Operating Instructions

Control unit

Type GRANUDOS Touch

without dosing unit



Suitable for the Operating Instructions for dosing devices:

- **GRANUDOS Flex-Touch, No.: BA SW 022**
- **GRANUDOS VARIO-Touch, No.: BA SW 003**

Table of contents

1 About these instructions / general 4
1.1 Scope of applicability 4
1.2 Target group 4
1.3 Symbols used 4
1.4 Warranty 5
1.5 Additional information 5
1.6 Information regarding support queries 6
2 Safety 7
2.1 Intended use 7
2.2 Safety notices 7
2.2.1. Handling of chemicals, risks to humans and the environment 7
2.2.2. Protective measures and rules of conduct 7
3 Product description – scope of delivery 8
3.1 Scope of delivery / Accessories 8
3.2 Product description 8
3.2.1. Device overview 8
3.3 Identification of the device / Identification plate 9
3.4 Technical data 9
4 Installation 9
5 Commissioning 9
6 Operation / service of the control unit 10
6.1 General 10
6.2 The GRANUDOS Touch Control Unit 10
6.2.1. Operating menu– Operating status – Operation messages 10
6.2.2. Start –Delay booster pump and dosing delay 14
6.2.3. Automatic operation 14
6.2.4. Alarm 15
6.2.5. Manual dosing 15
6.3 The Main Menu 16
6.3.1. Main menu Login 16
6.3.2. Main menu → Settings (overview) 17
6.3.3. Main menu → Service 24
6.3.4. Main menu → Log (event and data logging) 27
6.3.5. Main menu → Calibration (option for design with buffer tank) 28
7 Maintenance, care, fault removal 30
7.1 Device maintenance 30
7.1.1. pH measurement – calibrating the pH electrode (option for operation with buffer tank) 30
7.1.2. Opening and closing the control housing 31
7.2 Fault removal 32
8 Decommissioning – Storage – Disposal 36
8.1 General 36
8.2 Decommissioning 36
8.3 Disposal of used parts and operating materials 36
9 Documents 36
9.1 Declaration of conformity 36
9.2 Wiring diagrams 37
9.2.1. Wiring diagram networkboard **GRANUDOS VARIO-Touch** and **GRANUDOS Flex-Touch** 37
9.2.2. Wiring diagram I/O circuit board **GRANUDOS VARIO-Touch** 38
9.2.3. Wiring diagram I/O circuit board **GRANUDOS Flex-Touch** 39
9.2.4. Wiring diagram buffer tank **GRANUDOS VARIO-Touch** and buffer tank **GRANUDOS Flex-Touch** 40
9.3 Commissioning protocol 41

9.4 Operation data sheet 41
9.5 Maintenance protocol 45
9.6 Spare parts list, wear parts list, consumables 45
10 Appendices 45

Imprint:

All rights reserved
© Copyright by WDT – Werner Dosiertechnik GmbH & Co KG

Edition: see footer

Reproduction of any kind and translation into other languages, even in excerpts, is only permitted with the express authorisation of the company WDT - Werner Dosiertechnik GmbH & Co. KG.

These operating instructions are an English translation of the original German version by the company WDT.

Responsible for the content:
Co. WDT - Werner Dosiertechnik GmbH & Co. KG
Hettlinger Str. 17
D-86637 Wertingen - Geratshofen
Phone: +49 (0) 82 72 / 9 86 97 – 0
Fax: +49 (0) 82 72 / 9 86 97 – 19
Email: info@werner-dosiertechnik.de

1 About these instructions / general

1.1 Scope of applicability

This instruction describes the function, installation, commissioning and operation of the device. The Operating Instructions must be read carefully before use and kept on the device for direct use!

These Operating Instructions are valid in conjunction with the Operating Instructions:

- **"GRANUDOS Flex Dosing Unit", No.: BA SW 022**
- **"GRANUDOS VARIO Dosing Unit", No.: BA SW 003**

1.2 Target group

Only our instructed partners and people who have been trained in the device functions are permitted to work on the system, provided that they have read and understood these Operating Instructions.

Electrical connection work may only be carried out by appropriately trained specialists!

1.3 Symbols used

This document uses the following types of safety notices as well as general notices:



DANGER!

"DANGER" denotes a safety notice which, if disregarded, may lead to **serious** or **life-threatening injuries, serious material damage** or **death**!



CAUTION!

"CAUTION" denotes a safety notice which, if disregarded, may lead to **injuries, damage to health** or **material damage**!



ATTENTION!

"ATTENTION" denotes a safety notice which, if disregarded, may lead to material **damage** or may impair the **function of the system**!



CORROSIVE!

"Corrosive" denotes a safety notice which, if disregarded when handling chemicals, may lead to **injuries** or **material damage**.



ESD SENSITIVE!

"ESD SENSITIVE" denotes electronic components that may be damaged by electrostatic discharges. The generally accepted safety precautions for electronic components must be observed when handling the devices!



NOTICE!

A "NOTICE" denotes information that is of particular importance for the **smooth running of operations** and that can **disrupt the operating process** if not observed.



TIP!

A "TIP" denotes information that may result in **improvements in the operating process**.



Use face protection!

Wear approved face protection to prevent facial injuries due to contact with hot or chemical materials.



Use hand protection!

Wear approved hand protection to prevent hand injuries due to contact with hot or chemical materials (according to DIN EN 374: Protective gloves against dangerous chemicals and micro-organisms).



Use protective apron!

Wear an approved protective apron to prevent injuries to the front of your body due to contact with hot or chemical materials.



Use foot protection!

Wear approved foot protection to prevent foot injuries due to contact with hot or chemical materials or falling objects.

1.4 Warranty

All WDT devices and systems are manufactured using modern production methods and are subject to comprehensive quality control. However, should there be a reason for complaint, any compensation claims shall be directed to the company WDT in accordance with the general terms and conditions of warranty (see below).

General terms and conditions of warranty

The company WDT assumes a 2-year warranty, starting with the commissioning, up to 27 months after delivery; subject to correct installation and commissioning with a completed and signed commissioning protocol.

Exempt from this are wear parts such as seals, hoses, diaphragms, dosing screws, electrodes, roller carriers and other parts that are subject to mechanical or chemical wear and tear. For these we assume a warranty of 1/2 year.

Our enterprise resource planning system requires an invoice for each delivery (including warranty services). When returning a defective component, upon review you will receive a corresponding credit, if applicable. We request a return within 14 days.

The costs for subsequent damage and for the processing of warranty claims are excluded.

There are no warranty claims for damage caused by frost, water and electrical overvoltage or by improper handling.



TIP!

In order to protect the warranty claims, please mail the completed commissioning protocol, along with the defective component, to the company WDT. Without the commissioning protocol, we reserve the right to assert a warranty regulation.



NOTICE!

It is not permitted to make any modifications to the device, as this may lead to malfunctions. If this specification is not observed, the warranty obligation and product liability will become void!

1.5 Additional information

Further information about special topics, e.g., design of the dosing performance or description of the operating parameters, is available from your specialist dealer.

1.6 Information regarding support queries

The control unit is subject to continued further development of both its firmware and hardware. We always strive to preserve the compatibility of the components used, but we are unable to guarantee this over a period of several years!

For spare part orders, we therefore always require the following data. You can find these on the identification plate.

- exact device designation
- device serial number
- year of manufacture

We also require the following data for technical support requests. You can find these in the menu item **Menu → Service → Info.**

- current firmware version
- current hardware version

2 Safety

2.1 Intended use

The GRANUDOS Touch control unit must only be used for the purposes described in the Product Description in *Chapter 3.2, Product description*! Also pay attention to the locally applicable regulations concerning accident prevention, occupational safety and drinking water protection!

NOTICE

The standard GRANUDOS booster pump is **not suitable for saline water (seawater/brine pools)**. A special version is available for this case. Pay attention to this when placing your order!

2.2 Safety notices

Carefully read and pay attention to the operating instructions prior to installation, maintenance and use of the device!
Work on the device and changes in the settings may only be carried out by properly instructed persons!

IT safety
The GRANUDOS Touch control unit makes remote display possible using network-enabled devices. The operator is responsible for ensuring that only authorised persons can access the device. The operator, or their authorised representative, is further responsible for the safety of all Internet or WLAN connections.

2.2.1 Handling of chemicals, risks to humans and the environment

Danger due to corrosive substances!
Formation of substances hazardous to health when handling and mixing chemicals!
In emergencies, contact the respective poison control centre.

Emergency number:

Munich Emergency Poison Centre (or any other Poison Centre

Phone: +49 89 19240

2.2.2 Protective measures and rules of conduct

CORROSIVE!
The GRANUDOS Touch control unit controls devices that dose corrosive chemicals. For this reason, it is essential that you pay attention to the safety information.

ESD SENSITIVE!
The electronic components in the device control units are sensitive to electrostatic discharge. For this reason, the generally accepted safety precautions for electronic components must be observed when handling the devices, including:

- **Discharge of personal static charge**
- **Dissipative clothing**
- **Disconnect the device from the voltage supply**

3 Product description – scope of delivery

3.1 Scope of delivery / Accessories

The GRANUDOS Touch control unit is delivered with the GRANUDOS as standard.

In addition, customer-specific or order-related modifications are possible, e.g., remote display.

3.2 Product description

The **GRANUDOS Touch** control unit is intended solely for control tasks associated with the treatment of swimming pool water. It is used for the following dosing devices:

- **GRANUDOS Flex-Touch**
- **GRANUDOS VARIO-Touch**

The control unit has the following main functions:

- Dosing of chlorine granulate via the dosing screw
- Acid dosing via the peristaltic pump directly from the delivery container
- Backwash disinfection / high-speed dosing
- Filling a buffer tank with chlorine solution for disinfecting additional small pools using dosing pumps (option)
- Fault indication potential-free
- PC link, remote display via LAN

3.2.1 Device overview

The GRANUDOS Touch control unit is set up as a ready-assembled unit.



Figure 1, GRANUDOS VARIO-Touch and GRANUDOS Flex-Touch

GRANUDOS Touch control unit (standard)

The micro-processor-supported control unit is contained in a dust-proof housing. The operating status, the fill levels and active inputs and outputs (IN – OUT) are displayed in the start menu. The inputs and outputs can be operation messages or fault indications.

3.3 Identification of the device / Identification plate

For spare part orders and troubleshooting, it is useful to know the device serial number and the firmware version. The device serial number is located on the identification plate on the side of the control housing. The firmware version can be found using the menu item **Menu → Service → Info**. Keep the identification plate clean and in a legible condition.

Identification plate, see OI for the Dosing unit

- **for GRANUDOS Flex-Touch, No.: BA SW 022**
- **for GRANUDOS VARIO-Touch, No.: BA SW 003**

3.4 Technical data

	GRANUDOS **VARIO-Touch Control Unit**	GRANUDOS **Flex-Touch Control Unit**
Connection data		
Electrical connection data	240 VAC/50-60 Hz ± 10%, 35 W, I max. 0.2 A, standby 22 VA, safety (Schuko) plug	
Protection class	Control housing IP54	
Interface connection	LAN RJ45 for Modbus TCP, USB for data export	
Operating data:		
Measuring range	pH value: 2.00 to 12.00	
Medium temperature Ambient temperature Humidity technical room	0 to 40°C 5 to 35°C max. 70% (non-condensing)	
Hypochlorous acid concentration	max. 0.35%	max. 0.2%
Room ventilation (in and out)	According to DIN 19643	
Material of control housing	Housing: PS	
Firmware version	–	
Hardware version	—	

Additional data, see the dosing unit of the respective dosing device.

4 Installation

For installation, see operating instructions for the dosing unit of the respective dosing device.

- **for GRANUDOS Flex-Touch, No.: BA SW 022**
- **for GRANUDOS VARIO-Touch, No.: BA SW 003**

5 Commissioning

For Commissioning, see the operating instructions for the dosing unit of the respective dosing device.

- **for GRANUDOS Flex-Touch, No.: BA SW 022**
- **for GRANUDOS VARIO-Touch, No.: BA SW 003**

The device is delivered with defined factory settings. You can find the setting values in the operation data sheet in *Chapter 9.4.* Adjust the parameters to your pool's requirements.

6 Operation / service of the control unit

Hinweis

NOTICE!

Pay attention to the nationally applicable accident prevention provisions. In Germany: Operation of Swimming Pools DGUV 107-001.

6.1 General

Once all the preparations for commissioning have been completed, the settings can be made on the GRANUDOS Touch dosing system.

6.2 The GRANUDOS Touch Control Unit

The GRANUDOS Touch control unit is equipped with a touch-sensitive display. Settings can be made by tapping on a symbol. The calibration menus come with additional text-based instructions.

6.2.1 Operating menu– Operating status – Operation messages

The control unit of the GRANUDOS Touch is easy and clear to operate using a 7" touch screen. The operating states and faults are displayed directly in the start display: see *Figure 3, Automatic operation.*

In automatic operation, the current operating status, the fill levels and active inputs and outputs are displayed (IN – OUT). The inputs and outputs can be operation messages or fault indications.

