contact is closed if the bathing water temperature is < the index value.
25	Voltage-free contact request heating root	
26	Voltage-free contact release measuring and control system NO contact	Voltage-free, active release signal for a measuring and control system. Contact 26-27 is closed, if the filter system is in manual or automatic mode and the filter pump is running.
27	Voltage-free contact release measuring and control system root	
28	Voltage-free contact release measuring and control system NC contact	
The voltage-free contacts of terminals 24–28 and 35–37 have a maximum load capacity of 230 VAC, 4 A.		
29	Feedback automatic actuator	Connecting cable to automatic actuator. The signals are only evaluated if an automatic actuator is programmed in the Configuration menu.
30	24 V~ automatic actuator	
31	Position filtering automatic actuator	
32	Position backwashing automatic actuator	
33	Position rinsing automatic actuator	
34	Position draining automatic actuator	
35	Voltage-free contact collective fault NO contact	Voltage-free, active collective fault contact. Contact 35-36 is closed if the mains voltage is present and the control unit is switched on and there is no error.
36	Voltage-free contact collective fault root	
37	Voltage-free contact collective fault NC contact	

No.	Function	Note
The input signals of terminals 38 – 63 are designed for connecting voltage-free contacts. The encoder voltage 24 VDC is at the terminals identified with "+".		
38	Thermal protection filter pump +	Thermal protection integrated into the filter pump (NC contact) (FBS ... types from Wilo). If a filter pump without thermal protection is used, this must be programmed in the Configuration menu (not with Filtra ... types from KSB and GENO -Top … from Speck).
39	Thermal protection filter pump	
40	Flow monitor +	Flow monitor for monitoring through-flow (default setting: NO contact). The signal is only evaluated if a flow monitor is programmed in the Configuration menu.
41	Flow monitor	
42	Max. temperature limiter +	Safety thermostat (index value 40 °C) for monitoring the bathing water temperature (only NC contact possible). The signal is only evaluated if a max. temperature limiter is programmed in the Configuration menu.
43	Max. temperature limiter	
44	Fault signal input 3 +	Alarm input (only NO contact possible) e.g. for disinfection (predefined alarm message text: "SBC dosing system"). The signal is only evaluated if all three alarm inputs are programmed in the Configuration menu and while mains output 2 is active.
45	Fault signal input 3	
46	Fault signal input 2 +	Alarm input (only NO possible) e.g. for solar control (predefined alarm message text: "SB dosing system"). The signal is only evaluated if at least two alarm inputs are programmed in the Configuration menu and while mains output 1 is active.
47	Fault signal input 2	
48	Fault signal input 1 +	Fault signal input (only NO possible) for e.g. measuring and control system (predefined fault message text: "M&C system"). The signal is only evaluated if at least one fault signal input is programmed in the Configuration menu.
49	Fault signal input 1	
50	Max. level waste water lifting system +	Voltage-free waste water lifting system level switch (only NC possible). The signal is only evaluated if a waste water lifting system level switch is programmed in the Configuration menu.
51	Max. level waste water lifting system	
52	Level "d" Raw water tank	The transmitter voltage 24 VDC is available at terminals 53 and 56. **In swimming baths with a skimmer, NO must be programmed in the "Configuration" menu / inputs/outputs / Level control present.**
53	Level switch Raw water tank +	
54	Level "c" Raw water tank	

No.	Function	Note	
55	Level "b" Raw water tank	Level a:	Overshoot: Switching on the filter pump outside the filter running times in automatic mode.
56	Level switch Raw water tank +	Level b:	Undershoot: Switching off the filter pump.
57	Level "a" Raw water tank	Level b:	Overshoot: Closing the make-up water feed solenoid valve.
		Level c:	Undershoot: Opening the make-up water feed solenoid valve.
		Level c:	Overshoot: Switching the filter pump back on.
		Level d:	Undershoot: Switching off the filter pump (dry running protection).
58	Forced switch-on filter pump +	Command of an upstream solar controller to the BW-tronic that the filter pump will be switched on in automatic mode outside predefined filter running times (only NO contact possible).	
59	Forced switch-on filter pump		
60	Channel cleaning +	External latching switch for channel cleaning (only NO contact possible). The signal is only evaluated if an external channel cleaning switch is programmed in the Configuration menu.	
61	Channel cleaning		
62	Differential pressure switch +	Differential pressure switch for triggering backwash during manual or automatic mode (only NO contact possible).	
63	Differential pressure switch		
64	Reserved	⚠ **Warning! Under no circumstances make modifications or connect anything else!**	
65	Temperature sensor KTY	Temperature sensor for measuring the water temperature (only KTY possible). The signal is only evaluated if a temperature sensor is programmed in the Configuration menu.	
66	Temperature sensor KTY		
67	Temperature measurement current output 0/4 – 20 mA +	Standard signal output with the temperature signal, possibly calibrated (default setting 0 – 20 mA) 1... 40 °C. The signal is only available if a temperature sensor is connected.	
68	Temperature measurement current output 0/4 – 20 mA -		
75	RS 485 "A"	Serial port on the display board for Connection of a PC, serial printer or networking with GENO-BW-Tip-control, GENO-CPR-tronic 02 . . .	
76	RS 485 "B"		
77	Earth		

E Start-up

The work described below may only be performed by trained experts. It is recommended that the device is started up by the Grünbeck technical service / an authorised specialist company.

1 | First fill of the pool

In reinforced concrete pools, the leak test to demonstrate water leak-tightness should already have been undertaken with chlorinated water by a 14-day test filling.

Before the pool is filled after tiling, it must be thoroughly cleaned in order to remove residues resulting from grouting and construction site dirt. Failure to undertake cleaning establishes the conditions for subsequent microbial contamination.

We recommend cleaning agents containing chlorine bleach for cleaning in order to eradicate any slight points of germ growth. Before the pool is filled, all residues of cleaning agents must have been flushed thoroughly down the drain. Paint the pool walls with chlorinated water prior to filling in order to prevent algae formation.

Note: The pool water should have chlorine added immediately after filling. Regardless of the treatment technology with which the pool will be operated afterwards, for a duration of at least 2 weeks it initially has to be run in at an increased chlorine concentration of at least 2 mg/l.

2 | Preparing the filter system

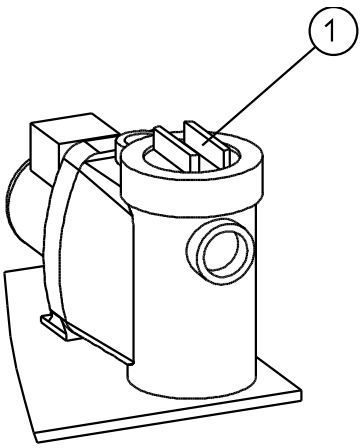


Fig. E-1: Circulation pump

- Carry out a visual check and leak test before commissioning, i.e. check all screw connections, valves and pipe connections.
- The pool must be filled with water.
- Open all shut-off valves in the suction and pressure line.
- Bleed the lines of the circulation circuit if necessary.
- Open the transparent cover (no. 1) of the circulation pump until the circulation pump is completely filled with water, fill with water if required.
- The system must be backwashed at least once before filter operation so that the sandy constituents and the dust (also referred to as undersized particles) will be removed from the new filter sand. The system has been backwashed sufficiently when the backwash water flowing to the drain is clear (observe via the transparent pipe section). The system must then be rinsed.
- Use the manual aeration and deaeration vent to bleed the filter system during initial start-up. The aeration and deaeration vent must be opened slightly during filter operation, and closed as soon as water emerges.

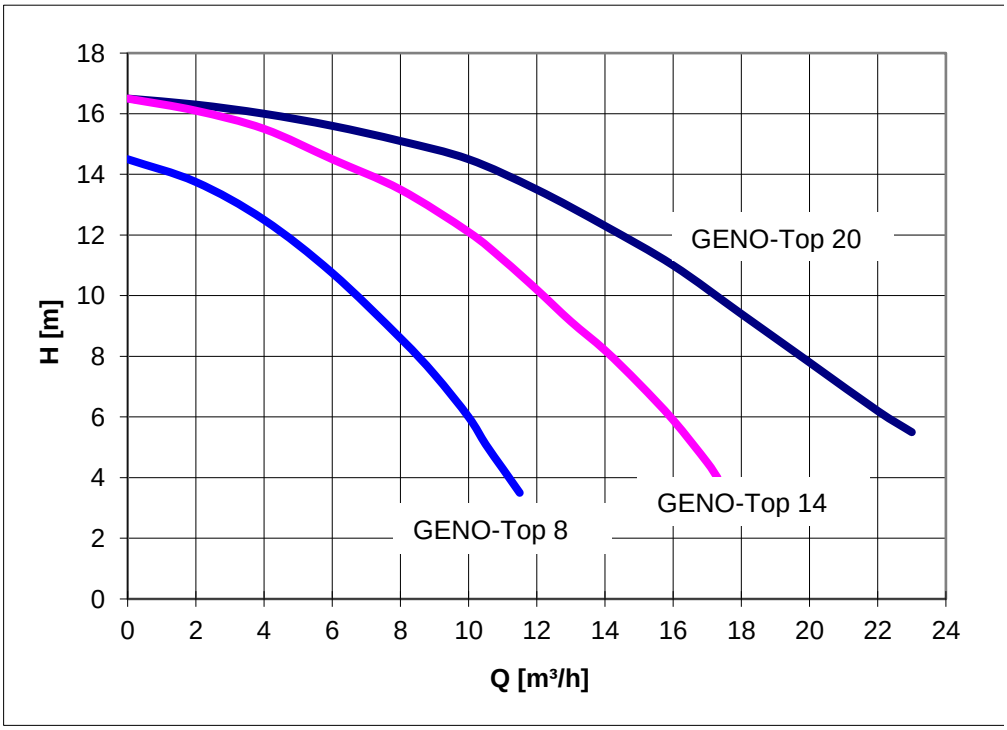


Fig. E-2: Pump characteristic curves of GENO-Top 8,14 or 20

3 | Taking the filter system into operation

Note: We recommend storing the operation manual close to the system. This can be placed on the grey cover after commissioning, for example.

