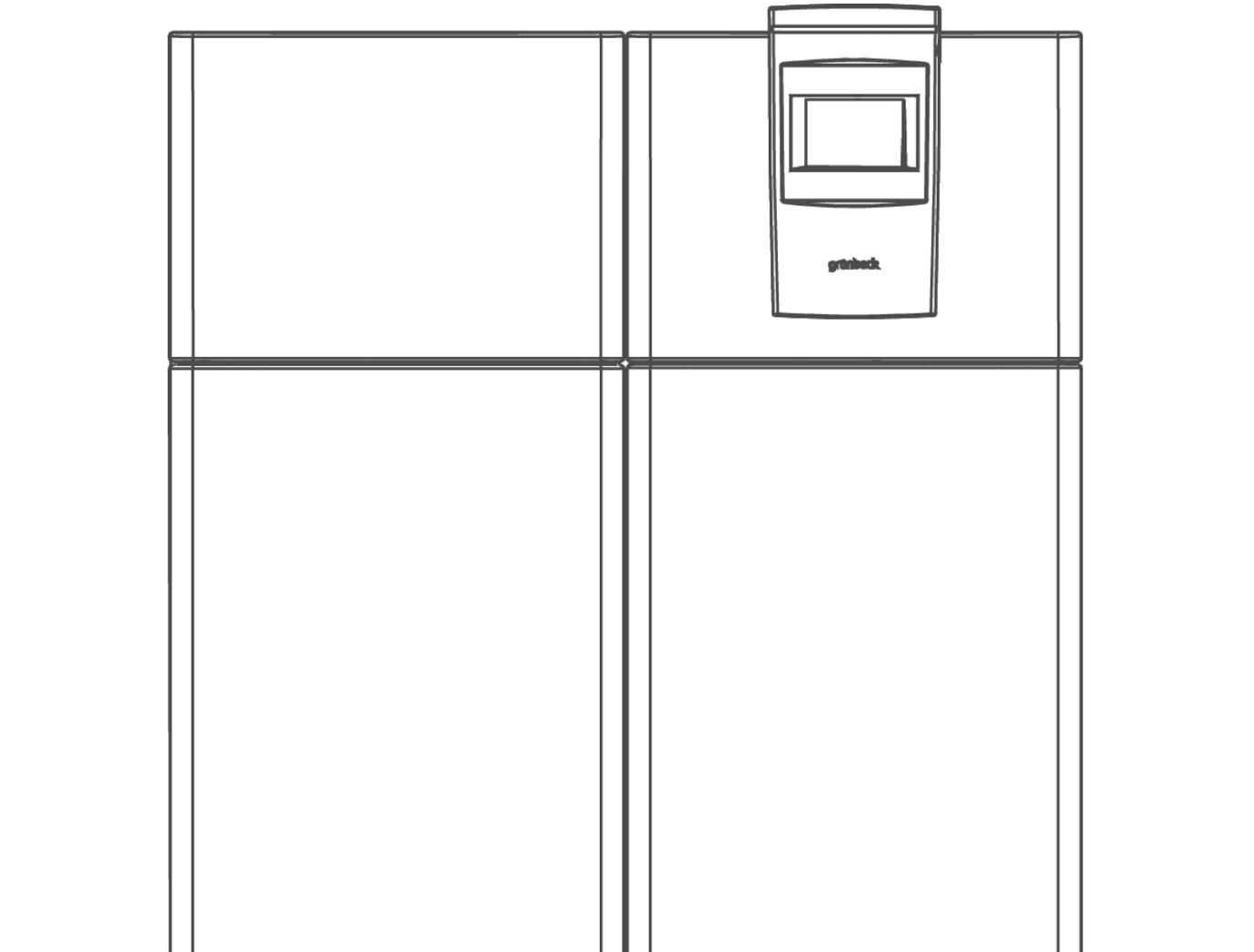


We understand water.



Ultrafiltration system | spaliQ:UF150

Operation manual

grünbeck

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**Original operation manual**

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# 1 About this manual

## 1.1 Other applicable documents

The following documents also apply in the case of the spaliQ:UF150:

- For Grünbeck's technical service/authorised service company:  
Technical service manual for spaliQ:UF150, order no.: TD4.IU000de.
- Supplied electrical diagram, order no. 247 198.
- The manuals for all accessories used also apply.

## 1.2 Target group

The target group for this manual is comprised of qualified specialists and owner-users.

## 1.3 Storage of documents

Keep this manual and all other applicable documents, so that they are available when needed. Make sure that your specialist installer enters the proper start-up and annual maintenance in the operation log in chapter 14.

## 1.4 Symbols used



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

---



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

---



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

---



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

---



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

---



This symbol identifies work that may only be performed by electronically trained personnel in accordance with the VDE guidelines or according to the guidelines of similar local institutions.

---

## 1.1 Typographical conventions

The following typographical conventions are used in this instruction:

Description	Depiction
Handling instruction One-step or chronological sequence of steps does not matter	▶ Action
Handling instruction multi-step and chronological sequence of action steps important	<ol style="list-style-type: none"> <li>1. First action                             <ol style="list-style-type: none"> <li>a first step</li> <li>b second step</li> </ol> </li> <li>2. Second action</li> </ol>
Result after a handling instruction	» Result
Lists	<ul style="list-style-type: none"> <li>• List item                             <ul style="list-style-type: none"> <li>• List sub-item</li> </ul> </li> </ul>
Menu paths	Status level>Menu level>Submenu
Display texts	Display text
Operating elements	Button/key

## 1.2 Validity of the manual

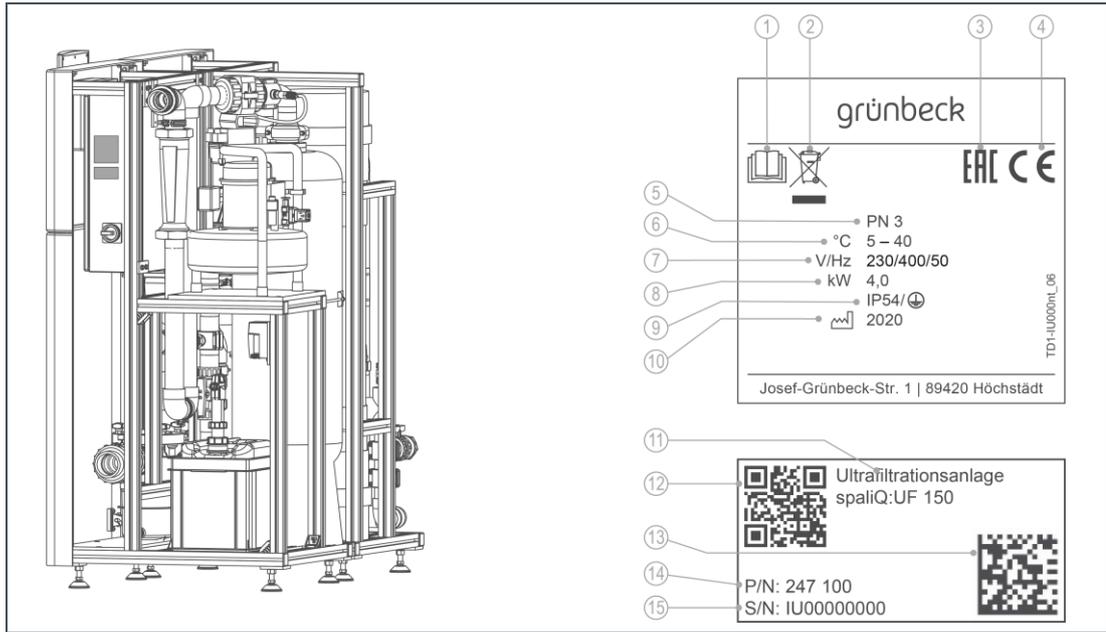
This manual applies to the following products:

- spaliQ:UF150 ultrafiltration system

## 1.3 Type plate

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

- ▶ Therefore, enter the necessary information in the table below to have it readily available whenever necessary.



Pos.	Description	Pos.	Description
1	Observe operation manual	2	Disposal information
3	EAC coding	4	CE mark
5	Nominal pressure	6	Water temperature
7	Power supply	8	Connected load
9	Protection class/protection	10	Date of manufacture
11	System designation	12	QR code
13	Data matrix code	14	Order no.
15	Serial no.		

- Product designation: spaliQ:UF150 ultrafiltration system
- Order no.: 247 100
- Serial no.: \_\_\_\_\_

## 2 Safety

### 2.1 Safety measures

- Install the product in a frost-free room. Otherwise, the system may suffer irreparable damage. The consequence may be water damage.
- Only use genuine spare parts for maintenance or repair. If unsuitable spare parts are used, the warranty for your product will be void.
- Do not use any products which have a damaged power supply cable. This can lead to injuries due to electric shock. Have damaged power supply cables replaced without delay.
- Only operate the product if all components are installed properly.
- Safety equipment must never be removed, bridged or otherwise tampered with.

### 2.2 Technical safety instructions

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



---

**CAUTION:** Type and source of danger.

- Possible consequences
  - ▶ Preventive measures
- 

The following signal words are defined depending on the degree of danger and may be used in this document:

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

### 2.3 Regulations

Comply with the following regulations and directives, amongst others, during installation and start-up:

- Statutory regulations on environmental protection
- Provisions of the employers' liability insurance companies

## 2.4 Duties of the qualified specialist and/or the specialist companies

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

- Only perform activities described in this manual.
- Carry out all activities in accordance with applicable standards and regulations.
- Instruct the owner/user in the function and operation of the product.
- Instruct the owner/user in the maintenance of the product.
- Inform the owner/user about possible dangers that can arise during the operation of the product.

## 2.5 Responsibilities of the owner/user

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

- Where necessary, only instruct specialist installers and specialist companies to carry out the required activities.
- Have the product explained by the specialist installer and/or specialist company.
- Only perform activities described in this manual.
- Do not carry out any activities that are indicated for specialist installers or specialist companies.
- Only use this product as intended.
- Make sure that the required inspection and maintenance work is carried out.
- Keep this manual.

## 3 Product description

### 3.1 Intended use

The spaliQ:UF150 ultrafiltration system is exclusively used for filtering pool water in private swimming pools and whirlpools.

The spaliQ:UF150 is not allowed to be used in the following circumstances:

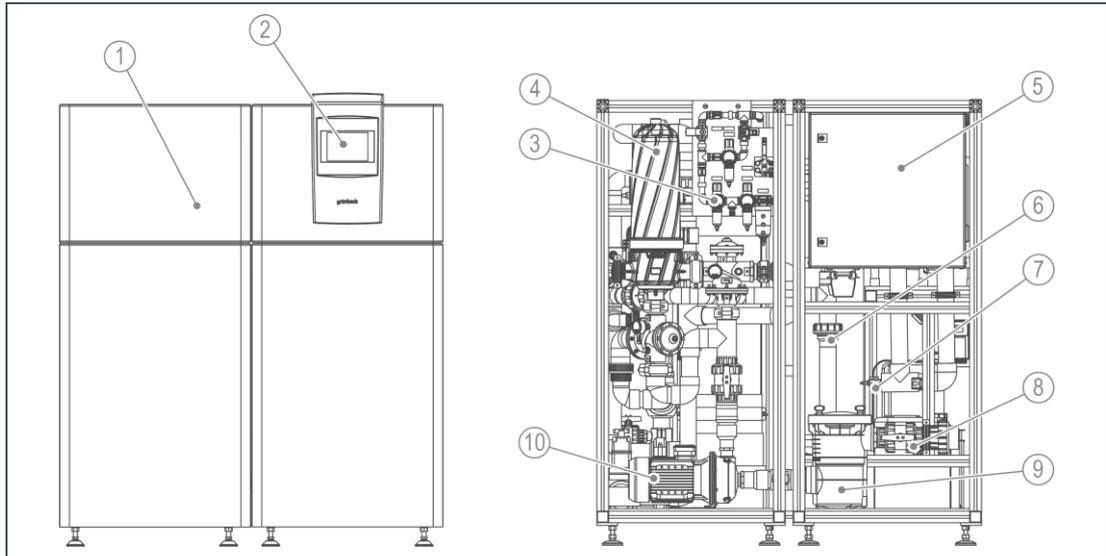
- Drinking water
- Saltwater / seawater / brine
- In conjunction with saltwater electrolysis processes
- In conjunction with ozone disinfection processes

### 3.2 Application limits

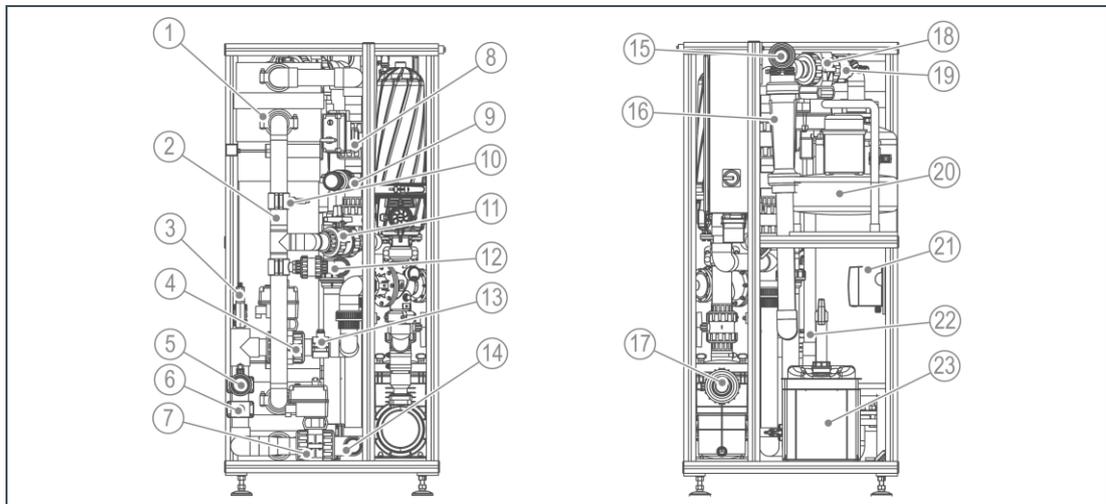
For the application of the spaliQ:UF150 ultrafiltration system, the limit values stipulated in the German Drinking Water Ordinance represent the upper limits for the admissible substances contained in the water, with the exception of the following parameters:

Parameters	Value
Appearance/colour	colourless
Undissolved sediment	without
pH value	6 – 8
Free chlorine	≤ 1.4 mg/l
Chloride content	< 500 mg/l
Turbidity	
average (FNU)	< 3 NTU
short-term max.	20 NTU (FNU)
Filterable substances (pore size 0.2 µm)	< 4 mg/l
Total iron	< 0.10 mg/l
Oils/greases/hydrocarbons	not detectable
Total hardness	< 14 °dH

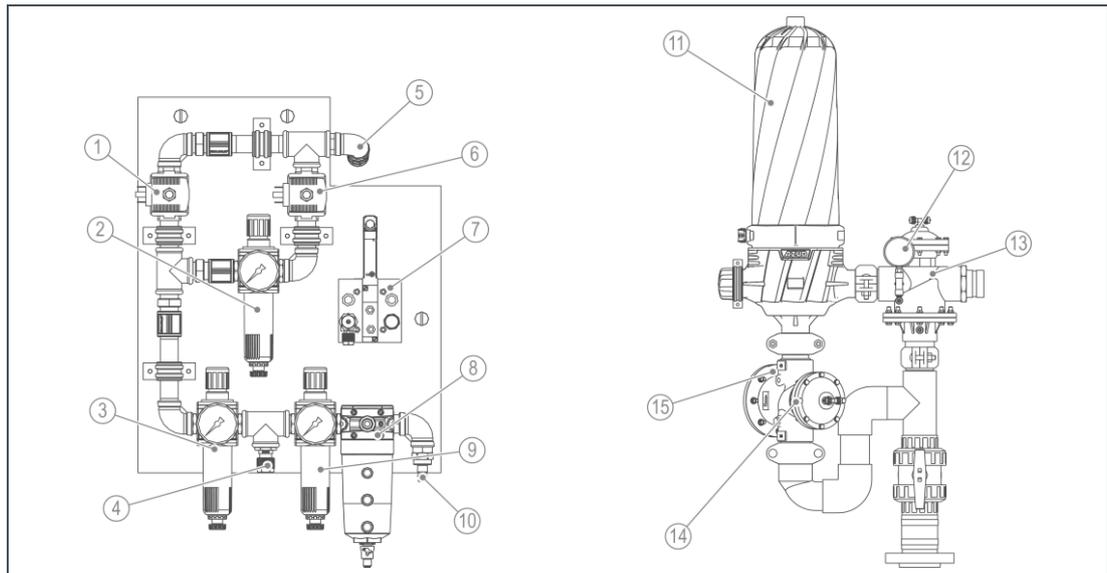
### 3.3 Product components



Pos.	Designation	Pos.	Description
1	Housing	2	Operating unit with touch panel
3	Compressed air preparation	4	Backwash filter with valves
5	Control cabinet	6	Filtrate line UF screw connection
7	Discharge valve	8	Raw water connection with shut-off valve
9	Hair and fibre strainer	10	Circulation pump with shut-off valve



Pos.	Designation	Pos.	Description
1	Ultrafiltration module	2	Filtrate line UF
3	Chlorine dosing point	4	Motorised ball valve raw water UF / raw water line UF
5	Connection for CIP	6	Pressure measurement raw water UF
7	Motorised ball valve lower drain UF	8	Motorised ball valve upper drain UF
9	Connection for CIP	10	Pressure measurement filtrate UF
11	Filtrate line UF ball valve	12	Connection for CIP
13	Water withdrawal point for measuring and control system	14	Drain connection
15	Filtrate connection	16	Flow measurement
17	Raw water connection	18	Motorised ball valve filtrate UF
19	Flushing air connection with non-return valve	20	Compressor incl. condensate emptying
21	Dosing system for adding disinfectant for the UF	22	Flushing water line
23	Chemical collecting tray		



Pos.	Designation	Pos.	Description
1	Flushing air solenoid valve	2	Pressure reducer for integrity test (optional)
3	Pressure reducer for flushing air	4	Connection for control air
5	Connection for flushing air	6	Integrity test solenoid valve (optional)
7	Solenoid valve for control air	8	Activated carbon filter
9	Pressure reducer for control air	10	Compressed air supply connection
11	Backwash filter 200 µm cut-off	12	Raw water pressure gauge
13	Backwash filter valve raw water/drain	14	Backwash filter valve raw water
15	Filtrate pressure gauge		

### 3.4 Accessories



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

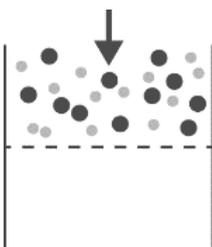
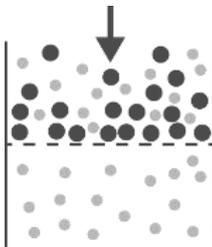
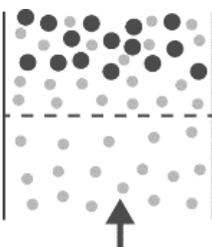
Illustration	Product	Order no.
without	<b>Night-time temperature reduction/whisper mode for pool with overflow channel</b>	<b>247 185</b>
	<p>For saving energy in pools with overflow channel by lowering the pool water temperature when not in use or with the pool cover closed.</p> <p>Separate switch cabinet with I/O for connecting to PLC control via BUS interface. Used for controlling 4 motorised ball valves (24V/DC) for lowering the pool water temperature in the raw water tank and subsequently circulating without the overflow channel.</p> <p>Motorised ball valves are not supplied.</p>	

Illustration	Product	Order no.
without	<b>Automatic integrity test</b>	<b>247 175</b>
<p>For regular, automatic checking of the undamaged condition of the virus/bacteria/parasite barrier.</p> <p>With result message for the client. (Fitted on the system ex-works)</p>		

## 3.5 Functional description

### 3.5.1 Ultrafiltration

Ultrafiltration is a filtration process in the membrane technology field. In this process, articles can be separated from a medium.

Illustration	Description
	<p>Fouled water flows through a membrane under pressure. This membrane functions like a strainer. Particles that are smaller than the pores flow through. Particles that are larger than the pores are retained.</p>
	<p>The filtered particles are deposited on the surface of the membrane. This layer becomes steadily thicker. The thicker the layer, the more resistance it creates. The flow rate decreases and the pressure loss increases.</p>
	<p>During backwash, filtered water (filtrate) flows through the membrane in the opposite direction. The particles on the surface are removed. The particles are flushing into the drain.</p>

Over time, particles build up on the surface of the membrane which cannot be removed by backwash. As a result, CIP cleaning must be carried out at regular intervals.

### 3.5.2 spaliQ ultrafiltration system

The filtered pool water is drawn in by a circulation pump with upstream hair and fibre strainer from a skimmer provided by the client or from a raw water tank. After the circulation pump, there is a filter unit which filters the water. The filter unit consists of a backwash filter and ultrafiltration module.

The filtered water is passed through a flow meter. The flow meter registers the amount of water. This guarantees a constant flow rate.

Before the filtrate is returned to the pool, it can be heated by an optional heat exchanger. It is also possible to add disinfectant to the filtrate using an optional measuring and control system and dosing pumps.

The spaliQ:UF150 ultrafiltration system and the individual components are controlled by a central control unit with a 7" touch panel.

### 3.5.3 Operating modes of the spaliQ ultrafiltration system

#### **Filtration**

The first filtration stage is the backwash filter. The backwash filter filters out coarse dirt particles (> 200 µm) and disrupted substances such as hairs and fibres in order to protect the ultrafiltration module.

The second filtration stage is the ultrafiltration module. The ultrafiltration module filters out small dirt particles as well as viruses, bacteria and parasites, removing them almost entirely (4 LOG levels/virus retention capacity > 99.99%).

#### **Flushing**

Particles deposited on the surface increase the resistance in the backwash filter and ultrafiltration module. Flushing is triggered once a defined resistance has been reached or a defined length of time exceeded. During flushing, deposited particles are flushed out down the drain.

The retention of dirt particles increases resistance in the backwash filter (differential pressure) and the ultrafiltration module (trans-membrane pressure). Once a particular resistance has been reached or after a certain length of time, flushing is triggered for reasons of hygiene. This involves retained dirt particles being flushed down the drain.

