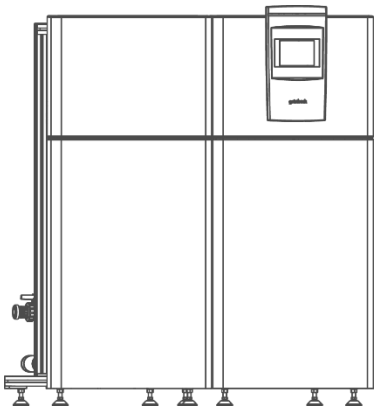


Ultrafiltration System spaliQ:UF150

Intended use

The ultrafiltration system spaliQ:UF150 is designed for the filtration of pool water in private swimming pools and whirlpools.

Function

The pool water to be filtered is sucked in from a skimmer or a raw water tank via a frequency-controlled circulation pump with hair and fibre strainer installed upstream.

In order to protect the ultrafiltration module, the backwash filter installed downstream filters off coarse dirt particles (> 200 µm).

The prefiltered pool water is then directed via the ultrafiltration module. Filtration takes place from inside out.

As a result of the pore size (≤ 0.02 µm) of the ultrafiltration module, small dirt particles, viruses and parasites are retained and filtered off (retention capacity for viruses > 99.99 %).

The filtrate is directed back to the pool via a flow measuring device, which registers the current delivery volume. If required, the circulation pump regulates to the set target volume.

The retention of dirt particles increases the differential pressure in the backwash filter and the ultrafiltration module. Once a particular differential pressure has been reached or after a certain length of time, flushing is triggered for hygienic reasons. The dirt particles are flushed to the drain.

The backwash filter is backwashed with pool water. A special Grünbeck flushing process is used for the flushing of the ultrafiltration module, where the ultrafiltration module is backwashed with filtrate and an additional disinfection stage prevents possible bacterial growth. Furthermore, system components such as flushing water storage tanks and flushing water pump are thus become superfluous. This saves space and prevents hygienic problems.

The ultrafiltration system spaliQ:UF150 and its components are controlled by a PLC controller with a 7" touch panel.

Application limits

For the application of the ultrafiltration spaliQ:UF150, 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:

- Aspect/colour: colourless
- Undissolved sediment: without
- pH value: 6 – 8
- Free chlorine: ≤ 1.4 mg/l
- Chloride content: < 500 mg/l
- Turbidity: in average < 3 NTU (FNU)
  short-term up to 20 NTU (FNU)
- Suspended solids: < 4 mg/l (filter fineness 0.2 µm)
- Total iron: < 0.1 mg/l
- Oils/greases/hydrocarbon: not detectable

Design

- Compact design
- Ergonomic system design
- Removable housing / casing
- Divisible system rack
- 7“ touch panel as indicator and operating element
- Documentation of measured data on integrated SD card
- Safety shut-down in case of power failure - in case of a power failure, the system (no draining of the pool) adopts a safe operating state.
- Frequency-controlled circulation pump with standard suction
- Hair and fibre strainer
- Backwash filter with 200 µm cut-off and automatic backwash
- Ultrafiltration module with a cut-off of 0.02 µm as barrier against viruses, bacteria and parasites, KTW approval
- Automatic backwash of ultrafiltration module by means of special Grünbeck flushing process (patent pending) with integrated flushing water pipe to flush the ultrafiltration module with filtrate

Subject to modifications| TD2-IU000en_024 | Edition February 2021

- Dosing system to add disinfectant during automatic backwash of ultrafiltration module, consisting of:
  - Hose dosing pump
  - Chlorine dosing point
  - Level/filling level measurement
  - Chemical tray for GENO-Chlor A
- Flow measurement to determine and transmit the delivery volume to the control unit.
- Low-noise compressor with automatic condensate draining
- Piping made of PVC and PE with motorised ball valves, valves and pressure measurements
- Water withdrawal point for optional measuring and control system, e.g. CPR-tronic 02 family
- Temperature sensor for installation into an optional heat exchanger or thermowell (if no heat exchanger is available) to determine the water temperature
- Device for manual integrity test during maintenance
- Hydraulic connections for CIP during maintenance

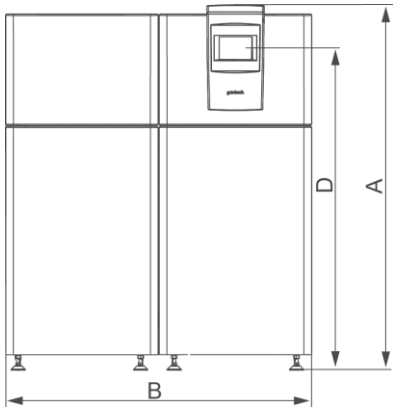
Interfaces of control unit:

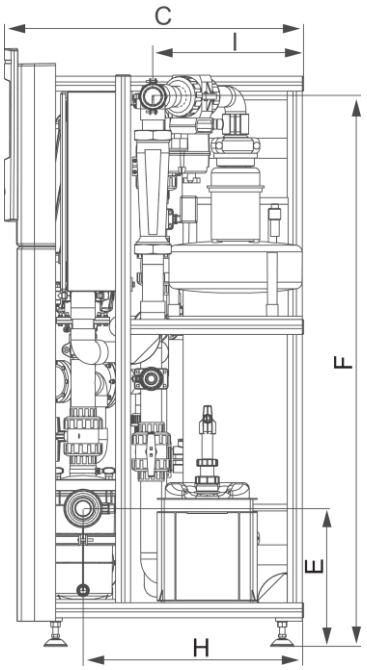
- LAN and Wi-Fi interface for operation via web browser
- Integration of an optional measuring and control system, e.g. CPR-tronic 02 family
  - 3 inputs 4-20 mA for measuring values (pH, Redox, chlorine)
  - Voltage-free input for part load operation
  - Voltage-free input for malfunction
  - Voltage-free output for release signal
- Integration of up to 3 attractions
  - 1 voltage-free input for external actuation each
  - 1 voltage-free input for collective fault signal each
  - 1 voltage-free output for actuation each
- Integration of pool illumination of up to 4 light circuits
  - Voltage-free input for external actuation
  - 1 voltage-free output for actuation each
- Voltage-free input for max. temperature limitation
- 4 voltage-free inputs for level measurement in raw water tank
- Voltage-free input of max. level of waste water lifting system
- Voltage-free input of external signal of automatic overflow bypass
- 2 voltage-free inputs for position messages "Open" and "Closed" of an external pool cover control
- Voltage-free output to activate external heating
- Voltage-free output for collective fault signal
- Voltage supply of optional heating pump 230 V/50 Hz
- Voltage supply of optional fresh water make-up feed raw water tank 24 V/DC
- Voltage supply of optional, automatic overflow channel bypass 24 V/DC

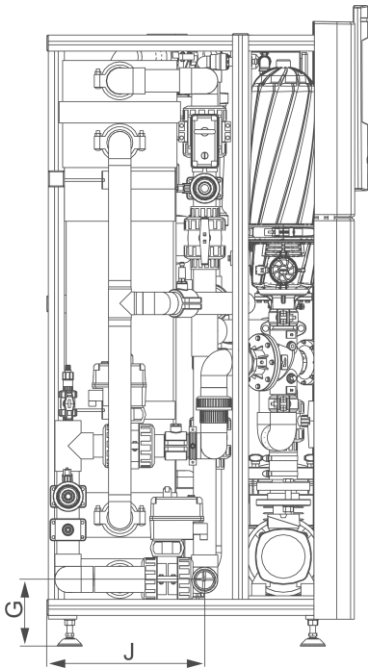
Scope of supply

- Ultrafiltration system, completely preassembled and packed on a pallet
- Operation manual

Technical specifications I







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 touch panel of control unit	mm	1580 - 1600
E	Connection height raw water	mm	415
F	Connection height filtrate	mm	1650
G	Connection height flushing waste 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)		mm	2000
Empty weight, approx.		kg	350
Operating weight, approx.		kg	500

Technical specifications II

Connection data		
Nominal connection diameter of raw water	DN	65
Nominal connection diameter of filtrate	DN	50
Nominal connection diameter of flushing waste 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 on site 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 pressure loss of filter system of 5 mWC) approx.**	kW	0,30
Power input (at 12 m³/h and pressure loss of filter system of 10 mWC) approx.**	kW	1,05
Power input (at 15 m³/h and pressure loss of filter system of 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 of filter system per flushing***	litres	≥ 240
Delivery pressure of circulation pump	mWC	≤ 27
Cut-off of backwash filter	µm	≤ 200
Cut-off of ultrafiltration module	µm	≤ 0,02
Membrane surface	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 of ultrafiltration module (TMP)	bar	≤ 2,5
pH range cleaning of ultrafiltration module (CIP)	pH	1 - 13 *
Free chlorine cleaning of ultrafiltration module (CIP)	mg/l	200 *
Number of ultrafiltration modules	piece(s)	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
Atmospheric humidity	%	≤ 70
Order no.		247 100

Installation requirements

Please observe local installation directives, general guidelines and technical specifications.

The installation site has to fulfil the following requirements:

- It must be frost-proof and ensure the system's protection from chemicals, dyes, solvents and vapours.
- It must be sufficiently ventilated and must not be prone to flooding.
- It should be below water level. If the installation site is located above the water level (suction operation), a non-return valve must be provided on the pump's pressure side. In addition the the suction conditions must also be observed in detail.
- A foundation of a sufficient size and adequate load carrying capacity has to be provided.
- The system must be easily accessible for maintenance and repair purposes. For maintenance and repair work, a clearance of at least 1 metre each is required on the right and the left side of the system.
- Take into consideration the minimum room height.
- Regarding the power supply on site, a power outlet that has its own AC/DC sensitive ground fault circuit interrupter (30 mA) is required.
- For the electrical connection provided on site by the client, a feeder cable which features an AC/DC sensitive ground fault circuit interrupter (30 mA) is required.
- A chemical-resistant drain connection is required in the floor to discharge the waste water from the flushing process.
- In case the flushing water is directed to a lifting system, make sure that said device is resistant to chlorinated water/chemicals.
- A floor drain must be available. If none is available, an appropriate safety device has to be installed. Floor drains leading to a lifting system do not work in case of a power failure.

Accessories

Automatic integrity test
Order no. 247 175

For regular, automatic inspection of the sound condition of the virus/bacteria/parasite barrier. With result message for the client.
(fitted on the system ex-works)

Lowering of water level at night in pools with overflow channel
Order no. 247 185

To save energy in pools with overflow channel by lowering the pool water level when the pool is not in use or when the pool cover is closed.

Separate switch cabinet with I/O for connection to PLC controller via BUS interface. Used to control 4 motorised ball valves (24V/DC) to lower the pool water level by directing water into the raw water tanks and subsequent circulation without the overflow channel. The motorised ball valves are not included in the scope of supply.

Consumables

- GENO-Chlor A
- Activated carbon filter of air treatment

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