- Set the output filter pressure (see pressure gauge on the filter container) during filter operation during commissioning using a ball valve on the pressure side to approx. 0.9 bar and make a note of this in the cover sheet of the operation log. Backwashing is required if the filter pressure increased by 0.2 - 0.3 bar above the initial filter pressure.

Note: The operating log is attached to this operation manual. When commissioning the filter system, make sure to record all data on the cover sheet of the operation log and fill in the first column of the checklist.

- Use GENO-BW-tronic (see chapter F-2) to move the filter system to "Filtration" position and assess the leak tightness of the system components during the operating phase.
- Check correct function of the filter system and explain the system functions and operation to the owner / user of the GENO-BW-tronic.
- Commissioning can be completed once it has been documented correctly in the operation log.

F Operation

1 | Introduction

The GENO-mat F 500/600/610 A filter system is a fully automatic system which is responsible for filtering the pool water for several hours a day depending on the pool type and pool use. Dirt particles collect in the filter during filtration and the filter pressure increases.

If the pressure increases by 0.2 – 0.3 bar (refer to the pressure gauge on the multi-way valve or on the lid of the filter tank) above the initial pressure (pressure during start-up), the filter must be backwashed.

Irrespective of the increase in pressure, the filter should be backwashed on one or several days a week, subject to the dirt load.

For hygienic reasons, however, the filter must be backwashed at least once a week. A backwash process must also be carried out before and after longer periods of standstill. The backwash procedure is described in chapter H-2.1.

2 | Control unit GENO-BW-tronic

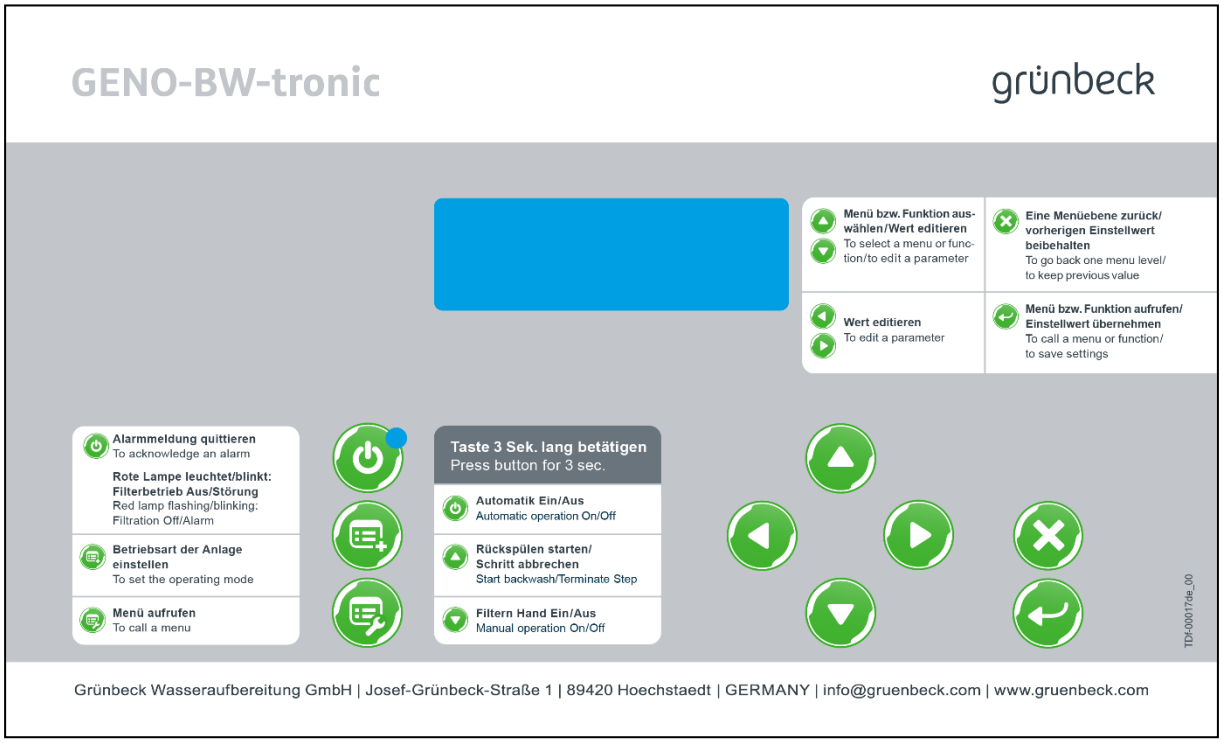
Filtration If the automatic actuator is not in the Filtration position, the filter pump will be switched off. Use the automatic actuator to turn the valve disc of the automatic multi-way valves to the filter position. The filter pump switches on and filters the bathing water. The Filtration function is displayed in the main menu.

Backwashing If backwashing is triggered by the time programming, differential pressure signal or manually, the filter pump switches off.
The automatic actuator turns the valve disc of the automatic multi-way valve to the backwash position. After approx. 1 minute, the filter pump switches back on and the filter material contained in the filter container is backwashed from the bottom towards the top.
This procedure is finished after approx. 2.5 minutes (factory setting). The filter pump now switches on again for approx. 1 minute and the actuator moves the valve disc to the rinsing position during this time. The filter pump switches on for approx. 0.8 minutes, thereby rinsing out the dirt particles which have accumulated on the lower distribution system and discharging them down the drain. The filter pump switches off again and the valve disc is turned to the filter position. The filter pump switches on. The complete backwashing is completed after approx. 8 - 9 minutes. The particular functions (backwashing, rinsing) are displayed in the main menu.

Emptying The filter pump switches off for approx. 1 minute. The automatic actuator turns the valve disc of the automatic multi-way valve to the drainage position. The filter pump switches on and pumps the content of the pool to the drain connection until the operating mode is switched over. The filter pump must be switched off manually in good time.
(e.g. "system OFF . . . o.k."). The Drainage function is displayed in the main menu.

Off The filter pump is switched off and the automatic actuator is moved to the Filtration position.

2.1 Operating foil



Key	Function
	Acknowledge alarm message (while the message is on display) Press > 3 sec.: Switch automatic mode on/off (filter running times) Red lamp lights up: Filter mode off / red lamp flashes: Fault
	Access to functions in the menu for setting the operating mode: OFF/Manual/Automatic/Backwashing/Drainage
	Changing over from the basic display to the menus Operation/Configuration/Customer service

	Switch back one menu level or Switch back from the main menu to the basic display or Discard a changed value and keep the old value	
	Call up a submenu or a function or Accept a changed value	
	Navigate within a menu Editing a value / text Scroll between several currently active alarm messages	Press > 3 sec.: Trigger backwashing / cancel step (if filter pump running)
		Press > 3 sec.: Switch filter pump manual mode on/off
	Editing a value / text Changeover between alarm message(s) and basic display	
		

When the display backlighting is switched off, each key press initially switches on the backlighting. The key must be pressed again to carry out the actual function.

2.2 Basic information about the display

```
Date              Time
Operating mode:
                Function
Temperature:   .,,.  °C
```

Structure of the basic display (the temperature is only displayed if a temperature sensor is connected and has been programmed in the Configuration menu as present):

```
Date              Time
       BW-tronic
   Systemdesignation
Software:       V-.--
```

After the mains voltage is switched on, the following display appears for 15 seconds:

```
Operation:                ↓
 Filter operating times
  Backwash times
  Temperature index value
```

The first line of each menu contains the name of the menu.
Use the ▼ and ▲ keys to access the menu items.
If an arrow (↓, ↑ or ↕) is indicated in the upper right-hand corner, the list of the selectable menu items is longer than can be shown in the display.