# 4 Control unit

## 4.1 Overview

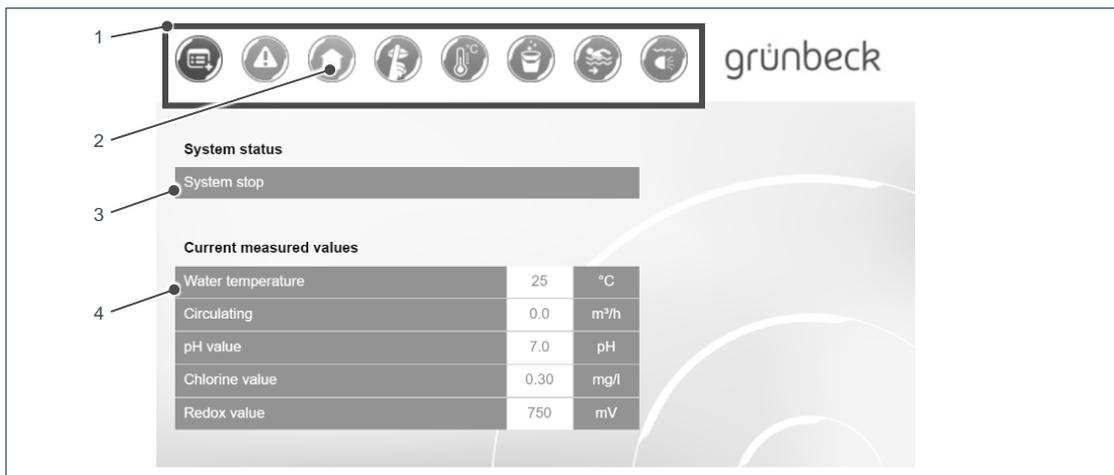


Pos.	Description	Pos.	Description
1	Touch panel	2	Display configuration key

## 4.2 Display screens

### 4.2.1 Status level

The status level is the basic display of your ultrafiltration system. It provides you with information about the current status of the system and current measured values.



Pos.	Description	Pos.	Description
1	Menu level buttons	2	Home button
3	System status	4	Current meas. values

## 4.2.2 Menu level

The menu level buttons provide access to the following submenus

Figure	Explanation
	<p><b>Home button</b></p> <p>Pressing the Home button returns you to the status level at any time.</p>
	<p><b>Main menu button</b></p> <p>From the main menu, you can access the following submenus:</p> <ul style="list-style-type: none"> <li>&gt; Operator</li> <li>&gt; Settings</li> <li>&gt; Configuration level</li> <li>&gt; Commiss. level</li> <li>&gt; CS level</li> </ul>
	<p><b>Signals button</b></p> <p>This submenu displays all information and active faults (refer to chapter 7.6).</p>
	<p><b>Night-time temperature reduction/whisper mode button</b></p> <p>This submenu provides quick access to existing night-time temperature reduction or whisper mode, if night-time reduction/whisper mode has been configured. Here you can switch the night-time temperature reduction or whisper mode on or off, as well as setting the run time and time block (refer to chapter 7.7).</p>
	<p><b>Water temp. button</b></p> <p>This submenu provides quick access to the selection of the required water temperature (normal, warm or cold bathing), if temperature control has been configured.</p> <p>In addition, the current measured value of the water temperature is shown (refer to chapter 7.8).</p>
	<p><b>Cleaning button</b></p> <p>This submenu provides quick access to the Cleaning menu, if automatic overflow channel bypass has been configured. Here, for example, you can switch automatic channel cleaning on or off for a subsequent manual channel cleaning (see chapter 7.9).</p>
	<p><b>Attractions button</b></p> <p>This submenu provides quick access to available attractions, if attractions have been configured. You can switch these on or off individually.</p> <p>As well as the running times, it is also possible to enter a forced switch on (see chapter 7.10). The forced switch on is used for avoiding water stagnating in the pipelines of the attractions.</p>
	<p><b>Pool lighting button</b></p> <p>This submenu provides quick access to existing pool lighting, if pool lighting has been configured. You can switched these on or off individually here (see chapter 7.11).</p>

## 4.3 Navigating the control unit

Navigation using the installed touch panel takes place by touching the required buttons, fields or values with your finger.



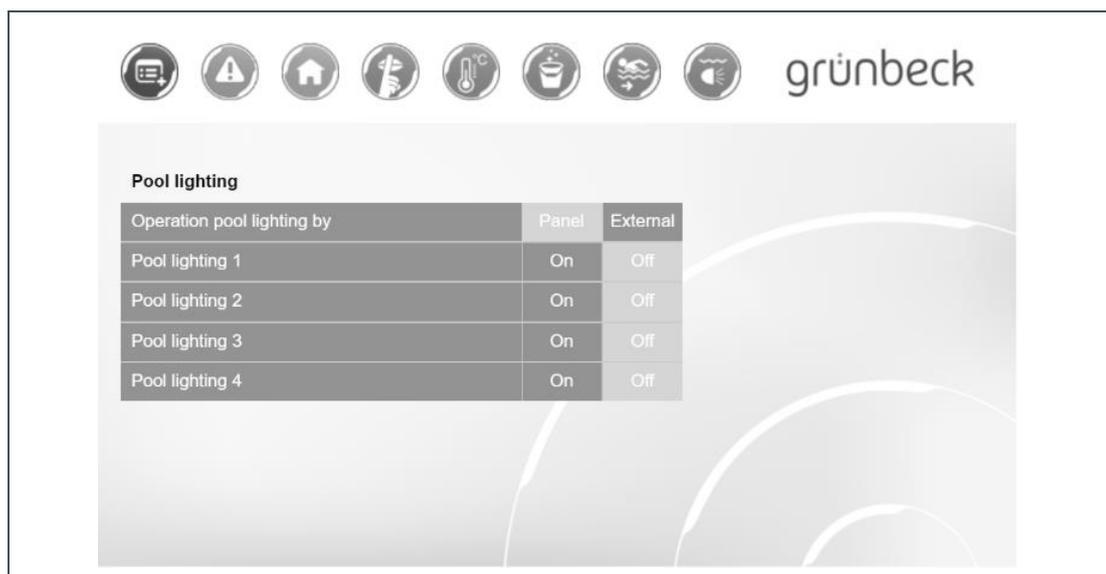
Buttons and fields that are active are highlighted in a transparent colour.

### 4.3.1 Three sample applications are shown below:

#### Carry out action / select button or field

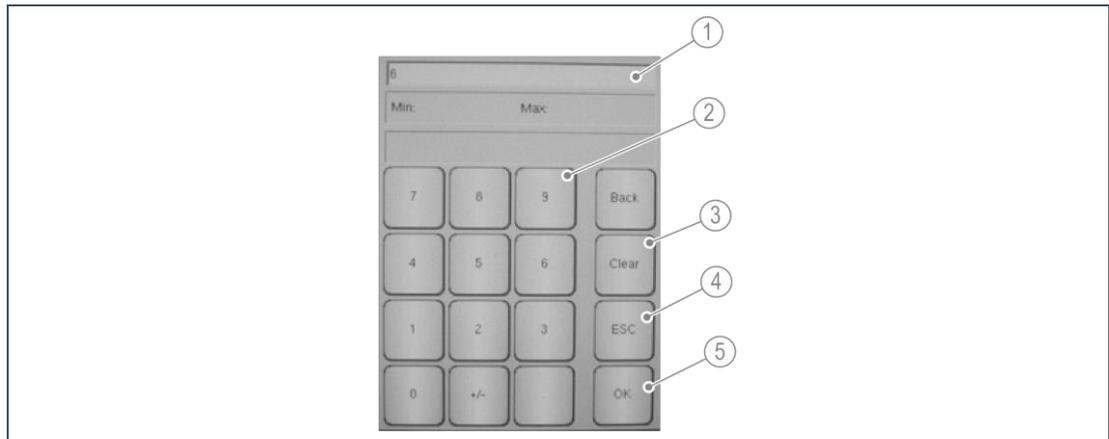
- ▶ Touch the button or the required field.
- » The required action is carried out.

Example: Touch the Pool lighting button. The corresponding menu opens. Here, you can make the required settings such as switching on the pool lighting for the pool edge at the left by touching the On field.



#### Entering a numerical value

1. Touch the numerical value briefly.
  - » An input window opens.
2. Enter the numerical value.
3. Confirm with OK.
  - » The input window closes.



Pos.	Description	Pos.	Description
1	Numerical value display	2	Number field
3	Clear key (delete the displayed numerical value)	4	ESC key (cancel the action)
5	OK key (confirm the entered numerical value)		

### Page break in multi-page selection fields

If a selected menu item contains several pages with fields or values, this is indicated by arrow keys.

1. Touch the left arrow key.
  - » Display changes to the previous page.
4. Touch the right arrow key.
  - » Display changes to the next page.



Pos.	Description	Pos.	Description
1	Previous page	2	Next page

If it is possible to change to the previous or next page, the arrow key is highlighted in a dark colour. The arrow key is highlighted in a transparent colour if no change is possible.

## 4.4 Menu structure

### 4.4.1 Main menu

Menu items	Submenu	Second submenu	Values and settings				
Operator/user	System op.	-	Time				
			Off				
			ON				
	Filtration block 1 / 2 / 3	-	Filtration days				
			Filtration times				
	Fl. block	-	Flushing days				
			Start time				
			Man. triggering				
			Settings (code 005)		General	Date and time	Date/time display
						Miscellaneous	Switch-over DST to ST
				Date/time setting			
			Ultrafiltration module	Measurement and limit values	Lang. changvr.		
				Index and control values	Contact data		
				Flushings	Filtration		
				Times	Flushing		
					Integrity test		
					Index values		
					Control vals.		
					Fl. ultrafiltr. module		
					Integrity test ultrafiltr. module		
					Fl. backw. filter		
					Faults in circulation pump, waste water lifting system		
					Filtration faults		
					Rinsing faults		
					Integrity test faults		
					MKH limit position faults		
				Temp. control	Temperature measurement		
					Times		
					Water temperature display		
					Comparison meas.		
					Fault max. temp. limiter		
					Release heating circ. pump		
				Measuring and control system	Times		
					Fault meas. & control system		
					Release meas. & control system		
				Raw water tank	Additional fresh water feed		
					Channel cleaning		
					Night-time temperature reduction/whisper mode		
					Fault lim. posns.		
					MKH suction line RWS		
					MKH suction line pool		
					MKH separation floor drain routes		
					MKH pool lowering in RWS		
				Attractions	Faults		
				Configuration level (code-protected)	General		
					Ext. pool cover		
					Yes/No		
				Ultrafiltration module	Waste water lifting system / pump sump		
					Automatic integrity test		
					Integrity test after every x flushings		
				Temp. control	Heating circ. pump		
					Max. temperature limiter		
					Yes/No		
				Measuring and control system	Measuring and control system		
					Release meas. & control system		
					N.C./N.O.		
					Fault meas. & control system		
					pH measurement		
					Yes/No		
					Chlorine measurement		
					4-20mA signal scaling		
					Redox measurement		

Menu items	Submenu	Second submenu	Values and settings
	Raw water tank	Raw water tank	Yes/No
		Level RWS level a	N.C./N.O.
		Level RWS level b	
		Level RWS level c	
		Level RWS level d	
		Automatic channel cleaning	Yes/No
		Night-time temperature reduction/whisper mode	Yes/No
	Attractions	Attraction 1	Yes/No
		Attraction 2	Designation
		Attraction 3	
	Pool lighting	Pool lighting 1	Yes/No
		Pool lighting 2	Designation
		Pool lighting 3	
		Pool lighting 4	
Commissioning level (code-protected)	Start-up	-	On/Off
	Meas. values (display only)	Inlet press. UF module	Indication only
		Outlet press. UF module	
		Diff. press. UF module	
		Water temperature	
		Circulation capacity	
		pH value	
		Chlor. val.	
		Redox value	
	Valves ultrafiltr. module	Valves BW filter	Open/closed
		MKH raw water	
		MKH lower channel	
		MKH upper channel	
		Valve fl. air	
		MKH filtrate	
		Valve auto cond. emptying	
		Valve auto integrity test	
		Valve fr. water make-up feed	
		Valve auto channel cleaning	
		MKH suction line RWS	
		MKH suction line pool	
		MKH separation floor drain routes	
		MKH pool lowering in RWS	
	Drives	Circulation pump	On/off, set point in %
		Chlorine dosing system	On/Off
		Compressor	
		Heating circ. pump	
		Measuring and control system	
		Attraction 1	
		Attraction 2	
		Attraction 3	
		Pool lighting 1	
		Pool lighting 2	
		Pool lighting 3	
		Pool lighting 4	
Technical service level (code-protected)	Code-protected area	Code-protected area	Code-protected area

## 4.4.2 Signals

Menu level	Menu items	Values and settings
Signals	Display all signals	Signals with date/time Acknowledge signals

### 4.4.3 Home

Menu level	Menu items	Values and settings
Home	System status	Current system status
	Current meas. values	Water temperature
		Circulation capacity
		pH value
		Chlor. val.
	Redox value	

### 4.4.4 Night-time temperature reduction/whisper mode

Menu level	Menu items	Values and settings
Night-time temperature reduction/whisper mode	Manual night-time temperature reduction/whisper mode	On/Off
	Max. run time	Run time

### 4.4.5 Water temperature

Menu level	Menu items	Values and settings
Water temperature	Current meas. values	Water temperature
	Temp. control	Normal bathing
		Warm bathing
	Cold bathing	

### 4.4.6 Cleaning

Menu level	Menu items	Values and settings
Cleaning	Operation channel cleaning by	Panel/external
	Automatic channel cleaning	On/Off

### 4.4.7 Attractions

Menu level	Menu items	Values and settings
Attractions	Attraction 1	On/Off
	Attraction 2	Run time
	Attraction 3	
	Forced switch on	Weekday
		Start time
		Runtime per attraction
	Man. triggering	

## 4.4.8 Pool lighting

Menu level	Menu items	Values and settings
Pool lighting	Operation pool lighting by	Panel/external
	Pool lighting 1	On/Off
	Pool lighting 2	
	Pool lighting 3	
	Pool lighting 4	

## 4.5 Settings (code 005)

Menu level>Main menu>Settings

1. Enter the code using the numerical keypad.
2. Confirm with **OK**.

### 4.5.1 General

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Date/time	Date/time	-	-	Display of the current date/time.
	DST to ST switchover	No	Yes/No	Yes: automatic switchover. No: no automatic switchover.
	Date/time	01.04.2016/ 12:00	01.01.2010 – .../ 0:00 – 24:00 hours	Entry of the current date. Entry of the current time; 24h mode. To complete the process, press the <b>Apply</b> button
	Lang. changvr.	German	German, English	Language selection.
Miscellaneous	Change contact data	Installer/Grünbeck contracting party	Free choice	Here, a free choice of designation, as well as a phone number or mobile number can be entered.

## 4.5.2 Ultrafiltration module

### Meas./lim. vals.

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Lim. vals. filtr.	Warn. inlet pr. max.	1.8 bar	0.0 – 3.0 bar	If exceeded, the system continues to be operated; possibly lower flow rate!
	Fault inlet pr. max.	2.5 bar	0.0 – 3.0 bar	Malfunction on exceeding leads to system switch-off. No circulation!
	Warn. diff. press. max.	0.8 bar	0.0 – 2.0 bar	If exceeded, flushing of the system is triggered outside the flushing times/blocks. Adapt flushing block if necessary – shorten flushing intervals!
	Fault diff. press. max.	1.0 bar	0.0 – 2.0 bar	Malfunction on exceeding leads to system switch-off. Contamination of the ultrafiltration module possible.
Lim. vals. flushing	Fault inlet pr. min.	0.1 bar	0.0 – 1.0 bar	Monitoring of the ultrafiltration module inlet pressure in automatic and manual modes in the NaOCl forward-flushing, flushing out and filling steps.
				Fault on undershooting leads to protective switch-off of circulation pump. System freezes current step and switches to waiting mode until the fault is rectified. After rectification of the fault and acknowledgement of the fault signal, continuation from the current step.
	Fault inlet press. max.	1.2 bar	0.0 – 3.0 bar	Monitoring of ultrafiltration module inlet pressure; in the NaOCl forward-flushing, flushing and filling steps.
				Fault on overshoot leads to protective switch-off of circulation pump. System freezes current step and switches to waiting mode until the fault is rectified. After rectification of the fault and acknowledgement of the fault signal, continuation from the current step.
Fault outlet pr. min.	0.1 bar	0.0 – 1.0 bar	Monitoring of ultrafiltration module outlet pressure; in backwash step.	
			Fault on undershooting leads to protective switch-off of compressor. System freezes current step and switches to waiting mode until the fault is rectified. After rectification of the fault and acknowledgement of the fault signal, continuation from the current step.	
Fault outlet pr. max.	2.0 bar	0.0 – 3.0 bar	Monitoring of ultrafiltration module outlet pressure; in backwash step.	
			Fault on overshooting leads to protective switch-off of compressor. System freezes current step and switches to waiting mode until the fault is rectified. After rectification of the fault and acknowledgement of the fault signal, continuation from the current step.	
LVs integrity test	Fault inlet pr. min.	0.1 bar	0.0 – 1.0 bar	Monitoring of ultrafiltration module inlet pressure with manual and automatic integrity tests. Fault on undershoot leads to cancellation of integrity test and transition to current operating mode. After rectifying the fault and acknowledging the fault signal, the integrity test is repeated.
				Fault inlet pr. max.
	Fault outlet pr. min.	0.1 bar	0.0 – 1.0 bar	Monitoring of ultrafiltration module outlet pressure with manual and automatic integrity tests. Fault on undershoot leads to cancellation of integrity test and transition to current operating mode. After rectifying the fault and acknowledging the fault signal, the integrity test is repeated.
				Fault outlet pr. max.

### Index/ctrl vals.

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Index values	Filtr. full load	10 m³/h	5.0 – 15.0 m³/h	Index value specification flow rate for operating status filtration full load in automatic and manual mode. Regulation of the circulation pump at the index value takes place if there is a deviation of the actual value via the frequency inverter.
	Filtr. part load	8 m³/h	5.0 – 15.0 m³/h	Index value specification flow rate for operating status filtration part load in automatic and manual modes. Regulation of the circulation pump at the index value takes place if there is a deviation of the actual value via the frequency inverter. In conjunction with optional measuring and control system and its feedback part-load operation.
	Filtration night-time reduction/whisper mode	8 m³/h	5.0 – 15.0 m³/h	Index value specification flow rate for operating status filtration night lowering/whisper mode in automatic and manual modes. Regulation of the circulation pump at the index value takes place if there is a deviation of the actual value via the frequency inverter. Only with "Night-time reduction/whisper mode" accessories registered.
	Fl. backw. filter	90%	0 – 100 %	Index value specification flow rate for operating status flushing backwash filter. Index value must be found by pressure gauge on the backwash filter and pump characteristic curves as well as specifications in the operation manual. No recording of actual value by flow rate measurement and control on deviation from the index value via frequency inverter.
	Fl. ultrafiltr. module	75%	0 – 100 %	Index value specification flow rate for operating status flushing ultrafiltration module. Index value must be found by pressure gauge on the backwash filter and pump characteristic curves as well as specifications in the operation manual. No recording of actual value by flow rate measurement and control on deviation from the index value via frequency inverter.
	Control vals.	KP val	0.7	0 – 100
TN val		6.0	0 – 100	Readjustment time
TV val		0.3	0 – 100	Lead time
Dead bd		1.0	0 – 100 %	Delay time
Max. adjustment value		100%	0 – 100 %	Min. and max. frequency for the frequency converter.
Min. adjustment value		30%	0 – 100 %	
Reset field		-	-	Controller is reset (initial position).

### Flushings

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Fl. ultrafiltr. module	Draining	80 s	0 – 999 s	Duration of emptying the ultrafiltration module through the lower drain connection.
	Advancing NaOCl	60 s	0 – 999 s	Duration of dosing NaOCl via the chlorine dosing system on the raw water side of the ultrafiltration module.
	Fl. in NaOCl	7 s	0 – 999 s	Duration of flushing in the reserved NaOCl quantity together with bathing water via circulation pump into the ultrafiltration module. Ultrafiltration module must be filled up to the top drain connection. Time must be set to local conditions!
	Taking effect NaOCl	900 s	0 – 999 s	Duration of the NaOCl solution taking effect in the fibres of the ultrafiltration module – softening the dirt particles that are filtered out.
	Backwash	7 s	0 – 999 s	Duration of backwash of the ultrafiltration module with filtrate from the flushing water line. The driving force is the compressed air from the compressor. Ultrafiltration module is not allowed to be directly exposed to compressed air.
	Flushing out	25 s	0 – 999 s	Duration of flushing out the ultrafiltration module with raw water – forward flush. Used for flushing out dirt particles that are still adhering as well as remaining chlorine concentrations through the top drain connection. Time must be set to local conditions!
	Filling	60 s	0 – 999 s	Duration of filling the system with bathing water – venting the system! Filling takes place at a low flow rate. Time must be set to local conditions!
	Start	-	-	Touching the <b>Start</b> field triggers flushing of the ultrafiltration module.

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Integrity test (manual and automatic)	Draining	8 min	0 – 60 min	Time during which the filtrate side of the ultrafiltration module is subjected to compressed air (max. 0.5 bar) from the compressor until the water on the filtrate side has been forced through the ultrafiltration membrane. The compressed air is supplied through the opened flushing air solenoid valve or integrity test solenoid valve.
	Pr. buildup	20 s	0 – 999 s	Compressed air build-up of the compressed air takes place until the pressure measured at the filtrate pressure measurement is stable at 0.5 bar.
	Settling	60 s	0 – 999 s	Settling time on the filtrate side ultrafiltration module before measurement of the pressure drop starts.
	Meas. pressure drop	10 min	0 – 60 min	Time during which measurement of the pressure drop takes place on the filtrate side ultrafiltration module via the filtrate pressure measurement. Measured pressure drop is evaluated. Flushing air or integrity test solenoid valve is closed.
	Depr.	10 s	0 – 999 s	Time during which the filtrate side ultrafiltration module is depressurised from the applied compressed air.
	Filling	60 s	0 – 999 s	Duration of filling the system with bathing water – venting the system. Filling takes place at a low flow rate. Time must be set to local conditions.
	Outlet pressure	-	-	Display of the currently measured pressure on the filtrate side.
	Start	-	-	Touching the <b>Start</b> field triggers an integrity test.
Fl. backw. filter	Backwash	15 s	0 – 999 s	Duration flushing the backwash filter with raw water. Flushing water must be free from dirt particles towards the end of the flushing - flushing water can be observed through the transparent drain pipeline. The time must be increased if there is significant contamination.
	Deaerat. compressor	10 s	0 – 99 s	Duration of automatic condensate emptying. Automatic condensate emptying takes place automatically as the last step in flushing the backwash filter. Blocked during flushing procedures and integrity test. Solenoid valve closed when deenergised. Duration of the automatic condensate emptying depending on the amount of condensate built up.
	Start	-	-	Touching the <b>Start</b> field triggers flushing of the backwash filter.

