

# Operating and installation instructions



## Granudos 45/100 dosing unit

without control unit, for

### GRANUDOS 45/100-CPR Touch XL



Operating instructions for the CPR  
Touch XL Measuring and control

unit:

no.: BA MR 001

### GRANUDOS 45/100-Touch



Operating instructions for the  
Granudos Touch Control unit:

no.: BA SW 010

### GRANUDOS 45/100-S5



Operating instructions for the  
Granudos Touch Control unit:

no.: BA SW 014

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

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## 1 About these instructions / general

### 1.1 Scope of applicability

These instructions describe the function, installation, commissioning and operation of the GRANUDOS **45/100-CPR Touch XL**, **45/100-Touch** and **45/100-S5** dosing system with appropriate options.

Read these operating instructions carefully prior to operating the device and keep them in close proximity to the device for immediate use!

**These operating instruction are only valid together with following operating instructions:**

- for GRANUDOS **CPR Touch XL**, “CPR-Touch XL Measuring and control unit” no. **BA MR 001**.
- for GRANUDOS **Touch**, “GRANUDOS Touch Control unit” no. **BA SW 010**.
- for GRANUDOS **S5**, “GRANUDOS S5 Control Unit” no. **BA SW 014**.

### 1.2 Target group

Only our authorised partners and people who have been trained in the functioning of the device are permitted to work on the device, 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

The following types of safety notices and general notices are used in this document:



#### **DANGER!**

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



#### **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 that, if disregarded, may lead to **material damage!**



#### **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 ESD-sensitive devices must be observed when handling the devices!



**Tip!**

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



**Mandatory sign**

Use face protection!



**Mandatory sign**

Use protective gloves! In accordance with DIN EN 374



**Mandatory sign**

Use protective apron!



**Mandatory sign**

Use protective boots!

### 1.4 Warranty

All WDT devices and equipment 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 Co. 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 gaskets, hoses, membranes, dosing screws, electrodes, roller supports and other parts that are subject to mechanical or chemical wear and tear. For these we assume a warranty of 1/2 year.

Our merchandise management programme 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 damages and for the processing of warranty claims are excluded.

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



#### **Tip!**

**For the safeguarding of any warranty claims, please send the completed commissioning protocol together with the defective component to WDT. Without the commissioning protocol, we reserve the right to assert a warranty regulation.**



#### **ATTENTION!**

**It is not permitted to make any modifications to the device. If this specification is not observed, the warranty obligation and product liability will expire!**

### 1.5 Further information

Additional information concerning specific topics such as, for example, designing of the dosing performance or description of the operating parameters, may be obtained from your specialist dealer, or directly from:

WDT Werner Dosiertechnik GmbH & Co KG

Hettlinger Straße 17

86637 Wertingen - Geratshofen, Germany

Phone +49 8272 98697-0

Fax. +49 8272 98697-19

<http://www.werner-dosiertechnik.de>

## 2 Safety

### 2.1 Intended use

The GRANUDOS 45/100 dosing device may only be used for the purpose listed in the product description in section 3.2! The locally applicable regulations concerning accident prevention, occupational safety and drinking water protection must also be observed!

### 2.2 Safety notices

Carefully read and comply with the operating instructions prior to installation and use of the device!

Work on the device and changes in the settings may only be carried out by properly instructed persons!

#### Observe the warning notices on the device



#### 2.2.1 Handling of chemicals, risks to humans and the environment

In the event of an emergency when dealing with chemicals you can also contact the Emergency Poison Centre!

#### **Emergency number:**

#### **Munich Emergency Poison Centre (or any other Poison Centre)**

#### **Phone: +49 89 19240**

#### Excerpt from the Accident Prevention Regulations, GUV-V D 5

Installation rooms for chlorination systems and storage rooms  
Section 3a. (1) Chlorination systems must be installed in lockable rooms and the chemicals intended for the chlorination must be stored in lockable rooms.

Re Section 3a Para. 1:

This requirement ensures that chlorination systems and chemicals shall be protected against weather effects and unauthorised access.

(2) Rooms in accordance with Para. 1 must **not** be intended for the permanent presence of persons.

Re Section 3a Para. 2:

..... A “permanent presence” is given when persons are present in the room for more than 2 hours per day. Repair and maintenance work on the chlorination system are exempt from this.

2.2.2 Protective measures and rules of conduct



**CORROSIVE! SAFETY EQUIPMENT!**

The GRANUDOS 45/100 dosing system is used for the dosing of calcium hypochlorite granulate (colloquially: Chlorine granulate) as well as the pH reducer (acid) from the supply canister.



These substances have a strong reaction when combined and release toxic chlorine gas outside of water. For this reason, the greatest possible care must be taken when working with chemicals and it is essential that personal safety equipment is worn:

Face protection, protective gloves, protective apron, boots.



The chlorine granulate and the sulphuric acid must not be mixed with each other or with other chemicals or substances!

Store the chemicals so that they are not accessible to unauthorised persons.

When storing chemicals observe the notices in *Section 3.5, Storage of chemicals*.