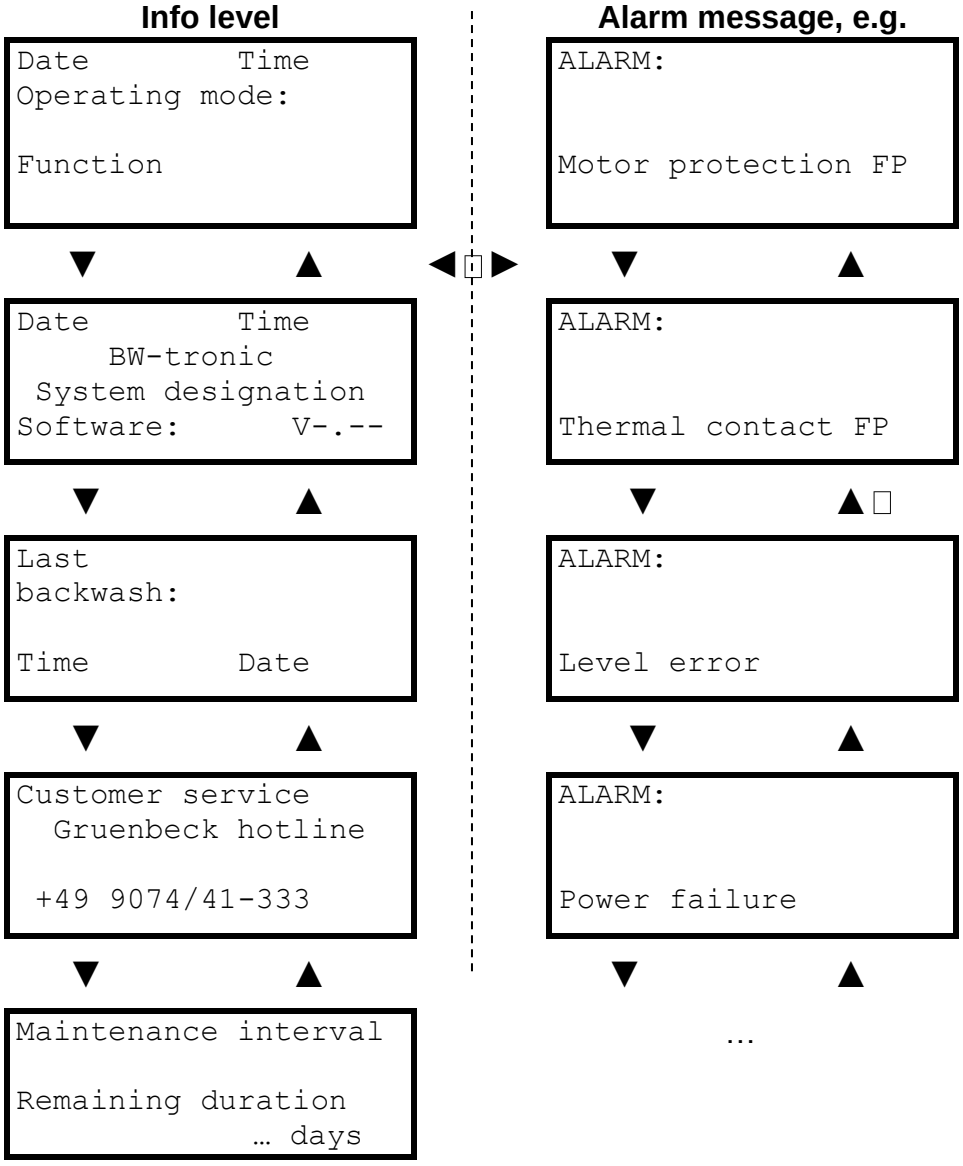
```
Operation:

Code:            0000
```

In menus that are protected against unauthorised access, it is first necessary to enter the required code (in the "Operation" or "Functions" menu only if this has been programmed by the owner / user):

If no key is pressed, all menus revert to the basic display automatically after 10 minutes. Exception: Alarm messages.

3.3 Structure of the Info menu

If one or more alarm messages are active at the same time, the ◄ and ► keys can be used for switching back and forth between the Info level and the list of currently active alarms.



2.4 Structure of the main menu

```
MAIN MENU:
  Operation
  Configuration
  Customer service
```

In the "Operation" menu, the owner / user of the system can adapt the functions to his / her individual requirements. Access to this menu is not protected by a code request as standard.

Various preliminary settings have been made regarding the system configuration at the factory in the "Configuration" menu. The commissioning technician adapts the controller to the conditions on-site here. The menu is always protected by a code request. The "Customer service" menu contains various service and auxiliary functions for troubleshooting by the technical customer service / authorised service company. The menu is always protected by a code request.

2.5 Structure of the "Operation" menu

Operation
- Filter run times
- Backwash times
- Temperature index value
- Date, time
- Code access operator

```
FILTER RUN TIMES:

Mo    07:00 - 11:00
Mo  * 17:00 - 20:00
Mo    00:00 - 00:00
Tu  * 07:00 - 11:00
Tu  * 17:00 - 20:00
Tu    00:00 - 00:00
We  * 07:00 - 11:00
We  * 17:00 - 20:00
We    00:00 - 00:00
Th  * 07:00 - 11:00
Th  * 17:00 - 20:00
Th    00:00 - 00:00
Fr  * 08:00 - 10:00
Fr  * 13:00 - 15:00
Fr  * 18:00 - 20:00
Sa  * 08:00 - 10:00
Sa  * 13:00 - 15:00
Sa  * 18:00 - 20:00
Su  * 08:00 - 10:00
Su  * 13:00 - 15:00
Su  * 18:00 - 20:00
```

Depending on the programmed times (factory settings – can be changed according to individual requirements) filtration of the bathing water takes place if automatic mode is active.

Up to three filter running times can be programmed per day; only those filter running times that are marked with the asterisk "*" are carried out.

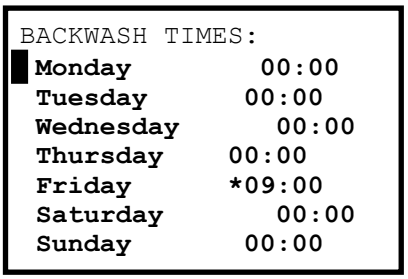
Programming:

Use the ▲ and ▼ keys to select the required line, press the "Enter" key to jump first to the column with the asterisk "*" and then press the ▲ and ▼ keys to switch the asterisk on or off.

Then press the  key to jump to the start time (hours) and press the ▲ and ▼ keys to set the required time. Use the ◄ and ► keys to switch back and forth between the units and tens of the hour value.

Then press the  key to jump to the start time (minutes) and press the▲and ▼ keys to set the required time. Use the ◄ and ► keys to switch back and forth between the units and tens of the minute value.

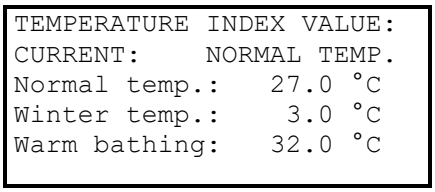
To programme the hours and minutes of the end time.



According to the programme times (factory setting – can be changed according to individual requirements), rinsing of the filter system takes place if automatic mode is active.

One automatic backwash can be programmed per day; only those backwashes that are marked with the asterisk "*" are carried out. The rinsing time is also allowed to be outside a filter running time.

Programming:
As with "filter running times"



CURRENT: the active temperature index value.
Programming of the required bathing water temperature (only possible in systems with compact heat exchanger and temperature sensor).
NORMAL TEMPERATURE: (factory setting 27 °C).
WARM BATHING: Increased temperature index value (factory sett. 32 °C).
WINTER TEMPERATURE: Index value just above the freezing point to protect outdoor swimming pools against freezing over in winter (e.g. 3 °C).

Note: Changing over from a "cooler" to a "warmer" index value causes "manual filtration mode" to be activated until the "warmer" index value is reached. This means it is possible for a backwash to be dispensed with, since this only takes place in automatic mode according to the programming above.

If the change from automatic mode to manual mode (until the particular temperature index value is reached) is not required, it will be necessary to switch back to automatic mode manually. In that case, the bathing water is only heated up during the filter running time.

Note: "Winter temperature" is primarily intended for open-air swimming pools to protect them against freezing in winter (index value e.g. 3 °C). It should be noted that the filter running times are also adapted accordingly because heating-up of the pool water only takes place during the filter running times.
As a result, it may be necessary for filtering to take place during the night as well, or for 24-hour operation to be carried out by "Manual filtration".

Note: If a temperature reduction is required for reasons of energy saving with an indoor pool for a relatively long period without use, "winter temperature" can be used to set a reduced index value of 24 °C, for example in the GENO-BW-tronic. From this level, the water can then also be heated back up to "normal temperature" during a reasonable period.

Note: However, it should be noted that reducing the temperature of the bathing water may also require a temperature reduction of the air conditioning system (air temperature should be approx. 2 °C warmer than the bathing water).
If the "winter temperature" is not used then this index value should be programmed in the GENO-BW-tronic to the same temperature as the "normal temperature". If the "winter temperature" button is pressed accidentally on the GENO-BW-Tip-control (accessory) then it will not cool down the bathing water unnecessarily.

```
DATE, TIME:
 Date:    --  .--.----
 Time:    --    :--:--
 Daylight saving time: No
```

Programming the current time (CET) and date. Changing "Summer time" to "Yes" automatically adds one hour to the current time.