## Times

Parameters	Factory settings	Setting range, setting parameters	Comments
Fault in circulation pump	10 s	1 – 99 s	Delay time for fault triggering circulation pump in automatic and manual mode.
Fault in pump sump/waste water lifting system	10 s	1 – 99 s	Delay time for max. level waste water lifting system/pump sump fault triggering in automatic and manual modes. The max. level pump sump/waste water lifting system must be present continuously throughout this time until there is a fault signal. Fault on opened contact "Max. level waste water lifting system" leads to the system switching off.
Fault in min. filtration flow	20 s	1 – 99 s	Delay time for fault triggering flow rate in automatic and manual mode. The limit value flow rate must be continuously overshoot or undershot during this time until a fault signal is triggered. The min. or max. limit value is a fixed setting at delta 2.0 m³/h below or above index value. Fault on undershot set point leads to protective switch-off of circulation pump. System freezes current step and switches to waiting mode until the fault is rectified. After rectification of the fault and acknowledgement of the fault signal, continuation from the current step.
Fault in max. filtration flow	20 s	1 – 99 s	Delay time for fault triggering flow rate in automatic and manual mode. The limit value flow rate must be continuously overshoot or undershot during this time until a fault signal is triggered. The min. or max. limit value is a fixed setting at delta 2.0 m³/h below or above index value. Fault on exceeding a set point leads to protective switch-off of circulation pump. System freezes current step and switches to waiting mode until the fault is rectified. After rectification of the fault and acknowledgement of the fault signal, continuation from the current step.
Fault in filtration inlet press. max.	5 s	1 – 99 s	Delay time for the fault triggering filtration inlet pressure max. in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.

Parameters	Factory settings	Setting range, setting parameters	Comments
Fault in filtration diff. press. max.	3 s	1 – 99 s	Delay time for fault triggering filtration differential pressure max. in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.
Fault in flushing inlet press. min.	5 s	1 – 99 s	Delay time for the fault triggering flushing inlet pressure min. in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.
Fault in fl. inlet press. max.	3 s	1 – 99 s	Delay time for the fault triggering flushing inlet pressure max. in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.
Fault in fl. outlet press. min.	5 s	1 – 99 s	Delay time for the fault triggering flushing outlet pressure min. in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.
Fault in fl. outlet press. max.	3 s	1 – 99 s	Delay time for the fault triggering flushing outlet pressure max. in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.
Fault integrity test inlet press. min.	5 s	1 – 99 s	Delay time for the fault triggering integrity test inlet pressure min. in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.
Fault integrity test inlet press. max.	3 s	1 – 99 s	Delay time for the fault triggering integrity test inlet pressure max. in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.
Fault integrity test outlet press. min.	5 s	1 – 99 s	Delay time for the fault triggering integrity test outlet pressure min. in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.
Fault integrity test outlet press. max.	3 s	1 – 99 s	Delay time for the fault triggering integrity test outlet pressure max. in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.
Fault lim. posns. MKH raw water UF "Open"	30 s	1 – 99 s	Delay time adjusting the valves. Missing or incorrect signal of the limit position after expiry of the delay time leads to fault triggering.
Fault lim. posns. MKH raw water UF "Closed"			
Fault lim. posns. MKH lower drain UF "Open"			
Fault lim. posns. MKH lower drain UF "Closed"			
Fault lim. posns. MKH upper drain UF "Open"			
Fault lim. posns. MKH upper drain UF "Closed"			
Fault lim. posns. MKH filtrate UF "Open"			
Fault lim. posns. MKH filtrate UF "Closed"			

### 4.5.3 Temp. control

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Temperature measurement	Water temperature	-	-	Display of the current measured value of the water temperature.
	Comparison meas.	0 °C	0 – 40 °C	Carrying out a comparison measurement (refer to chapter 7.3 in the operation manual for spaliQ:UF150, order no.: TD3-IU000de).
Times	Fault max. temp. limitation	10s	1 – 99 s	Delay time for the fault triggering of an optional max. temperature limiter in automatic and manual mode. The fault must be continuously present during this time until a fault signal is triggered.
	Release heating circ. pump	2 min	0 – 60 min	Delay time for the enable of an external heating and the activation of a heating circulation pump in automatic and manual mode. Delay time applies: <ul style="list-style-type: none"> <li>• After flushing,</li> <li>• When the circulation pump starts in manual mode,</li> <li>• When the circulation pump starts and finishes in automatic mode.</li> </ul>

## 4.5.4 Measuring and control system

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Times	Fault meas. & control system	10 s	1 – 99 s	Delay time for the fault triggering of measuring and control system in automatic and manual mode. Coming with active fault message from optional measuring and control system.
	Release meas. & control system	2 min	0 – 60 min	Delay time for the enable of an optional measuring and control system in automatic and manual mode. Delay time applies: <ul style="list-style-type: none"> <li>• After flushing</li> <li>• When the circulation pump starts in manual mode</li> <li>• When the circulation pump starts/finishes in automatic mode</li> </ul>

## 4.5.5 Raw water tank

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Additional fresh water feed times	Monitoring make-up water feed	60 min	0 – 120 min	Monitoring time after opening the additional fresh water feed.
		If the corresponding level c or level b has not reached the RWS level after the time elapses, the fresh water make-up feed is closed and a fault message is triggered. The fresh water make-up feed is released again after the fault message is acknowledged.		
Overflow channel bypass times	Pre-work for cleaning	20 s	0 – 999 s	Delay time before opening valve drain after automatic channel cleaning was activated.
	After activation of the automatic channel cleaning, the circulation pump is switched off. The delay time causes the pool water contained in the channel or in the channel collecting line to be directed to the raw water tank – and not into the drain.			
	Rinsing gutter	20 s	0 – 999s	Delay time before closing the valve channel after the automatic channel cleaning was deactivated.
After deactivation of the automatic channel cleaning, the circulation pump is switched on. The delay time causes the contaminated water/cleaning agent contained in the channel or in the channel collecting line to be directed into the drain.				
Night-time reduction/w hisper mode times	Pool lowering	10 s	0 – 999 s	Time for reducing the pool water in the raw water supply tank. Only with "Night-time reduction/whisper mode" accessories present.
Mafs. lim. posns.	MKH suction line RWS	30 s	1 – 99 s	Delay time adjusting the valves. Missing or incorrect signal of the limit position after expiry of the delay time leads to fault triggering.
	MKH suction line pool			
	MKH separation floor drain routes			
	MKH pool lowering in RWS			

## 4.5.6 Attractions

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Faults	Attraction 1	10 s	1 – 99 s	Delay time for the fault triggering of an optional attraction.
	Attraction 2			
	Attraction 3			
				The fault must be permanently present until a fault signal is triggered.

## 4.6 Configuration level (code-protected area)



The work described here may only be carried out by Grünbeck's technical service/authorised service company.

The following parameters and values can be changed in the configuration level:

Menu	Submenu	Selection
General	Ext. pool cover	Yes/No
Ultrafiltration module	Waste water lifting system/pump sump	Yes/No
	Automatic integrity test	Yes/No Integrity test after every x flushings 5 – 20
Temp. control	Heating circ. pump	Yes/No
	Max. temperature limiter	Yes/No
Measuring and control system	Measuring and control system	Yes/No
	Release meas. & control system	N.C./N.O.
	Fault meas. & control system	
	pH measurement	Yes/No
Raw water tank	Chlorine measurement	Scaling 4 – 20 mA signal
	Redox measurement	
	Raw water tank	Yes/No
	Level RWS level a	N.C./N.O.
	Level RWS level b	
	Level RWS level c	
	Level RWS level d	
Attractions	Automatic channel cleaning	Yes/No
	Night-time temperature reduction/whisper mode	Yes/No
Attractions	Attraction 1	Yes/No
	Attraction 2	Designation
	Attraction 3	
Pool lighting	Pool lighting 1	Yes/No
	Pool lighting 2	Designation
	Pool lighting 3	
	Pool lighting 4	

### 4.6.1 General

Submenu	Parameters	Factory setting	Setting range, setting parameter	Comments
Ext. pool cover	Available	No	Yes/No	Potential-free inputs for position messages limit positions "Open" and "Closed" of an external pool cover control. Enable of the circulation pump only when limit positions are reached so as to avoid damaging the pool cover.

### 4.6.2 Ultrafiltration module

Submenu	Parameters	Factory setting	Setting range, setting parameter	Comments
Waste water lifting system/pump sump	Available	No	Yes/No	Potential-free level switch in client's waste water lifting system, only NC contact possible.
				As soon as the contact of a client's waste water lifting system is triggered, the circulation pump is switched off.
	Available	No	Yes/No	-

Submenu	Parameters	Factory setting	Setting range, setting parameter	Comments
Automatic integrity test	Integrity test after every x flushings	10	5 – 20	Selection after how many automatic flushings of ultrafiltration module an automatic integrity test is triggered (if option available).

### 4.6.3 Temp. control

Submenu	Parameters	Factory setting	Setting range, setting parameter	Comments
Heating circ. pump	Available	No	Yes/No	Electrical power supply heating circulation pump via switch cabinet.
		N.O.	-	"Enable heating" potential-free signal to request external heating. Contact closed if the water temperature actual value < set point and the circulating pump is running. Inactive if: <ul style="list-style-type: none"> <li>• System or circulation pump is off</li> <li>• Flushing operation</li> <li>• Max. temperature limiter has been triggered.</li> </ul>
Max. temperature limiter	Available	No	Yes/No	Safety thermostat (index value < 40 °C) for monitoring water temperature, only NC possible.
		N.C.	-	Fault max. temp. limiter input. When the contact of an optional max. temperature limiter opens, the "Enable heating" signal and "Heating circulation pump" are switched off. In automatic mode, the circulation pump is switched on outside the filter operating times.

### 4.6.4 Measuring and control system

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Measuring and control system	Available	No	Yes/No	-
		N.O.	-	Input for part load operation of measuring and control system. Potential-free part load operation signal coming from optional measuring and control system. In automatic mode, the system goes into partial load operation.
	Release meas. & control system	N.O.	N.C./N.O.	Potential-free signal output to an optional measuring and control system. Closed in automatic/manual mode and when circulation pump in filtration mode, open during flushing.
	Fault meas. & control system	N.O.	N.C./N.O.	Fault signal input coming from optional measuring and control system. Fault signal only for information purposes for owner.
pH measurement	Available	No	Yes/No	Analog input (4-20mA) for pH value of an optional measuring and control system.
	Scaling 4 – 20 mA in pH	4.00	0.00 – 14.00	Set value corresponds to 4mA signal.
		10.00	0.00 – 14.00	Set value corresponds to 20mA signal.
Chlorine measurement	Available	No	Yes/No	Analog input (4-20mA) for chlorine value of an optional measuring and control system.
	Scaling 4 – 20 mA in mg/l	0.00 mg/l	0.00 – 10.00 mg/l	Set value corresponds to 4mA signal.
		2.00 mg/l	0.00 – 10.00 mg/l	Set value corresponds to 20mA signal.
Redox measurement	Available	No	Yes/No	Analog input (4-20mA) for redox value of an optional measuring and control system.
	Scaling 4 – 20 mA in mV	0 V	0 – 1300 V	Set value corresponds to 4mA signal.
		1000 V	0 – 1300 V	Set value corresponds to 20mA signal.

## 4.6.5 Raw water tank

Submenu	Parameters	Factory settings	Setting range, setting parameters	Comments
Raw water tank	Available	Yes	Yes/No	Yes: Level inputs a – d of an optional level measurement active. No: in swimming pool with skimmer.
Level RWS level a-d	Level a	N.O.	N.C./N.O.	Overshoot: Switching on the circulation pump outside the filter running times in automatic mode. Does not apply with "Night-time temperature reduction/whisper mode" accessories.
	Level b	N.O.	N.C./N.O.	Overshoot: Closing filling water make-up feed. Undershoot: Switching off the circulation pump if outside the filter running times in automatic mode.
	Level c	N.O.	N.C./N.O.	Overshoot: Switching circulation pump back on. Undershoot: Opening filling water make-up feed.
	Level d	N.O.	N.C./N.O.	Undershoot: Switching off the circulation pump – dry-running protection.
Automatic channel cleaning	Available	No	Yes/No	-
		N.O.	-	External signal input for automatic channel cleaning Input signal for external switch.
Night-time temperature reduction/whisper mode	Available	No	Yes/No	-

## 4.6.6 Attractions > Attraction 1 – 3

The submenus for attractions 1 – 3 have the same structure. The x in the table identifies the attraction in question.

Parameters	Factory settings	Setting range, setting parameters	Comments
Available	No	Yes / No	-
Designation of attraction x	Attraction x	Free choice	Here, a free choice of designation can be entered (e.g. counter-current system).

## 4.6.7 Pool lighting > Pool lighting 1 – 4

The submenus for pool lighting 1 – 4 have the same structure. The x in the table indicates the pool lighting in question .

Parameters	Factory settings	Setting range, setting parameters	Comments
Available	No	Yes / No	-
Designation of pool lighting x	Pool lighting x	Free choice	Here, a free choice of designation can be entered (e.g. pool edge left).

## 4.7 Commissioning level (code-protected range)



In the commissioning level, parameters and values can be read or changed. For changing, commissioning must be switched on by tapping the On field.

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**CAUTION:** Danger in case of incorrect operation and incorrect settings.

- This can lead to hazardous operating conditions which cause injury, illness or damage to property.
  - ▶ Read these instructions and the instructions for other system components carefully.
  - ▶ Do not carry out any work that you are not qualified to do.
- 



**CAUTION:** Risk of damage to system components in the event of incorrect use of the filter system due to deactivated fault shutdowns on the commissioning level.

- It is possible that incorrect valve positions may not be detected
  - Actuators convey against incorrectly positioned valves
  - Hot running or dry running of actuators
  - Failure of the system components or filter system
  - ▶ Ensure that all valves are in the correct position for the required operating state.
- 



**CAUTION:** Risk of damage to the ultrafiltration module in the event of incorrect use of the filter system due to deactivated fault shutdowns on the commissioning level.

- It is possible that incorrect valve positions may not be detected
  - Actuators convey against incorrectly positioned valves
  - ▶ Ensure that all valves are in the correct position for the required operating state.
  - Non-permissible pressure build-up on the filtrate side
  - Ultrafiltration module is built up directly with compressed air > 0.5 bar
  - Failure of the ultrafiltration module or filter system
  - ▶ Ensure that the ultrafiltration module is not directly pressurised with compressed air > 0.5 bar. Never exceed the time for the backwash step or backwash volume of approx. 55 litres.
-

### 4.7.1 Menu structure commissioning level

Menu	Submenu	Selection
Meas. values (display only)	Inlet press. UF module	-
	Outlet press. UF module	
	Diff. press. UF module	
	Water temperature	
	Circulation capacity	
	pH value bathing water	
	Chlorine value bathing water	
	Redox value bathing water	
Valves	Valves BW filter	Open/closed
	MKH raw water	
	MKH lower channel	
	MKH upper channel	
	Valve fl. air	
	MKH filtrate	
	Valve auto cond. emptying	
	Valve auto integrity test	
	Valve fr. water make-up feed	
	Valve auto channel cleaning	
	MKH suction line RWS	
	MKH suction line pool	
	MKH separation floor drain routes	
	MKH pool lowering in RWS	
Drives	Circulation pump	On/off, set point in %
	Chlorine dosing system	On/Off
	Compressor	
	Heating circ. pump	
	Measuring and control system	
	Attraction 1	
	Attraction 2	
	Attraction 3	
	Pool lighting 1	
	Pool lighting 2	
	Pool lighting 3	
	Pool lighting 4	



At the end of the commissioning process, this must be switched off by tapping the Off field.

## 4.8 Connection Wi-Fi capable terminal unit directly to control unit



Check that the Wi-Fi router installed in the control cabinet is correctly positioned in the socket, as well as the position of the cable connections.

The control unit of the spaliQ:UF150 is equipped with a Wi-Fi router. You can connect Wi-Fi devices such as smartphones, tablets or laptops directly to the control unit of the spaliQ:UF150. They permit access to the control unit. The Wi-Fi router is preconfigured (fixed IP address and fixed password setting).

1. In the settings of your Wi-Fi device, search for available Wi-Fi -networks.



You can find information about connecting your Wi-Fi device (e.g. smart phone or tablet) to a Wi-Fi in the instructions for the device.

2. Select the SSID of your filter system (spaliQ:UF150).
3. Enter the password.



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The password you need for the connection is also the serial number of your filter system. The serial number is located on the type plate in the switch cabinet. (Password example: SN150030)

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- » The connection is established.
4. Open the Internet browser on your Wi-Fi device.
  5. Enter 192.168.1.254/webvisu.htm in the address line of your browser (subnet mask 255.255.255.0).
  6. Confirm the entry.
    - » The internal website of the spaliQ:UF150 is opened.

## 4.9 Display configuration key



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The display configuration button, directly next to the touch panel, can be used to query information and make settings for connecting the touch panel to the control unit in the control cabinet.

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The most important settings have already been factory-set and are not permitted to be changed.

The following settings are only permitted to be changed if necessary:

Display > Touchbeeper

1. Enable the checkmark to switch on the touchbeeper or disable it to switch off the touchbeeper.
3. Press the **Submit** button

You can return to the status level using the Exit button, followed by the Start Application button.

In the event of connection problems between the touch panel and the control unit in the control cabinet (counter counts from 10 to 0 multiple times in succession), you can use the Exit button followed by the **Reboot** Device button to restart the touch panel software.

## 5 Installation

### 5.1 Requirements for the installation site



The system must be protected from direct sunlight and frost.

Observe local installation directives, general guidelines and technical specifications.

The installation site must be frost-proof. The system must be protected from chemicals, dyes, solvents and vapours.

The installation site must be sufficiently ventilated and must not be prone to flooding.

The installation site should be below water level. If the installation site is above the water level (suction operation), a non-return valve must be fitted on the pump pressure side and the suction conditions must also be observed in detail.



**Note:** Possible damage to the circulation pump due to excessive pressure losses on the suction side.

- Cavitation, increased vibrations and wear due to material removal on the impeller or housing of the circulation pump.
- Considerable damage to the circulation pump
- Functional failure
- ▶ Observe the required NPSH and the resulting max. permissible pressure loss on the suction side of the standard suction circulation pump.

A foundation of a sufficient size and adequate load carrying capacity must be provided. The system must be easily accessible for maintenance and repair purposes. At least 1 m to the left and right of the system will be required for maintenance and repair work. The minimum room height must be complied with.

Regarding the power supply on site, a power outlet that has its own AC/DC sensitive ground fault circuit interrupter (30 mA) is required. A feeder cable must be laid on-site for the electrical connection.



**NOTE:** The system will not function without continuous power supply.

- No filtered water will be available if the system is operated without electricity.
- ▶ Do not connect the electrical power supply with switches or the like.

A chemically resistant drain connection is required in the floor of the installation location in order to discharge the waste water from flushing.



**NOTE:** Fault if the drain connection is not chemically resistant.

- Water damage or fault of the filter system if the drain connection fails.
  - ▶ Use a drain connection that is resistant to chlorinated water/chemicals.
- 

The lifting system used must be resistant to chlorinated water/chemicals.

---



**NOTE:** Malfunction of the lifting system in the event of a power failure.

- Water damage in case the lifting system fails.
  - ▶ Secure your water installation against inadvertent water leakage if there is a power failure.
- 



**NOTE:** Fault of the lifting system if the chemical resistance is insufficient.

- Water damage or fault of the filter system if the lifting system fails.
  - ▶ Use a lifting system that is resistant to chlorinated water/chemicals.
- 

The installation room must be provided with a floor drain. If none is available, an appropriate safety device has to be installed to avoid water damage.

## 5.2 Checking the scope of supply

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

## 5.3 Transport and installation of the filter system

1. Transport the spaliQ:UF150 ultrafiltration system to the predetermined location.
2. Use conventional transporting equipment for transport.



If the spaliQ:UF150 ultrafiltration system is too large to be transported or brought into the technical room, the housing can be removed and if necessary the system rack can be divided up.

---

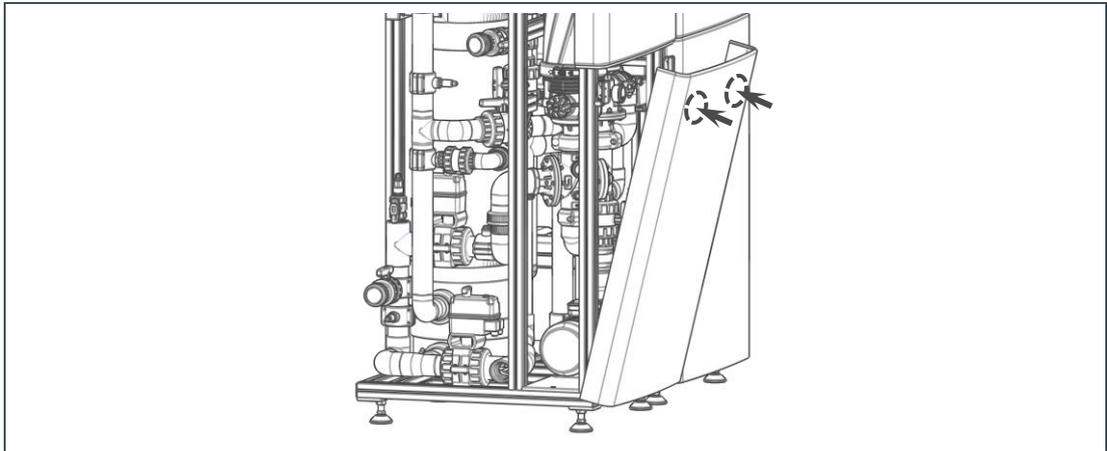
3. Set up the spaliQ:UF150 ultrafiltration system at the prepared location.
4. Use a water-level to align the racks using the adjustable legs.
5. Reconnect disconnected connections (first system rack, then hydraulic, then electrical) if you divided up the system.

### 5.3.1 Removal/installation of housing

The housing must be removed in order to carry out work (preparatory, installation, inspection, maintenance) on the technology. Proceed as follows to remove:

### Removal of the large cover

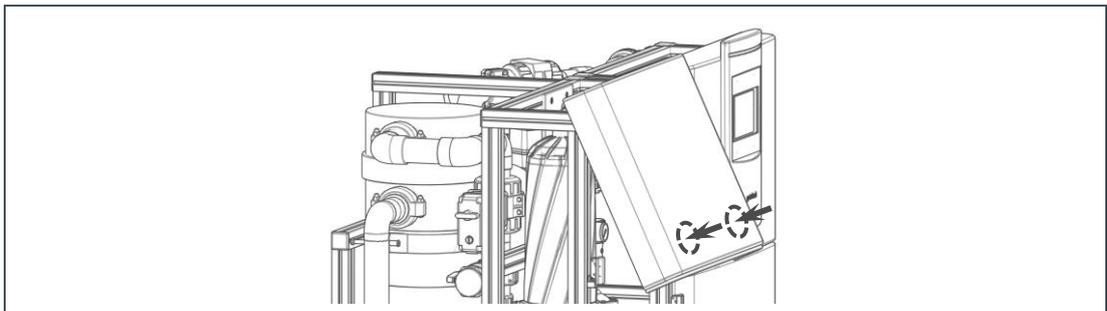
1. Push the large cover against the system rack at the upper corners.
  - » The snap-fit connections fitted release the cover.