Operating notes:

The operating status is displayed in the status line at the bottom left. The following operating states are available:

- Dosing delay
- Automatic
- Manual dosing
- Menu
- Calibration
- Output test
- Input test

Overview sensors / actuators

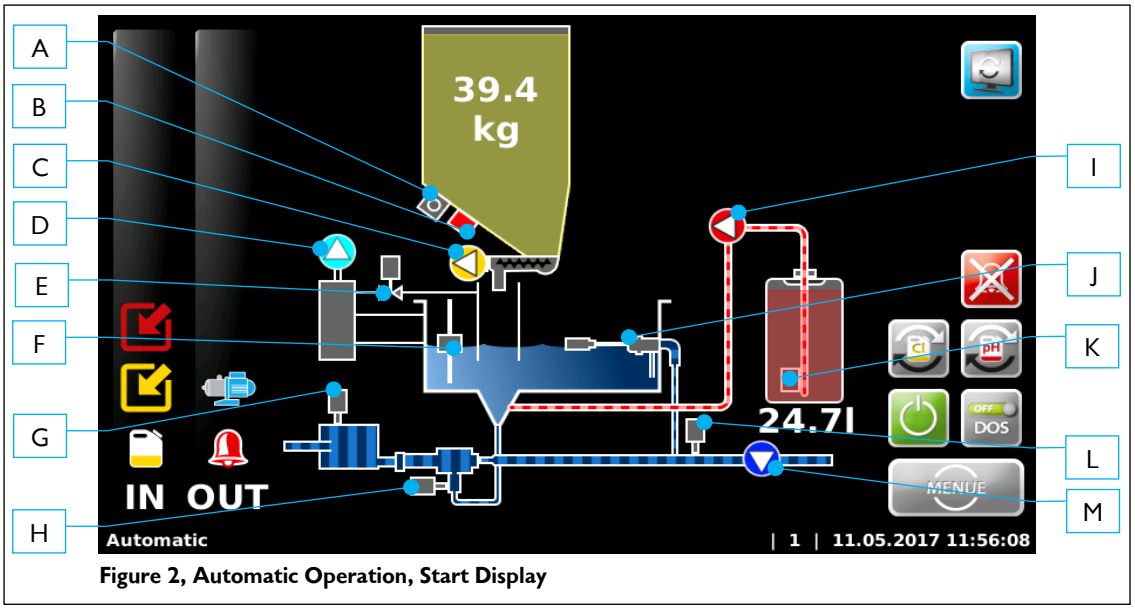


Figure 2, Automatic Operation, Start Display

A Solenoid knocker (on the drum)
B Chlorine empty switch
C Chlorine dosing motor
D Dust extraction pump (option)
E Dust extraction flushing valve (option)
F Level switch for flushing tub
G No chlorine sensor
H Flow switch for suction pipe
I Dosing pump for pH reducer (acid)
J Floating valve inlet for flushing tub
K Level switch acid empty (suction lance)
L Pressure switch
M Booster pump

The device is operated by means of a touch screen. Desired parameter changes, calibrations and tests can be done simply by lightly touching the corresponding symbol or the numeric value.

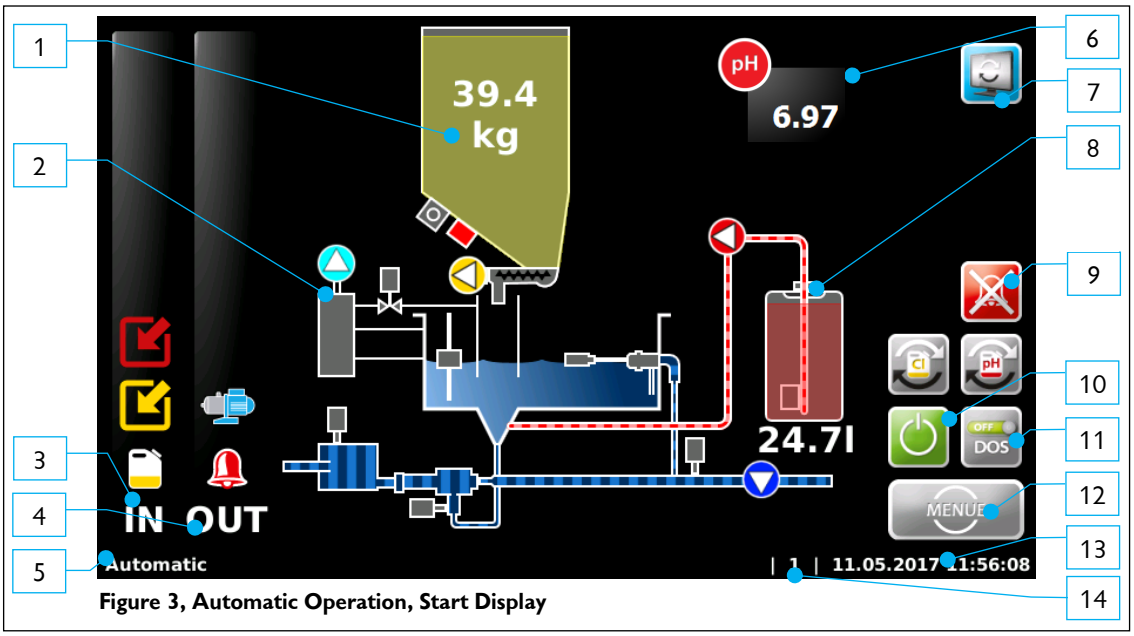


Figure 3, Automatic Operation, Start Display

1. Chlorine granulate fill level
2. Dust extraction (option)
3. IN list
4. OUT list
5. Status line
6. Measuring value pH (option)
7. Toggle between start display and buffer tank display
8. Acid fill level
9. Cancel alarm
10. Start / Stop dosing device
11. Manually activate / deactivate dosing
12. Menu button
13. Date / time bar
14. User level (0=guest, 1=end user, 2=technician 1)

The **IN list** shows the input signals to the control unit.
The **OUT list** shows the active output signals of the control unit.

Symbols used:

The symbols depend on the firmware installed, i.e., the device version. For further information on how to proceed, see *Chapter 7.2, Fault* removal.

The function buttons on the start display


Switch to buffer tank view



Reset chlorine counter, after drum change



Reset acid counter, after canister change


Dosing device on/off



Switch off dosing, e.g., for service tasks



Deactivate alarm relay



View main menu



Manually cancel the dosing delay, dosing starts

The "IN" list



red = pH level (container for pH control empty)
yellow = disinfection level (container for chlorine granulate empty)
blue = flocculation level (flocculant container empty, only for CPR Touch XL)



Shock chlorination (filter disinfection) active



The controller is deactivated using the central control cabinet.
No dosing occurs, no alarm message given.



The dosing is blocked by an optional flow switch in the clean water line.
No dosing occurs



A dynamic dosing time (chlorine or acid) has been exceeded. The respective output is blocked. The fault must be acknowledged manually.



Dosing deactivated manually



red= input signal; external pH control active
yellow= input signal; external pH control active



The pressure at the GRANUDOS booster pump is too low. The booster pump is stopped



The level in the GRANUDOS flushing tub is too low. The booster pump is stopped



The level in the GRANUDOS flushing tub is too high. The dosing of chlorine and acid is stopped



The flow in the GRANUDOS is too low. The dosing of chlorine and acid is stopped.



A fuse has been tripped; the failed fuse is saved in the event log with its name and can be read about there.

The "OUT" list



red = acid dosing output active
yellow = chlorine dosing output active



The alarm relay is active.



Chemical reserve
Advance notice for container exchange, check chemicals levels and prepare chemicals



The booster pump is active



The knocker is active. This symbol is only displayed very briefly



TIP!

The following symbols only apply for the OPTION with buffer tank filling.

The "IN" list (option, design with buffer tank)



The buffer filling is started, message is only pending briefly.



The buffer filling with chlorine solution is stopped. Now, flushing takes place.



The buffer tank level has dropped too low. Chlorine dosing is stopping



The buffer tank level is too high.
Chlorine dosing, acid dosing and the booster pump are stopped.



Collecting tub alarm (leakage)
Chlorine dosing, acid dosing and the booster pump are stopped.



The optical sensor on the cyclone did not detect any chlorine while the buffer tank was being filled. The filling was stopped.



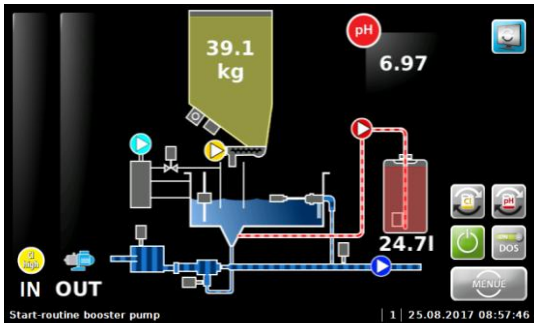
The buffer tank filling has been deactivated by the system. Filling was performed too slowly or the optical sensor on the cyclone was triggered.

The "OUT" list (option, design with buffer tank)



Buffer tank filling is active.

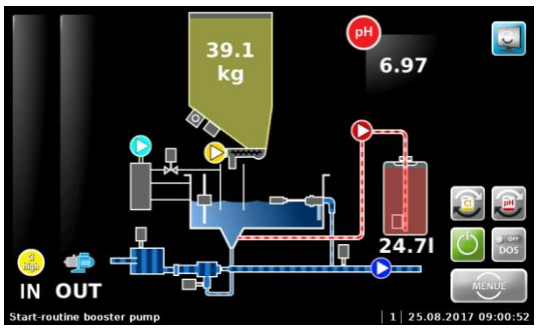
6.2.2 Start –Delay booster pump and dosing delay



If the device is restarted, the booster pump startup routine runs. Dosing is suppressed during this time.

Software alarms are suppressed during this time.

The device then switches to automatic operation.

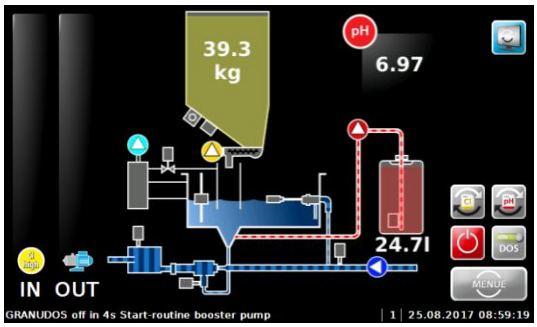


If "Delay booster pump" is activated, the delay time shown in the footer elapses before the booster pump starts.

(This is used to vent the supply line.)

The dosing delay can be cancelled with 

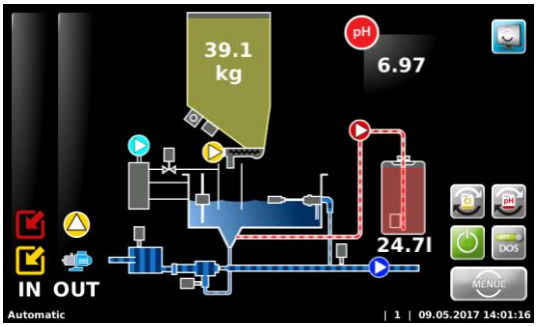
and the device is set to automatic operation.



Use the  button (top right) to switch to the "Buffer tank" display.

If the GRANUDOS is deactivated externally, dosing stops and the booster pump runs on, as shown in the footer, so that no chlorine remains in the suction pipe.

6.2.3 Automatic operation

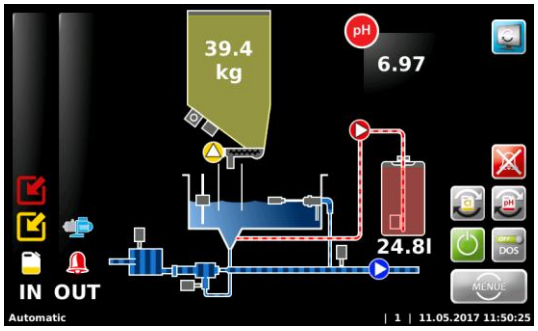


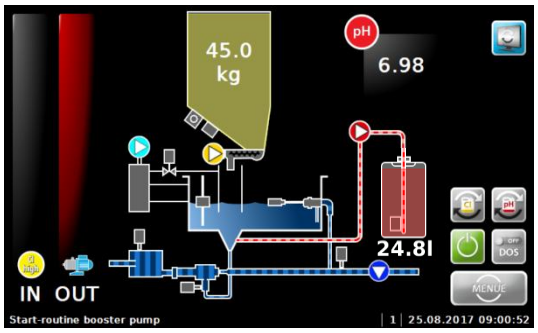
The device is in "automatic" operating status. The device doses chlorine and acid in the set cycle, as required.

The **OUT list** shows the currently active Booster pump and Chlorine dosing outputs as an example.

There is no fault.

6.2.4 Alarm





If an alarm occurs, this will be indicated by the symbol in the **OUT list**. The alarm relay is activated.

A distinction is made between alarms (software alarms, e.g., dosing time monitoring) and faults (switch inputs).

In the event of measuring value alarms, the respective measuring value is additionally illustrated in red.

In the event of faults, the corresponding symbol appears in the **IN list**.

Alarms or faults must be pending for 6 seconds before they are processed as an alarm.

With the button, the alarm relay can be temporarily deactivated without fixing the fault.

The GRANUDOS now starts with the startup routine.

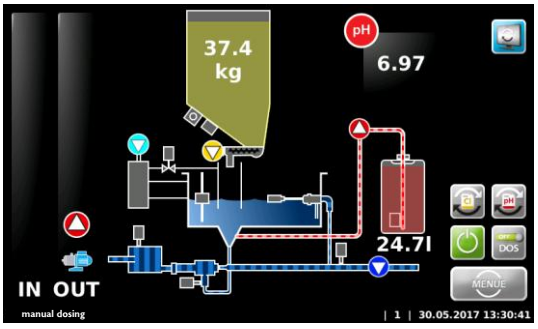
If the fault recurs again, or if the fault is not fixed, the alarm relay will be reactivated.

Tipp

TIP!