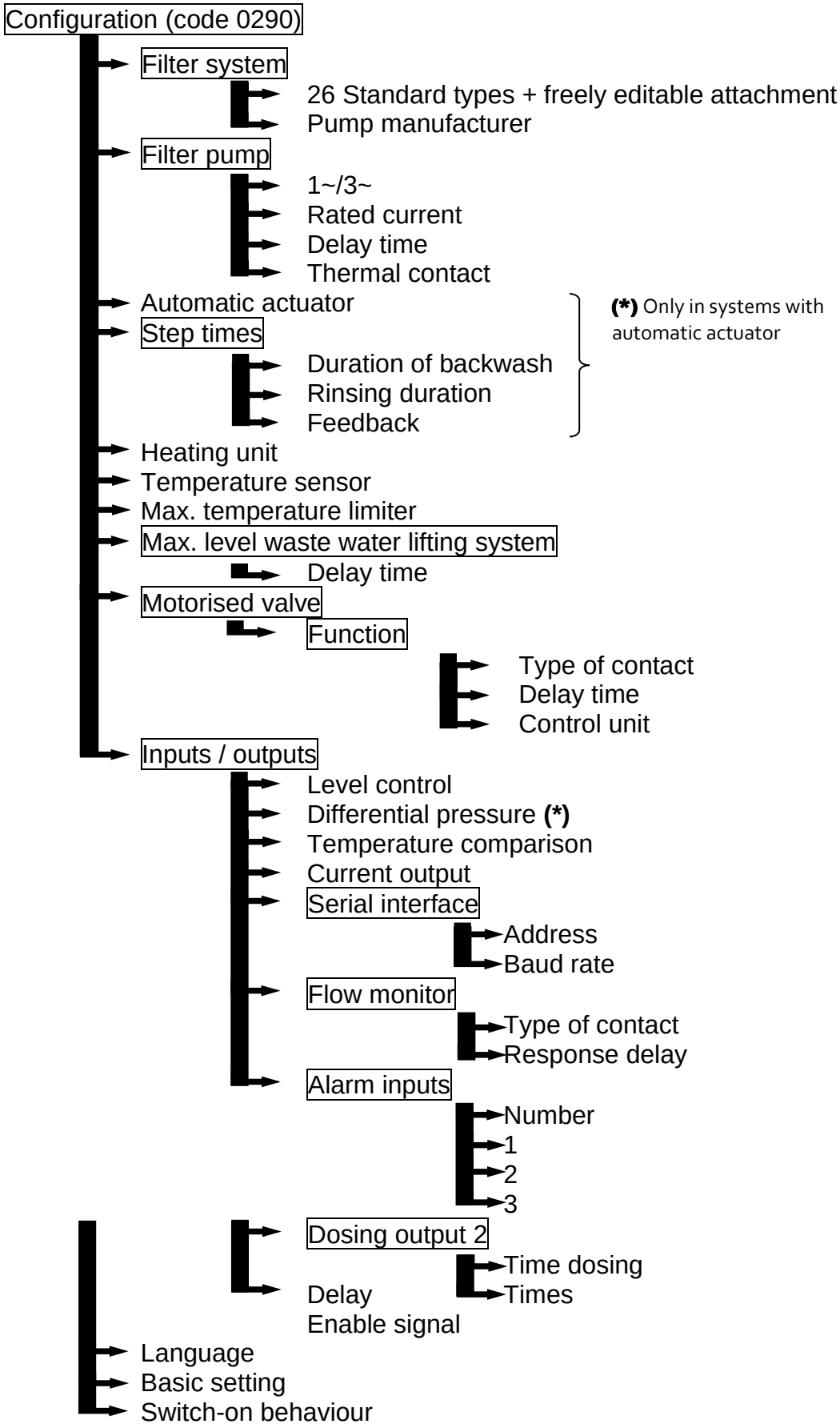
Programming the date and time: As with "filter running times".

```
Operator access via
       code:
         No

 Operator code…  0
```

The "YES" setting means that the "Operator" menu and the "Functions" menu are protected by the code programmed here (possible range 1000 .... 9999) against unauthorised access. There is a master code for the technical customer service / authorised service company.

2.6 Structure of the "Configuration" menu

Caution! The setting values of these parameters should only be changed if you are certain about what you are doing! If in doubt, please contact Grünbeck's technical customer service / authorised service company responsible for your area.


Configuration (code 0290)
Filter system
26 Standard types + freely editable attachment
Pump manufacturer
Filter pump
1~/3~
Rated current
Delay time
Thermal contact
Automatic actuator
Step times
Duration of backwash
Rinsing duration
Feedback
(*) Only in systems with automatic actuator
Heating unit
Temperature sensor
Max. temperature limiter
Max. level waste water lifting system
Delay time
Motorised valve
Function
Type of contact
Delay time
Control unit
Inputs / outputs
Level control
Differential pressure (*)
Temperature comparison
Current output
Serial interface
Address
Baud rate
Flow monitor
Type of contact
Response delay
Alarm inputs
Number
1
2
3
Dosing output 2
Time dosing
Delay
Times
Enable signal
Language
Basic setting
Switch-on behaviour

Caution! The setting values of these parameters should only be changed if you are certain about what you are doing! If in doubt, please contact Grünbeck's technical customer service / authorised service company responsible for your area.

2.7 Overview of parameters in the "Configuration" menu:

Menu item	Factory setting	Setting range
Filter system	See Table 2.8.1	26 predefined filter systems and one user-definable data record
Pump manufacturer	Speck	Speck / KSB / Wilo / others
Filter pump	See Table 2.8.1	
Connection	See Table 2.8.1	1~ alternating current 3~ phase current
Rated current	See Table 2.8.1	0.5 ... 10.0 A
Delay	3 seconds	1 ... 99 seconds
Thermal protection	No	Yes / No
Automatic actuator	See Table 2.8.1	Yes / No
Duration of backwash	2.5 minutes	0.1 ... 10.0 minutes
Rinsing duration	0.8 minutes	0.1 ... 5.0 minutes
Feedback	2.0 minutes	0.0 ... 9.9 minutes
Heating unit	See Table 2.8.1	Yes / No
Temperature sensor	See Table 2.8.1	Yes / No
Max. temperature limiter	No	Yes / No
Max. level waste water lifting system	No	Yes / No
Delay time	0.5 minutes	0.1 ... 5.0 minutes
Motorised valve	Function: none	Channel clean./ Backwash funct. / none
Type of contact	NOC	NOC / NCC
Delay time	0.6 minutes	0.0 ... 10.0 minutes
Control unit	L_{open}	L_{open} / L_{open} + L_{closed}
Level control available	Yes	Yes / No
Level control contact type	NOC	NOC / NCC

Menu item	Factory setting	Setting range
Differential pressure response delay	2.0 minutes	0.0 ... 10.0 minutes
Differential pressure interlocking	10.0 hours	0.1 ... 99.9 hours
Temperature comparison	--.- °C	10.0 ... 40.0 °C
Current output	0 – 20 mA	0 – 20 mA / 4 – 20 mA
Serial port available	No	Yes / No
Address	1	0 ... 9
Baud rate	4800	1200, 2400, 4800, 9600, 19200
Flow monitor	No	Yes / No
Type of contact	NOC	NOC / NCC
Delay time	1 minute	0 ... 9 minutes
Alarm inputs number	0	0 ... 3
Alarm input 1	M & C system	Freely editable
Alarm input 2	Dosing system SB	Freely editable
Alarm input 3	Dosing system SBC	Freely editable
Times	0 minutes	0 ... 999 minutes
Del. Enable signal	0 minutes	0 … 30 minutes
Language	German	deutsch, english, francaise, italiano, espanol, русский
Basic setting	No	Yes / No
Switch-on behaviour	OFF	OFF/Auto start-up

2.8 Explanation of parameters in the "Configuration" menu:

```
FILTER SYSTEM:
GENO-mat F 500 A, AC
GENO-mat F 500 A, 3P
GENO-mat F 500 HK, AC
GENO-mat F 500 HK, 3P
GENO-mat F 500 A, AC
GENO-mat F 500 A, 3P
GENO-mat F 600 A, AC
GENO-mat F 600 A, 3P
GENO-mat F 610 A, AC
GENO-mat F 610 A, 3P
GENO-mat F 600 HK, AC
GENO-mat F 600 HK, 3P
GENO-mat F 600 A, AC
GENO-mat F 600 A, 3P
--------------------
```

In GENO-mat F filter systems, the appropriate data record is programmed at the factory, meaning that the parameters are also set automatically.

Filter pump + rated current, automatic actuator,
Heating unit and temperature sensor

correctly preconfigured. However, the components can be configured and have their parameters set differently subsequently.