2. Lift the large cover out of the suspension.
3. Position the large cover to prevent it from falling over.
4. Protect the cover against falling over.
5. Carry out the planned/scheduled work.

### Removal of the small cover

1. Push the small cover against the system rack at the bottom corners.
  - » The snap-fit connections fitted release the cover.



2. Lift the small cover out of the suspension.
3. Put down the small cover where it is protected against falling over and damage



The electrical connection cables must be disconnected from the small cover with the touchpanel installed.

### Installation of the large cover

1. Guide the large cover into the suspension.
2. Push the large cover against the system rack at the upper corners.
  - » The fitted snap-fit connections engage.

### Installation of the small cover

1. Guide the small cover into the suspension
2. Push the small cover against the system rack at the bottom corners.
  - » The fitted snap-fit connections engage.

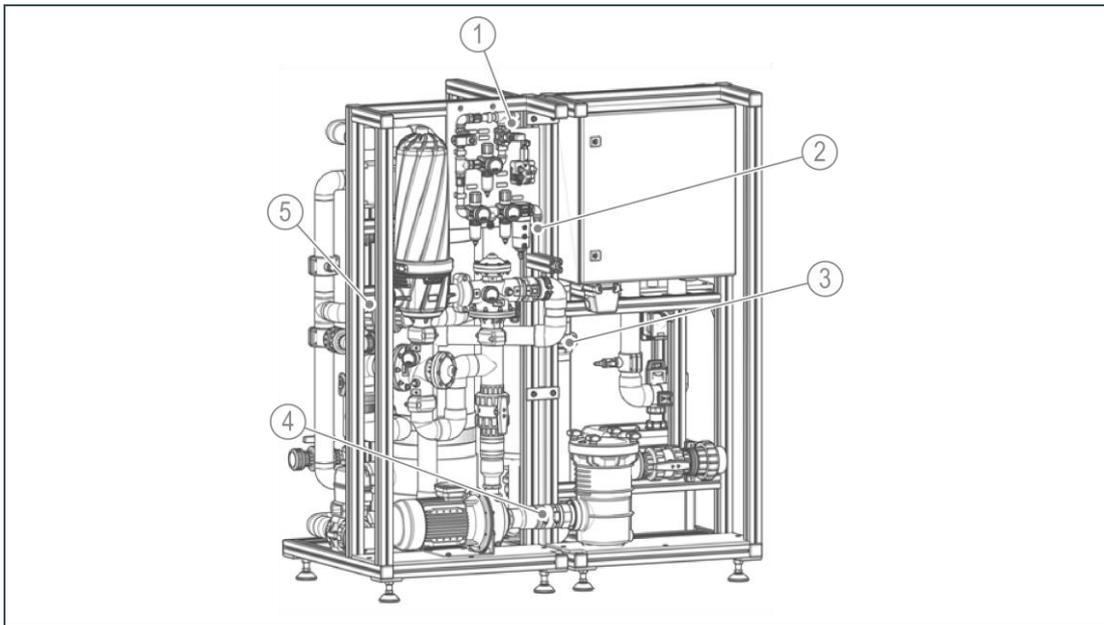


The electrical connection cables will have to be connected on the small cover with the touchpanel installed.

## 5.3.2 Dividing the system rack

### Dividing the system rack hydraulically

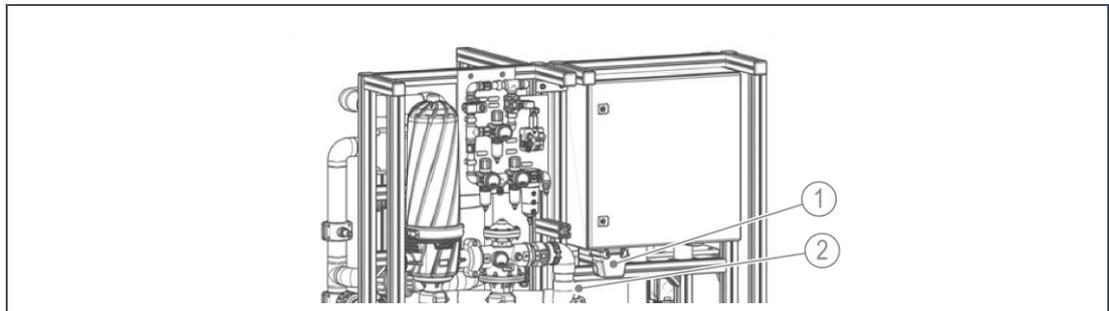
The following hydraulic connections must be disconnected:



Pos.	Designation	Pos.	Designation
1	Connection for flushing air	2	Compressed air supply connection
3	Filtrate line UF screw connection	4	Hair and fibre strainer hose connection to circulation pump
5	Filtrate line UF ball valve		

### Separating the system rack electrically

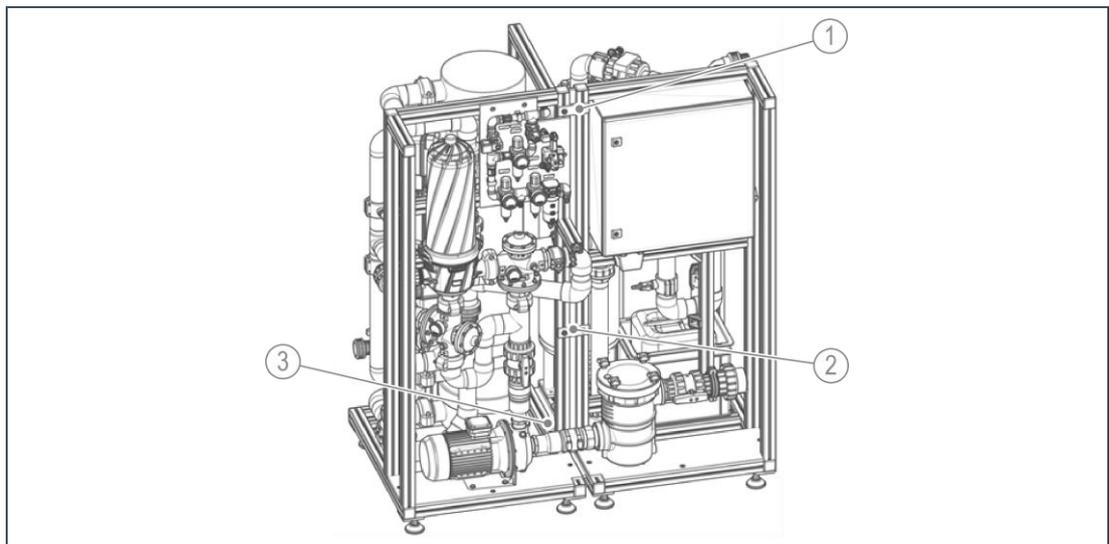
The following electrical connections must be disconnected:



Pos.	Designation	Pos.	Designation
1	Electrical plug	2	Cable to circulation pump

### Separating the system rack mechanically

The system rack must be disconnected and then divided at the following connections:



## 5.4 Hydraulic installation



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The installation may only be carried out by specially trained personnel or a specialist company.

---



**NOTE:** The entire filter system is intended for installation in a technical room located below the water level.

- The filter system can run empty when at a standstill if installed above the water level.
  - If the pressure loss on the suction side of the circulation pump is excessive, cavitation may occur.
    - ▶ Install the non-return valve on the pressure side of the circulation pump.
    - ▶ Observe the required NPSH for the resulting suction operation, as well as the resulting max. permissible pressure loss on the suction side of the standard suction circulation pump.
- 



**NOTE:** The filter system is not allowed to be used as a fixed point for pipelines under any circumstances.

- Loadings imposed by the client's pipelines can cause damage to components.
    - ▶ Support the PVC piping directly before and after the filter system.
- 

### 5.4.1 Filter system

1. Provide shut-off possibilities before and after the system so that the system can be blocked off during maintenance work.
2. Secure the system against water hammer.
3. Only use suitable piping material (pressure-resistant, temperature-resistant according to the information in the technical specifications).
4. Only use piping material or pipelines that are of sufficient size.
5. Only use a suction line that is leak-tight and as short as possible.
6. Only use suction lines with diameters that are at least equal to the diameter of the suction connection and can withstand the resulting negative pressure. Do not use any pressure hoses, but vacuum hoses.
7. Avoid sudden changes in cross section and direction as well as excessive curvatures, so as to reduce flow resistance in the pipelines.
8. Pipe bends should be used by preference.
9. Increase the diameter of the pipeline if long pipe runs with many curvatures are unavoidable.
10. Avoid stresses caused by thermal expansion.

## 5.4.2 Raw water connection

1. Connect the PVC-U piping from the raw water connection to the on-site raw water storage tank or skimmer in a continuously rising (supply operation) or continuously falling (suction operation) direction.



Use PVC screw connections with gluing point provided with the system for this purpose.

---

2. Provide a shut-off possibility between the raw water connection and the on-site raw water tank resp. skimmer.

## 5.4.3 Filtrate connection

1. Install PVC-U piping from the filtrate connection to the pool.
2. Provide a shut-off possibility between the filtrate connection and pool.
3. Secure the filter system against water hammer if required, e.g. using a non-return valve in the filtrate line.



**CAUTION:** Note the maximum temperature of the filter system.

- If the maximum temperature is exceeded, the filter system could fail, representing a danger of water damage.
  - ▶ Measures must be taken in the control technology or by mechanical means to ensure that the throughflow on the heating side is also stopped and interrupted if the circulation pump is at a standstill.
- 



**CAUTION:** Increase in the temperature on the bathing water side at the heat exchanger above 40 °C.

- Damage and failure of the filter system or PVC-U piping.
  - ▶ Provide a maximum temperature limiter after the heat exchanger which switches off the heating pump if the temperature is exceeded.
-

#### 5.4.4 Flushing waste water connection/drain

- ▶ Install PVC-U piping from the flushing waste water connection to the drain.



Use PVC screw connections with gluing point provided with the system for this purpose.

---



Run the flushing waste water line vertically downwards and without obstruction into an outlet funnel/drain pipe according to DIN EN 1717. Make sure that the outlet is unobstructed so as to avoid the possibility of re-contamination from the drain. Do not reduce the flushing waste water line or connect it to the drain with a fixed connection.

---

- The transparent pipe sections fitted in the filter system can be used as viewing points for subsequent visual inspection of the flushing water.
- We recommend installing a syphon in the drain line as an odour trap.
- If there is a floor drain with odour trap, the client must ensure that no flushing water is distributed within the technical room.
- If the flushing waste water is carried within a lifting system, the client must provide a level control that blocks the flushing programme using a voltage-free contact.

## 5.5 Electrical installation



The electrical installation may only 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 230/400 V/50 Hz three-phase system.



**WARNING:** Danger of an electric shock when working on electrical components while an electrical power supply is active.

- Electrical shock, indisposition, fatal injury.
- ▶ Disconnect the electrical power supply prior to installing, dismantling or performing an intervention on the control unit or performing any work on electrical components.
- ▶ Make sure that the frequency converter has been separated from the electrical power supply for at least 15 minutes and is isolated prior to working on the frequency converter or the connected circulation pump.



**NOTE:** Fault of the filter system if the circulation pump is not connected correctly to the electrical supply.

- Fault of the filter system, inadequate circulation, failure of the filter system or circulation pump.
- ▶ Checking the direction of rotation of the pump motor:  
The direction of rotation of the pump motor must match the direction arrow on the pump motor housing. Check the direction of rotation by switching on briefly and switching off again (within max. 1 - 2 seconds). Swap any two phases at the engine power supply if the direction of rotation is incorrect.

### 5.5.1 Filter system electrical power supply connection

The filter system is already wired up. It only needs to be connected to the electrical power supply in the building.

The required terminals and all other terminals can be found in the separate electrical diagram (order no. 247 198).

## 6 Start-up



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Start-up may only be carried out by a specialist installer or Grünbeck's technical service/authorised service company.

---



**WARNING:** Danger in case of incorrect operation and incorrect settings.

- This can lead to hazardous operating conditions which cause injury, illness or damage to property.
  - ▶ Read these instructions and the instructions for other system components carefully.
  - ▶ Do not carry out any work that you are not qualified to do.
- 

### 6.1 Preparations

#### 6.1.1 First fill of the pool

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

Before the tiled pool is filled, it must be thoroughly cleaned, the overflow channel or skimmer, the pipelines and the raw water tank must also be thoroughly cleaned. Residues that have arisen during the jointing process, residues containing oil, construction site dirt or similar, must be removed and must under no circumstances enter into the filter system. Similarly, the cleaning agents are also not permitted to enter into the filter system. Failure to undertake cleaning establishes the conditions for subsequent microbial contamination.

After thorough cleaning, all residues of cleaning agents must be washed out thoroughly in the drain. Pool walls should be coated with chlorinated water before filling, to prevent algae growth to the greatest possible extent and to kill any small areas of germ growth.

---

NOTE: Blocking or damage to the filter system if filling with residue, dirt or cleaning agents present



- Malfunction of the filter system, inadequate circulation, CIP cleaning necessary, failure of the filter system.
  - ▶ The residue, contamination and cleaning agents are not allowed to enter the filter system under any circumstances.
- 

The required water quality of the filling water in the private swimming pool is subject to the specifications given in DIN-EN 16713.

The filling water must have generally hygienic drinking water properties as a means of combatting infections. Processing the water used for filling in a separate system should be

considered is required if it contains increased concentrations of humic substances, or if the following values are exceeded:

- Increased concentrations of dissolved organic carbon (DOC).
- Iron  $\geq 0.10$  mg/l.
- Copper  $\geq 0.2$  mg/l
- Manganese  $\geq 0.05$  mg/l.
- Nitrate  $\geq 0.50$  mg/l
- Polyphosphate as phosphorous  $\geq 0.01$  mg/l
- Total hardness  $> 14$  °dH

In order to prevent scale deposits in the pool and to reduce the precipitation of scale in the heating system as well as avoid scale deposits in the filter system, softened water must be used for filling the pool or make-up water feed.

---

NOTE: Blocking of the filter system on filling with water with a total hardness  $> 14$  °dH.



- Malfunction of the filter system, inadequate circulation, CIP cleaning necessary, failure of the filter system.
- ▶ Do not use any filling water with a total hardness  $> 14$  °dH. The value should not be less than  $7$  °dH in order to provide an adequate buffer effect.



We recommend adding chlorine to the pool water directly after it is filled, and to operate with an increased chlorine concentration of  $1.4$  mg/l for at least two weeks.

---

## 6.1.2 Check on hydraulic and electrical installation and preparation

1. Carry out a visual inspection and leak test of all connections, screw connections, valves, flange and pipe connections.
2. Check all hose transitions are firmly attached.



When doing this, check if there is still tightening reserve visible on the hose clamp when the clamping screw is firmly tightened.

---

3. Check at the switch cabinet:
  - a Set the main switch to position **0**.
  - b Check the electrical connections.
  - c Retighten the cable screw connections.
  - d Seal using cable putty if required.
  - e Set the motor protection relay according to the motor ratings.
4. Check all other electrical connections.
5. Check that the Wi-Fi router installed in the control cabinet is correctly positioned in the socket, as well as the position of the cable connections. The green LED on the Wi-Fi router must be continuously lit.

6. Check the hydraulic and electrical installation.
7. Check the supply to the dosing system for disinfectant with chemicals.
8. Ensure a safe disposal of dripping and leakage water in the piping system and the system area.

### 6.1.3 Switching on the system / configuring the control unit

1. Switch on the system.
2. Set the switch cabinet main switch to position **I**.
3. Configure the control unit for the installed swimming pool system, e.g. register and set the parameters for the client's components (see chapter 4).

### 6.1.4 Compressed air supply

Compressed air is required for commissioning.

1. Adjust and check the compressed air supply.



Use the supplied, appropriate hoses and connections for the air supply lines.

---

2. Remove the red transport cap from the connection point of the compressor.
3. Install the black suction filter supplied in the cardboard box.
4. Set the pressure switch on the compressor to position **I**.
5. Activate commissioning mode.

Main menu>Commissioning level>

6. Touch the **Commissioning On** button.  
» You are in commissioning mode.
7. Switch on the compressor (under Drives).
8. Wait until the compressor is charged to 8 bar.



A pressure range of 6 – 8 bar is set on the pressure switch of the compressor and is not allowed to be altered.

---

9. Set the pressure reducer on the compressor to approx. 7.5 to 8.0 bar.
10. Lock the pressure reducer on the compressor.
11. Open the air supply lines.
12. Check the air supply of the backwash filter values, ultrafiltration module flushing process and automatic integrity test if there is one (option).
13. Check the pressure reducer for control air is set correctly (5.0 bar), readjust and lock if necessary.

14. Check the pressure reducer for flushing air is set correctly (2.5 bar), readjust and lock if necessary.
15. Check the pressure reducer for integrity test (option) is set correctly (0.5 bar), readjust and lock if necessary.
16. Carry out a visual check and leak test of all connections, screw connections, valves and connectors, correcting them if necessary.



**WARNING:** Danger of compressed air leakage on any point in the compressed air supply, above all at valves and couplings.

- Injury to the face due to compressed air leakage.
- ▶ Wear protective equipment such as protective goggles.



**NOTE:** Damage to the compressor

- Avoid excessively long running times.
- ▶ Comply with rest cycles and intervals of the compressor (15 minutes operation / 15 minutes interval)!

## 6.2 Taking the filter system into operation



**NOTE:** In commissioning mode, there is no safety cut-off of the filters in the event of a fault.

- In case of incorrect operation, there is a risk of damage to the filter system and failure of the filter system.
- ▶ Take particular care when commissioning the filter system.



**NOTE:** Danger of water hammer when operating the valves when the circulation pump is running.

- Damage to the filter system with possible water damage.
- ▶ Operate the valves only when the circulation pump is switched off.



**NOTE:** Damage to the mechanical seal of the circulation pump due to dry running.

- Leaks or failure of the circulation pump.
- ▶ Make sure that the circulation pump does not run dry.
- ▶ Make sure that the circulation pump does not pump against closed fittings/valves.



**NOTE:** Danger of air in the suction line.

- Circulation pump no longer pumps adequately or not at all, and can be damaged.
  - ▶ Make sure that the circulation pump does not draw in any air.
- 

Main menu>Commissioning level

- ▶ Select **Commissioning On**

## 6.2.1 Emptying preservation agent filter system

1. Select Motorised ball valve upper drain UF **Open**
2. Select Motorised ball valve lower drain UF **Open**
  - » Existing preservation agent drains out into the drain.
3. Select Motorised ball valve lower drain UF **Closed**
4. Select Motor ball valve upper drain UF **Closed**.

## 6.2.2 Establishing the water supply

1. Open the shut-off valves in the suction and pressure/filtrate line.
2. Open the on-site vent valves.
3. Fill the circuit, in particular the suction line, hair and fibre strainer as well as the circulation pump, with water.
4. Check the circulation pump in switched-off and deenergised condition for freedom of movement (above all if it is not operated for a long period of time).



**WARNING:** Danger due to moving parts such as the impeller of the circulation pump.

- Danger of severing fingers or hands.
  - ▶ Do not reach with your fingers or hands into moving parts such as the impeller of the circulation pump.
- 

5. Check the fresh water make-up feed at the raw water tank (readjust if necessary).
  6. Check the level of settings at the raw water tank (readjust if necessary).
- 



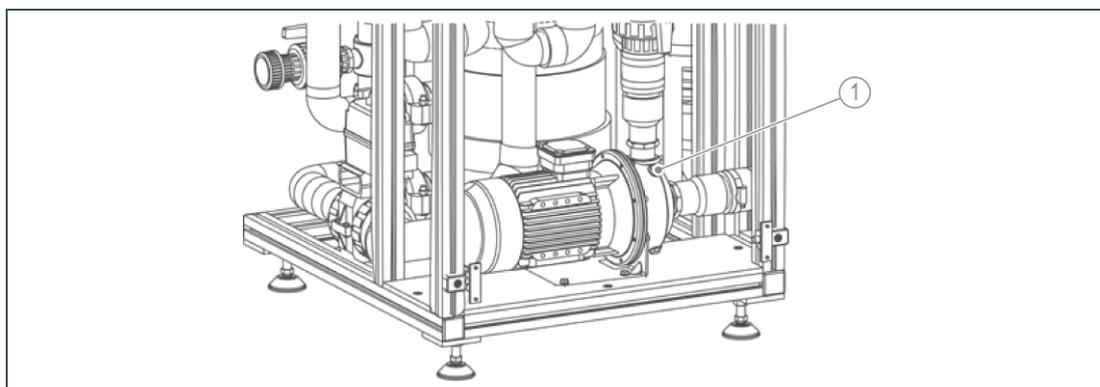
**NOTE:** The dry-running protection of the pump must be guaranteed.

- Leaks or failure of the circulation pump.
  - ▶ The flushing waste water quantity sufficient for an uninterrupted flushing of the filter system must be stored in the in raw water tank.
-

### 6.2.3 Flushing out preserving agent ultrafiltration module – forward flush

The first step is to flush the ultrafiltration module to the drain – in this case a forward flush – to flush the remaining preserving agent contained in the ultrafiltration module out to the drain.

1. Select Motorised ball valve upper drain UF **Open**
2. Select Motorised ball valve raw water UF **Open**
3. Set the circulation pump to approx. 50%.
4. Select switching on the circulation pump **On**
  - a Briefly check the direction of rotation of the circulation pump at low speed (see chapter 5.5).
  - b Correct it if required.
  - c Bleed the circulation pump.



**NOTE:** Preserving agent must be flushed out.

- Input of preserving agent in pool circuit.
- ▶ Flush the filter system for at least 10 minutes on commissioning or recommissioning.

5. Select switching off the circulation pump **Off**.
6. Select Motorised ball valve upper drain UF **Closed**.
7. Select Motorised ball valve raw water UF **Closed**.

## 6.2.4 Filling the filter system

1. Select Motorised ball valve raw water UF **Open**.
2. Select Motorised ball valve filtrate UF **Open**.
3. Set the circulation pump to approx. 50%.
4. Select switching on circulation pump **On**.
  - » Until flow measurement is filled with water.
5. Select switching off the circulation pump **Off**.
6. Select Motorised ball valve raw water UF **Closed**.
7. Select Motorised ball valve filtrate UF **Closed**.