An alarm will automatically be deleted when its cause has been fixed. For example, if the empty chemical container has been replaced. The "Switch-off time monitoring alarm" must be acknowledged manually, as described above!

6.2.5 Manual dosing



In the event of a fault with the external measurement technology that cannot be fixed, the chlorine dosing and the dosing of the pH value regulation can be performed via the Manual operation emergency function for a limited period of time.

If this operating mode is selected (see *Chapter 6.3.2.1)*, the display in the status line changes from automatic to manual dosing.

6.3 The Main Menu



Automatic
Navigates to the start display and into automatic operation; automatically switches to user level 0 or 1. In manual operation mode, a different symbol is displayed here.

Settings
For adapting parameters and system settings

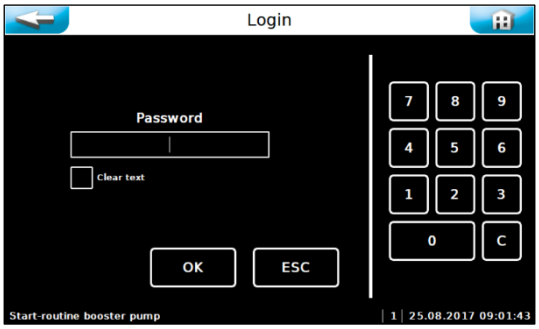
Service
Input and output test, info

Login
For password assignment; no password is assigned in the delivery state.

Log
For query of events and data logging

Calibration
Calibration of the pH electrode

6.3.1 Main menu Login



In the Main menu, passwords are assigned under Settings → System → Password. A personal password protects the control unit against unauthorised access. Settings, calibration, output tests, etc., can then no longer be performed without a password. You can still browse the menu and view the data logging.

If no password has been assigned in user level 1, the system always switches to user level 1! *See operation data sheet, Chapter 9.4.*

For future changes and adjustments, you must sign in with your personal password under Login. If you switch to the start display, the password must be re-entered.

Hinweis

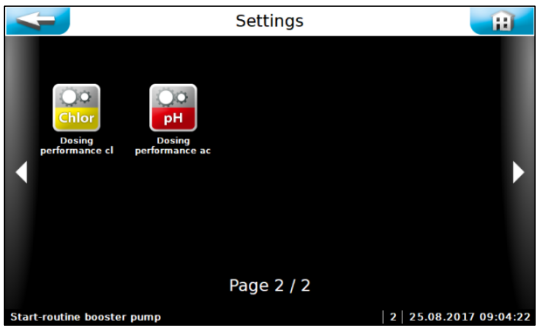
NOTICE!

Once a password has been assigned, unauthorised persons will be denied access to the control unit. The setting buttons will appear in grey. Desired changes can only be made after the password has been entered. Once a password has been assigned, make a note of the password and keep it in a secure location.

6.3.2 Main menu → Settings (overview)

The Settings menu is used to make the desired settings for the GRANUDOS. Use the white arrow keys on the side to scroll to the next screen menu. The 2nd page is only displayed in user level 2 (technician 1).





Chlorine/acid dos. performance (*6.3.2.1*)
Adjust the dosing performance to the pool size

Reserve indication chlorine (*6.3.2.2*)
Set reserve indication for chlorine granulate

Reserve indication acid (*6.3.2.3*)
Set reserve indication for pH reducer

Shock cl. (*6.3.2.4*)
Set dosing performance for the Shock chlorination function

System (*6.3.2.5*)
Set date, time, password, display, network and language

Determining the chlorine dosing performance (*6.3.2.6*)
Dosing performance (dosing quantity) is determined

Dust extraction (option) (*6.3.2.7*)
Set parameters for dust extraction

Buffer (operation with buffer tank) (*6.3.2.8*)
Set dosing performance for Buffer tank filling function

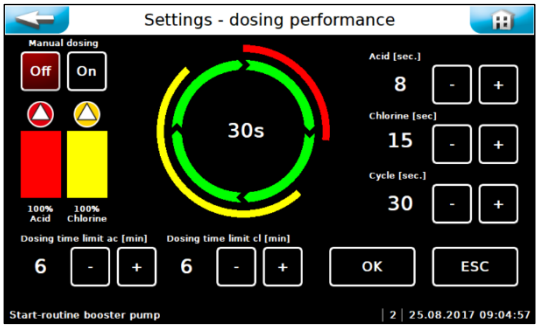
pH Supervision (for operation with buffer tank) (*6.3.2.9*)
Set parameters for pH supervision

Delay booster pump (*6.3.2.10*)
Set delay time for the start of the booster pump

Dosing performance chlorine granulate (by customer service only) (*6.3.2.11*)
Set device-specific dosing parameters

Dosing performance acid (by customer service only) (*6.3.2.12*)
Set device-specific dosing parameters

6.3.2.1 Main menu → Settings → Dosing performance (button)



The "Dosing performance" menu is used for adjusting the dosing performance to the expected consumption of chemicals in the pool.

Especially in case of lower water content, it is very important to adjust the dosing performance to avoid incorrect dosing.

The required dosing performance depends on several factors, e.g., the pool volume, location, type of use and, of course, the pool's frequency of use.

Explanation of the setting parameters

- Chlorine: → Dosing time for the chlorine granulate, can be set from 1-15 seconds
- Acid: → Dosing time for the acid, can be set from 1-8 seconds



ATTENTION!

The use of sulphuric acid is generally possible up to a concentration of 50%. With higher concentrations or when using other acids (e.g., hydrochloric acid, dissolved sodium hydrogen sulphate, etc.), pay attention to changes in dosing performance and/or increased corrosiveness! We recommend consultation with WDT!

- Cycle: → Length of the entire dosing cycle in seconds from 30-360 seconds
- Acid dosing time limit: → Dosing time monitoring with external control, can be set from 0 – 100 minutes
- Chlorine dosing time limit → Dosing time monitoring with external control, can be set from 0– 100 minutes
- Manual dosing off/on: → Switch between automatic and continuous dosing

Explanation regarding the dosing process

Chlorine and acid are dosed at intervals with pauses between the dosing cycles.

The dosing performance is determined by the dosing cycle (time between the dosing intervals) and the dosing times (running time of the dosing motors for chlorine and acid).

A dosing cycle proceeds as follows:

1. Chlorine dosing; 1-15 sec.
2. Pause; 3.5 sec.
3. Acid dosing; 1-8 sec.
4. Pause until end of cycle

This cycle runs continuously with "Manual dosing".

In "Automatic" operation, this cycle also runs; however, the dosing is only activated if the control command for the dosing (chlorine or acid) is pending. It the control command encounters a pause, the respective dosing is activated in the following cycle.

Example for setting the dosing performance

Requirement: Indoor pool with a circulation capacity of 200 m³/h. In accordance with DIN 19643, in indoor pools 2 g of chlorine must be added per each 1 m³/h circulation capacity.

Calculation: 200 m³/h x 2 g chlorine = 400 g/h chlorine dosing

Maximum dosing performance **GRANUDOS VARIO 2 kg** = 2000 g/h = 100%

That means that the dosing performance must be set to 20% for a chlorine dosing of 400 g/h.

The acid dosing is initially set to the same value, i.e., at 20%. An adjustment may be necessary during ongoing operation.

Explanation of dosing time monitoring Cl / pH

If the GRANUDOS is controlled by a measuring and control device, the dosing performance must be set sufficiently high so that even large loads can be regulated without significant deviations from the target value. This means that the pause times must always be greater than the dosing times. However, if the dosing times are longer than the pause times, then either the dosing performance is too low (set too weakly, or motor or screw are defective), or there is a malfunction in the measuring and control device (control relay stuck, contact defective) or a fault in the GRANUDOS control board.

The dosing time monitoring totals the dosing times against the pause times, and if the set dosing time limit is exceeded, dosing is stopped and indicated as a fault.

Both the chlorine and pH control and/or dosing are monitored.

Explanation about the operation with an external acid dosing pump for regulating the pH value

If an (existing) external dosing pump is to be operated for regulating the pH value, it must be considered that the acid dosing in the GRANUDOS is also always active in order to avoid deposits in the dissolving system.

For this purpose, the acid control can be clamped parallel on the chlorine control (electric wire bridge).

With 240 V control: On the network card NT-GRD on SL7, bypass terminal 1+3 and 2+4.

With potential-free control: On the I/O board on SL10, bypass terminal 1+3 and 2+4.

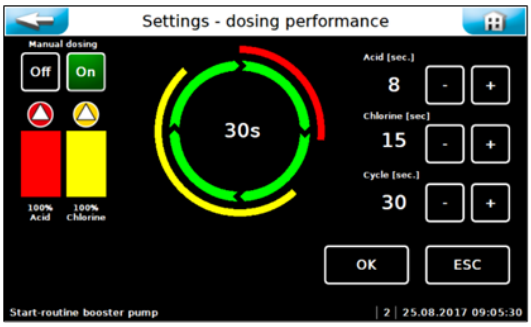
Thus, during each chlorine dosing the acid dosing is activated as well. For the required cleaning function, the dosing performance of the acid dosing must be set to a low value. However, it must be checked if the set dosing performance is sufficient for the cleaning; the mixing cyclone must not get cloudy. See also *Chapter 6.3.2.1, page 17, Example for setting the dosing performance.*

Vorsicht!

CAUTION!

It is urgently recommended to connect the pH control at the GRANUDOS to avoid acid overdosing in the event of a fault in the chlorine dosing.

Manual dosing Off/On



It is possible to change over to continuous manual dosing. This may be required in the event of a fault with the measurement technology, e.g., electrode failure, that cannot be fixed. In this case, both the chlorine dosing and the acid dosing may be performed via the "Manual operation" function.

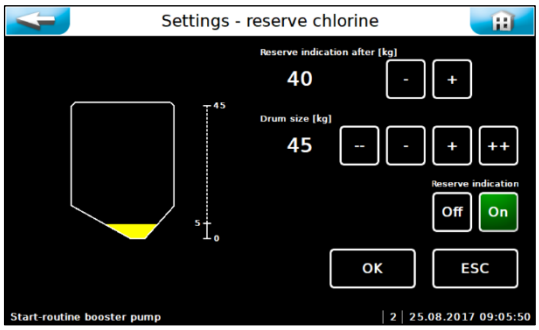
After activation of manual dosing, the automatic symbol changes and manual dosing is displayed in the status line.

Vorsicht!

CAUTION!

In the "Manual dosing" operating mode, the water quality must be monitored more closely to adjust the dosing performance to changing conditions. Non-compliance with this may result in considerable incorrect dosing!

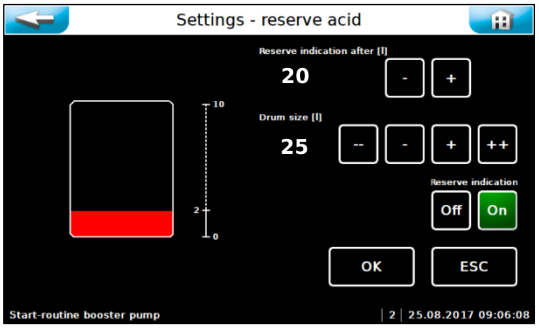
6.3.2.2 Main menu → Settings → Reserve indication chlorine



The quantity for which a reserve message will be displayed after dosing is indicated here, as well as the size of the full container.
The message indicates that the chemical container will soon be empty.

The reserve indication function can also be deactivated.

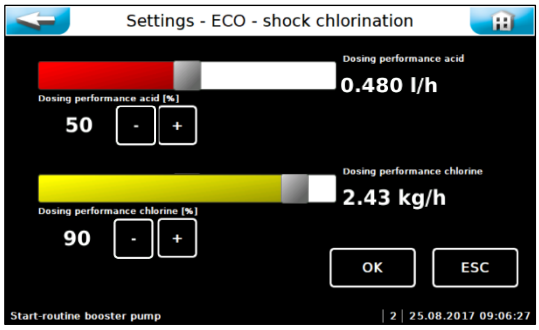
6.3.2.3 Main menu → Settings → Reserve acid



The quantity for which a reserve message will be displayed after dosing is indicated here, as well as the size of the full container.
The message indicates that the chemical container will soon be empty.

The reserve indication function can also be deactivated.

6.3.2.4 Main menu → Settings → Shock chlorination



With this menu, you can adjust the dosing performance for a shock chlorination, e.g., for a filter disinfection or for a temporarily increased chlorine requirement in the pool water.

For monitoring purposes, the chlorine concentration **should be checked** during shock chlorination!

6.3.2.5 Main menu → Settings → System



Date/Time
Set date and time

Password
Assign a password

Display brightness
Adjust the display brightness to the ambient conditions

Network
Set network parameters

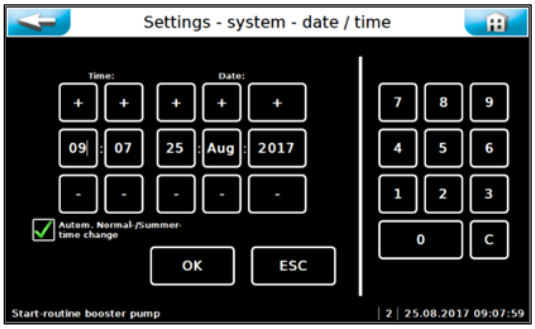
Reset
Reset all parameters to the factory settings

Language
Select the user language

System ID
For factory customer service only

Internal
For factory customer service only

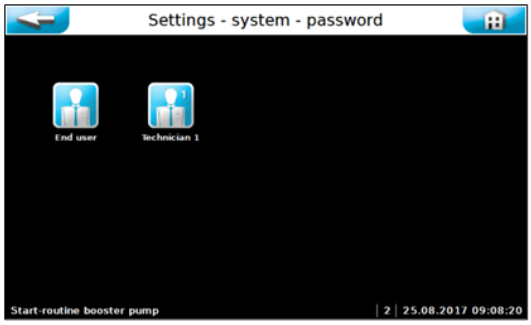
a) Main menu → Settings → System → Date / Time

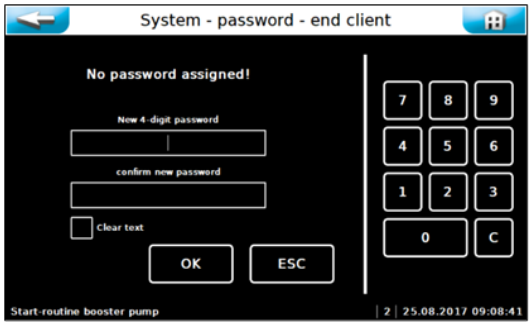


Adjust date and time.