Table 2.8.1: The following parameters are preset by selecting one of the predefined filter systems.

Table F-2.9: Predefined data records

Data record	Electrical power supply	Filter pump	Nominal pump flow	Heating unit + heating / circulation pump	Tempera-ture sensor	Automatic actuator
F 500 HK, AC	230 V/50 Hz	GENO-Top 8, AC	3.2 A	Yes	Yes	No
F 500 HK, 3P	400 V/50 Hz	GENO-Top 8, 3P	1.2 A	Yes	Yes	No
F 600 HK, AC	230 V/50 Hz	GENO-Top 14, AC	5.7 A	Yes	Yes	No
F 600 HK, 3P	400 V/50 Hz	GENO-Top 14, 3P	2.1 A	Yes	Yes	No
F 500 A, AC	230 V/50 Hz	GENO-Top 8, AC	3.2 A	No	No	Yes
F 500 A, 3P	400 V/50 Hz	GENO-Top 8, 3P	1.2 A	No	No	Yes
F 600 A, AC	230 V/50 Hz	GENO-Top 14, AC	5.7 A	No	No	Yes
F 600 A, 3P	400 V/50 Hz	GENO-Top 14, 3P	2.1 A	No	No	Yes
F 610 A, AC	230 V/50 Hz	GENO-Top 20, AC	7.4 A	No	No	Yes
F 610 A, 3P	400 V/50 Hz	GENO-Top 20, 3P	3.0 A	No	No	Yes
F 500 A, AC	230 V/50 Hz	GENO-Top 8, AC	3.2 A	Yes	Yes	Yes
F 500 A, 3P	400 V/50 Hz	GENO-Top 8, 3P	1.2 A	Yes	Yes	Yes
F 600 A, AC	230 V/50 Hz	GENO-Top 14, AC	5.7 A	Yes	Yes	Yes
F 600 A, 3P	400 V/50 Hz	GENO-Top 14, 3P	2.1 A	Yes	Yes	Yes
BWK 500 HK; 3P	400 V/50 Hz	FILTRA N 6D	1.2 A	yes	yes	no
BWK 500 HK; AC	230 V/50 Hz	FILTRA N 6E	3.2 A	yes	yes	no
BWK 600 HK; 3P	400 V/50 Hz	FILTRA N 14D	2.0 A	yes	yes	no
BWK 600 HK; AC	230 V/50 Hz	FILTRA N 14E	5.4 A	yes	yes	no
BWK 500 A; 3P	400 V/50 Hz	FILTRA N 6D	1.2 A	no	no	yes
BWK 500 A; AC	230 V/50 Hz	FILTRA N 6E	3.2 A	no	no	yes
BWK 600 A; 3P	400 V/50 Hz	FILTRA N 14D	2.0 A	no	no	yes
BWK 600 A; AC	230 V/50 Hz	FILTRA N 14E	5.4 A	no	no	yes
BWK 500 A; 3P	400 V/50 Hz	FILTRA N 6D	1.2 A	yes	yes	yes
BWK 500 A; AC	230 V/50 Hz	FILTRA N 6E	3.2 A	yes	yes	yes
BWK 600 A; 3P	400 V/50 Hz	FILTRA N 14D	2.0 A	yes	yes	yes
BWK 600 A; AC	230 V/50 Hz	FILTRA N 14E	5.4 A	yes	yes	yes
"----------" "user-programmable data record, preset in exchange control units"	230 V/50 Hz	FILTRA N 6E	3.2 A	no	no	no

Pump manufacturer: To match the filter systems, the data is set up for the filter pumps from Speck (GENO-Top…), KSB (FILTRA...) and Wilo (FBS...): Rated current, thermal protection (No/Yes).

```
FILTER PUMP:
1~ alternating current
Rated current    0.0 A
Delay            3 sec
Thermal protection  YES
```

The parameters of the Filter pump menu are automatically preconfigured by selecting one of the 26 standard filter systems.

The following selections must be made in all other cases or if using a different filter pump:

1 The following selections must be made in all other cases or if using a different filter pump:

- 1~ alternating current or 3~ three-phase pump.
- Always check the rated current of the filter pump (information on the pump type designation plate) (if in doubt, the information on the type designation plate applies)!
- Delay time between switching on the filter pump and the start of current monitoring.
- Standard filter pumps may be equipped with thermal protection. Default setting
  Speck/KSB: No
  Wilo/other: Yes.

```
Actuator
  available:   YES
```

The "Actuator available" parameter is preconfigured automatically by selecting one of the 26 standard filter systems.

```
STEP TIMES:
  Backwashing: 2.5 min
  Rinsing:     0.8 min
  Feedback al. 2.0 min
```

Only in systems with automatic actuator

The parameters of the Step times menu are preconfigured automatically by selecting one of the 26 standard filter systems.

- Step duration for backwashing and rinsing (first filtrate) with automatic actuator.
- Delay time for the feedback signal from the automatic actuator to the control unit. These three parameters should not be changed in compact filter systems, because these times are required for correct backwashing.

```
HEATING UNIT
  available:     YES
```

The "Heating unit available" parameter is preconfigured automatically by selecting one of the 26 standard filter systems, in this case: No.

In this context, heating unit means compact heat exchanger + heating circulation pump.

```
Date     Time
Operating mode:
              function
Temperature:   ..,. °C
```

If the bathing water temperature is < index value and the control unit sends the enable signal to the heating unit then the "^" symbol is displayed in the basic display next to the temperature value.

```
TEMPERATURE SENSOR
 available:      YES
```

The "Temperature sensor available" parameter is preconfigured automatically by selecting one of the 26 standard filter systems. If there is no temperature sensor, the bathing water temperature is not shown in the basic display either.

```
MAX. TEMP. LIMITER:
 available:    NO
```

If the signal from a temperature limiter installed by the client is interrupted, then the heating circulation pump and the heating request signal switch off.

```
Waste water lift. system
 available:    NO
 Parameter
```

If the max. level of a waste water lifting system installed by the client is triggered, then the filter pump is switched off. If the signal is active for longer than 5 minutes, the system changes to filtering.

```
Lift. System parameter
 Delay 0.5 min
```

When the level signal has dropped again, the filter pump restarts after the delay time has expired.

The "Max. level lifting sys." message appears on the display while the max. level is actuated

```
 Motorised valve:
 available:      NO

  Parameter
```

"Channel cleaning" setting:

The filter pump can be switched off and the motorised ball valve moved to the cleaning position by means of a latching switch for channel cleaning provided by the client. No backwashing is possible during channel cleaning.

Note: The channel cleaning function can also be used to stop the filter pump during opening / closing of a roller cover. Unfortunately, there is no possibility for linking to the roller cover module (order no. 203 570).

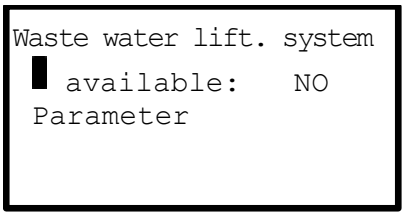
```
 Motorised vlv. PARAMETER:
 Contact: NO CONTACT
  Del. 0.6 min.
  Control unit: Lopen
```

"Backwash function" setting:
The motorised valve output is used for taking the backwash water from the swimming pool if the raw water tank is too small.
The switch contact type, the delay time = run time for closing the motorised ball valve and the number of control lines required for opening the motorised ball valve (only Lopen or Lopen + Lclosed) are stored under "Parameters".

If 2 or 3-way ball valves made by Praher with actuator drive E0510 ECO or E0412 are used, the "Control" parameter must be programmed → Lopen.

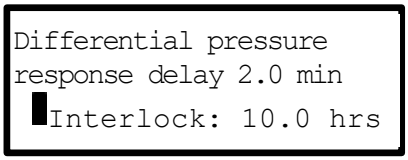
Note: If the raw water tank is too small (e.g. Poolgroup with GENO-mat F 600 AK) then the suction line must be connected to the floor drain via a motorised ball valve (3-way ball valve, 230 VAC, L-bore) so as to allow the required backwash water to be taken directly from the pool.

Theoretically, two 2-way ball valves actuated in opposite directions can be used, although additional circuitry would be required for this!



Each contact of the level control can be individually defined as an NC or NO contact.

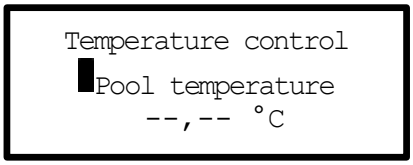
Available must be programmed to NO in systems with a skimmer!



Only in systems with automatic actuator!

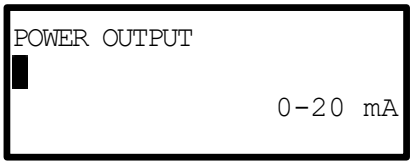
A response delay can be programmed for triggering backwashing by differential pressure (only NO contact possible), during which time the differential pressure system must be present without interruption. The signal is interlocked for 10 hours after a differential pressure backwashing.