## 6.2.5 Flushing out preserving agent ultrafiltration module – Backwash

After filling, backwash of the ultrafiltration module takes place in order to flush remaining preserving agent down the drain.

1. Select compressor **On**.
2. Wait until it is filled with 8 bar.



**NOTE:** Avoid running the compressor for too long!

- Damage to the compressor
  - ▶ Comply with rest cycles and intervals of the compressor (15 minutes operation / 15 minutes interval)!
- 

3. Select Motorised ball valve upper drain UF **Open**.
4. Check the pressure reducer for flushing air has the correct setting of 2.5 bar.
5. Select solenoid valve flushing air **Open** (open for approx. 5 seconds).
  - » The water on the filtrate side is flushed through the ultrafiltration module back to the drain with the help of the compressed air.



**NOTE:** Ultrafiltration module is not allowed to be exposed to compressed air pressure.

- Damage to the ultrafiltration module.
  - ▶ Note the duration of backwash
- 

6. Select solenoid valve flushing air **Closed**.
7. Select motorised ball valve upper drain UF compressor **Closed**.
8. Select Compressor **Off**.

## 6.2.6 Filling the filter system

1. Select Motorised ball valve raw water UF **Open**.
2. Select Motorised ball valve filtrate UF **Open**.
3. Set the circulation pump to approx. 50%.
4. Select switching on circulation pump **On**.
  - » Until the filter system has been completely deaerated and filled with water (can be observed by the flow measurement).
5. Select switching off the circulation pump **Off**.
6. Select Motorised ball valve raw water UF **Closed**.
7. Select Motorised ball valve filtrate UF **Closed**.

## 6.2.7 Setting backwash of backwash filter

For effective backwash of the backwash filter, the flushing water quantity (see technical data – backwash filter flushing performance) and the backwash time must be set according to the prevailing general conditions and documented.

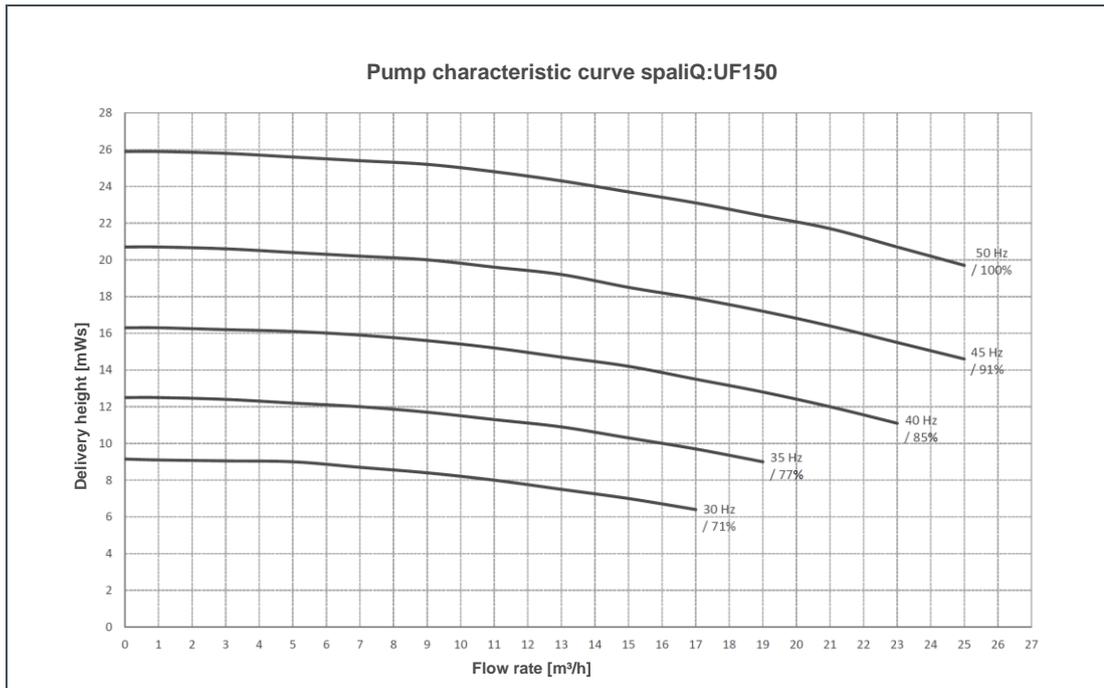
1. Select compressor **On**.
2. Wait until it is filled with 8 bar.



**NOTE:** Avoid running the compressor for too long!

- Damage to the compressor
- ▶ Comply with rest cycles and intervals of the compressor (15 minutes operation / 15 minutes interval)!

3. Check the pressure reducer for control air is at the correct setting of 5.0 - 5.5 bar.
4. Select Valves BW filter **Open**,
  - » open to drain
5. Check the function of the backwash filter valves. Valves should open and close fully, but without water hammer. Fine-tune the air supply setting if required.
6. Set the circulation pump on the control via % set point to the necessary index value backwash filter flushing performance ( $Q = 9.0 \text{ m}^3/\text{h}$  at approx. 20 mWC). Can be compared using pump characteristics at corresponding frequency of the frequency converter (see display of pump characteristic curves).



7. Select Circulation pump **On**. Check the rinsing pressure using the filtrate pressure gauge on the backwash filter filtrate valve. Correct the % set point if necessary.
8. Observe the backwash of the backwash filter through the transparent sight glass.
9. Select switching off the circulation pump **Off**.
10. Select Valves BW filter **Closed**.
11. Select Compressor **Off**.
12. In the following menu level, set the obtained % index value as the index value for backwash flushing.

```
Main menu>Settings>Ultrafiltr. module>Index/crtl vals.>Index
vals.>Fl. backw. filter
```

13. Exit commissioning mode

```
Main menu>Commissioning
```

14. Select Commissioning **Off**.

## 6.2.8 Setting Grünbeck flushing process ultrafiltration module / measuring times

Various steps/sequences are required for the Grünbeck-flushing process. Times of the steps required for this depend on the existing swimming pool system (suction line lengths, height differences, line losses, ...), which means they have to be measured and adapted individually:

Individual time can be found when flushing of the ultrafiltration module is triggered. Trigger automatic flushing in the following menu level.

Main menu>Settings>Ultrafiltration module>Flushings>Flushing  
Ultrafiltration module>Start

In the following steps, times must be measured and then set:

### Emptying module

4. Measure the time until the ultrafiltration module has emptied completely. Add a 20 second safety margin.
5. In the following menu level, enter the measured time + safety margin.

Main menu>Settings>Ultrafiltration module>Flushings>Flushing  
ultrafiltration module>Emptying

### Fl. in NaOCl

1. Measure the time until the ultrafiltration module has filled completely, i.e. until water emerges from the upper drain connection.
2. In the following menu level, enter the measured time.

Main menu>Settings>Ultrafiltr. Module>Flushings>Fl. ultrafiltr.  
module>Fl. in NaOCl

### Backwash

3. Measure the time until approx. 55 litres have flowed into the drain.
4. Set the measured time in the following menu level.

Main menu>Settings>Ultrafiltration module>Flushings>Flushing  
ultrafiltration module>Backwash

### Flushing out with raw water

1. Measure the time until the ultrafiltration module has filled completely, i.e. until water emerges from the upper drain connection. Measured time + 10 seconds gives the index time for the flushing-out procedure.
2. Set the measured index time in the following menu level.

Main menu>Settings>Ultrafiltration module>Flushings>Flushing  
ultrafiltration module>Flushing out

### Filling filter system

1. Measure the time until the complete system has been deaerated and filled with water (to be observed by flow rate measurement).
2. Set the measured time + 10 seconds in the following menu level.

Main menu>Settings>Ultrafiltration module>Flushings>Flushing  
ultrafiltration module>Filling

## 6.2.9 Integrity test of ultrafiltration module (pressure-holding test)

1. Check the integrity of the bacteria/virus barrier during or after commissioning .



For a reliable result, the ultrafiltration module must have been operated in filtration mode for at least 24 hours.

---

- 1 - Initiate the integrity test in the following menu level.

```
Main menu>Settings>Ultrafiltr. module>Flushings>
Integrity test
```

3. In the manual integrity test (standard system), use the existing pressure reducer for flushing air and the flushing air solenoid valve. At the beginning of the manual integrity test, set the pressure on the pressure reducer to 0.5 bar.

>> Program running.

4. At the end of the integrity test (standard system) set the pressure back to 2.5 bar.



In the automatic integrity test (option), the optional pressure reducer for integrity test (set to 0.5 bar) is used. and also the integrity test solenoid valve.

---

## 6.2.10 Completion of commissioning / handover of product to the owner

1. Trigger automatic backwash filter flushing

```
Main menu>Settings>Ultrafiltration module>Flushings>
Backwash filter flushing
```

2. Check the sequence.
3. Check the backwash time and adjust the factory setting if required.
4. Trigger automatic flushing on the ultrafiltration module.

```
Main menu>Settings>Ultrafiltration module>Flushings>Flushing
ultrafiltration module
```

5. Check the sequence.
6. Check the step times and adjust the factory settings if necessary.
7. Start filter operation.

```
Main menu>Operator>System operation
```

8. Measure, set or check the circulation capacity.
9. Open the water lines/pipes for additional swimming pool components provided by the client (e.g. measuring water supply measuring and control system).
10. Check for function and leak-tightness.
11. Bleed the lines for the circulation circuit and for a heating circuit if there is one.

- 12. When the filter system is not subject to loading, read off the transmembrane pressure of the ultrafiltration module on the display.
- 13. Document in the operation log the measured set points.




---

In future, the filter system flushes with a defined pressure increase or according to the set flushing block.

---

- 14. Adjust the limit values to the local conditions.
- 15. In the operation log, document the measured index value for backwash filter flushing and index value for ultrafiltration module flushing.
- 16. Carry out a temperature comparison of the pool water.
- 17. Assess the entire system for leaks during the operation phase.
- 18. Check the filter system and accessories are functioning correctly.
- 19. Enter the contact data for the customer.

Main menu>Settings>General>Change contact data

- 20. Explain the system functions and operation to the owner or customer.
- 21. Inform the owner or customer that air flowing in through the pool inlet nozzles is a normal procedure in the course of flushing the ultrafiltration module.
- 22. 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. The operating log is attached to this manual.
- 23. Complete the commissioning.
  - » The filter system is now ready for operation and can start regular operation.

# 7 Operation

## 7.1 Request information

The Home button accesses the Status level.



Buttons/fields that were pressed last and are thus active are highlighted in a transparent colour!

### 7.1.1 System status

This provides information about the system status.

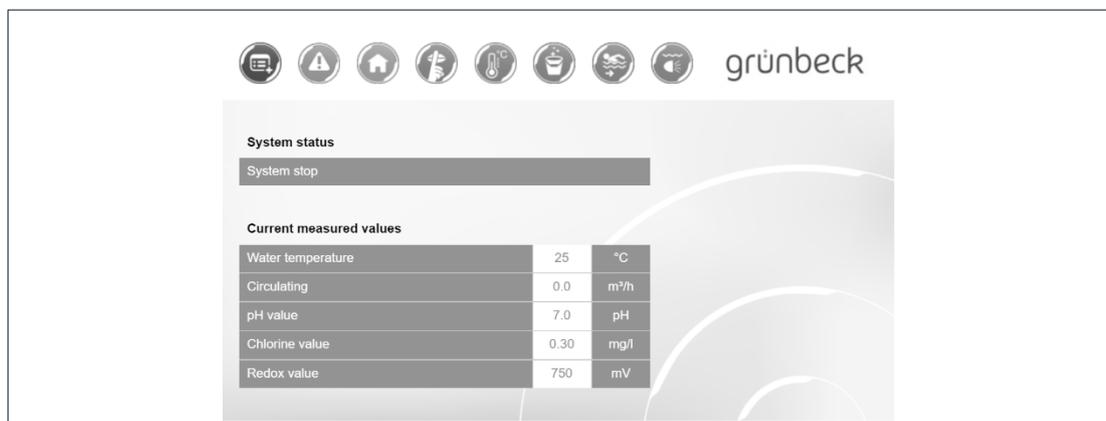
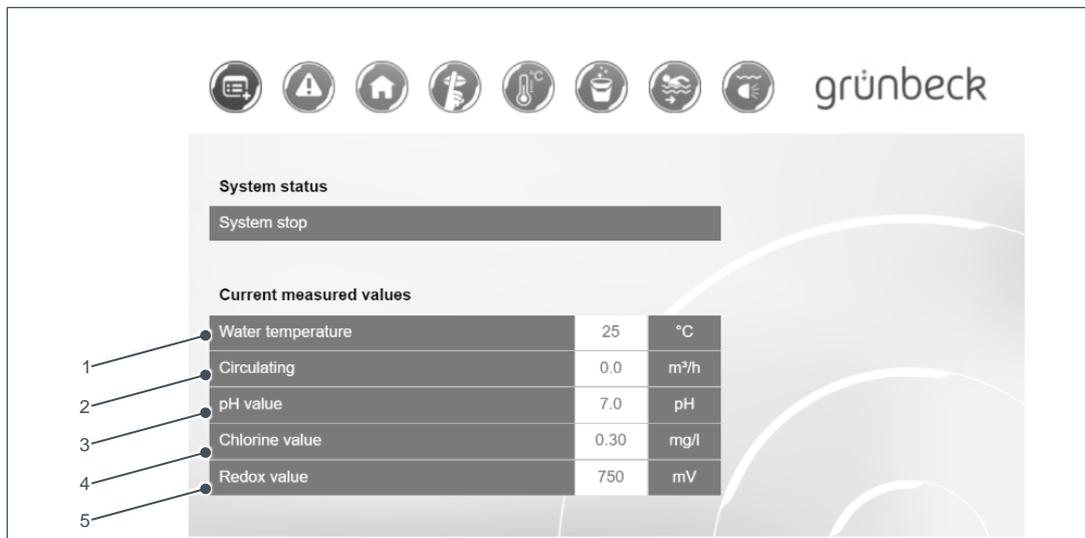


Figure	Explanation
System stop*	No circulation is taking place at the moment. The system is in a safe operating status.
Recirc. mode - full load	The system is in filtration operating mode and filters the pool water. The filtration full load set point applies.
Recirc. mode - part load	The system is in filtration operating mode and filters the pool water. The partial load filtration set point applies once part load operation feedback from the optional measuring and control system.
Recirculation mode – Night-time temperature reduction/whisper mode	The system is in filtration operating mode and filters the pool water. The night-time temperature reduction/whisper mode filtration set point applies, if the corresponding accessories are present.
Ultrafiltration module flushing*	The ultrafiltration module is being flushed. After flushing, the system switches to the operating mode previously in force.
Ultrafiltration module integrity test*	The system checks that the bacteria/virus barrier is undamaged. After the test, the system switches to the operating mode previously in force.
Ultrafiltration module flushing with integrity test*	The ultrafiltration module is flushed and a test is then performed that the bacteria/virus barrier is undamaged.
Backwash filter flushing*	The backwash filter is flushed. After flushing, the system switches to the operating mode previously in force.
Channel cleaning*	The automatic overflow channel bypass is active. The gutter can then be cleaned.
Commissioning mode	Commissioning mode has been activated. When this is active, it is not possible to switch over to a normal operating mode.

\* If the filter system is in this system status, the corresponding measuring values such as water temperature, pH value, chlorine value and Redox value should where possible correspond to the conditions in the pool!

## 7.1.2 Current meas. values



Pos.	Description	Pos.	Description
1	Display of the current water temperature measured by the filter system using its temperature sensor.	2	Display of the current circulation capacity measured by the filter system using its flow rate measurement.
3 <sup>a)</sup>	Display of the pH value sent from an optional measuring and control system of the filter system.	4 <sup>a)</sup>	Display of the free chlorine value sent from an optional measuring and control system of the filter system.
5 <sup>a)</sup>	Display of the Redox value sent by an optional measuring and control system of the filter system.		

a) can only be displayed if an optional measuring and control system sends these values

## 7.2 Operating mode, filter blocks/set flushing block

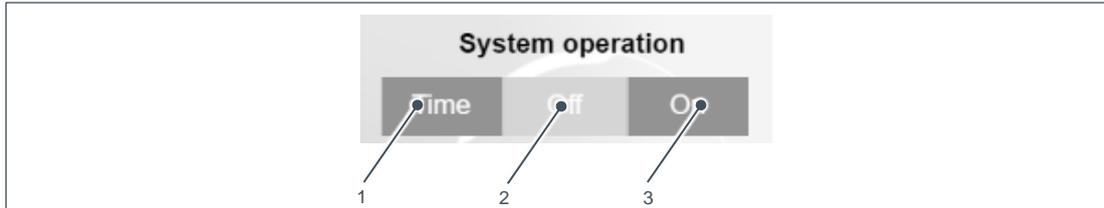
Status level>Main menu button>User

Parameters	Value	Remark
System op.	Time	
	Off	
	ON	
Filtration block 1	Selection weekdays	Monday, Tuesday, Wednesday, ..., Sunday
	Selection starting time	Time
	Selection finishing time	Time
Filtration block 2	Selection weekdays	Monday, Tuesday, Wednesday, ..., Sunday
	Selection starting time	Time
	Selection finishing time	Time
Filtration block 3	Selection weekdays	Monday, Tuesday, Wednesday, ..., Sunday
	Selection starting time	Time
	Selection finishing time	Time
Fl. block	Selection weekdays	Monday, Tuesday, Wednesday, ..., Sunday
	Selection starting time	Time
	Man. triggering	

## 7.2.1 Setting operating mode

Status level>Main menu button>User>System op.

1. Select the required operating mode.
  - » The selected operating mode is highlighted in a transparent colour.

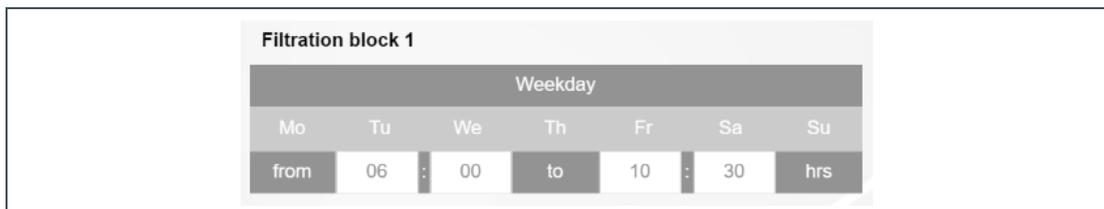


Pos.	Description	Pos.	Description
1	System runs in automatic mode. Filtration and flushing take place automatically according to the stored filter blocks or flushing block.	2	System is switched off.
3	System running in continuous operation. Filtration takes place continuously in 24 h operation. Flushing block is followed. Set filter blocks are not followed!		

## 7.2.2 Setting filter blocks

Status level>Main menu button>User>Filter block 1-3

1. Select the weekdays on which filtration block x should be active.
  - » The selected weekdays are highlighted in a transparent colour.
2. Select the starting time (time of day) for filtration block x.
  - » The input window opens.
3. Enter the starting time (time of day) of the filtration block x
4. Confirm with **OK**.
  - » Input window closes; starting time is accepted.
5. Select the finishing time (time of day) of filtration block x.
  - » The input window opens.
6. Enter the finishing time (time of day) of filtration block x.
7. Confirm with **OK**.
  - » The input window closes; finishing time is accepted.





It is important to make sure that the filter system runs for a sufficient length of time during the day in order for the filter system to function correctly and to ensure sufficient hygiene. The filter blocks should be adapted to usual bathing times and distributed evenly throughout the day.

### 7.2.3 Setting flushing block

Status level>Main menu button>User>Fl. block

1. Select the weekdays on which the flushing block should be active.
  - » The selected weekdays are highlighted in a transparent colour.
2. Select the starting time (time of day) of the flushing block.
  - » The input window opens.
3. Enter the starting time (time of day) of the flushing block.
4. Confirm with **OK**.
  - » The input window closes; starting time is accepted.



For hygiene reasons, the filter system must be flushed at least every three days! Ideally, the filter system should be flushed at least three times a week.

### 7.2.4 Manual triggering of ultrafiltration system flushing



If required, flushing of the ultrafiltration system can be triggered by hand, e.g. if there is a considerable one-off usage. The triggered flushing takes place in addition to the active flushing block.

Status level>Main menu button>User>Fl. block

- ▶ Select **Man. triggering** to trigger an additional flushing.
- » Flushing of the ultrafiltration system is triggered. Following, the filter system reverts to its previous or active operating mode.

## 7.3 Carrying out a comparison measurement

Status level>Main menu button>Settings>Temperature regulation

If the water temperature is measured directly in the pool using a floating thermometer of the like, this measured temperature value in the pool may differ from the temperature value of the system in the technical room. If this is the case, proceed as follows:

1. Touch the numerical value in the comparison measurement line.
  - » The input window opens.
2. Then enter the measured temperature value of the floating thermometer.
3. Confirm with **OK**.
  - » The input window closes; measured temperature value is accepted.
4. Tap the Apply field in the comparison measurement line.
  - » The entered temperature value is accepted, the calculated temperature deviation is taken into account by the control unit.

Temp. measurement			
Water temperature		25	°C
Comparison measurement	Take over	0	°C

## 7.4 Setting the date/time

Status level>Main menu button>Settings>General

In the first block, the current date and current time are displayed on the first line. In the event of deviations, the date and time can be reset.

1. In the second block, in the first line, select the relevant white fields in order (from left to right: Day-month-year/hour/minute).
2. Tap the first white field (day).
  - » The input window opens.
3. Enter the desired value.
4. Confirm with **OK**.
  - » The input window closes; the value is accepted.
5. Repeat steps 2 – 4 for the remaining white fields.
6. Once all the values have been set, press the **Apply** button in the second line of the second block.
  - » Your settings are transferred into the first block. You have set the date and time.

## 7.5 Sw.-over DST to ST

Status level>Main menu button>Settings>General

Select whether an automatic switchover between daylight saving time and standard time is to be carried out.

- ▶ Select DST to ST switchover Yes
- » An automatic switchover between daylight saving time and standard time is carried out

## 7.6 Signals

Status level>Signals button



Pos.	Description	Pos.	Description
1	Date and time of when the signal occurred	2	Detailed designation of the signal that occurred.
3	Acknowledge signal button	4	Button for the contact data

The **Signal** button can be different colours:

- Green: There is no information or faults. Everything is OK with the system.
- Yellow: There is information available for the customer. No action is required.
- Red: There are fault(s) present. Action is required.

Information can be acknowledged by tapping the **Acknowledge** button



For more detailed information on the displayed signals or fault signals and how to remedy them (refer to chapter 9).

Once the cause of the fault has been successfully eliminated, the fault signal can be acknowledged by pressing the **Acknowledge** button. The fault signal disappears.

Once the cause of the fault has been successfully eliminated and fault signals acknowledged, the filter system changes to the current operating mode.