You can activate automatic switching from normal to summer time.

b) Main menu → Settings → System → Password





Guest (user level 0)
No password, read-only rights

End user (user level 1)
No end user password is assigned ex works. We recommend the assignation of an end user password to protect the system against unauthorised access. Enter the password in the operation data sheet. The individual end user password must contain four digits between 0000 and 9999. In the second line, the password must be re-entered.

Technician 1 (user level 2)
The Technician 1 password consists of five digits and has a factory default setting of 01234. This password is intended for the service partner. We recommend that you change this password as well and enter it in the operation data sheet.

If you place a green check mark next to Clear text, the entered numbers are shown instead of white dots.

To change an active end user password, it must be entered in the uppermost line. The new password must be entered in the two following lines.

If you wish to delete the end user password completely, simply enter the active password in the upper line. The other two lines remain empty.

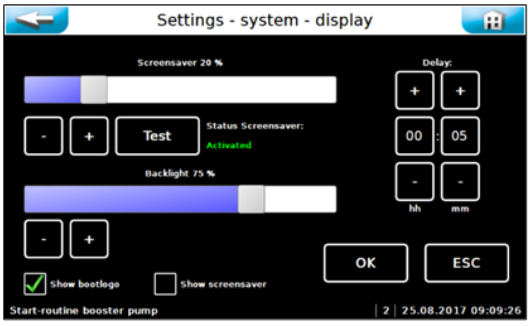
If an incorrect password is entered, a fault indication appears.

Hinweis

NOTICE!

Please store the individually chosen passwords safely in the operation data sheet. Lost passwords can only be reset by the factory customer service!

c) Main menu → Settings → System → Display

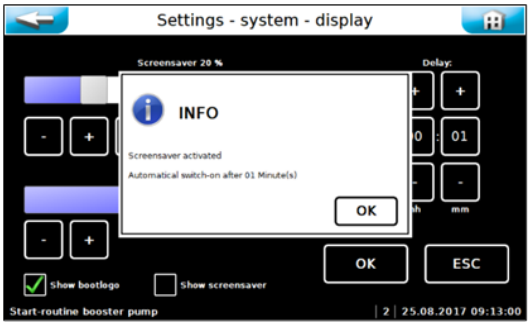


After the set delay time, the screensaver dims the background lighting to the selected brightness.

The Test button can be used to test the settings.

The Backlight setting permanently reduces the background lighting in the operating mode.

The boot logo (currently WDT logo) can be activated or deactivated when the control unit is started up



The screensaver can be activated or deactivated.

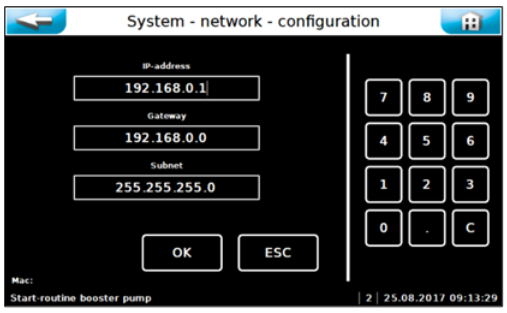
Save settings using OK and confirm the instruction text with OK.

Hinweis

NOTICE!

Please reduce the background lighting to the minimal brightness required by you. This significantly increases the display's service life.

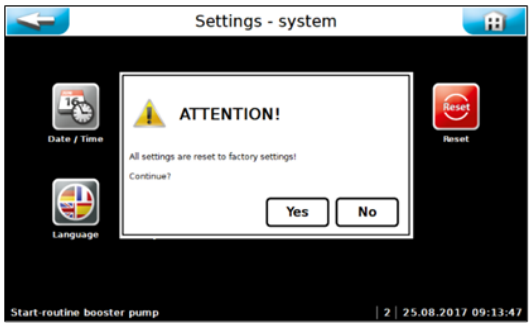
d) Main menu → Settings → System → Network



The touch panel contains a LAN interface with an RJ45 socket. The current status messages can be transferred to an external display via this interface. The terminal device can be a PC monitor, a tablet PC or a smartphone, e.g.

Further information about this topic is available upon request. The operator must establish the necessary IT requirements for remote access! (e.g., VNP connection, data security, etc.)

e) Main menu → Settings → System → Reset



This command can only be performed in user level 2 (with password).
All of the set parameters are reset here to the factory settings.
The factory settings are listed in the operation data sheet *in Chapter 9.4*.

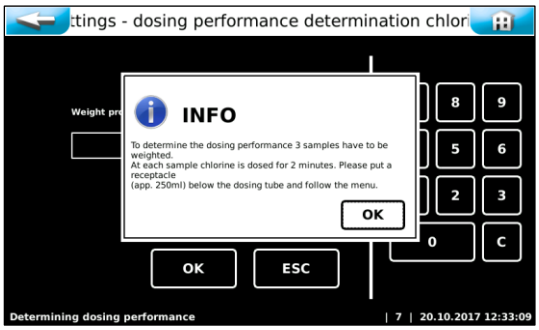
Subsequently, all parameters must be entered again!

f) Main menu → Settings → System → Language



Select the desired operating language.

6.3.2.6 Main menu → Settings → Determining dosing performance



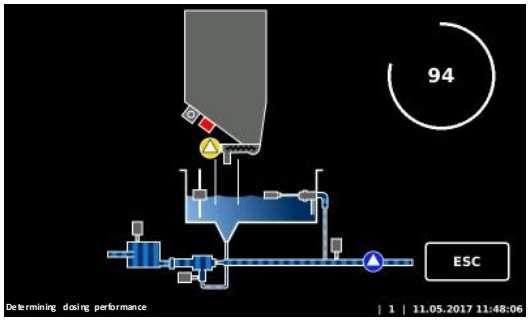
The effective dosing performance must be determined in order to calculate chemical consumption and thereby the reserve indication.

Follow the menu prompts. A dosing sample is taken 3 times.

Hinweis

NOTICE!

Place a shallow collecting basin under the dosing pipe and follow the menu prompts. Weigh the dosing samples.



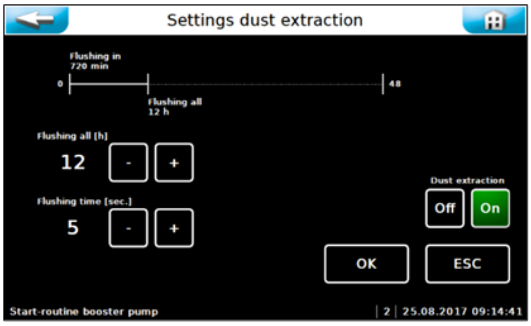
Chlorine granulate is transported into the collecting basin for 2 minutes.

Tipp

TIP!

If the granulate quality changes, e.g., if a different supplier is used, the determination of the dosing performance must be performed again to ensure that the reserve indication is accurate.

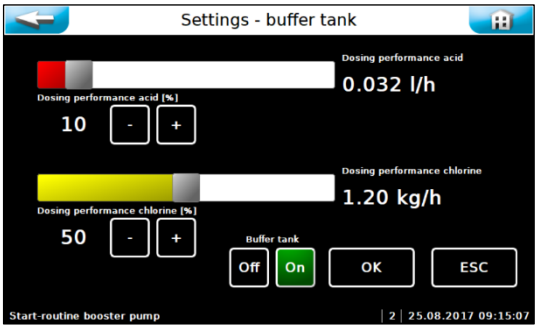
6.3.2.7 Main menu → Settings → Dust extraction (option)



The dust extraction parameters are set here.

Set the flushing interval (flushing all)
Set flushing time
Set dust extraction run-on
Switch dust extraction on or off
Confirm settings using OK.

6.3.2.8 Main menu → Settings → Buffer tank



This menu makes it possible to set the dosing performances for filling the buffer tank. Select the dosing performance so that the required concentration is present after the buffer tank is filled. For monitoring purposes, the pH value must be determined via analysis repeatedly after the buffer tank has been filled!
The pH value in the buffer tank must be between 6.8 and 7.2.

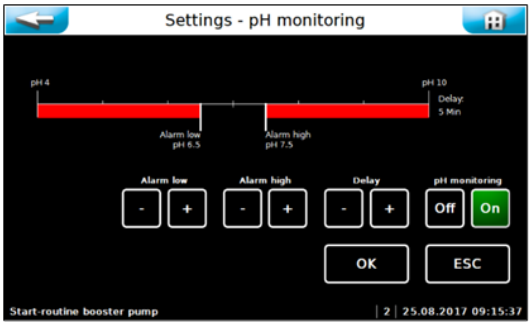
Buffer tank Off- On: → Activate or deactivate buffer tank filling function permanently. The filling is controlled automatically via the level control in the buffer tank.

Hinweis

NOTICE!

During initial commissioning, or if the buffer tank is empty, the "Start monitoring" fault must be confirmed several times until the "Start filling" level is reached.

6.3.2.9 Main menu → Settings → pH monitoring buffer tank

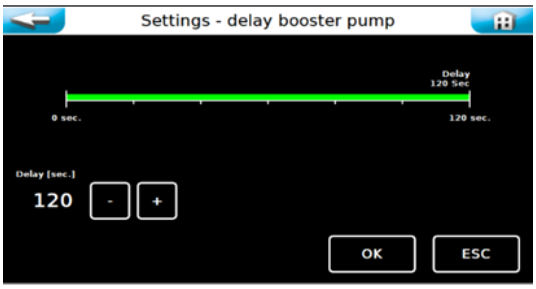


The parameters for pH monitoring and alarm message are set here.

Alarm low: → lower alarm value
Alarm high: → upper alarm value
Delay: → adjustable time for complete mixing of the chlorine solution for an even pH value in the solution

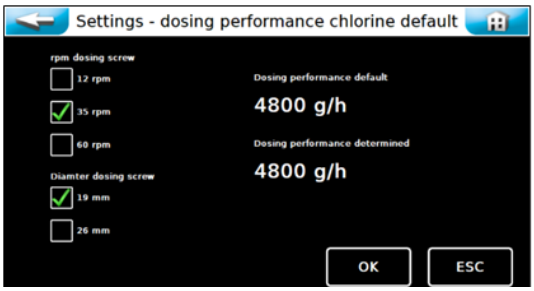
pH monitoring Off / On: → Operating mode pH monitoring On / Off

6.3.2.10 Main menu → Settings → Delay Booster pump



This function is active when the GRANUDOS is controlled externally (the input from CCS). In this case, the booster pump is started again after the set delay time, e.g., after the swimming pool filter system has been flushed. This ensures that no air remains in the pipe, which could lead to faults in the GRANUDOS.

6.3.2.11 Main menu → Settings → Dosing performance chlorine granulate - installed dosing components



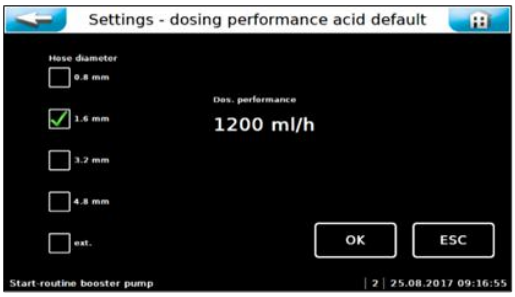
These settings can only be implemented in user level 2. The values set here depend on the dosing device design. The values are preset ex works and are used as the basis for determining the dosing quantities and reserve indication. After a complete dosing performance determination, the displayed default values are overwritten by the determined dosing performances.



ATTENTION!

These values may only be changed if the appropriate components have been installed in the GRANUDOS. Otherwise, the dosing quantities will be determined incorrectly!

6.3.2.12 Main menu → Settings → Dosing performance acid - installed dosing components



These settings can only be implemented in user level 2. The values set here depend on the dosing device design. The values are preset ex works and are used as the basis for determining the dosing quantities.

If an **external acid pump** is used, "external" must be checked here, and the dosing performance of the external acid pump must be entered to correctly record the remaining amount in the acid container.



ATTENTION!

It is important that the correct dosing performance is entered; otherwise, incorrect consumption and remaining amounts will be calculated.

6.3.3 Main menu → Service



Input test
A test programme for switch inputs (electrical signals).

Output test
A test programme for pumps and relay outputs.

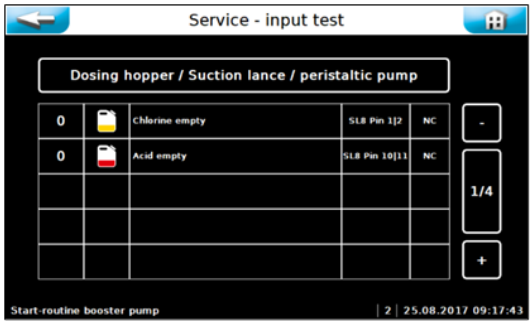
Operation hour counter
Counts the operating hours for booster pump, acid dosing motor, chlorine dosing motor and dust extraction pump.