Existing filter systems can only be retrofitted with a differential pressure switch as part of a highly complicated procedure, because the automatic multi-way valve will have to be completely removed in some configurations in order to establish the inlet and outlet pressure measuring points!



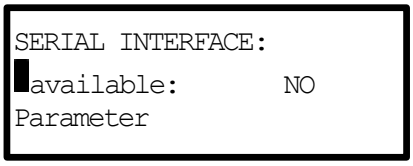
Only if a temperature sensor is available!

The precise measured value of the bathing water can be programmed here for more accurate temperature control (measurement by hand in the pool). The temperature difference between this measurement and the connected sensor is stored in the control unit. The compared measurement value is displayed on the basic display.



The standard signal output with the (compared) water temperature can be switched over between 0/4 – 20 mA.

The current signal is only available if a temperature sensor is present.



"YES" setting for connection of a PC, a serial printer (needle printer with EPSON-compatible command set) or for networking with a GENO-BW-Tip-control remote control, touchpanel, GENO-CPR-tronic 02 family measuring and control system.

	Setting values for connection of ...	**Address**	**Baud rate**
	GENO- BW-Tip-control	1	4800
SERIAL INTERFACE PARAMETER Address: 1 Baud rate: 4800	Touchpanel, GENO-CPR-tronic 02 family	7	19200
	Printer	any	4800
	PC	any	Analog setting value of the PC interface

FLOW MONITOR: available: NO Parameter	A flow monitor provided by the client causes the filter pump to switch off if the flow monitor does not report any through-flow after being switched on, at the latest after the time set for the response delay parameter expires.

```
FLOW MONITOR PARAM.:
Contact:  NC Contact
Response delay 1 min
```

"Parameters" contains the switch contact type and the aforementioned delay time.

The flow monitor is always interrogated when the filter pump is running, except during backwashing.

```
ALARM inputs:
 Number:   0
1 Measuring & Contr. - System
2 Dosing system SB
3 Dosing system SBC
```

In total, there are up to 3 alarm inputs available for system components on the input side. These signals can be shown on the display and forwarded via the collective fault contact. Only the programmed number is evaluated. The predefined texts can be edited as required, as follows:

- Define the required number of alarm inputs.
- Move the cursor to line 1 and press the key to open it for editing.
- Press the ◄ and ► keys to select the required position and the ▲ and ▼ keys to select the required character. All upper and lowercase letters are available, as well as numbers, punctuation and many special characters.
- When the required text is ready, finish by pressing the key.

If programmed, continue with the next line.

```
TIME DOSING:        YES

Times
```

If the power output 2 should be used for time dosing, "Yes" must be programmed here.

```
DOSING TIMES:
Monday      0     Min.
 Tuesday    0     Min.
Wednesday   0     Min.
Thursday    0     Min.
Friday      0     Min.
Saturday    0     Min.
Sunday      0     Min.
```

Under Times it is possible to define for each day of the week for how long the power output 2 should remain switched on in each active automatic filter run time. The remaining dosing time is lost if the programme time is longer than the filter run time. When the filter is stopped (dry-running protection), the time dosing is only halted, not cancelled.

Setting range 0 ... 999 minutes.

```
Del. Enable signal
            0    min.
```

In automatic mode, the "Request heating" and "Operating message to measuring and control system" signals can be output for shorter than during the programmed filter run times:
Later at the start of the filter run time, earlier at the end of the filter run time.
When the filter run time starts, the system additionally takes into account whether the filter pump is blocked e.g. by dry running protection.

Objective of the increase:

Start filter run time:	If the measuring and control system is enabled, the bathing water will be circulated already and the pH and Redox measured values will be more accurate.
End of filter run time:	The premature blockage of the measuring and control system prevents high concentrations of dosing agent at the addition points. In addition, the heat exchanger is cooled down. There is no danger of the temperature sensor heating up due to the residual heat, thus triggering the "Temperature > 55 °C" alarm.

```
SPRACHE:
 deutsch
```

```
LANGUAGE:
  deutsch
```

Selection of the menu language.

```
BASIC SETTING
Are you sure?
       NO
```

If you enter "Yes", all parameters of the "Configuration" menu are reset to factory settings except for the filter system + pump manufacturer and the filter pump, actuator, heating unit and temperature sensor parameters.

```
SWITCH-ON BEHAVIOUR

                 OFF
```

Behaviour of the system after a power failure > 5 minutes:
Off: The system remains stopped in "OFF" mode.
Auto start-up: the system adopts the same operating mode as before the power failure.

Note: In pools with skimmer and prefabricated pools with a relatively small raw water tanks (e.g. Poolgroup), the pool is open to the drain via the floor drain during backwashing (approx. 3 minutes). If there is a longer power failure during backwashing, the pool can be emptied completely. As protection against dry running protection of the circulation pump, only the "OFF" factory setting is allowed to be selected for skimmer pools.

2.10 Alarm messages

If one or more alarms are present, the display changes over and shows an alarm message of the error that occurred first instead of the basic display. If more than one alarm is active, it is possible to use the ▲ and ▼ keys to scroll through the error messages (see chapter F-2.3), the red LED in the  key flashes. The LED lights up continuously if there is only one non-acknowledged fault.

Possible alarm messages:

ALARM: Motor protection FP	Filter pump current overrun; the control unit goes to OFF operating mode. According to the standard, deviations in the nominal current of up to a factor of 1.2 are permitted. This means the setting value of the "Rated current" parameter should be increased gradually up to this maximum value until this alarm message no longer occurs. Have your technical customer service / authorised service company check the settings of the current monitoring and the wiring if necessary, and have the current consumption of the pump measured if increasing the rated current is not successful.
ALARM: Thermal contact FP	Triggering of the thermal contact of the filter pump; the control unit goes to OFF operating mode (only with FSB filter pumps from Wilo). The filter pump is overheated – when it has cooled down again and you have acknowledged the alarm message, observe the temperature behaviour of the pump: If the fault reoccurs, inform your technical customer service / authorised service company.
ALARM: Level error	Invalid position of the level switch in the raw water tank; the filter pump switches off until a valid level position reoccurs. Please notify your technical customer service / authorised service company. In swimming baths with a skimmer, the level control must be programmed as not present!
ALARM: Step time	The feedback signal from the automatic actuator did not arrive at the GENO-BW-tronic within the required time; goes to OFF operating mode. Please notify your technical customer service / authorised service company.

ALARM: Max.level lifting system	The waste water lifting system can no longer pump the water adequately out of the pump sump; the control unit goes to goes to OFF operating mode. Please check the delivery rate of the waste water lifting system. If it is working correctly, notify your technical customer service / authorised service company so that they can extend the waiting time for resetting the level switch signal if necessary.
ALARM: Flow monitor	In spite of the filter pump being switched on, there is no flow; the control unit goes to OFF operating mode. Please check the piping to see if a manual valve is closed. If not, please notify your technical customer service / authorised service company.
ALARM: Power failure	This is an information message for the owner / user that the mains voltage has failed for > 5 minutes. If one of the functions of backwashing or drainage was active during the mains failure, the automatic actuator will automatically move to the "Filtration" position after the mains npower returns so as to avoid unnecessary water loss. After the mains power is restored, the system behaves as set in the Service menu / Configuration / Switch-on behaviour (Off/Auto start-up). The time when the mains voltage was restored is logged in the error memory.
ALARM: Max. temperature lim.	The max. temperature limiter (safety thermostat) in the bathing water circuit has tripped; the heating circulation pump switches off until the water has cooled down again, the fault is then self-acknowledging. If the fault reoccurs, notify your technical customer service / authorised service company so that they can check the heating circulation pump.
ALARM: Temp. sensor defective Only possible if a temperature sensor is connected and programmed in the Configuration menu as present.	The connection line of the temperature sensor has a short circuit or the temperature sensor is defective. Until the error has been rectified, the temperature sensor must be reprogrammed in the Configuration by the technical customer service / authorised service company as not present.

ALARM: EEPROM1 def. (comp)	Internal electronics error. The current measurement of the filter pump and the temperature measurement are significantly disrupted. Please notify your technical customer service / authorised service company so that they can replace the control unit.
ALARM: (Predefined or user-definable message texts)	Here, the message text programmed for the particular alarm input appears; the alarms are only displayed and do not have any effect on the operating behaviour of the control unit.
WARNING: Maintenance required	The programmed maintenance interval has expired; the message does not have any effect on the operating behaviour of the control unit. Please notify your technical customer service / authorised service company, so that they can carry out maintenance (see chapter F-2.3 "Customer service" information menu).
Datum Uhrzeit Betriebsart Trockenlaufschutz Temperatur: 28,2°C	There is insufficient water in the raw water tank or it is a skimmer pool without level control. Check the setting in the Configuration / inputs/outputs / Level control menu (see chapter D-3, Electrical connection, terminals 52 ... 57).
ALARM: Temperature > 55 °C	The water temperature is > 55 °C (danger for the PVC piping) or the connection line of the temperature sensor is interrupted. Check the client's installation: Are there heating circulation pumps which are not activated by the GENO-BW-tronic and which pump hot water into the filter system outside the filter run time?