If fault signals occur that you cannot rectify yourself, contact your installer or Grünbeck's technical service/authorised service company. By tapping the **Contact** button you can access the stored contact data for your installer, your Grünbeck contractual partner and Grünbeck headquarters.

- ▶ Keep your equipment data (refer to chapter 1.3) ready.

## 7.7 Setting night-time temperature reduction/whisper mode (only with available accessories)

Figure	Explanation
	<p>Quick access to existing night-time temperature reduction or whisper mode, if night-time reduction/whisper mode has been configured. Here you can switch the night-time temperature reduction/whisper mode on or off, as well as setting the run time and time block.</p>



Night-time temperature reduction/whisper mode can only be set and operated if the system is equipped with the corresponding "Night-time temperature reduction/whisper mode" accessories. In addition, in terms of the usage options, there is a difference between whether or not an external pool cover has been registered/configured by the start-up specialist.

### 7.7.1 Night-time temperature reduction/whisper mode without registered external pool cover

You can set a night-time temperature reduction/whisper mode time block for regular, automatic night-time temperature reduction/whisper mode and for each individual day of the week. The night-time temperature reduction/whisper mode then runs every week on the selected days of the week within the set night-time temperature reduction/whisper mode time block.

1. Select the days of the week on which the night-time temperature reduction/whisper mode time block should be active.
  - » The selected weekdays are highlighted in a transparent colour.

2. Select the starting point (time) for the night-time temperature reduction/whisper mode time block.
  - » The input window opens.
3. Enter the starting point (time) of the night-time temperature reduction/whisper mode time block.
4. Confirm with **OK**.
  - » The input window closes; starting time is accepted.
5. Select the end point (time) of the night-time temperature reduction/whisper mode time block.
  - » The input window opens.
6. Enter the end point (time) of the night-time temperature reduction/whisper mode time block.
7. Confirm with **OK**.
  - » The input window closes; finishing time is accepted.

---

The circulation pump runs in automatic mode only with the "Night-time temperature reduction/whisper mode filtration" set point if the times of the set time block intersect with the active filter running times. No circulation is carried out outside the active filter running times.



In manual mode, the circulation pump runs continuously within the set night-time temperature reduction/whisper mode time block with the "Night-time temperature reduction/whisper mode filtration" set point.

---

The night-time temperature reduction/whisper mode can also be initiated manually if required, regardless of the set days of the week and the set night-time temperature reduction/whisper mode time block.

- ▶ Select manual night-time temperature reduction/whisper mode On.
  - » Night-time temperature reduction/whisper mode is active for the set max. run time.

If you want to change the set max. run time of a manually initiated night-time temperature reduction/whisper mode:

1. Select the max. run time.
  - » The input window opens.
2. Enter the max. run time required
3. Confirm with **OK**.
  - » The input window closes; max. run time is applied.

You can also end the manually initiated night-time temperature reduction/whisper mode before the max. run time has elapsed.

- ▶ Select manual night-time temperature reduction/whisper mode Off.
- » Night-time temperature reduction/whisper mode is ended.

## 7.7.2 Night-time temperature reduction/whisper mode with registered external pool cover

With a registered external pool cover, the night-time temperature reduction/whisper mode is automatically activated depending on the external pool cover. The night-time temperature reduction/whisper mode is active for as long as the external pool cover is closed.



---

The circulation pump runs in automatic mode only with the "Night-time temperature reduction/whisper mode filtration" set point if the closed status of the external pool cover intersects with the active filter running times. No circulation is carried out outside the active filter running times.

In manual mode, the circulation pump runs continuously during the closed status of the external pool cover with the "Night-time temperature reduction/whisper mode filtration" set point.

---

The night-time temperature reduction/whisper mode can also be initiated manually if required; e.g. when the external pool cover is open.

- ▶ Select manual night-time temperature reduction/whisper mode On.
- » Night-time temperature reduction/whisper mode is active for the set max. run time.

If you want to change the set max. run time of a manually initiated night-time temperature reduction/whisper mode:

1. Select the max. run time.
  - » The input window opens.
2. Enter the max. run time required
3. Confirm with **OK**.
  - » The input window closes; max. run time is applied.

You can also end the manually initiated night-time temperature reduction/whisper mode before the max. run time has elapsed.

- ▶ Select manual night-time temperature reduction/whisper mode Off.
- » Night-time temperature reduction/whisper mode is ended.

## 7.8 Water temperature

Figure	Explanation
	Quick access to the selection of the required preset water temperature (normal, warm or cold bathing), if the temperature regulation has been registered/configured. In addition, you can read off the current measured value of the water temperature.

### 7.8.1 Selecting water temperature

You can select between the following water temperatures:

- Normal bathing
- Warm bathing
- Cold bathing

Proceed as follows:

- ▶ Select the required water temperature.
- » The selected water temperature is highlighted in a transparent colour.

Temp. control		
Norm bathing	28	°C
Warm bathing	30	°C
Cold bathing	6	°C



A corresponding response time for the heating up or cooling down using a client's heat exchanger or the like must be taken into account!

### 7.8.2 Changing water temperature index values

You can change the index values of the corresponding water temperatures as follows:

1. Touch the numerical value in the required water temperatures line.
  - » The input window opens.
2. Then enter the required index value for the water temperature.
3. Confirm with **OK**.
  - » The input window closes; entered index value is accepted.

## 7.9 Selecting Cleaning menu

Figure	Explanation
	Quick access to the Cleaning menu, if automatic overflow channel bypass has been registered/configured. Here, for example you can switch automatic channel cleaning on/off for subsequent manual channel cleaning.

In this menu, automatic channel cleaning can be activated for a subsequent manual cleaning of the channel or the pool edge.

The cleaning agent used in manual cleaning and the resulting dirty water flow through the channel to the drain. The circulation pump is switched off. There is no circulation through the filter system.

If the automatic overflow channel bypass is to be operated via the touch panel, the **Panel** button must be active.

Proceed as follows for manual cleaning of the channel or the pool edge via the touch panel:

1. Activate automatic channel cleaning by touching **On**.
  - » The filter system is switched off.
2. Start with manual cleaning of the channel or the pool edge.

Once manual cleaning has been finished and the dirty water has flowed completely through the channel, automatic channel cleaning can be deactivated.

- ▶ Deactivate automatic channel cleaning by touching **Off**.
  - » The filter system is switched on and reverts to the previous operating status.



If the automatic overflow channel bypass is to be operated via an external switch (e.g. key switch in the pool area), the **External** button must be active.

Proceed as follows for manual cleaning of the gutter or the pool edge via an external switch:

- 1 - Activate the automatic overflow channel bypass by pressing the external switch.
  - » The filter system is switched off.
- 2 - Start with manual cleaning of the channel or the pool edge.

Once manual cleaning has been finished and the dirty water has flowed completely through the channel, automatic channel cleaning can be deactivated.

- ▶ Deactivate automatic overflow channel bypass by pressing the external switch.
- » The filter system is switched on and reverts to the previous operating status.

## 7.10 Selecting attractions

Figure	Explanation
	Quick access to the existing attractions, if attractions have been registered/configured. These can be switched on or off individually. In addition to the particular running times, it is also possible to enter forced switch on in order to prevent stagnation in the attraction lines.

### 7.10.1 Switching attraction on/off

Select the required attraction:

1. In the line for the required attraction, tap the **On** field.
  - » The attraction is switched on.
2. In the line for the required attraction, tap the **Off** field.
  - » The attraction is switched off.

Attractions			act	set	
Attraction 1	On	Off	0	20	min.
Attraction 2	On	Off	0	20	min.
Attraction 3	On	Off	0	20	min.

## 7.10.2 Setting the runtime

Set the required runtime of the attraction as follows:

1. In the line for the required attraction, touch the numerical value in the "set" column.
  - » The input window opens.
2. Enter the required runtime in minutes.
3. Confirm with **OK**.
  - » The input window closes; numerical value is accepted.

act	set	
0	20	min.
0	20	min.
0	20	min.



If an attraction has been switched on, the time already elapsed will be displayed in the "actual" column.

## 7.10.3 Forced switched on of attractions



**Warning:** Inconvenience and injury to the bathers by attractions suddenly switching on.

- Forced switch on of the attractions while there are bathers in the pool, sudden water jet hits bather.
  - ▶ Make sure that the forced switch on is not triggered while there are bathers in the pool!



**NOTE:** attractions should be used regularly.

- Stagnation in the lines of the attractions, germ build-up in the lines.
  - ▶ Regular use of the attractions and activation of forced switch on.



**Note:** Triggering of forced switch on when external pool cover is closed.

- With wide shower jets or similar, pool water enters into the external pool cover or in the pool edge area.
  - ▶ If possible, ensure that an external pool cover is opened during the forced switch on!
  - ▶ Ensure that the amount of pool water in the pool is maintained and/or there is no damage in the area around the pool edge.

Set a desired automatic forced switch-on as follows:

1. Select the weekdays on which the forced switch on should be active.
  - » The selected weekdays are highlighted in a transparent colour.
2. Select the starting time (time of day) of the forced switch on.
  - » The input window opens.
3. Enter the starting time (time of day) of the forced switch on.
4. Confirm with **OK**.
  - » The input window closes; starting time is accepted.
5. Select the runtime of the forced switch on for each attraction.
  - » The input window opens.
6. Enter the runtime of the forced switch on for each attraction.
7. Confirm with **OK**.
  - » The input window closes; runtime is accepted.

**Forced switch on**

Weekday						
Mo	Tu	We	Th	Fr	Sa	Su
at	22	:	30	hrs	Manual trig	
Runtime per attraction				0	10	sec.

When the forced switch on is activated, the attractions are switched on in sequence for the set runtime on the set weekdays at the set time of day. The lines of the attractions are flushed through with fresh, disinfected pool water.



If the forced switch-on is present while an attraction is active/switched on, this active attraction will be shut down for a short time to notify the customer of the subsequent forced switch-on.

Carry out a manual forced switch-on as follows:

- ▶ Tap the manual initiation field

## 7.11 Selecting pool lighting

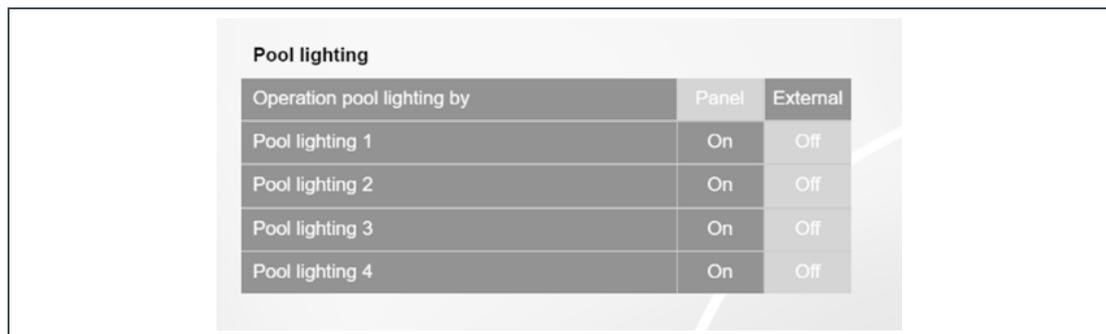
Figure	Explanation
	Quick access to an existing pool lighting system, if pool lighting has been registered/configured. This can be switched on/off individually here.

Up to 4 individual light circuits can be switched on/off in this menu.

If the pool lighting is to be operated via the touch panel, the **Panel** button must be active.

Select the required pool lighting as follows:

1. In the line for the required pool lighting, touch the **On** field.
  - » The pool lighting is switched on.
2. In the line for the required pool lighting, touch the **Off** field.
  - » The pool lighting is switched off.



Pool lighting		
Operation pool lighting by	Panel	External
Pool lighting 1	On	Off
Pool lighting 2	On	Off
Pool lighting 3	On	Off
Pool lighting 4	On	Off

If the pool lighting is to be operated via an external switch, the **External** button must be active. All pool lighting systems switched on on the touch panel are switched on and off together via the external switch.

Select the required pool lighting as follows:

- ▶ In the line for the required pool lighting, touch the On field.

The pool lighting can be switched on and off via the external switch.

## 8 Cleaning, inspection, maintenance, care



In order to ensure the proper functioning of the product in the long term, certain tasks have to be performed at regular intervals. We recommend a six-monthly and annual maintenance. All regulations and guidelines, which apply at the installation site must be strictly adhered to. A maintenance contract ensures that all the required work will be performed in due time.



**WARNING:** Danger of an electric shock when working on electrical components while an electrical power supply is active.

- Electrical shock, indisposition, fatal injury.
- ▶ Disconnect the electrical power supply prior to installing, dismantling or performing an intervention on the control unit or performing any work on electrical components.
- ▶ Make sure that the frequency converter has been separated from the electrical power supply for at least 15 minutes and is isolated prior to working on the frequency converter or the connected circulation pump.



**WARNING:** Danger of compressed air leaking from the compressed air supply, valves and couplings.

- Injuries in the facial area.
- ▶ Wear protective equipment such as protective goggles.

### 8.1 Cleaning

- ▶ Regularly clean the filter system to remove dirt and chemical residues.



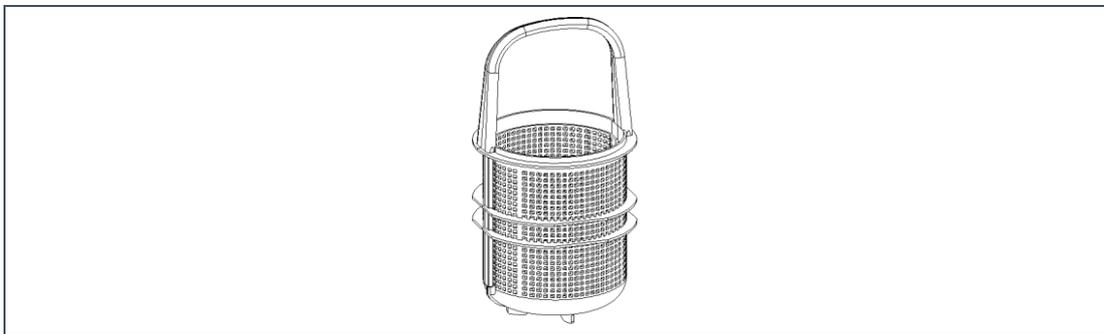
Clean the product with lukewarm soapy water. Do not use any strong or abrasive cleaning agents as these may damage the surface.

#### 8.1.1 Cleaning hair and fibre strainer

Clean the basket of the hair and fibre strainer at least once a week.

1. Switch the filter system over to cleaning.
2. Close the shut-off valves in the suction and pressure line of the circulation pump or the hair and fibre strainer.
3. Unscrew the four star handles on the cover.
4. Remove the cover with washers.
5. Remove the cover seal and the strainer basket.
6. Clean the cover seal and strainer basket with water.

7. Place the strainer basket back into the hair and fibre strainer.
8. Make sure that the strainer basket is in the correct position (see marking).
9. Push the strainer basket firmly into the hair and fibre strainer.
10. Fill the hair and fibre strainer with water (if required).
11. Insert the cover seal.
12. Put on the cover.
13. Screw on the four star handles together with the four washers.
14. Open the shut-off valves in the suction and pressure lines of the circulation pump or the hair and fibre strainer.
15. Switch the filter system back on.
16. Check the hair and fibre strainer for leaks.



**NOTE:** Danger of the circulation pump impeller seizing.

- Failure of the circulation pump and the filter system
  - ▶ The circulation pump is never allowed to be operated without a hair and filter strainer.
- 

### 8.1.2 Cleaning pool bottom/walls

1. Clean the pool bottom and pool walls at least once a week with a vacuum cleaning device.
2. Use a vacuum cleaning device that is independent of the filter.

### 8.1.3 Cleaning the overflow channel

The pool edge and overflow cleaning must be undertaken using the channel cleaning function (manual or automatic) into the dirty water drain. After the channel line has emptied into the raw water tank, channel cleaning is switched on:

1. With manual channel cleaning, switch off the filter system and open the outlet to the drain.

2. With automatic channel cleaning, activate this using the control unit (see chapter 7.9).
3. Carry out cleaning with the required and permitted cleaning agents.
4. Flush the cleaned areas with clear drinking water to avoid residues of cleaning agents entering the pool circuit.
5. In manual channel cleaning, switch on the filter system and close the outlet to the drain.
6. In automatic channel cleaning, deactivate it using the control unit (see chapter 7.9).

#### 8.1.4 Cleaning raw water tank




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The work described here may only be carried out by Grünbeck's technical service/authorised service company.

---

Clean the raw water tank at regular intervals.

1. Switch the filter system and circulation pump off.
2. Shut off the suction line of the circulation pump.
3. Switch off the solenoid valve for filling water make-up feed.

The cleaning can be performed with the required and permitted cleaning agents.

4. Discharge the cleaning water completely into the drain via the draining ball valve or container residual water emptying.
5. Flush the cleaned areas with clear water.
  - » All residues of cleaning agents are flushed into the drain and do not enter the pool circuit.
6. Remove the remaining cleaning water with a sponge or cloth.
7. Switch on the solenoid valve for filling water make-up feed.
8. Fill the raw water tank.
9. Open the suction line of the circulation pump.
10. Take the filter system and circulation pump into operation.

#### 8.1.5 Emptying pool




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The work described here may only be carried out by Grünbeck's technical service/authorised service company.

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**NOTE:** Damage to the mechanical seal of the circulation pump due to dry running.

- Leaks or failure of the circulation pump.
- ▶ Circulation pump is not allowed to run dry.



**NOTE:** Danger of air in the suction line.

- Circulation pump no longer pumps sufficiently or not at all. Possible failure of the circulation pump.
- ▶ Circulation pump is not allowed to draw in air.

---

The pool water is emptied via a separate pool connection or a connection on the bottom drain system.

## 8.2 Inspection



The inspections must be carried out by the owner of the filter system at the specified time intervals at least. Shorter time intervals may be required depending on the operating conditions.



Points for inspecting the filter system and the most important system components are described below.



More detailed inspection instructions for system components as well as the filter system can be found in the separate instructions.

### 8.2.1 Daily inspection

1. Check the system function.
2. Check the leak-tightness of the system components.
3. Pay attention to unusual noises or vibrations.

### 8.2.2 Weekly inspection.

1. Clean the hair and fibre strainer of the circulation pump.
2. Check the circulation pump for function and heat build-up.
3. Check the air compressor for function and heat build-up.
4. Check the air supply for leak tightness and function.

### 8.2.3 Monthly inspection (functional check)

1. Check the system function.
2. Check the leak-tightness of the system components and connections.
3. Pay attention to unusual noises or vibrations.
4. Drain the pressure reducer if necessary.
5. Check the filling level of the chemical canister.

**Air compressor:**

6. Check the intake filter.
7. Check the oil level, replenish oil if necessary,
8. Cleaning the cooling ribs/cooling surfaces if they are dirty.
9. Check the pressure settings and adjust them if necessary.

## 8.3 Maintenance



Some regular work is necessary in order to ensure the proper functioning of the product in the long term. We recommend six-monthly and annual maintenance.



Carrying out maintenance work requires specialist knowledge. The maintenance work may only be carried out by Grünbeck's technical service/authorised service company.



Record data and work performed, including repair work, in the operation log.

## 8.4 Consumables



**NOTE:** Danger of damaging the system if unsuitable consumables are used.

- There is a risk of functional impairments, faults and loss of warranty.
- ▶ Only use genuine consumables.

Product	Order no.
GENO-Chlor A	210 012
Filter elements – activated carbon filter preparation	899 50 356

## 8.5 Spare parts



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**NOTE:** Danger of damaging the system if unsuitable spare parts are used.

- There is a risk of functional impairments, faults and loss of warranty.
  - ▶ Only use genuine spare parts.
- 

You may order spare parts and consumables from your local Grünbeck representative (refer to the internet at [www.gruenbeck.com](http://www.gruenbeck.com)).

## 8.6 Wearing parts



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**NOTE:** Danger of damaging the system if unsuitable wearing parts are used.

- There is a risk of functional impairments, faults and loss of warranty.
  - ▶ Only use genuine wearing parts.
- 



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Wearing parts must be checked regularly during the inspection and maintenance, and renewed if necessary.

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Wearing parts are listed below:

- Filter elements backwash filter
- Ultrafiltration module
- Dosing hoses
- Mechanical seals on circulation pump
- Sensors
- Moving parts
  - Drives
  - Valves
- Batteries
- Seals.

# 9 Faults



**WARNING:** Danger of an electric shock when working in the control unit or on electrical components with an active electrical power supply!

- Electrical shock, indisposition, fatal injury, failure of electrical components.
- ▶ Disconnect the electrical power supply prior to installing, dismantling or performing an intervention on the control unit or performing any work on electrical components.
- ▶ Before working on the frequency converter or connected circulation pump, the frequency inverter must have been deenergised and isolated for at least 15 minutes.



**WARNING:** Danger of compressed air leakage on any point in the compressed air supply, above all at valves and couplings.

- Injury to the face due to compressed air leakage.
- ▶ Wear protective equipment such as protective goggles.

The spaliQ:UF ultrafiltration system displays faults on its display. If faults do occur that cannot be remedied by the instructions given below, contact Grünbeck's technical service/authorised service company.

- ▶ Keep your equipment data ready (see chapter 1.3).

## 9.1 Display messages

1. Acknowledge the signal by tapping the **Acknowledge** button.
2. Watch the display.
3. Compare the signal on the display with the following table if the fault signal reoccurs.

Signal	Cause of failure	Troubleshooting
Inlet pressure warning – Filtration	Motorised ball valves not opened.	Check function and setting of motorised ball valves; renew motorised ball valves if there is a fault.
	Excessive pressure losses in subsequent filtrate line to the pool.	Minimise pressure losses (larger pipelines, open closed ball valves, etc.).
Fault: Inlet pressure – Filtration	Motorised ball valves not opened.	Check function and setting of motorised ball valves; renew motorised ball valves if there is a fault.
	Excessive pressure losses in subsequent filtrate line to the pool.	Minimise pressure losses (larger pipelines, open closed ball valves, etc.).
Fault: Inlet pressure max. – Flushing	Motorised ball valve upper drain ultrafiltration module not opened.	Check function and setting of motorised ball valves; renew motorised ball valves if there is a fault.
	Contamination of ultrafiltration module due to irreversible fouling.	Carry out intensive chemical cleaning (CIP). Notify Grünbeck's technical service/ authorised service company.