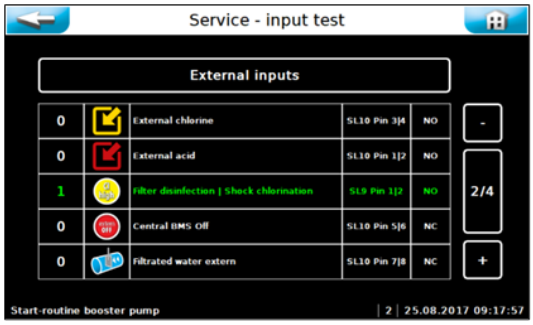
Consumption counter
Counts the chemicals consumption.

Maintenance interval
Setting the time interval for the maintenance message

Info
For querying the firmware versions.

6.3.3.1 Main menu → Service → Input test





The input test is used to check the connected inputs (switches). The changing activation of the switch inputs is indicated by 0 (open) or 1 (closed).

The fourth column displays the pin header (SLx) and the connectors (Pinx/x) to which the switch is connected.

The fifth column shows the function of the switches NO or NC, respectively.

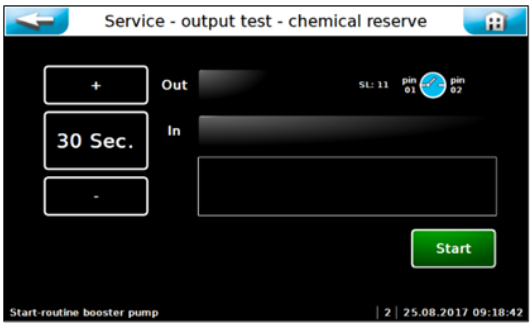
NO (normally open) indicates open in the operating state and closed in the event of a fault.

NC (normally closed) indicates closed in the operating state and open in the event of a fault.

You can scroll through the 4 pages for the input test using the + and – buttons.

6.3.3.2 Main Menu → Service → Output test





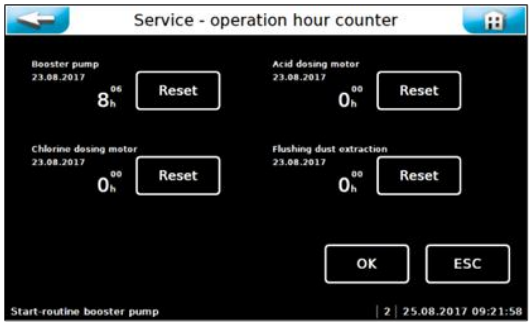
The output test is used to check the connected outputs (pumps, motors and relays). The selected output is activated for 30 seconds. The control can be deactivated at any time using Stop.

For safety reasons (chlorine gas formation), the output test for the chemical-dosing outputs is only released if no fault exists that could prevent the dosing.

An output test can be performed for the following actuators:

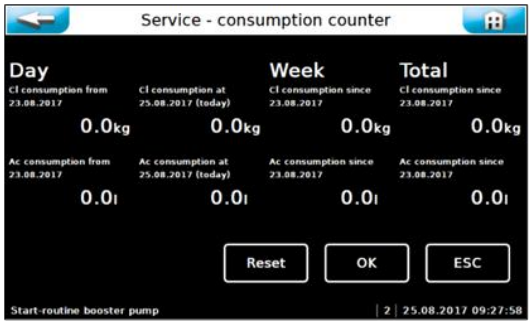
- Acid dosing
- Chlorine dosing
- Knocker
- Solenoid valve buffer tank
- Alarm
- Chemical reserve – for both together
- Chemical empty
- Dust extraction flushing

6.3.3.3 Main menu → Service → Operation hour counter



Use “Reset” to reset the operating hours for the respective actuators.

6.3.3.4 Main menu → Service → Consumption counter

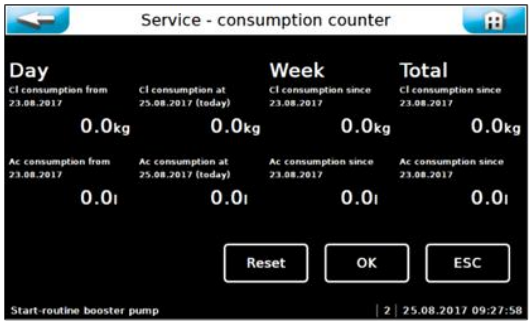


The consumption counter summarises the consumption of each chemical.

The Reset button can be used to reset each individual consumption reading to 0. In order to reset, you must be logged into user level 2.

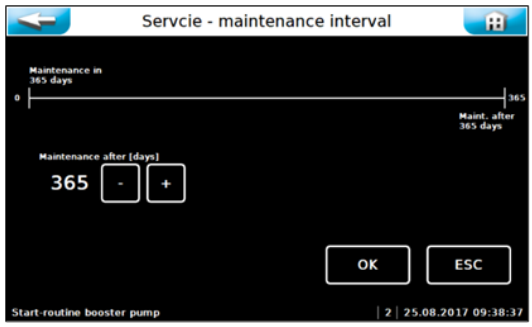
Each value is queried and must be confirmed individually.





The previous operating day's consumption (left column) cannot be reset.

6.3.3.5 Main menu → Service → Maintenance interval



The time interval for the maintenance message in days is set here. After the set time interval the Time symbol is used on the start display as a reminder of any pending maintenance works.

New: Once the maintenance interval has expired, a Reset button appears. This can be used to reset the time. (In level Technician 1= user level 2)

If the maintenance interval has not yet elapsed, the maintenance interval can be reduced using the minus button until the Reset button appears.

6.3.3.6 Main menu → Service → Info



The software and device data used can be viewed using the Info button.

The following are distinguished:

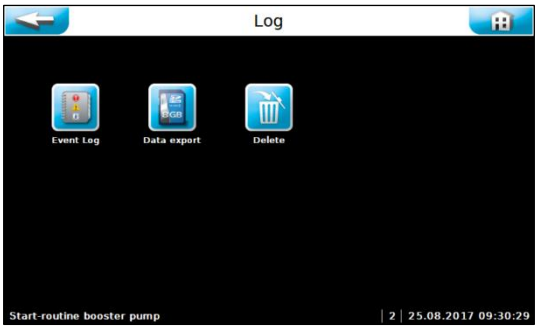
DSP version: → Firmware version

I/O version: → Coprocessor version on the I/O board

HTTP version: → Web front-end version (user interface software version).

Build: → Date of manufacturing

6.3.4 Main menu → Log (event and data logging)

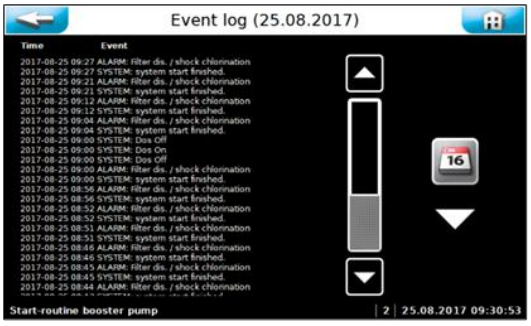


Event Log
Displays a chronological list of the events that have occurred

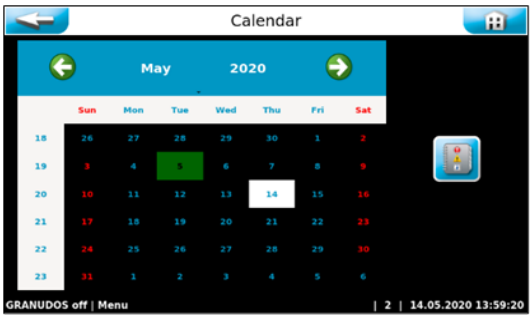
Data export
This is used to export the collected data to a USB stick

Delete
This is used to delete the stored data

a) Main menu → Log → Event Log

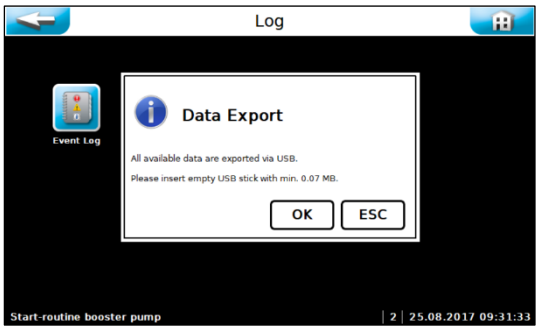


When calling up the menu, a list of events that occurred on this day will be displayed.
You can use the Calendar BUTTON to view events from previous days.



The current day is shown on a white background. Days on which the control unit was activated are shown on a green background. If you select another day by tapping on it, that day will be shown on a white background. You can use the Event Log BUTTON to view the events of the selected day.

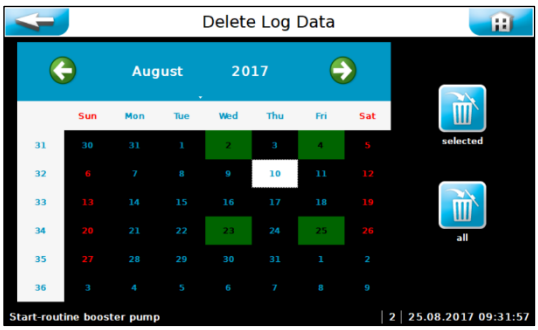
b) Main menu → Log → Export



You can use the Export menu item to load the stored log files onto an **empty** USB stick. If the USB stick is not empty, formatting is suggested and will be carried out after you confirm with OK.

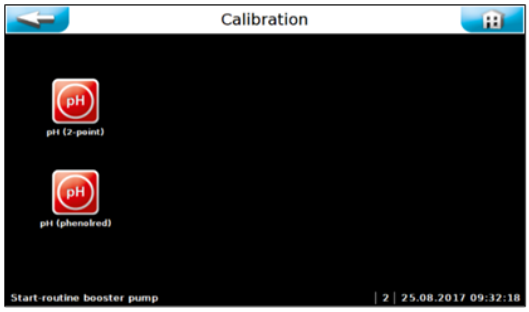
The daily event files and CSV files can then be found on the USB stick.

c) Main menu → Log → Delete



The current day is shown on a white background. Days on which the log files were stored are shown on a green background. If you select the desired day by tapping on it, that day will be shown on a white background. You can use the selected button to delete the event log events and the data log events for the selected day.
You can use the all button to delete all event log events and data log events at once.

6.3.5 Main menu → Calibration (option for design with buffer tank)

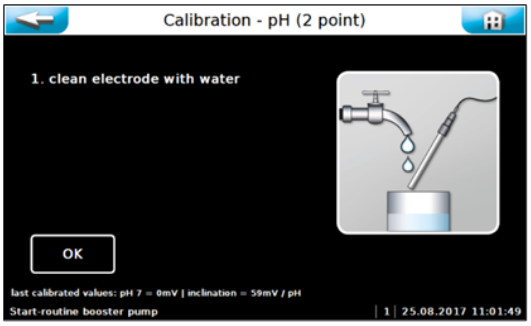


2-point
Two-point calibration of the pH electrode

pH (phenolred)
One-point calibration of the pH electrode

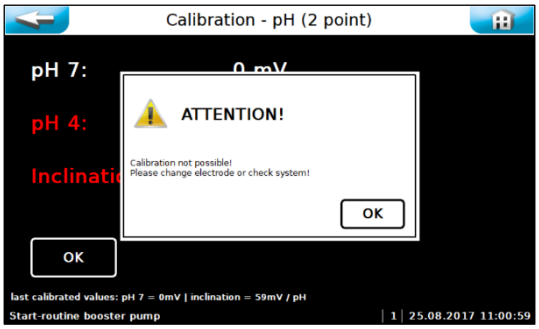
The calibration is graphically guided and accompanied by a help text. Follow the menu prompts. Use the OK button to acknowledge the completed steps.

6.3.5.1 Main menu → Calibration → pH 2-point



Perform calibration in accordance with the instructions.

Once the pH calibration has been completed, the measuring results for the zero point voltage and slope voltage are displayed and an evaluation of the electrodes is carried out. In case of minor deviations, the calibration is adopted immediately. In case of "medium" deviations, a cleaning notice is displayed. In case of major deviations, the exchange of the pH electrode is suggested. If the exchange of the electrode does not remedy the problem, the fault may be with the electrode cable or the measuring amplifier.



pH7 = buffer solution for determining the zero point voltage.
The optimal zero point voltage is at 0 mV up to +/-30 mV.

pH4 = second buffer solution for determining slope voltage.

Inclination mV/pH = slope voltage
The optimal slope voltage at 25°C is approx. 59 mV/pH.
(pH7 – pH4 = 3 pH x 59 mV = 177 mV)

Example:
(mV(pH 4) = 187 mV – mV(pH7)= 10mV) = 177 mV ./. 3 pH = 59 mV/pH



NOTICE!

Notice regarding evaluation of the electrodes

Cleaning notice

If the **zero point voltage** is less than +/-41 mV, the voltage rating will appear in yellow and the calibration will be terminated with a cleaning notice.

If the **slope voltage** lies between 52 mV/pH and 63 mV/pH, the voltage rating will appear in yellow and the calibration will be terminated with a cleaning notice.

Error notice

If the **zero point voltage** is greater than +/-61 mV, the voltage rating will appear in red and the calibration will be rejected with an error notice!

If the **slope voltage** is less than 50 mV/pH or greater than 65 mV/pH, the voltage rating will appear in red and the calibration will be rejected with an error notice!