G Troubleshooting

1 | Introduction

Operational errors cannot be completely ruled out even when the filter systems have been designed and produced with care and operated as intended. Table G-1 provides an overview of possible problems that may occur during the operation of the filter systems and indicates the causes and their elimination.

Note: Grünbeck's technical customer service / authorised service company definitely must be notified in case of malfunctions that cannot be remedied with the information given in table G-1!
Specify the designation of the filter system, serial number and fault description when doing so.

Caution: The GENO-BW-tronic must be switched off at the mains switch before each installation or removal, or before interventions in the filter pump.

2 | Fault overview

Table G-1: Other errors		
This is what you observe	**This is the cause**	**This is what to do**
No display on GENO-BW-tronic.	Defective motherboard or display board.	Notify the technical customer service / authorised service company because the complete control unit must always be renewed.
Pump does not draw or does not draw enough.	Closed shut-off valves.	Check all shut-off valves before and after the system and open them.
	Air in the suction line.	Check the suction line for leaks.
	Three-phase motor of the circulation pump is turning in the wrong direction.	Check power supply and adjust, if necessary.
	Motor of circulation pump does not turn.	Check power supply and adjust, if necessary. Notify Grünbeck's technical customer service / authorised service company.
	Filter pump without water	Unscrew transparent cover of the filter pump, fill housing with water, screw cover back on.
	Excessive suction height (> 2 m)	Adjust the pump location.
	Hair and fibre strainer in the circulation pump is heavily contaminated.	Clean hair and fibre strainer.
	Coarse strainer in the skimmer is contaminated.	Clean coarse strainer.
	Filter pressure has increased significantly.	Trigger backwashing.
	Excessive pressure losses in the lines (pipeline too long, pipe diameter too small or blocked, lines with too many angles).	Check pipeline system and make modifications (larger pipe diameter, fewer changes of direction, curves instead of angles, …).
Leaks.	Wear on O-rings or seals.	Renew defective seals. Notify Grünbeck's technical customer service / authorised service company.

Continuation Table G-1: Other errors		
This is what you observe	**This is the cause**	**This is what to do**
Pump does not start up	Incorrect voltage	Compare the pump voltage (type designation plate) with mains voltage
	Fuse has tripped or is damaged	Find the cause and eliminate it, renew damaged fuse if necessary
	Circulation pump / motor is blocked	Notify Grünbeck's technical customer service / authorised service company.
Pump is too loud	Air in the suction line	Check the suction line for leaks.
	Three-phase motor of the circulation pump is turning in the wrong direction.	Check power supply and adjust, if necessary
	Excessive suction height (> 2 m)	Change location of circulation pump.
	Pipe diameter of suction line too small	Modify suction line accordingly.
	Foreign bodies in the circulation pump	Clean circulation pump as well as hair and fibre strainer
Outfeed of filter material.	Internal distributor system or automatic multi-way valve is defective.	Notify Grünbeck's technical customer service / authorised service company.
	Rinsing performance is too high due to very low pressure losses.	Restrict the rinsing performance in the drain line.

3 | Failure of the motor (actuator)

Note: All backwash times must be deactivated until the automatic actuator has been repaired (see chapter F-2.5). The position numbers (in brackets) relate to Fig. G-1.

1. Disconnect the motor cable and unscrew the motor (no. 2).
2. Remove the manual operating lever (no. 5) from the holder and insert into threaded spindle (no. 3).
3. Turn the hand lever to the right to lift the valve disc and rotate it until the switch tab of the "Backwash" microswitch engages in the switch cam of the driver.
4. Then turn to the left to lower the valve disc (no. 14) until the screw ring actuates the limit switch (switch on aluminium bracket).
5. Trigger backwashing at the BW-tronic control unit:
   (e.g. press ▲ > 3 seconds). Filter pump running - backwash duration approx. 3 min. takes place automatically.
6. After automatic deactivation of the filter pump, set the valve to rinsing (first filtrate) in the same way as described under points 3. and 4. using the manual operating lever. After the filter pump has switched off, immediately change over to rinsing (first filtrate) because the set rinsing duration of approx. 2 min. starts immediately after the backwashing time.
7. Following automatic deactivation of the first filtrate phase, set the multi-way valve to the >Filtration< operating position in the same way as described under points 3. and 4. using the manual operating lever.

4 | Defect of the switch circuit board (actuator)

Note: All backwash times must be deactivated until the automatic actuator has been repaired (see chapter F-2.5). The position numbers (in brackets) relate to Fig. G-1.

1. Disconnect the motor cable and unscrew the motor (no. 2).
2. Remove the manual operating lever (no. 5) from the holder and insert into threaded spindle (no. 3).
3. The wires must be disconnected from the terminals 19 - 20 - 21 at the terminal strip and insulated. Wire ends are not allowed to touch one another (24V/50Hz).
4. Disconnect the wire from terminal 22 and connect it to terminal 18 as well.
5. Set the OFF operating mode on the BW-tronic control unit (e.g. "User Menu" "system OFF . . . o.k." "Enter").
6. Select the required valve position as described under 3 point 3. and 4.
7. Set the "Manual mode ON" operating mode on the BW-tronic control unit (e.g. press ▼ for > 3 seconds). The pump runs until the function is interrupted by reprogramming to "OFF operating mode". (e.g. press ▼ > 3 seconds).
8. All valve settings can be selected as described under 3 point 7.
9. The filter run times continue to be processed in automatic mode.

5 | Removal of the automatic actuator

Note: The item numbers (in brackets) relate to Fig. G-1.

1. Close shut-off valves provided by the client in the suction and pressure line.
2. Drain the filter system using the draining valve at the filter container, this process can be accelerated by lifting the valve disc (see point 2.1 to point 2.5).
   - 2.1 Remove cover (no. 1).
   - 2.2 Disconnect the motor connection cable at the circuit board and unscrew the motor (no. 2).
   - 2.3 Remove the manual operating lever (no. 5) from the holder and insert it into the threaded spindle (no. 3).
   - 2.4 Use the manual operating lever to turn the threaded spindle to the right to lift the valve disc (no. 14) (only until the driver cam is turned as well).
   - 2.5 Lower the valve disc after the filter container has been emptied.
3. Unscrew and remove the driver pin (no. 6).
4. Remove 4 screws (no. 7) and pull of the automatic actuator.
5. Remove 2 screws (no. 8) and pull off the valve cover (no.9).
6. Remove the valve disc (no. 14).
7. Installation of the automatic multi-way valve with automatic actuator is performed in reverse order.

Caution! The recess or penetration in the valve disc (no. 14) must match the "Filtration" valve position.

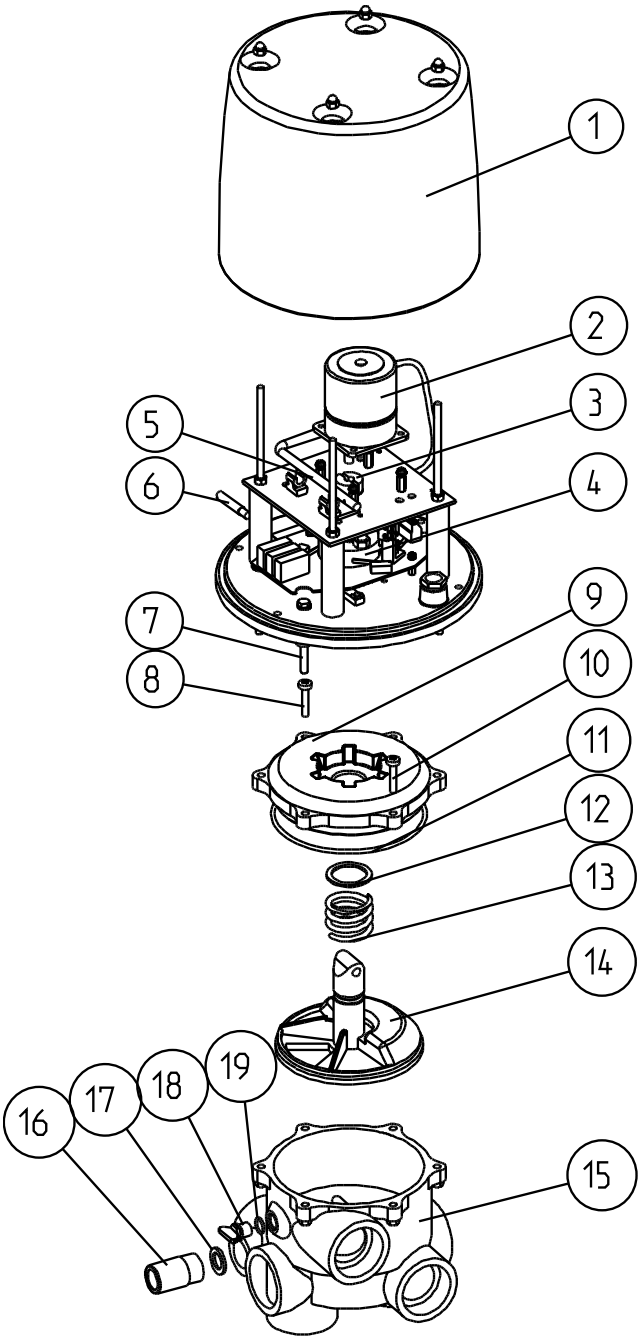


Fig. G-1: Exploded view of F 600 A automatic multi-way valve with automatic actuator