Signal	Cause of failure	Troubleshooting
Fault: Inlet pressure min. – Flushing.	Circulation pump does not pump.	See chapter 9.2, Circulation pump
	No or inadequate flow rate.	Ensure adequate flow rate.
	No or inadequate water supply.	Ensure adequate water supply.
Fault: Inlet pressure max. – Integrity test	Motorised ball valve upper drain ultrafiltration module not opened.	Check function and setting of motorised ball valves; renew motorised ball valves if there is a fault.
	Contamination of ultrafiltration module due to irreversible fouling.	Carry out intensive chemical cleaning (CIP). Notify Grünbeck's technical service/ authorised service company.
Fault: Inlet pressure min. – Integrity test.	Circulation pump does not pump.	See chapter 9.2, Circulation pump
	No or inadequate flow rate.	Ensure adequate flow rate.
	No or inadequate water supply.	Ensure adequate water supply.
Fault: Outlet pressure max. – Flushing	Motorised ball valve upper drain ultrafiltration module not opened.	Check function and setting of motorised ball valves; renew motorised ball valves if there is a fault.
	Pressure reducer for flushing air set incorrectly.	Set pressure reducer for flushing air to correct value of 2.5 bar.
Fault: Outlet pressure min. – Flushing.	Pressure reducer for flushing air defective.	Renew pressure reducer for flushing air.
	Motorised ball valve lower drain ultrafiltration module opened.	Check function and setting of motorised ball valves; renew motorised ball valves if there is a fault.
	Motorised ball valve filtrate ultrafiltration module opened.	
	Solenoid valve flushing air not opened.	
	Pressure reducer for flushing air set incorrectly.	Set pressure reducer for flushing air to correct value of 2.5 bar.
	Pressure reducer for flushing air defective.	Renew pressure reducer for flushing air.
Fault: Outlet pressure max. – Integrity test	Compressed air supply inadequate – leaking or defective.	See chapter 9.2, Inadequate compressed air supply.
	Motorised ball valve upper drain ultrafiltration module not opened.	Check function and setting of motorised ball valves; renew motorised ball valves if there is a fault.
	Pressure reducer for integrity test set incorrectly.	Pressure reducer for integrity test to correct value of 0.5 bar.
Fault Outlet pressure min. – Integrity test.	Pressure reducer for integrity test defective.	Renew pressure reducer for integrity test.
	Motorised ball valve filtrate ultrafiltration module opened.	Check function and setting of motorised ball valves; renew motorised ball valves if there is a fault.
	Solenoid valve integrity test not opened.	Check function of solenoid valve; renew solenoid valve in case of fault.
	Pressure reducer for integrity test set incorrectly.	Pressure reducer for integrity test to correct value of 0.5 bar.
Warn. diff. pressure - Filtration	Pressure reducer for integrity test defective.	See chapter 9.2, Inadequate compressed air supply.
	Flushing ultrafiltration module ineffective.	Check flushing (steps, times, chemical dosing, ...) and optimise.
Fault: differential pressure – Filtration	Contamination of ultrafiltration module due to irreversible fouling.	Carry out intensive chemical cleaning (CIP). Notify Grünbeck's technical service/ authorised service company.
	Flushing ultrafiltration module ineffective.	Check flushing (steps, times, chemical dosing, ...) and optimise.
Fault: Flow max. – Filtration	Contamination of ultrafiltration module due to irreversible fouling.	Carry out intensive chemical cleaning (CIP). Notify Grünbeck's technical service/ authorised service company.
	Flow measurement or flow control defective.	Check flow measurement for function; renew in case of fault. Check flow rate control.
Fault: Flow min. – Filtration	Motorised ball valves in incorrect position.	Check function and setting of motorised ball valves; renew motorised ball valves if there is a fault.
	Excessive pressure losses in client's piping.	Minimise pressure losses (larger pipelines, open closed ball valves, etc.).
	No or inadequate water supply.	Ensure adequate water supply.
	Leak.	Repair leak.

Signal	Cause of failure	Troubleshooting
Fault: Integrity test run time exceeded	Solenoid valve integrity test not opened.	Check function and control of solenoid valve; renew defective parts in case of fault.
	Pressure reducer for integrity test set incorrectly.	Pressure reducer for integrity test to correct value of 0.5 bar.
	Pressure reducer for integrity test defective.	Renew pressure reducer for integrity test.
	Compressed air supply inadequate – leaking or defective.	See chapter 9.2, Inadequate compressed air supply.
Fault: integrity test failure	Motorised ball valve upper drain ultrafiltration module not opened.	Check function and setting of motorised ball valves; renew motorised ball valves if there is a fault.
	Motorised ball valve filtrate ultrafiltration module opened.	
	Solenoid valve integrity test not opened.	Pressure reducer for integrity test to correct value of 0.5 bar.
	Pressure reducer for integrity test set incorrectly.	
	Pressure reducer for integrity test defective.	Renew pressure reducer for integrity test.
	Compressed air supply inadequate – leaking or defective.	See chapter 9.2, Inadequate compressed air supply.
Max. permissible integrity test pressure drop exceeded. Viruses/bacteria/parasite barrier of your spaliQ:UF150 may be damaged.	Notify Grünbeck's technical service/ authorised service company.	
Integrity test successfully completed.	Integrity of viruses/bacteria/parasite barrier ensured.	No fault. Everything OK.
Warning: Pre-alarm for chlorine backwash dosing tank	Filling level chemical canister reaching the end.	Reorder chemical.
Fault: Empty signal for chlorine backwash dosing tank	Filling level chemical canister is at the end.	Renew empty chemical canister with a new one.
Fault: Max. temp. limiter.	Optional safety thermostat max. temperature limiter has tripped - water temperature above the value set on the max. temperature limiter.	Check index value specification water temperature. Check potential-free signal enable heating – switch-off at index value must be provided. Check switch-off of client's heating and heat supply – switch-off at index value must be provided. Protect system against unwanted heat supply from client's system.
Fault: Pump sump/waste water lifting system	Client's waste water lifting system can no longer pump the water out of the pump sump adequately.	Check client's waste water lifting system.
	Leakage message has tripped.	Rectify the cause of the leakage message.
Fault: Dry running protection(in raw water tank level d).	No or inadequate water supply from raw water tank.	Ensure adequate water supply.
	Optional solenoid valve freshwater make-up feed does not function.	Check function and control of solenoid valve; renew defective parts in case of fault.
	Optional level measurement defective.	Check function and configuration of the level; renew defective parts in case of fault.
Fault: Circulation pump	Pool with skimmer system.	In the configuration menu, set raw water tank as "No".
	Fault of frequency converter.	Notify Grünbeck's technical service/ authorised service company.
	Voltage failure	Rectify the cause of the power failure.
Fault: meas. & control system.	Thermal protection of circulation pump has tripped.	Check motor for overheating. Check motor for mechanical overload. Check correct connection of thermistor.
	Collective fault from optional measuring and control system.	Comply with instructions for optional measuring and control system.
Fault: power failure.	Voltage failure	Rectify the cause of the power failure.
Fault: Limit position xxx.	Limit position "Open" or "Closed" of the motorised ball valves not reached.	Eliminate cause.
	inadequate adjusting time.	Adjust delay time for setting the valves.
	Limit position switch defective.	Renew motorised ball valve.
Fault wire break xxx.	Cable break – signal no longer present.	Renew defective cables or plugs.
	Short-circuit of the signal	Check fine-wire fuse in switch cabinet and measure 4-20mA signal.
Fault: Wire break temp. sensor	Signal no longer present.	Renew defective cables or plugs.
Fault: Fresh water supply	No or inadequate water supply from raw water tank.	Ensure adequate water supply.
	Optional solenoid valve freshwater make-up feed does not function.	Check function and control of solenoid valve; renew defective parts in case of fault.
	Optional level measurement defective.	Check function and configuration of the level; renew defective parts in case of fault.

Signal	Cause of failure	Troubleshooting
Attraction fault x	Motor protection switch has tripped.	Check motor for overheating. Check motor for mechanical overload.
	Power failure	Rectify the cause of the power failure.
Fault: power supply unit	Battery empty.	Batteries must be charged.
	Battery has exceeded its service life.	Renew battery. Notify Grünbeck's technical service/authorised service company.
Maintenance required.	Set maintenance interval has elapsed.	Notify Grünbeck's technical service/ authorised service company. System continues to run until maintenance in the set operating mode.

## 9.2 Other observations

Observation	Meaning	Remedy
Leaks	Worn O-rings or seals	Replace defective seals Notify Grünbeck's technical service/authorised service company.
Control unit is out of operation.	Main switch is off.	Switch on the main switch.
	Incorrect mains voltage.	Check mains voltage.
Circulation pump does not start up.	Incorrect voltage.	Compare circulation pump voltage (type plate) with main 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 service/ authorised service company.
Flow rate decreases over time.	Blushing backwash filter ineffective.	Check flushing (steps, times, ...) and optimise.
	Backwash filter valves not activated on flushing.	Check compressed air supply for control air of backwash filter valves.
Circulation pump does not draw or does not draw enough. / Flow rate too low.	Closed shut-off valves.	Check all shut-off valves upstream and downstream of the system and open them
	Air in the suction line.	Check the suction line for leaks
	Three-phase motor of the circulation pump is rotating in the wrong direction	Check electrical power supply, adapt if necessary.
	Motor of circulation pump does not turn.	Check electrical power supply, adapt if necessary. Notify Grünbeck's technical service/ authorised service company.
	Circulation pump has no water.	Unscrew transparent cover of the circulation pump, fill housing with water, screw cover back on.
	Excessive suction height.	Change location of circulation pump.
	Hair and fibre strainer of 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 backwash.
	Excessive pressure losses in the lines (pipeline too long, pipe diameter too small or clogged, lines with too many angles).	Check pipe system and make modifications (larger pipe diameters, fewer changes of direction, elbows instead of angles, ...)
Circulation pump is too loud.	Air in the suction line.	Check the suction line for leaks
	Three-phase motor of the circulation pump is rotating in the wrong direction	Check electrical power supply, adapt if necessary.
	Excessive suction height – cavitation.	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.
Shaft seal on circulation pump leaking – leakage.	Mechanical seal worn (high operating times, dry running, ...)	Notify Grünbeck's technical service/authorised service company.
Flow measurement float is stuck.	Impurity	Clean flow meter and float.
	Foreign bodies	Remove the foreign matter.

Observation	Meaning	Remedy
Measured value transducer of flow meter does not output a signal.	Plug connection interrupted.	Check plug connection and renew equipment socket if necessary.
	Cable interrupted.	Check cable and renew if necessary.
	Measuring transducer defective.	Notify Grünbeck's technical service/authorised service company.
Measured value transducer for flow rate outputs irregular signal that does not correspond to the float display.	Measuring transducer defective.	Notify Grünbeck's technical service/authorised service company.
Pressure gauge does not output any signal.	Plug connection interrupted.	Check plug connection and renew equipment socket if necessary.
	Cable interrupted.	Check cable and renew if necessary.
	Pressure gauge defective.	Notify Grünbeck's technical service/authorised service company.
Inadequate compressed air supply.	Compressor generates inadequate or no compressed air.	Check compressor suction filter for contamination. Renew in case of contamination.
	Compressor oil level too low.	Top up oil in the compressor.
	Compressed air hose defective.	Renew defective compressed air hose.
	Compressed air couplings defective.	
Pressure gauge value on compressed air preparation system differs from pressure transducer measurements on the touch panel.	Deviations may occur due to different measuring devices.	The measurements from the pressure transducer on the touch panel have priority. Ignore any deviating value from the pressure gauge.
Touch panel continuously shows counters running from 10 to 0.	Connection problem of the touch panel with the controller in the control cabinet.	Check the location of the Wi-Fi module in the socket in the control cabinet – green LED on the Wi-Fi module must be continuously lit. Check the cable connections between the touch panel, Wi-Fi module and controller. Perform a restart in accordance with chapter 4.9 "Display configuration button".
Attractions cannot be switched on via the touch panel and/or are active and are switched off suddenly.	Automatic overflow channel bypass is active	Once cleaning has been carried out, deactivate the automatic overflow channel bypass via the touch panel.
Attractions run and are shut down suddenly.	Forced switch-on of attractions is active	Deactivate the set forced switch-on of attractions where applicable
	Run time has elapsed	Switch the attraction back on or change the run time

## 10 System shutdown

Lengthy shut-down periods can result in germ growth in the filter system. As a result, adequate filter flushings (backwash filter and ultrafiltration module) must be carried out before and after lengthy shut-downs.

In case of shut-downs > 24 hours, the ultrafiltration module requires CIP cleaning followed by preservation carried out by Grünbeck's technical customer service / authorised service company. The maximum time an ultrafiltration module can remain in preserved condition is 4 months. Following that, the ultrafiltration module must have the preservation repeated at the same maintenance intervals by Grünbeck's technical service / authorised service company.

Prior to resuming operation, the preserving agent must be flushed from the system.

### 10.1 Shutdown



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The work described here may only be carried out by Grünbeck's technical service/authorised service company.

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Proceed as follows to take the filter system out of operation, e.g. overwintering outdoor swimming pools:

1. Conduct backwash of the filter system with the addition of chlorine until the filter system is free from impurities.
2. Flush the filter system with clear water to remove chlorine residues.
3. Flush the ultrafiltration module at least twice.
4. Carry out CIP cleaning and preservation (see chapter 3.2 System shut-down).
5. Empty and clean the filter system completely.
6. Open all valves slightly.
7. Completely empty all lines that are at risk of freezing.
8. Disconnect the electrical power supply from the components.

# 11 Disposal

- ▶ Comply with the applicable national regulations.

## 11.1 Packaging

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

## 11.2 Product



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If this symbol (crossed out waste bin) is on the product, this product is subject to the European Directive 2012/19/EU. This means that this product or the electrical and electronic components are not allowed to be disposed of in the household waste.

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

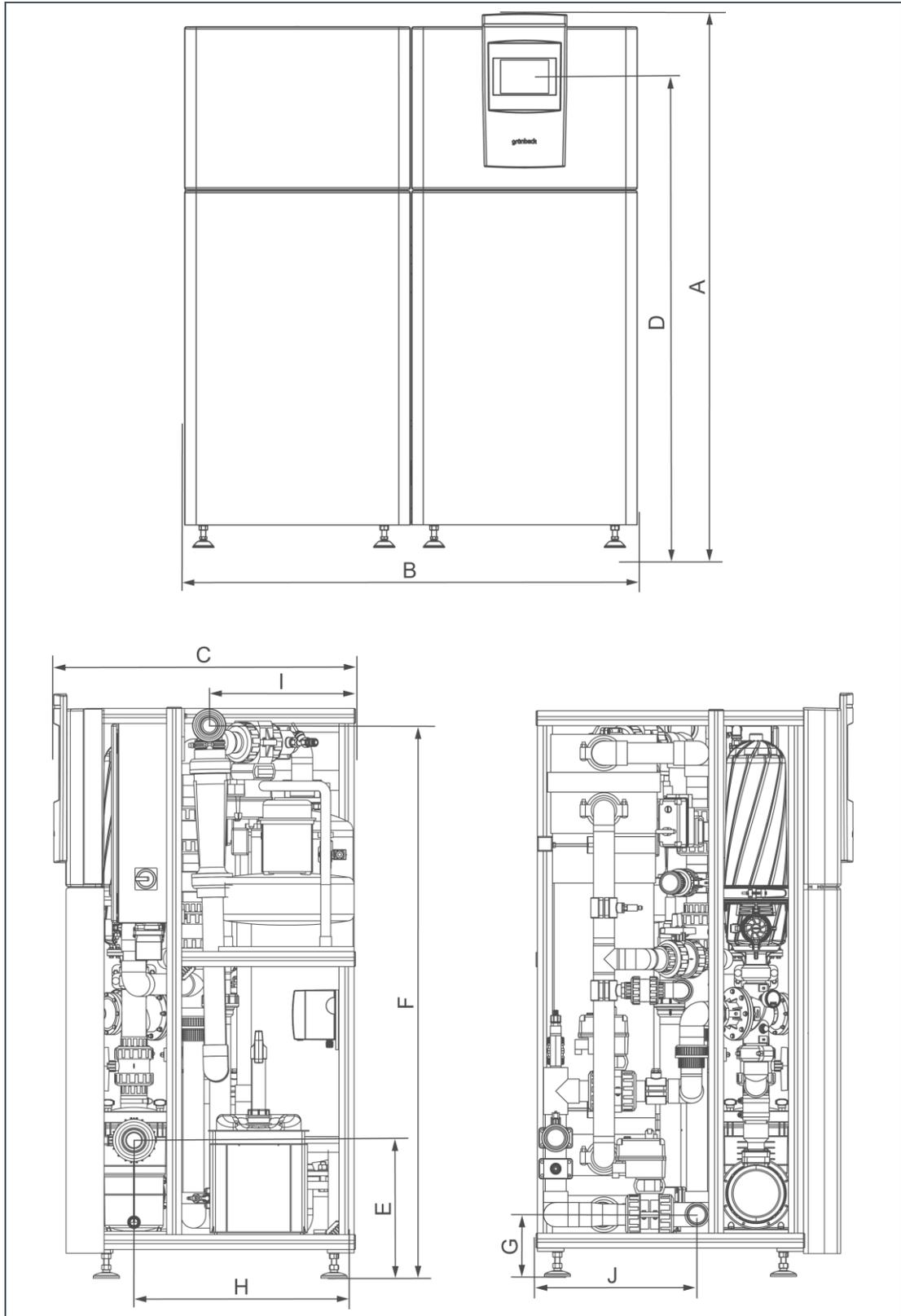


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For information on collection points for your product, contact your municipality, the public waste management authority, an authorised body for the disposal of electrical and electronic products or your waste disposal service.

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## 12 Technical specifications



Dimensions and weights			
A	Height of filter system	mm	1800
B	Width of filter system	mm	1500
C	Depth of filter system	mm	900
D	Operating height controller touch panel	mm	1580 – 1600
E	Raw water connection	mm	415
F	Connection height filtrate	mm	1650
G	Connection height flushing water pipe (drain)	mm	187
H	Connection depth raw water	mm	662
I	Connection depth filtrate	mm	452
J	Connection depth flushing waste water pipe (drain)	mm	485
	Minimum room height (foundation not included)	kg	2000
	Empty weight, approx.	kg	350
	Operating weight, approx.	kg	500

Connection data			
	Nominal connection diameter of raw water	DN	65
	Nominal connection diameter of filtrate	DN	50
	Nominal connection diameter of flushing water connection	DN	50
	Nominal connection diameter of cleaning connections (CIP)	DN	32
	Drain connection/floor drain required	DN	≥ 100
	Power supply	V/Hz	230/400/50
	Connected load	kW	4.0
	Protection / protection class		IP 54/⚡
	Fuse protection by others	A	≤ 20

Performance data			
	Nominal pressure		PN 3
	Filter capacity (at 23 mWC) **	m³/h	15
	Pressure loss of filter system at 15 m³/h **	mWC	12
	Required NPSH	m	≥ 3
	Permitted pressure loss suction side ****	m	≤ 6
	Power input (at 6 m³/h and a pressure loss of the filter system of 5 mWC) approx. **	kW	0.30
	Power input (at 12 m³/h and a pressure loss of the filter system of 10 mWC) approx. **	kW	1.05
	Power consumption (at 15 m³/h and pressure loss filter system 12 mWC) approx. **	kW	1.90
	Flushing capacity of backwash filter (at 20 mWC) **	m³/h	9
	Flushing capacity of ultrafiltration module (at 2.5 bar) **	m³/h	18
	Flushing water volume filter system per flushing***	Litres	≥ 240
	Delivery pressure circulation pump	mWC	≤ 27
	Cut-off backwash filter	µm	≥ 200
	Cut-off of ultrafiltration module	µm	≤ 0.02
	Membrane area	m²	75
	Typical transmembrane pressure of ultrafiltration module filtration (TMP)	bar	0.1 – 0.7
	Typical transmembrane pressure of ultrafiltration module backwash (TMP)	bar	0.5 – 2.0
	Transmembrane pressure ultrafiltration module (TMP)	bar	≤ 2.5
	pH range cleaning ultrafiltration module (CIP)	pH	1 – 13 *
	Free chlorine cleaning of ultrafiltration module (CIP)	mg/l	200 *
	Number of ultrafiltration modules	Piece	1

\* Only applies to the ultrafiltration module – not to other components!

\*\* At 20 °C performance data depends on the water composition as well as, in particular, the water temperature

\*\*\* Consumption data depends on the set flushing performance, flushing duration and degree of contamination

\*\*\*\*at normal air pressure, water temperature 40°C

General data			
	Water temperature	°C	5 – 40
	Ambient temperature	°C	5 – 35
	Air humidity	%	≤ 70
	<b>Order no.</b>		<b>247 100</b>

## 13 Other information

### 13.1 Explanation of terminology

<b>CEB</b>	Chemically enhanced backwash
<b>CIP cleaning</b>	Intensive chemical cleaning of the ultrafiltration module (cleaning in place)
<b>Filtrate</b>	Filtrate is the treated/filtered water after the filter system.
<b>Preservation</b>	Covering the ultrafiltration membrane with a special preserving agent when taking out of operation / shutting down
<b>MKH</b>	Motorised ball valve
<b>NPSH</b>	Net Positive Suction Head
<b>Raw water</b>	Raw water is the untreated water before it passes through the filter system.
<b>RWS</b>	Raw water tank
<b>PLC control unit</b>	Programmable logic controller
<b>Flushing waste water</b>	Water with the released dirt particles during flushing. Discharged to the drain.
<b>Flushing water</b>	Water for flushing the filter system. Taken directly from the pool circuit.
<b>TMP</b>	Transmembrane pressure
<b>UF</b>	Abbreviation for the ultrafiltration process.