If the calibration is rejected with an error notice, the device continues the control using the values from the most recent successful calibration.

The cause of the failed calibration must be investigated!

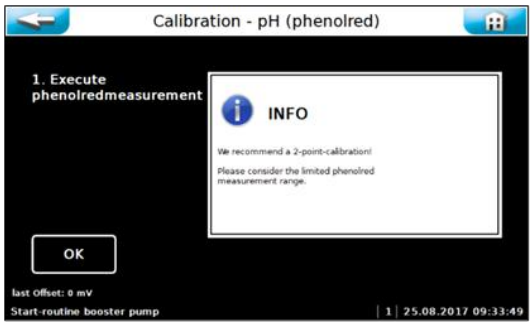
6.3.5.2 Main menu → Calibration → pH phenolred

Notice regarding the calibration with phenol red

A two-point calibration of the pH electrode dismisses the last phenol red calibration.

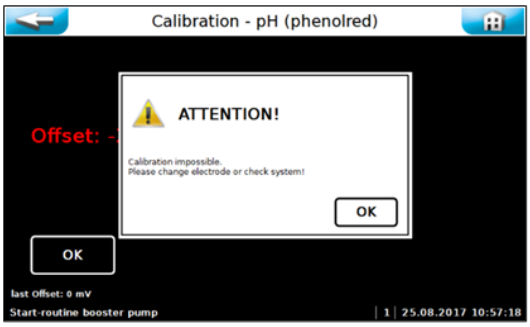
Pay attention to the fact that the pH measurement with phenol red can show an error of +/- 0.1 - 0.2 pH.

In addition, the buffer solution is subject to an ageing process and may therefore return additional false values!



Carry out the calibration according to the instructions.

Please pay attention to the displayed notices and follow the menu navigation.



The set deviation is displayed as offset at the end of the menu. In case of minor deviations, the calibration is adopted immediately.

For deviations greater than +/- 41 mV, a cleaning notice is given.

For deviations greater than +/- 61 mV, a change of the pH electrode will be suggested. If the calibration is rejected with an error notice, the device continues the control using the values from the most recent successful calibration.

If the exchange of the electrode does not remedy the problem, the fault may be with the electrode cable or the measuring amplifier.

7 Maintenance, care, fault removal

7.1 Device maintenance

In accordance with the DIN and the DGVU, chlorination systems must be serviced annually. We recommend that you assign a specialist firm to carry out regular maintenance. All required maintenance and repair tasks may only be carried out by properly qualified personnel from a specialist company. Required spare parts are available from your specialist dealer.

Please pay attention to the safety notices when handling chemicals and wear appropriate protective clothing.



TIP!

In order to carry out any maintenance work, use the maintenance protocol found in *Chapter 9.5.* for the dosing unit of respective dosing device:

- **for GRANUDOS Flex-Touch, No.: BA SW 022**
- **for GRANUDOS VARIO-Touch, No.: BA SW 003**

Document this work in the maintenance protocol.

7.1.1 pH measurement – calibrating the pH electrode (option for operation with buffer tank)

Each pH electrode is a wear part. It is subject to a certain degree of ageing, which is due to a variety of factors. In the area of swimming pool water treatment, a life span of 6 to 24 months can be expected.

The contamination of the electrode may be one reason for measuring value deviations. This contaminations can usually be removed using the electrode cleaner supplied with the delivery. For this purpose, the glass shaft of the pH electrode is submerged in the electrode cleaner for a few minutes.

Depending on the state and age of the electrode, the electrode's characteristics may change. This leads to measuring value deviations, which can be offset by a calibration.



ATTENTION!

During any work on the pH electrode, it must be ensured that neither the electrode's screw plug head nor the plug of the electrode cable are exposed to humidity! Even the smallest amount of humidity in the electrode head may lead to a distortion of the measuring value or even to a premature failure of the electrode!

Both the contacts in the electrode's plug head and on the electrode plug must display a shiny golden colour and may not show any signs of corrosion.



NOTICE!

After each cleaning or exchange of the electrode, a calibration must be carried out! Do not touch the glass top (sensor part) and the diaphragm with your fingers. Dab the glass top with a clean and soft cloth.

For setting the parameters for pH monitoring and alarm, see Chapter 6.3.2.9.

7.1.2 Opening and closing the control housing



DANGER DUE TO ELECTRICAL VOLTAGE!

Risk of death due to high voltage. All electrical work on the device may only be conducted by properly trained specialists under compliance with the applicable safety regulations!

Fuses inside the control housing may only be replaced by maintenance or repair personnel.

Before any electrical work is carried out, the power supply must be switched off and secured against being reactivated!



ESD SENSITIVE!

The electronic components in the devices are sensitive to electrostatic discharges. The generally accepted safety precautions for ESD-sensitive devices must be observed when handling the devices.

In particular, the following applies for **work on electronic components:**

Do not pull or plug in socket connections under voltage.

As the person handling the device, please discharge yourself electrostatically for at least 5 seconds prior to directly touching the devices, e.g., by touching a grounded part of the system or by wearing an ESD antistatic wrist strap connected to ground.

The device must be supplied with continuous voltage, i.e., the voltage supply must not be locked with the filter system. An input from CCS is available for interlocking the filling with the swimming pool's filter system. For electrical installation, see also wiring diagrams in the control unit's terminal casing or in Chapter *9.2on page 37.*

The housing is equipped with an “easy lock-in closure”.

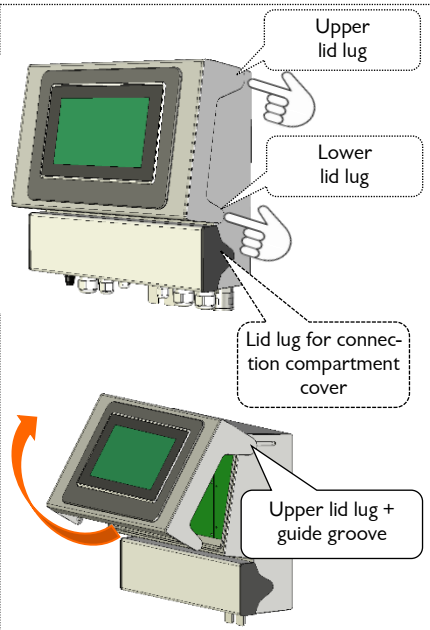


Figure 4, Control housing

Procedure

a) Open the display cover
Use your index fingers to lift the two lower lid lugs and the two upper lid lugs slightly outwards from the base housing. The display cover clips out to the front.

b) Now pull the display cover forwards.
The upper lid lugs run in guide grooves up to the front lock-in position.

The same procedure applies to the connection compartment cover (bottom).

c) Then open the display cover upwards.

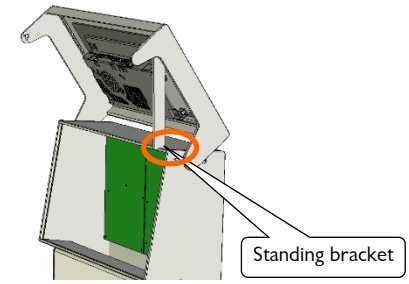


Figure 5, Control housing

d) Fold down the standing bracket, support it on the base housing and lock it in place.

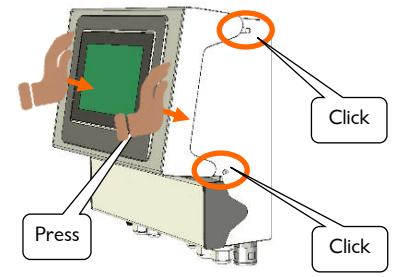


Figure 6, Control housing

e) Close the housing in reverse sequence. Release the standing bracket to the rear and fold the cover downwards.

f) Now unlock the upper lid lugs and push the lid backward onto the base housing.

g) In order to tightly reseal the housing, press gently on the four corners of the housing. The housing lid will close with a soft, audible click

h) Ensure that all lid lugs are always clipped in to prevent corrosive chlorine dust from entering!

Proceed in the same way for the connection compartment cover (bottom).

7.2 Fault removal

Tipp

TIP!

All faults and messages are displayed on the touch screen in the IN list. In addition, they may be queried in the Event Log.

An error will only be displayed once the error signal has occurred uninterrupted for at least 6 seconds.

In the event of a fault indication, it is also possible that switches or sensors are defective!

Fault indication	Cause / effect	Actions
1. Disinfectant (chlorine container) empty ALARM: Chlorine granulate container empty	This indication is for information purposes only, no action ensues. Chlorine dosing and booster pump keep running.	1. Refill chlorine granulate, or change container 2. If the chlorine granulate is not empty, recalibrate the empty switch or 3. Renew the empty switch.
2. Acid empty ALARM: Acid container empty	The acid dosing stops and the booster pump and chlorine dosing keep running. **Attention: Chlorine dosing without acid may lead to a blockage of the flushing tub/dissolving unit.**	1. Replace the empty acid container with a full one 2. If the acid container is not empty, the empty switch is faulty. 3. If the suction lance is new, check the float's functional direction – float at the bottom = empty display; otherwise, turn the float **Operation without acid for a short time only! Max. 2-3 days!**
3. Chemicals container filling level reserve INDICATION	This indication is for information purposes only, no action ensues.	Ensure sufficient resupplies.
4. Minimum pressure ALARM: The pressure at the booster pump is too low	Dosing is stopped. The booster pump has been deactivated. 1. Supply pressure too low 2. Booster pump faulty 3. Pressure switch faulty	Check the booster pump Set a lower response pressure at the pressure switch
5. Flushing tub level minimum ALARM: Water minimum switch active. The water level in the flushing tub is low; more water is suctioned off than runs into the flushing tub through the floating valve.	Cause: Inlet pressure too high, Counter-pressure too low Dosing is stopped. The booster pump has been deactivated. Floating valve defective? Switch defective?	1. Floating valve function: The water inlet should gently follow the float's movement. If OK, calibrate the water level. See OI Dosing unit, Chapter Commissioning; if this is not the case, insert a new diaphragm in the floating valve. 2. Insert a hole washer with a smaller drill hole 3. Dirt filter contaminated → clean filter 4. If water level is not at minimum, insert a new switch
6. Flushing tub level maximum ALARM: Water maximum switch active. The water level in the flushing tub is too high, less water is suctioned off than is flowing into the flushing tub through the floating valve.	Cause: Counter-pressure to high Floating valve defective Dosing is stopped. The booster pump keeps running. (For a maximum of 10 minutes to prevent the pump from overheating) Switch defective?	1. If the injector's suction performance is OK: a) Floating valve function: The water inlet should gently follow the float's movement. If OK, calibrate the water level. See OI Dosing unit, Chapter Commissioning b) If this is not the case, insert a new diaphragm in the floating valve. 2. If the suction capacity is insufficient, see under fault display **7. "Suction pipe flow minimum ALARM"** 3. If water level is not at maximum, insert a new switch
7. Suction pipe flow minimum ALARM: The water flow in the suction pipe is too low. The switch body of the flow switch does not rise, the switch LED lights up.	Dosing is stopped. The booster pump keeps running. (For a maximum of 10 minutes to prevent the booster pump from overheating)	1. Check the function of the booster pump. 2. Dirt filter contaminated → clean filter 3. Blocked suction opening in the flushing tub 4. There may be particles in the injector, both at the nozzle or in the suction pipe, due to particles entering during installation or from the chlorine drum 5. Insert a hole washer with a larger drill hole or remove it entirely 6. Blocked non-return valve at the buffer tank 7. Injector's diffuser nozzle worn out; if D > 6.5 mm, replace diffuser nozzle
8. Chlorine dosing monitor in cyclone ALARM: (with buffer tank) The optical sensor on the dissolving cyclone is activated.	The No chlorine sensor on the cyclone indicates that after the 2nd dosing interval, insufficient chlorine was dosed/is present in the cyclone.	1. Fault during dosing: Clotting in chlorine granulate Dosing screw blocked due to poor chlorine quality (too fine, moist) 2. The dosing motor is defective. 3. Calibrate the optical sensor.