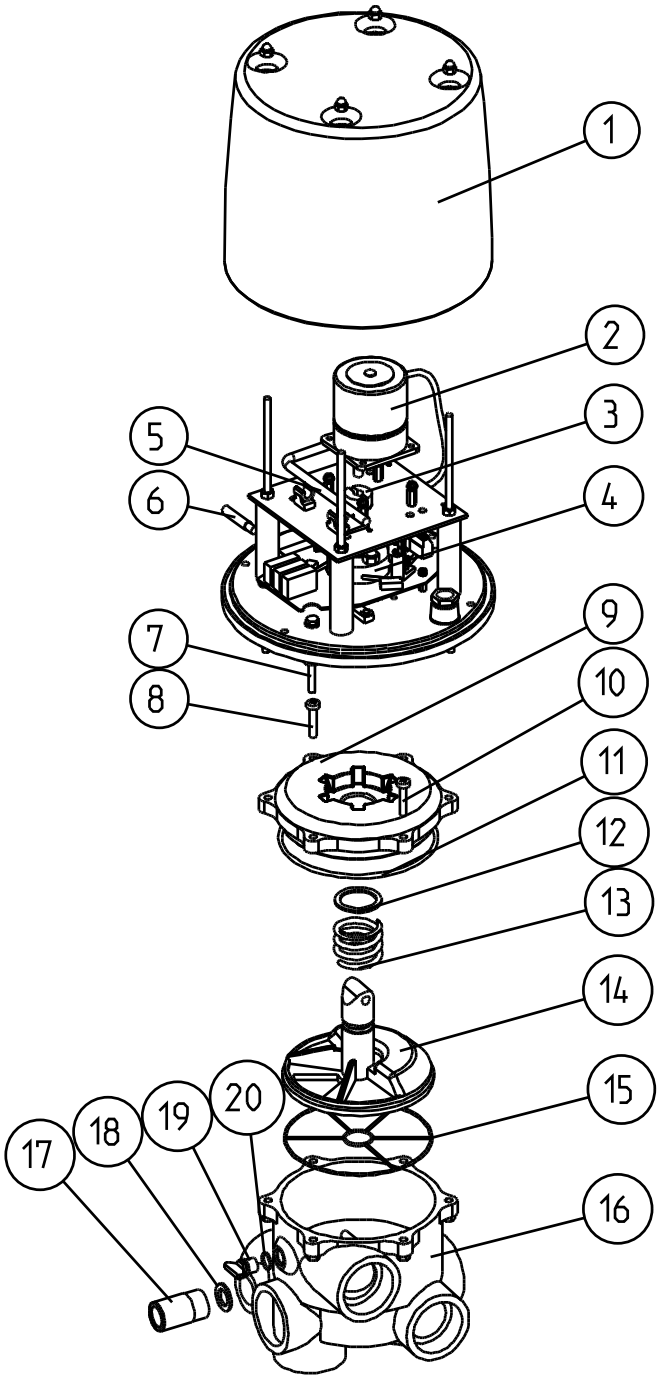


Fig. G-2: Exploded view of F 500/610 A automatic multi-way valve with automatic actuator

H Maintenance and care

1 | Basic information

In order to guarantee the reliable function of the filter systems over a long period of time, some maintenance work has to be performed at regular intervals. All regulations and guidelines which apply at the installation site must be strictly adhered to.

Note: By concluding a maintenance contract you ensure that all maintenance work will be performed in due time.

According to DIN 1988 part 8 / A 12, maintenance work at filter systems may only be performed Grünbeck's technical service / authorised service company or an approved company.

Warning! The electrical power supply to the unit must be disconnected before each installation / removal or intervention in the pump.

2 | Inspection (functional check)

You may perform the weekly inspections yourself:

- Check the system components for leaks.
- Perform at least one backwash (see chapter H-2.1).

Note: We recommend changing 3 to 5 % of the pool water volume every week by adding freshwater. In addition to evaporation from the pool, the weekly backwash volume to the drain is responsible for the required freshwater make-up feed.

- Clean the hair and fibre strainer of the circulation pump (see chapter H-2.2).
- Measure the pH value and readjust if required.
- Measure the amount of disinfectant [mg/l] in the pool.

2.1 Backwashing the filter system

If the pressure increases by 0.2 – 0.3 bar (refer to the pressure gauge on the multi-way valve or on the lid of the filter tank) above the initial pressure (pressure during start-up), the filter must be backwashed.

Irrespective of the increase in pressure, the filter should be backwashed on one or several days a week, subject to the dirt load.

For hygienic reasons, however, the filter must be backwashed at least once a week. A backwash process must also be carried out before and after longer periods of standstill.

The weekly backwashing can be set in the "Operation" menu and is only active if preceded by an asterisk "*" (see chapter F-2.5). A manual backwash can also be triggered using the GENO-BW-tronic by pressing the ▲ key for > 3 seconds.

2.2 Hair and fibre strainer

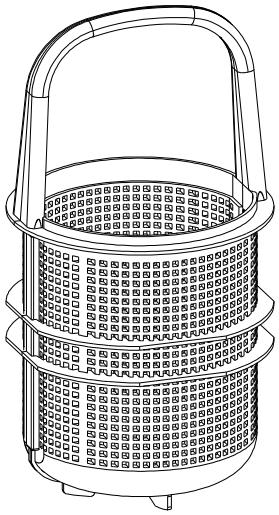


Fig. H-1: Hair and fibre strainer

1. Close the shut-off valves in the suction and pressure line.
2. Set the automatic multi-way valve to closed.
3. Unscrew the transparent cover on the circulation pump.
4. Remove the seal and hair / fibre strainer.
5. To facilitate cleaning, the hair and fibre strainer can be half-way opened (see Fig. H-1).
6. Close the hair / fibre strainer again and insert it into the pump housing. Make sure the strainer is in the correct position (see marking on the hair and fibre strainer) and press the strainer firmly into the pump housing.
7. Fill the pump housing with water (if necessary).
8. Insert the cover seal and screw in as far as the stop.
9. Open the shut-off valves in the suction and pressure lines.

Caution! The circulation pump is never allowed to be operated without a hair and filter strainer!

3 | Maintenance

Note: Make sure that all maintenance work is recorded in the operation log.

The customer service technician will fill in a column of the check list whenever maintenance is performed. This document provides evidence of proper maintenance.

4 | Spare parts

You may order spare parts and consumables from your local Grünbeck representative (refer to www.gruenbeck.de).

Note: For a detailed specification of the wearing parts refer to chapter C, if required.

5 | Operating log

GENO-mat F 500 A	**3P** ☐	**AC** ☐
GENO-mat F 600 A	**3P** ☐	**AC** ☐
GENO-mat F 610 A	**3P** ☐	**AC** ☐

Serial no.:.....

Customer

Name: .....

Address:.....

.....

Start-up

Installer: .....

Customer service technician:.....

Company:.....

Work time certificate: .....

Signature:.....

Pool:

Pool type:	☐ Indoor swimming pool	☐ Open-air pool
	☐ Skimmer	☐ Pool with overflow channel
Pool lining:	☐ Concrete pool, tiled	☐ Foil pool
	☐ Prefabricated pool	☐ Paint-on seal
Pool size:	L:_____ m W: _____ m D: _____m V: _____ m³	
Water heating:	☐ yes ☐ no	
Water treatment:	☐ manual	☐ automatic
Disinfection product:	☐ Chlorine	☐ Bromine ☐ Miscellaneous _____

Technical room:

Drain connection DIN EN 1717	☐ yes	☐ no
Floor drain available	☐ yes	☐ no
Filter output pressure:	_____ bar	

Notes: .....

.....

.....

Operating values	
Water temperature [°C]	
pH value	
Disinfectant content [mg/l]	
Water hardness in the pool water [°dH]	

Functional check / maintenance work	
System components checked for leaks	
Backwashing carried out	
Filter material checked for wear	
Hair and fibre strainer cleaned	
Overall status of the filter system checked	
Current consumption of the circulation pump checked	
Freshwater make-up feed checked	
Filter material changed	
Automatic multi-way valve checked for damage	
Hose connections checked	
Water quality assessed (colour, odour)	

Remarks

Date:
Company:
Customer service technician:
Work time certificate no.:
Signature:

Operating values	
Water temperature [°C]	
pH value	
Disinfectant content [mg/l]	
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