# 14 Operation log

## Ultrafiltration system | spaliQ:UF150

Serial no.: \_\_\_\_\_

### Start-up log

Customer				
Name: _____				
Address: _____				
Pool version				
Design	<input type="checkbox"/>	Indoor swimming pool	<input type="checkbox"/>	Open-air pool
	<input type="checkbox"/>	Pool with overflow channel with vertical flow	<input type="checkbox"/>	Pool with overflow channel with horizontal flow
	<input type="checkbox"/>	Pool with skimmer		
Pool lining	<input type="checkbox"/>	Concrete pool, tiled	<input type="checkbox"/>	Vinyl-lined pool
	<input type="checkbox"/>	Prefab pool	<input type="checkbox"/>	Paint-on seal
Pool size		Length [m]		Depth [m]
		Width [m]		Volume [m]
Water heating	<input type="checkbox"/>	yes	<input type="checkbox"/>	No
Disinfection product	<input type="checkbox"/>	Sodium hypochlorite GENO-Chlor A		
	<input type="checkbox"/>	Miscellaneous		
Technology / technical room				
Below water level	<input type="checkbox"/>	yes	<input type="checkbox"/>	No
Control air supply		Setting pressure reducer for control air		[bar]
		Setting pressure reducer for flushing air		[bar]
		Setting pressure reducer for integrity test (if provided)		[bar]
Measuring and control system	<input type="checkbox"/>	yes	<input type="checkbox"/>	No
Installation/accessories				
Drain connection acc. to DIN EN 1717	<input type="checkbox"/>	yes	<input type="checkbox"/>	No
Floor drain available:	<input type="checkbox"/>	yes	<input type="checkbox"/>	No
Flocculation dosing:	<input type="checkbox"/>	yes	<input type="checkbox"/>	No
Flocculant: GENO-flock	<input type="checkbox"/>	yes	<input type="checkbox"/>	No
Fresh water/filling water (drinking water quality)				
Water temperature	_____			[°C]
Acid capacity	_____			[mmol/l]
Water hardness	_____			[°dH]
pH value	_____			[-]
Conductivity	_____			[µS]
Pool water				
Water temperature	_____			[°C]
Acid capacity	_____			[mmol/l]
Water hardness	_____			[°dH]
pH value	_____			[-]
Conductivity	_____			[µS]
Redox value	_____			[mV]
Free chlorine in pool	_____			[mg/l]
Combined chlorine in the pool	_____			[mg/l]
Where applicable, aluminium value for flocculation	_____			[mg/l]
Ultrafiltration system				
Transmembrane pressure ultrafiltration module	_____			[bar]
Where applicable, aluminium value for flocculation before UF module	_____			[mg/l]



# 1st maintenance

## Operating values

Fresh water/filling water (drinking water quality)		
Water temperature	_____	[°C]
Acid capacity	_____	[mmol/l]
Water hardness	_____	[°dH]
pH value	_____	[-]
Conductivity	_____	[µS]

Pool water	on occurrence	after maintenance
Water temperature	_____ [°C]	_____ [°C]
Acid capacity	_____ [mmol/l]	_____ [mmol/l]
Water hardness	_____ [°dH]	_____ [°dH]
pH value	_____ [-]	_____ [-]
Conductivity	_____ [µS]	_____ [µS]
Redox value	_____ [mV]	_____ [mV]
Free chlorine in pool	_____ [mg/l]	_____ [mg/l]
Combined chlorine in the pool	_____ [mg/l]	_____ [mg/l]
Where applicable, aluminium value for flocculation	_____ [mg/l]	_____ [mg/l]

Ultrafiltration system	on occurrence	after maintenance
Transmembrane pressure ultrafiltration module	_____ [bar]	_____ [bar]
Where applicable, aluminium value for flocculation before UF module	_____ [mg/l]	_____ [mg/l]

Circulation pump	on occurrence	after maintenance
Volume flow rate OK	_____ [m³/h]	_____ [m³/h]
Operating hours circulation pump	_____ [h]	_____ [h]

Flushings	on occurrence	after maintenance
Number of flushings	_____	_____
Backwash filter flushing set point (circulation pump)	_____ [%]	_____ [%]
Ultrafiltration module flushing set point (circulation pump)	_____ [%]	_____ [%]

## Maintenance work

Preliminary maintenance work	OK
Product components checked for cleanliness, cleaned or renewed if necessary.	<input type="checkbox"/>
Product components checked for function and leak-tightness. Faulty components repaired	<input type="checkbox"/>
Valves fully functional (can be opened/closed completely) and undamaged.	<input type="checkbox"/>
Valve settings checked for the particular operating statuses.	<input type="checkbox"/>
Compressed air unit checked for leaks and function. In case of leaks, renew O-ring seal and renew the lines if necessary.	<input type="checkbox"/>
Function of the installed non-return valves checked (flushing air connection in filtrate line, compressed air preparation solenoid valve with integrated non-return valve, where applicable non-return valve on pump pressure side).	<input type="checkbox"/>
Adequate air supply tested (multiple actuation of the valves).	<input type="checkbox"/>
Flow measurement fully functional and undamaged.	<input type="checkbox"/>
Pressure measurements fully functional and undamaged.	<input type="checkbox"/>
Hose connections checked, faulty parts or parts weakened by ageing renewed.	<input type="checkbox"/>
Product components checked for unusual noises of vibration.	<input type="checkbox"/>
Flushing backwash filter and ultrafiltration module triggered and checked for correct procedure.	<input type="checkbox"/>
Sequences and step times of flushings checked.	<input type="checkbox"/>
Drainage of flushing water into the drain checked and without residues.	<input type="checkbox"/>

<b>Preliminary maintenance work</b>	<b>OK</b>
Flushing water clean and clear at the end of the filter flushing. Differential pressure values after flushing comply with values during commissioning.	<input type="checkbox"/>
Safety valve in filtrate line replaced after 2 years at the latest – Last change _____ [dmj]	<input type="checkbox"/>
Power input of circulation pump on the input of the FC at 100 % delivery rate checked _____ [A]	<input type="checkbox"/>
<b>Hair and fibre strainer</b>	<b>OK</b>
Suction basket removed and cleaned.	<input type="checkbox"/>
Cover seal cleaned and checked for damage.	<input type="checkbox"/>
<b>Circulation pump</b>	<b>OK</b>
Pump motor direction of rotation and ease of movement checked.	<input type="checkbox"/>
Circulation pump checked for impurities.	<input type="checkbox"/>
Detachable connections on the pump and circulation pump itself checked for tightness and secure seat.	<input type="checkbox"/>
No increased noise or vibrations determined in the circulation pump.	<input type="checkbox"/>
No increased motor temperature determined.	<input type="checkbox"/>
Electrical safety devices checked for function.	<input type="checkbox"/>
Dry-run protection triggered on reaching the lowest level in the raw water tank.	<input type="checkbox"/>
<b>Backwash filter</b>	<b>OK</b>
Backwash filter itself and the disks inside cleaned.	<input type="checkbox"/>
Disks checked for integrity and faulty filter disks replaced as necessary.	<input type="checkbox"/>
Elements of the piston checked. Replacement of wearing parts every 2 years – maintenance kit 2 – Last: _____	<input type="checkbox"/>
Seals from annual maintenance kit 1 replaced on the filter.	<input type="checkbox"/>
All other components visually inspected for damage.	<input type="checkbox"/>
<b>Ultrafiltration module</b>	<b>OK</b>
CIP cleaning carried out in accordance with separate flushing instructions. (Log created)	<input type="checkbox"/>
Values as during commissioning reached – circulation capacity, TMP.	<input type="checkbox"/>
Integrity test carried out in accordance with instructions – membrane barrier OK.	<input type="checkbox"/>
Integrity test with open UF module for repair of faulty membrane fibres carried out (as necessary).	<input type="checkbox"/>
Faulty membrane fibres sealed on both sides using repair kit – quantity: _____ (as necessary).	<input type="checkbox"/>
System preserved in accordance with instructions (for decommissioning).	<input type="checkbox"/>
<b>Compressed air unit/compressor</b>	<b>OK</b>
Compressor drained via autom. condensate emptying, adequate draining and valve function checked.	<input type="checkbox"/>
Function of safety valve checked (pull ring slowly when compressor is under pressure).	<input type="checkbox"/>
Compressor oil level checked, oil replenished if necessary.	<input type="checkbox"/>
Oil change performed and O-ring replaced - required every 2 years at the latest. Maintenance kit 2	<input type="checkbox"/>
Cooling ribs/cooling surfaces cleaned.	<input type="checkbox"/>
Non-return valves cleaned or renewed.	<input type="checkbox"/>
Activated carbon filter replaced (annually at the latest) – Maintenance kit 1.	<input type="checkbox"/>
Suction filter replaced (annually at the latest) – Maintenance kit 1.	<input type="checkbox"/>
Pressure settings/pressure reducer settings checked and adjusted if necessary.	<input type="checkbox"/>
Pressure reducer drained.	<input type="checkbox"/>
Filter elements in pressure reducer cleaned or replaced.	<input type="checkbox"/>
Leak-tightness of all transitions/connections checked.	<input type="checkbox"/>
<b>Hose dosing pump/dosing group for UF chemical backflushing</b>	<b>OK</b>
Functional check of hose dosing pump and dosing group performed.	<input type="checkbox"/>
Maintenance performed in accordance with separate operation manual (GENO-Schlauflex): Annual replacement of the pump hose and dosing valve – Maintenance kit 1.	<input type="checkbox"/>



## 2nd maintenance

### Operating values

Fresh water/filling water (drinking water quality)			
Water temperature	_____	[°C]	
Acid capacity	_____	[mmol/l]	
Water hardness	_____	[°dH]	
pH value	_____	[-]	
Conductivity	_____	[µS]	
Pool water			
	on occurrence		after maintenance
Water temperature	_____	[°C]	_____ [°C]
Acid capacity	_____	[mmol/l]	_____ [mmol/l]
Water hardness	_____	[°dH]	_____ [°dH]
pH value	_____	[-]	_____ [-]
Conductivity	_____	[µS]	_____ [µS]
Redox value	_____	[mV]	_____ [mV]
Free chlorine in pool	_____	[mg/l]	_____ [mg/l]
Combined chlorine in the pool	_____	[mg/l]	_____ [mg/l]
Where applicable, aluminium value for flocculation	_____	[mg/l]	_____ [mg/l]
Ultrafiltration system			
	on occurrence		after maintenance
Transmembrane pressure ultrafiltration module	_____	[bar]	_____ [bar]
Where applicable, aluminium value for flocculation before UF module	_____	[mg/l]	_____ [mg/l]
Circulation pump			
	on occurrence		after maintenance
Volume flow rate OK	_____	[m³/h]	_____ [m³/h]
Operating hours circulation pump	_____	[h]	_____ [h]
Flushings			
	on occurrence		after maintenance
Number of flushings	_____		_____
Backwash filter flushing set point (circulation pump)	_____	[%]	_____ [%]
Ultrafiltration module flushing set point (circulation pump)	_____	[%]	_____ [%]

### Maintenance work

Preliminary maintenance work	OK
Product components checked for cleanliness, cleaned or renewed if necessary.	<input type="checkbox"/>
Product components checked for function and leak-tightness. Faulty components repaired	<input type="checkbox"/>
Valves fully functional (can be opened/closed completely) and undamaged.	<input type="checkbox"/>
Valve settings checked for the particular operating statuses.	<input type="checkbox"/>
Compressed air unit checked for leaks and function. In case of leaks, renew O-ring seal and renew the lines if necessary.	<input type="checkbox"/>
Function of the installed non-return valves checked (flushing air connection in filtrate line, compressed air preparation solenoid valve with integrated non-return valve, where applicable non-return valve on pump pressure side).	<input type="checkbox"/>
Adequate air supply tested (multiple actuation of the valves).	<input type="checkbox"/>
Flow measurement fully functional and undamaged.	<input type="checkbox"/>
Pressure measurements fully functional and undamaged.	<input type="checkbox"/>
Hose connections checked, faulty parts or parts weakened by ageing renewed.	<input type="checkbox"/>
Product components checked for unusual noises or vibration.	<input type="checkbox"/>
	<input type="checkbox"/>
Flushing backwash filter and ultrafiltration module triggered and checked for correct procedure.	<input type="checkbox"/>
Sequences and step times of flushings checked.	<input type="checkbox"/>
Drainage of flushing water into the drain checked and without residues.	<input type="checkbox"/>

<b>Preliminary maintenance work</b>	<b>OK</b>
Flushing water clean and clear at the end of the filter flushing. Differential pressure values after flushing comply with values during commissioning.	<input type="checkbox"/>
Safety valve in filtrate line replaced after 2 years at the latest – Last change _____ [dmj]	<input type="checkbox"/>
Power input of circulation pump on the input of the FC at 100 % delivery rate checked _____ [A]	<input type="checkbox"/>
<b>Hair and fibre strainer</b>	<b>OK</b>
Suction basket removed and cleaned.	<input type="checkbox"/>
Cover seal cleaned and checked for damage.	<input type="checkbox"/>
<b>Circulation pump</b>	<b>OK</b>
Pump motor direction of rotation and ease of movement checked.	<input type="checkbox"/>
Circulation pump checked for impurities.	<input type="checkbox"/>
Detachable connections on the pump and circulation pump itself checked for tightness and secure seat.	<input type="checkbox"/>
No increased noise or vibrations determined in the circulation pump.	<input type="checkbox"/>
No increased motor temperature determined.	<input type="checkbox"/>
Electrical safety devices checked for function.	<input type="checkbox"/>
Dry-run protection triggered on reaching the lowest level in the raw water tank.	<input type="checkbox"/>
<b>Backwash filter</b>	<b>OK</b>
Backwash filter itself and the disks inside cleaned.	<input type="checkbox"/>
Disks checked for integrity and faulty filter disks replaced as necessary.	<input type="checkbox"/>
Elements of the piston checked. Replacement of wearing parts every 2 years – maintenance kit 2 – Last: _____	<input type="checkbox"/>
Seals from annual maintenance kit 1 replaced on the filter.	<input type="checkbox"/>
All other components visually inspected for damage.	<input type="checkbox"/>
<b>Ultrafiltration module</b>	<b>OK</b>
CIP cleaning carried out in accordance with separate flushing instructions. (Log created)	<input type="checkbox"/>
Values as during commissioning reached – circulation capacity, TMP.	<input type="checkbox"/>
Integrity test carried out in accordance with instructions – membrane barrier OK.	<input type="checkbox"/>
Integrity test with open UF module for repair of faulty membrane fibres carried out (as necessary).	<input type="checkbox"/>
Faulty membrane fibres sealed on both sides using repair kit – quantity: _____ (as necessary).	<input type="checkbox"/>
System preserved in accordance with instructions (for decommissioning).	<input type="checkbox"/>
<b>Compressed air unit/compressor</b>	<b>OK</b>
Compressor drained via autom. condensate emptying, adequate draining and valve function checked.	<input type="checkbox"/>
Function of safety valve checked (pull ring slowly when compressor is under pressure).	<input type="checkbox"/>
Compressor oil level checked, oil replenished if necessary.	<input type="checkbox"/>
Oil change performed and O-ring replaced - required every 2 years at the latest. Maintenance kit 2	<input type="checkbox"/>
Cooling ribs/cooling surfaces cleaned.	<input type="checkbox"/>
Non-return valves cleaned or renewed.	<input type="checkbox"/>
Activated carbon filter replaced (annually at the latest) – Maintenance kit 1.	<input type="checkbox"/>
Suction filter replaced (annually at the latest) – Maintenance kit 1.	<input type="checkbox"/>
Pressure settings/pressure reducer settings checked and adjusted if necessary.	<input type="checkbox"/>
Pressure reducer drained.	<input type="checkbox"/>
Filter elements in pressure reducer cleaned or replaced.	<input type="checkbox"/>
Leak-tightness of all transitions/connections checked.	<input type="checkbox"/>
<b>Hose dosing pump/dosing group for UF chemical backflushing</b>	<b>OK</b>
Functional check of hose dosing pump and dosing group performed.	<input type="checkbox"/>
Maintenance performed in accordance with separate operation manual (GENO-Schlauflex): Annual replacement of the pump hose and dosing valve – Maintenance kit 1.	<input type="checkbox"/>



# 3rd maintenance

## Operating values

Fresh water/filling water (drinking water quality)		
Water temperature	_____	[°C]
Acid capacity	_____	[mmol/l]
Water hardness	_____	[°dH]
pH value	_____	[-]
Conductivity	_____	[µS]

Pool water	on occurrence	after maintenance
Water temperature	_____ [°C]	_____ [°C]
Acid capacity	_____ [mmol/l]	_____ [mmol/l]
Water hardness	_____ [°dH]	_____ [°dH]
pH value	_____ [-]	_____ [-]
Conductivity	_____ [µS]	_____ [µS]
Redox value	_____ [mV]	_____ [mV]
Free chlorine in pool	_____ [mg/l]	_____ [mg/l]
Combined chlorine in the pool	_____ [mg/l]	_____ [mg/l]
Where applicable, aluminium value for flocculation	_____ [mg/l]	_____ [mg/l]

Ultrafiltration system	on occurrence	after maintenance
Transmembrane pressure ultrafiltration module	_____ [bar]	_____ [bar]
Where applicable, aluminium value for flocculation before UF module	_____ [mg/l]	_____ [mg/l]

Circulation pump	on occurrence	after maintenance
Volume flow rate OK	_____ [m³/h]	_____ [m³/h]
Operating hours circulation pump	_____ [h]	_____ [h]

Flushings	on occurrence	after maintenance
Number of flushings	_____	_____
Backwash filter flushing set point (circulation pump)	_____ [%]	_____ [%]
Ultrafiltration module flushing set point (circulation pump)	_____ [%]	_____ [%]

## Maintenance work

Preliminary maintenance work	OK
Product components checked for cleanliness, cleaned or renewed if necessary.	<input type="checkbox"/>
Product components checked for function and leak-tightness. Faulty components repaired	<input type="checkbox"/>
Valves fully functional (can be opened/closed completely) and undamaged.	<input type="checkbox"/>
Valve settings checked for the particular operating statuses.	<input type="checkbox"/>
Compressed air unit checked for leaks and function. In case of leaks, renew O-ring seal and renew the lines if necessary.	<input type="checkbox"/>
Function of the installed non-return valves checked (flushing air connection in filtrate line, compressed air preparation solenoid valve with integrated non-return valve, where applicable non-return valve on pump pressure side).	<input type="checkbox"/>
Adequate air supply tested (multiple actuation of the valves).	<input type="checkbox"/>
Flow measurement fully functional and undamaged.	<input type="checkbox"/>
Pressure measurements fully functional and undamaged.	<input type="checkbox"/>
Hose connections checked, faulty parts or parts weakened by ageing renewed.	<input type="checkbox"/>
Product components checked for unusual noises of vibration.	<input type="checkbox"/>
Flushing backwash filter and ultrafiltration module triggered and checked for correct procedure.	<input type="checkbox"/>
Sequences and step times of flushings checked.	<input type="checkbox"/>
Drainage of flushing water into the drain checked and without residues.	<input type="checkbox"/>

<b>Preliminary maintenance work</b>	<b>OK</b>
Flushing water clean and clear at the end of the filter flushing. Differential pressure values after flushing comply with values during commissioning.	<input type="checkbox"/>
Safety valve in filtrate line replaced after 2 years at the latest – Last change _____ [dmj]	<input type="checkbox"/>
Power input of circulation pump on the input of the FC at 100 % delivery rate checked _____ [A]	<input type="checkbox"/>
<b>Hair and fibre strainer</b>	<b>OK</b>
Suction basket removed and cleaned.	<input type="checkbox"/>
Cover seal cleaned and checked for damage.	<input type="checkbox"/>
<b>Circulation pump</b>	<b>OK</b>
Pump motor direction of rotation and ease of movement checked.	<input type="checkbox"/>
Circulation pump checked for impurities.	<input type="checkbox"/>
Detachable connections on the pump and circulation pump itself checked for tightness and secure seat.	<input type="checkbox"/>
No increased noise or vibrations determined in the circulation pump.	<input type="checkbox"/>
No increased motor temperature determined.	<input type="checkbox"/>
Electrical safety devices checked for function.	<input type="checkbox"/>
Dry-run protection triggered on reaching the lowest level in the raw water tank.	<input type="checkbox"/>
<b>Backwash filter</b>	<b>OK</b>
Backwash filter itself and the disks inside cleaned.	<input type="checkbox"/>
Disks checked for integrity and faulty filter disks replaced as necessary.	<input type="checkbox"/>
Elements of the piston checked. Replacement of wearing parts every 2 years – maintenance kit 2 – Last: _____	<input type="checkbox"/>
Seals from annual maintenance kit 1 replaced on the filter.	<input type="checkbox"/>
All other components visually inspected for damage.	<input type="checkbox"/>
<b>Ultrafiltration module</b>	<b>OK</b>
CIP cleaning carried out in accordance with separate flushing instructions. (Log created)	<input type="checkbox"/>
Values as during commissioning reached – circulation capacity, TMP.	<input type="checkbox"/>
Integrity test carried out in accordance with instructions – membrane barrier OK.	<input type="checkbox"/>
Integrity test with open UF module for repair of faulty membrane fibres carried out (as necessary).	<input type="checkbox"/>
Faulty membrane fibres sealed on both sides using repair kit – quantity: _____ (as necessary).	<input type="checkbox"/>
System preserved in accordance with instructions (for decommissioning).	<input type="checkbox"/>
<b>Compressed air unit/compressor</b>	<b>OK</b>
Compressor drained via autom. condensate emptying, adequate draining and valve function checked.	<input type="checkbox"/>
Function of safety valve checked (pull ring slowly when compressor is under pressure).	<input type="checkbox"/>
Compressor oil level checked, oil replenished if necessary.	<input type="checkbox"/>
Oil change performed and O-ring replaced - required every 2 years at the latest. Maintenance kit 2	<input type="checkbox"/>
Cooling ribs/cooling surfaces cleaned.	<input type="checkbox"/>
Non-return valves cleaned or renewed.	<input type="checkbox"/>
Activated carbon filter replaced (annually at the latest) – Maintenance kit 1.	<input type="checkbox"/>
Suction filter replaced (annually at the latest) – Maintenance kit 1.	<input type="checkbox"/>
Pressure settings/pressure reducer settings checked and adjusted if necessary.	<input type="checkbox"/>
Pressure reducer drained.	<input type="checkbox"/>
Filter elements in pressure reducer cleaned or replaced.	<input type="checkbox"/>
Leak-tightness of all transitions/connections checked.	<input type="checkbox"/>
<b>Hose dosing pump/dosing group for UF chemical backflushing</b>	<b>OK</b>
Functional check of hose dosing pump and dosing group performed.	<input type="checkbox"/>
Maintenance performed in accordance with separate operation manual (GENO-Schlauflex): Annual replacement of the pump hose and dosing valve – Maintenance kit 1.	<input type="checkbox"/>



# EC Declaration of Conformity

In accordance with the EC Machinery Directive 2006/42/EC, Appendix II A



This is to certify that the system designated below complies with the safety and health requirements of the applicable European Directives in terms of its design, construction and execution.

This certificate will become invalid if the system is modified in a way not approved by us.

## **spaliQ:UF150 ultrafiltration system**

**Serial no.: refer to type plate**

The aforementioned system also complies with the following directives and provisions:

- PED (2014/68/EU)

Furthermore, we confirm compliance with the essential requirements of the EMC Directive 2014/30/EU.

The following harmonised standards have been applied:

- DIN EN ISO 12100:2011-03
- DIN EN 60204-1:2019-06

Responsible for documentation:

Peter Höß

Manufacturer

Grünbeck Wasseraufbereitung GmbH  
Josef-Grünbeck-Str. 1  
89420 Hoechstädt  
Germany

Hoechstädt, October 2020

A handwritten signature in black ink, appearing to be 'P. Höß', written over a faint circular stamp or watermark.

Peter Höß

Head of System Development

# Notes

# Notes



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