9.  **ALARM: Fuse for the chlorine dosing motor or acid dosing motor or supply of the 24 V sensors** See log file regarding the differentiation between the individual safeguards	The chlorine dosing or acid dosing stops despite control. The booster pump keeps running. With fuse F1 of the 24 V sensors: The dosing and booster pump stop	Check chlorine motor for blockages, remove blockage, if necessary, and renew the fuse. Check the acid dosing motor and renew the fuse. Check the Chlorine empty, No chlorine and Flow minimum sensors, renew the defective sensor and the fuse.
10.  **Buffer tank filling start NOTIFICATION:**	The filling starts. Switchover valve active	The GRANUDOS starts to produce chlorine solution at the set dosing performance.
11.  **Buffer tank filling stop NOTIFICATION:**	The filling with chlorine solution stops.	The flushing cycle starts; afterwards, the switchover valve switches to normal function
12.  **Buffer tank level minimum ALARM:**	The lower control switch for starting the filling did not trigger.	Check switch function: If the tank is empty, the switch contact must be closed (measure at the terminal). If open: Switch or terminal contact faulty
13.  **Buffer tank level maximum ALARM:**	When filling, the upper Maximum level control switch to stop the filling was not triggered.	1. Check the "Stop buffer tank fill level" switch: If the tank is full, the switch contact of the "Stop buffer tank fill level" switch must be closed (measure at the terminal). If it is open when the buffer tank is full, the switch or terminal contact is faulty. 2. "Stop buffer tank filling level" switch working: →Check switchover valves for functioning
14.  **Buffer tank collecting tub alarm**	The level switch in the collecting tub reports liquid in collecting tub. Control valve to the buffer tank not closing	1. Buffer tank is overflowing or leaking a) "Stop buffer tank filling level" **and** Level maximum alarm level switches at buffer tank defective. → Renew level switches b) Leaking non-return valve in a dosing line → renew non-return valve c) Buffer tank leakage → renew buffer tank d) Check control valve to the buffer tank
15.  **Buffer tank filling time-out ALARM:**	Filling occurred too slowly. The buffer tank filling has been deactivated by the system.	1. Check switchover valves 2. Check "Start buffer tank" sensor: The contact must be open again 3 minutes after filling has started!
16.  **Filtrated water external ALARM:** External control switch of the flow in the clean water line active	External flow sensor reports flow too low. The dosing and booster pump are stopped.	Check swimming pool circulation; if this is OK, then check the flow sensor.
17.  **External Off NOTIFICATION:**	The GRANUDOS has been deactivated.	No action, since it has been deactivated externally.
18.  **Dosing time-out ALARM:** Chlorine (yellow) or acid (red)	The dynamic dosing time for chlorine or acid has been exceeded. The respective output is blocked. Dosing performance may be too low.	Check dosing screw and dosing pumps for defects and blockages. Eliminate fault or blockage. (see also Chapter 7 for the respective dosing unit). Check external control Increase dosing performance, if necessary.
19.  **Shock chlorination active NOTIFICATION:**	Shock chlorination / filter disinfection is active.	No action

Malfunctions without display in the device:

1. The display is dark and the device is turned off:

a) No supply voltage: → Restore the supply voltage
b) The main fuse at the lower left of the housing has blown: → Renew fuse – determine the cause
c) The fuse F1 at the power pack has blown: → Renew fuse – determine the cause
d) The power pack is defective: → Renew power pack

2. The flushing tub overflows when shutting down the GRANUDOS: → In this case, check the following parts:

a) Leaking floating valve: → Renew diaphragm
b) Switch body in the suction pipe is blocked: → Foreign objects in suction pipe → Clean suction pipe

For proper procedure, see operating instructions of the dosing unit for the respective dosing device, *in Chapter 7.1,* Device maintenance.

3. Dust extraction (option)

Fault	Cause	Remedy
Suction / flushing does not work	Dust extraction pump without function	Check pump function
	Solenoid valve without function	Check solenoid valve function
	Flushing tub empty or pump inlet plugged	Check the fill level in the filling tub Check the outlet connection of the flushing tub
	Hose broken or plugged	Visual check of the hose connections; clean, if necessary
Suction / flushing limited function	Flushing ring dirty	Clean flushing ring
	Pump draws air or is not properly vented Pump inlet dirty or plugged	Check connections Properly vent pump Check inlet and clean, if necessary
	Hoses dirty	Check hoses and clean, if necessary
	Solenoid valve, disconnect lever with seal worn out	Renew separating lever with seal (Code no. 12829)

8 Decommissioning – Storage – Disposal

8.1 General

In the event of decommissioning and risk of frost, the devices must be emptied completely and protected against frost!

8.2 Decommissioning

For required work on the dosing devices, please consult the corresponding instructions for the dosing devices.
The following tasks refer to the pH measuring technology, if present.

- The diaphragm of the combination electrode (electrode with glass shaft) must never dry out. The longest service life for electrodes when not in use can be reached if the glass shaft is stored in the electrolyte. To do this, the protective cover is filled to about halfway with electrolyte and pushed onto the glass shaft of the pH electrode.
- The combination electrodes are frost-resistant to approx. -15 °C; if the temperature falls below this value, the electrodes must be stored in a frost-safe environment.
- If condensation moisture can be expected at the installation site, the device must be supplied with continuous voltage in order to protect the electronics. Alternatively, the device may be dismounted and stored in a dry location.
- If frost is expected at the installation site, all water-conveying parts must be emptied completely.

Recommissioning



Attention!

During recommissioning, it is essential that you follow the instructions in the "Commissioning" chapter and implement the points contained in the commissioning protocol.

8.3 Disposal of used parts and operating materials



Thoroughly clean any removed, contaminated parts and dispose of or recycle them in accordance with the regulations applicable at the operating location. Pay attention to the relevant instructions on the packaging for the operating materials. In case of doubt, information may be obtained from the authorities responsible for disposal at your location.
If this is not possible, dispose of the parts/substances as hazardous waste.

9 Documents

9.1 Declaration of conformity

The declaration of conformity can be found in the operating instructions for the dosing unit of the respective dosing device:

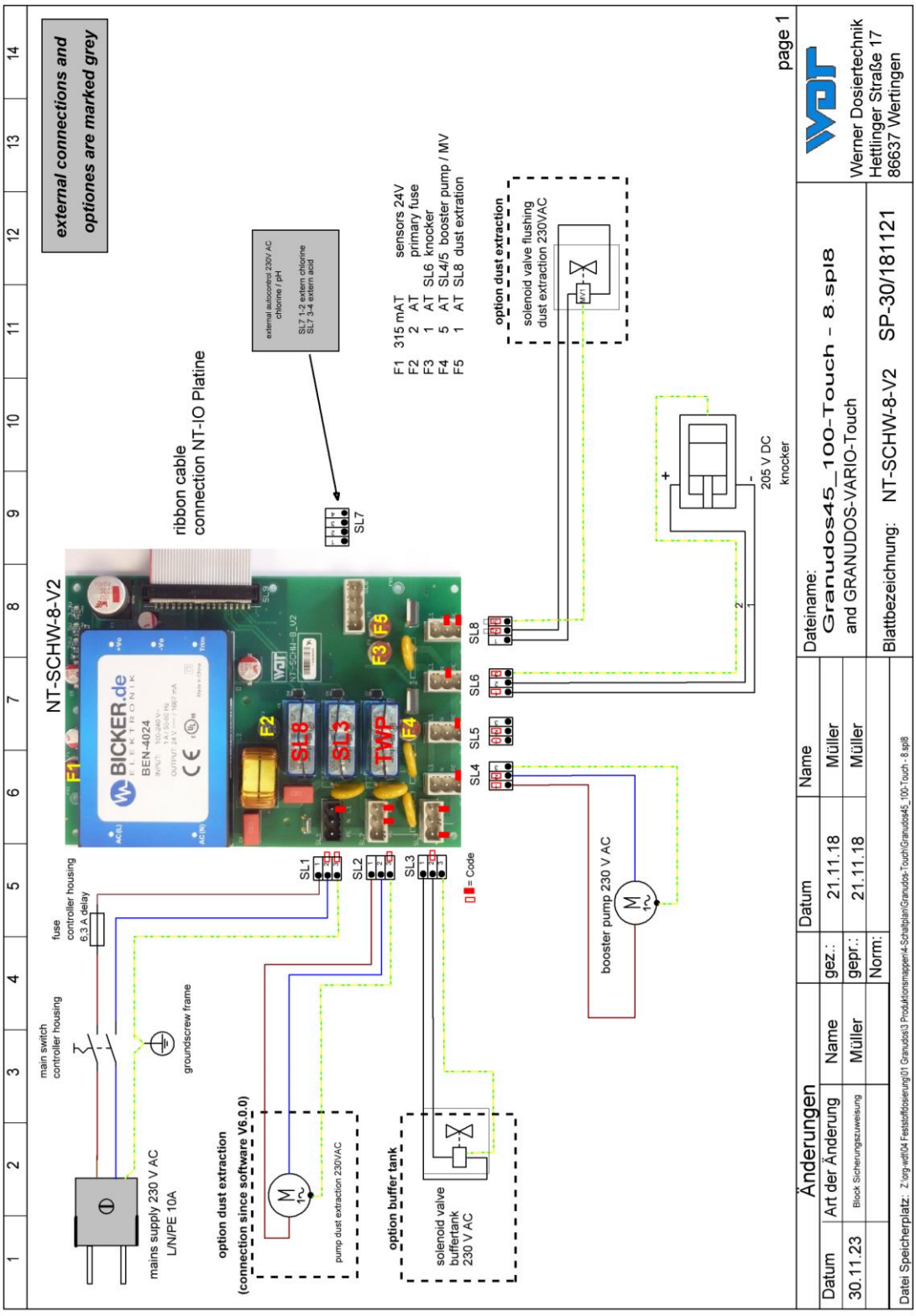
- **for GRANUDOS Flex-Touch, No.: BA SW 022**
- **for GRANUDOS VARIO-Touch, No.: BA SW 003**

9.2 Wiring diagrams

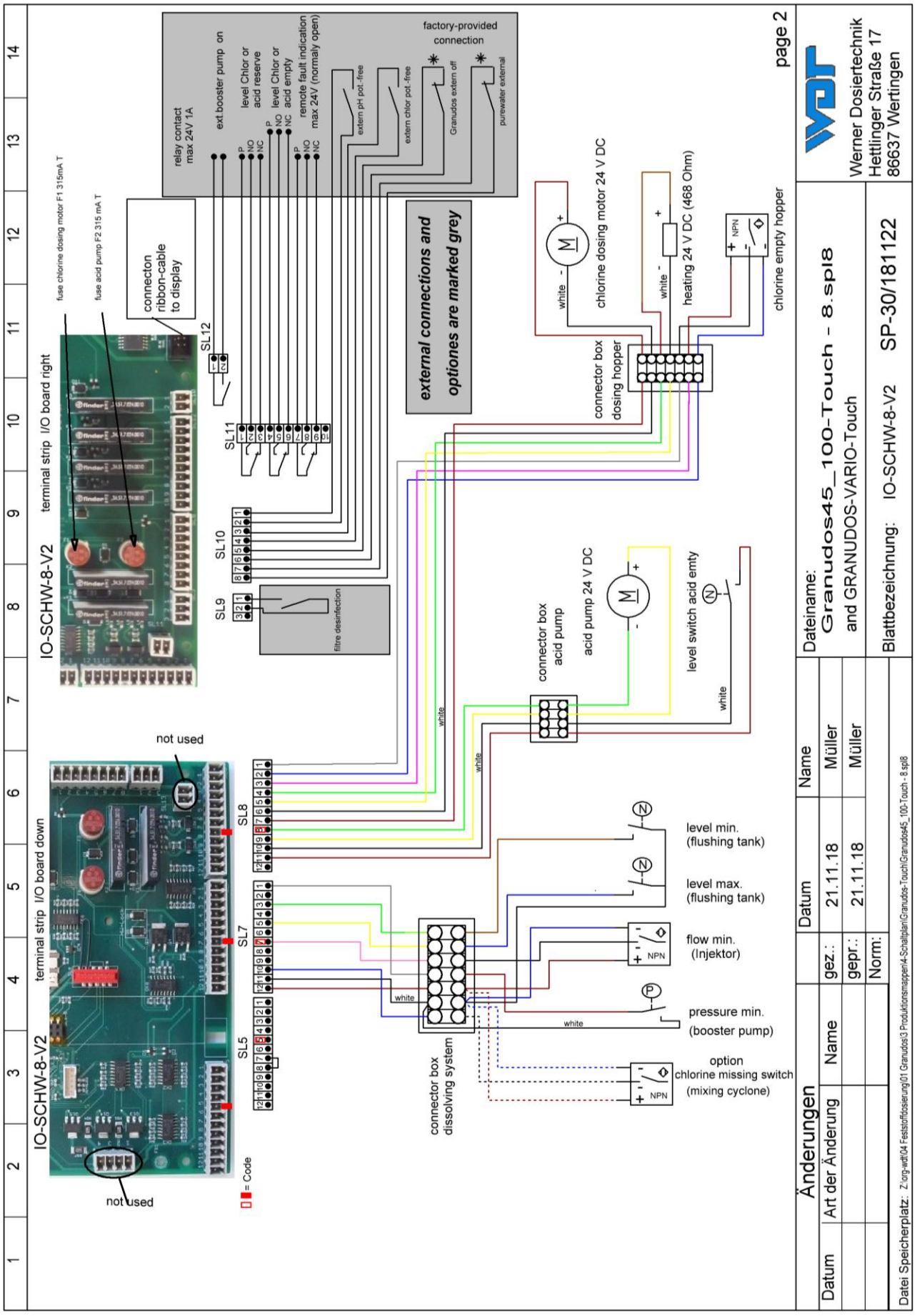
DANGER!

Risk of death due to high voltage. All electrical work on the device must only be carried out by trained specialists in accordance with the applicable safety regulations! Fuses in the control housing may only be renewed once the power has been disconnected and secured against being reactivated!

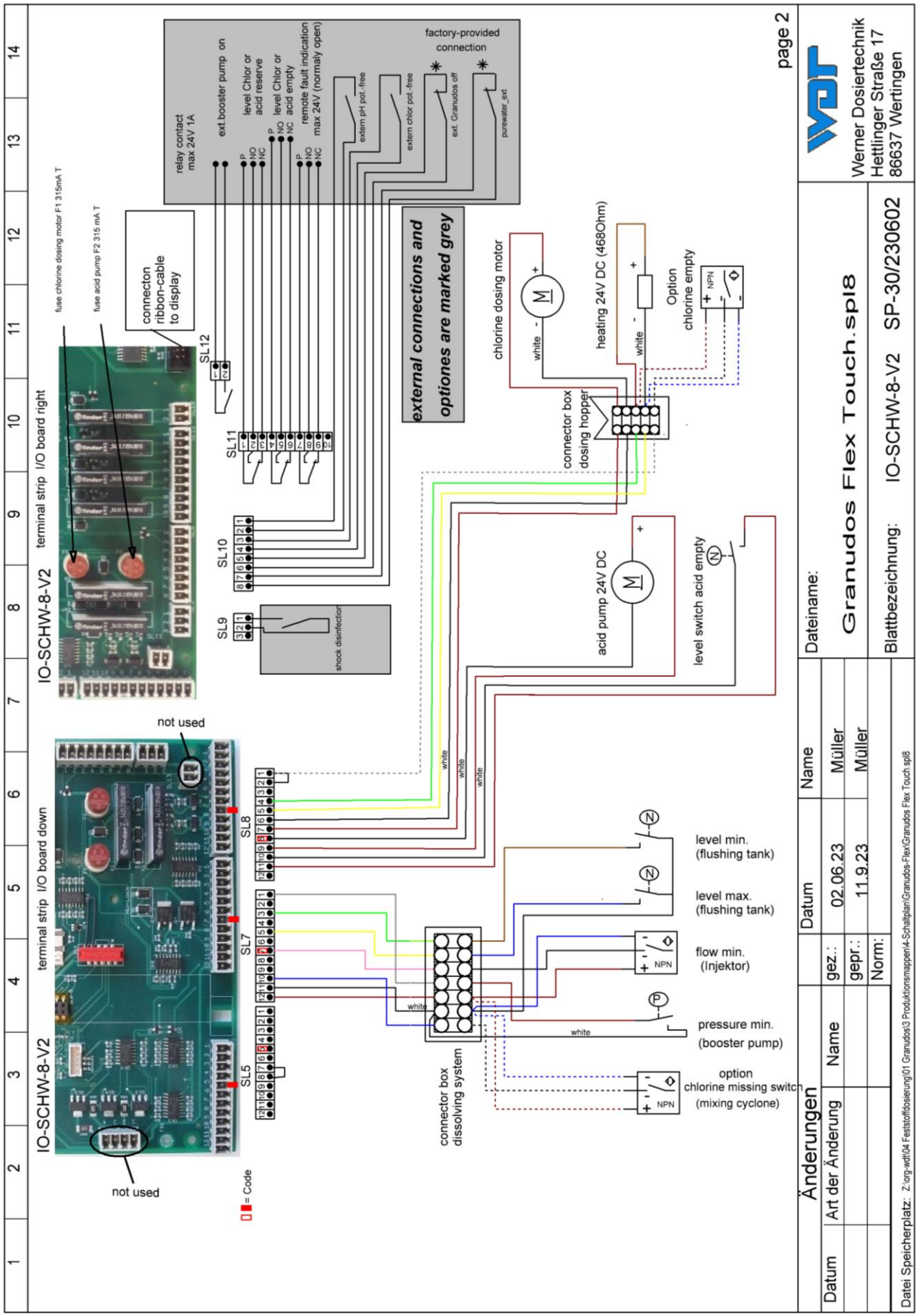
9.2.1 Wiring diagram networkboard **GRANUDOS VARIO-Touch** and **GRANUDOS Flex-Touch**



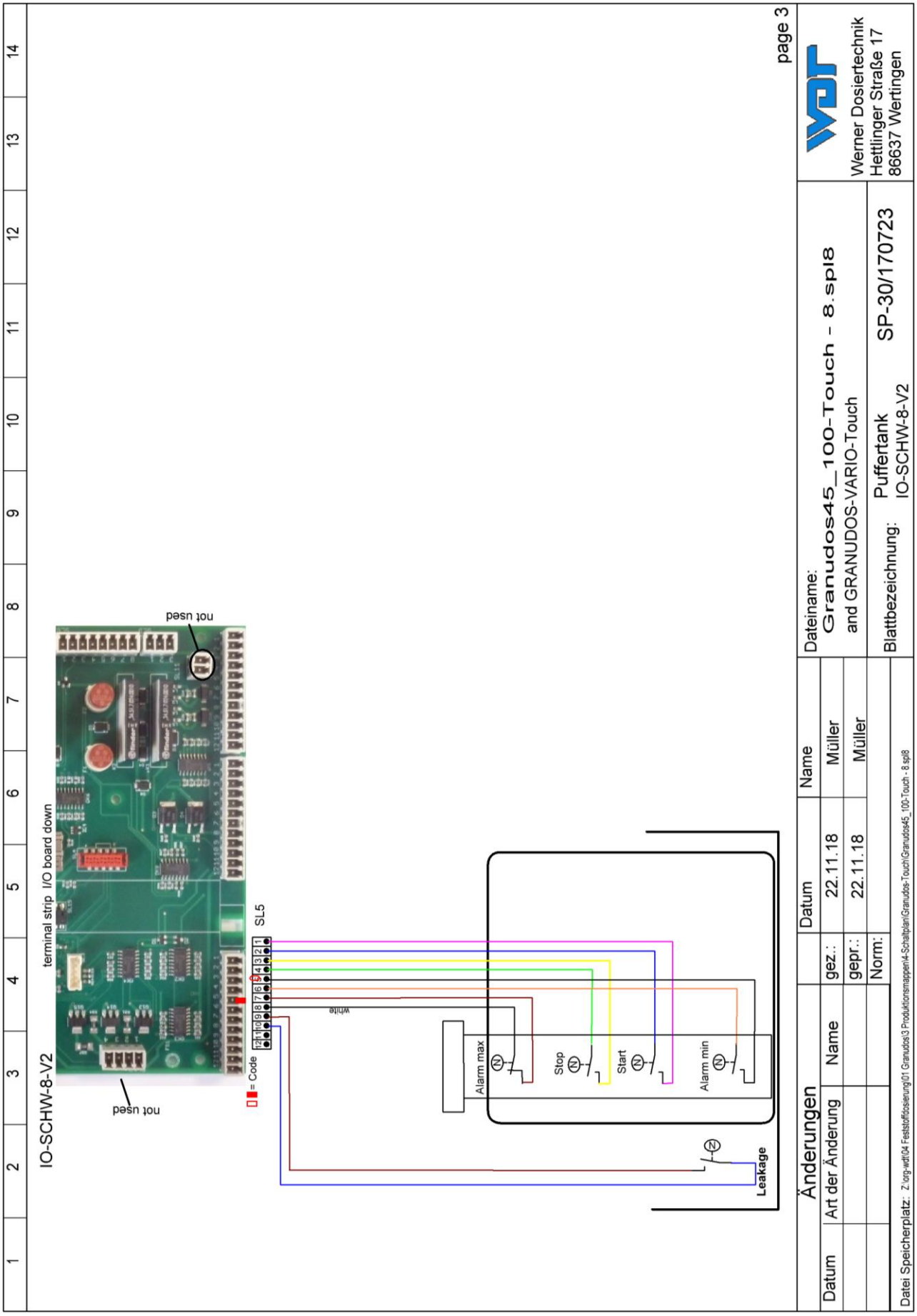
9.2.2 Wiring diagram I/O circuit board **GRANUDOS VARIO-Touch**



9.2.3 Wiring diagram I/O circuit board **GRANUDOS Flex-Touch**



9.2.4 Wiring diagram buffer tank **GRANUDOS VARIO-Touch** and buffer tank **GRANUDOS Flex-Touch**



9.3 Commissioning protocol

The commissioning protocol can be found in the operating instructions for the dosing unit of the respective dosing device in Chapter 9.3:

- **for GRANUDOS Flex-Touch, No.: BA SW 022**
- **for GRANUDOS VARIO-Touch, No.: BA SW 003**

9.4 Operation data sheet



During a *"firmware update"*, all parameters are reset to the factory settings. After an "update", all parameters must therefore be checked and readjusted to the pool. We therefore recommend that you enter the optimised, pool-specific parameters in this list.

In addition, the electrodes must be calibrated after a *"firmware update"*!

Settings menu	Factory settings	Setting ranges	Step	during commissioning	Optimised during operation
1 Dosing performance pH/acid				Date:	Date:
Acid	8 seconds	1-8 seconds	1		
Chlorine	15 seconds	1-15 seconds	1		
Cycle	30 seconds	30-360 seconds	30		
Dosing time limit acid	0	0-100 minutes	5		
Dosing time limit chlorine	0	0-100 minutes	5		
Manual dosing	Off	Off – On			
2 Reserve indication chlorine					
Reserve indication	acc. to order	1-150 kg	1		
Drum size	acc. to order	1-150 kg	1		
Reserve indication	On	Off - On			
3 Reserve indication acid					
Reserve indication after	20 l	1-500 l	1		
Drum size	25 l	1-500 l	1		
Reserve indication	On	Off - On			
4 Shock chlorination					
Dosing performance acid	10%	10-100%	1		
Chlorine dosing performance	50%	0-100%	1		
5 System → Password					
End user	—	0000 – 9999	1		
Technician 1	01234	00000 – 99999	1		
6 System → Display					
Screensaver	20%	12-100%	2		
Delay	00:05	00:00 – 23:59 h			
Backlight	75%	24 - 100%	2		
7 System → Network					
IP address	192.168.0.1				
Gateway	192.168.0.0				
Subnetmask	255.255.255.0				
8 Dust extraction					
Flushing interval	12 h	0 – 48 h	1		
Flushing time	5 seconds	0 - 5 seconds	1		
Dust extraction	acc. to order	Off – On			

9 Buffer tank					
Dosing performance acid	10%	10 - 100%	1		
Chlorine dosing performance	50%	50 - 100%	1		
Activate buffer tank	acc. to order	Off – On			
10 pH monitoring					
Alarm low	6.5 pH	6.5 – 7.5 pH	0.05		
Alarm high	7.5 pH	6.6 – 7.5 pH	0.05		
Delay time	5 minutes	0 – 60 min			
Activate pH monitoring	acc. to order	Off – On			
11 Delay booster pump					
Delay time	30 seconds	0 - 120 seconds	5		
12 Dosing performance Chlorine granulate					
Rotation speed of the dosing screw	acc. to order	12 – 60 rpm	1		
Diameter of the dosing screw	acc. to order	19 / 26 mm	1		
13 Dosing performance acid					
Hose diameter	4.8 mm	0.8/1.6/3.2/4.8/ext			
14 Maintenance interval					
Maintenance after	365 days	0 – 365 days			

Operation data sheet, –master copy–
Please copy the blank operation data sheet before filling it out!

Settings menu	Factory settings	Setting ranges	Step	during commissioning	Optimised during operation
1 Dosing performance pH/acid				Date:	Date:
Acid	8 seconds	1-8 seconds	1		
Chlorine	15 seconds	1-15 seconds	1		
Cycle	30 seconds	30-360 seconds	30		
Dosing time limit acid	0	0-100 minutes	5		
Dosing time limit chlorine	0	0-100 minutes	5		
Manual dosing	Off	Off – On			
2 Reserve indication chlorine					
Reserve indication	acc. to order	1-150 kg	1		
Drum size	acc. to order	1-150 kg	1		
Reserve indication	On	Off - On			
3 Reserve indication acid					
Reserve indication after	20 l	1-500 l	1		
Drum size	25 l	1-500 l	1		
Reserve indication	On	Off - On			
4 Shock chlorination					
Dosing performance acid	10%	10-100%	1		
Chlorine dosing performance	50%	0-100%	1		
5 System → Password					
End user	—	0000 – 9999	1		
Technician 1	01234	00000 – 99999	1		
6 System → Display					
Screensaver	20%	12-100%	2		
Delay	00:05	00:00 – 23:59			
Backlight	75%	24 - 100%	2		
7 System → Network					
IP address	192.168.0.1				
Gateway	192.168.0.0				
Subnetmask	255.255.255.0				
8 Dust extraction					
Flushing interval	12 h	0 – 48 h	1		
Flushing time	5 seconds	0 - 5 seconds	1		
Dust extraction	acc. to order	Off – On			
9 Buffer tank					
Dosing performance acid	10%	10 - 100%	1		
Chlorine dosing performance	50%	50 - 100%	1		
Activate buffer tank	acc. to order	Off – On			

10 pH monitoring					
Alarm low	6.5 pH	6.5 – 7.5 pH	0.05		
Alarm high	7.5 pH	6.6 – 7.5 pH	0.05		
Delay time	5 minutes	0 – 60 min			
Activate pH monitoring	acc. to order	Off – On			
11 Delay booster pump					
Delay time	30 seconds	0 - 120 seconds	5		
12 Dosing performance Chlorine granulate					
Rotation speed of the dosing screw	acc. to order	12 – 60 rpm	1		
Diameter of the dosing screw	acc. to order	19 / 26 mm	1		
13 Dosing performance acid					
Hose diameter	4.8 mm	0.8/1.6/3.2/4.8/ext			
14 Maintenance interval					
Maintenance after	365 days	0 – 365 days			

9.5 Maintenance protocol

The maintenance protocol can be found in the operating instructions for the dosing unit of the respective dosing device in *Chapter 9.5:*

- **for GRANUDOS Flex-Touch, No.: BA SW 022**
- **for GRANUDOS VARIO-Touch, No.: BA SW 003**

9.6 Spare parts list, wear parts list, consumables

The spare parts and wear parts listed in the following are available from your specialist dealer. Please always include the exact product designation and the device serial number with you orders. The device serial number can be found on control housing. Wear parts are excluded from the 2-year warranty. For these we assume a warranty of 1/2 year.

Spare parts

Device part		**Designation**	**Code no.**
Control unit		Power pack NT-SCHW-8 for 7" Touch devices	26939
		Control board IO-SCHW-8 for 7" Touch devices	26940
		Operating unit Touch 7", resist. G+F	27080

Consumables

Please pay attention to the safety data sheets for chemical manufacturers!

10 Appendices

Personal notes

You can use the following lines for personal notes, e.g., regarding conducted service tasks or special versions, extensions or device modifications.