**More information can be found in the chemical manufacturer's safety data sheets!**



**ESD SENSITIVE!**

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

Disconnect the device from the voltage supply  
Discharge of personal static charge



### 3 Product description - scope of delivery

#### 3.1 Scope of delivery / options

The scope of delivery includes the "**GRANUDOS 45/100**" dosing system which consists of the following components:

- Upright column with a rotatable drum holder
- Controll unit with 7" touch colour display ( type "**CPR Touch XL**" and type "**Touch**" only)
- Dosing device for chlorine granulate
- Dosing device for acid
- Dissolving unit for chlorine and acid

The following options are available for the dosing system

- a) Buffertank with or without protective tub (type "**CPR Touch XL**" and type "**Touch**" only)
- b) Remote display and remote access (type "**CPR Touch XL**" and type "**Touch**" only)
- c) Lifting device

#### 3.2 Product description

The GRANUDOS dosing system for the disinfection of swimming pool water with calcium hypochlorite.

##### 3.2.1 Functioning of the GRANUDOS 45/100, dosing unit

The GRANUDOS 45/100 dosing system uses calcium hypochlorite granulate and acid to prepare a neutral, very low-concentrate chlorine solution (maximum 0.4% chlorine) for the disinfection of swimming pool water. The chlorine granulate and the acid needed for neutralisation are dosed in turns with intermittent breaks into the dissolving unit. The dosed chemicals are completely dissolved and fed into the piping of the swimming pool water circuit. The GRANUDOS 45/100 dosing device is particularly well-suited for swimming pools with a water volume between 200 and 1500m<sup>3</sup>.

##### The functions of the GRANUDOS 45/100-CPR Touch XL

- Measuring free chlorine with open measuring cell, potentiostatic pH value, redox potential and temperature
- Controlling chlorine dosing using the measured value for free chlorine or redox potential.
- Dosing of chlorine granulate from the chlorine drum using the dosing screw and the knocker
- Dosing of acid (pH reducer) from the delivery canister using the peristaltic pump
- Filling a buffertank with chlorine solution for disinfecting additional small basins using dosing pumps (optional)

##### The functions of the GRANUDOS 45/100-Touch

- Dosing of chlorine granulate from the chlorine drum using the dosing screw and the knocker
- Dosing of acid (pH reducer) from the delivery canister using the peristaltic pump
- Filling a buffertank with chlorine solution for disinfecting additional small basins using dosing pumps (optional)

##### The functions of the GRANUDOS 45/100-S5

- Dosing of chlorine granulate from the chlorine drum using the dosing screw and the knocker
- Dosing of acid (pH reducer) from the delivery canister using the peristaltic pump

Functional principle of the GRANUDOS 45/100-CPR Touch XL dosing system

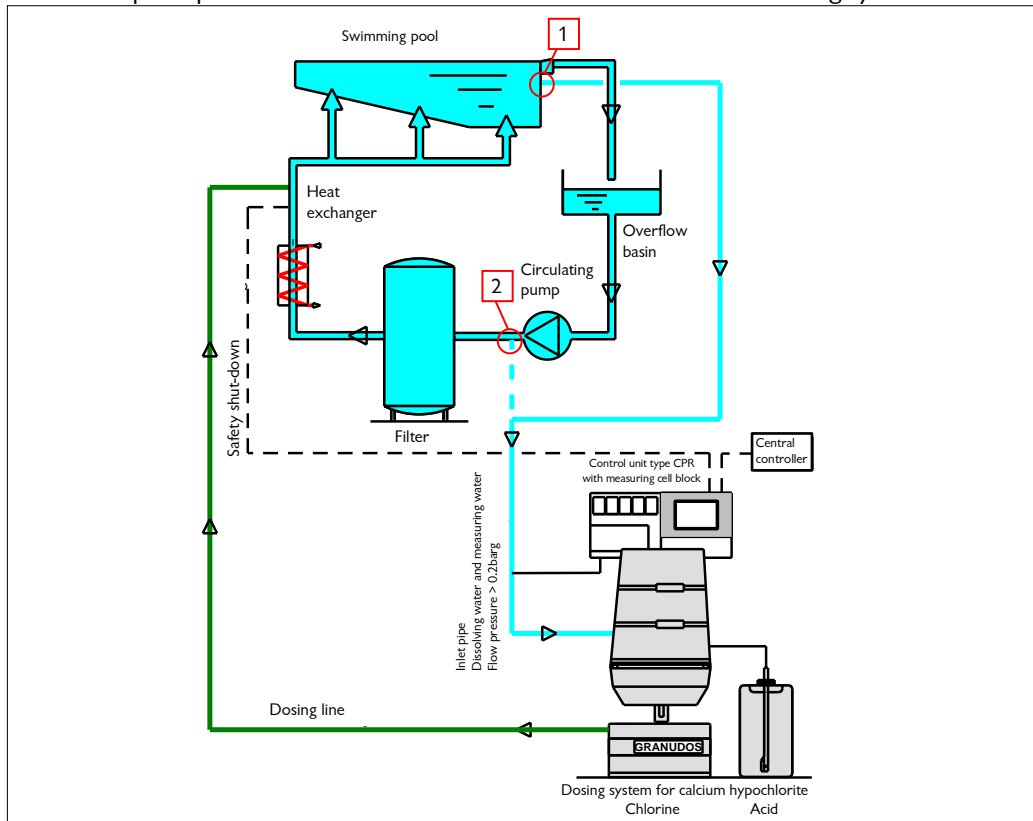


Figure 1, Flow diagram GRANUDOS 45/100-CPR Touch XL without buffertank

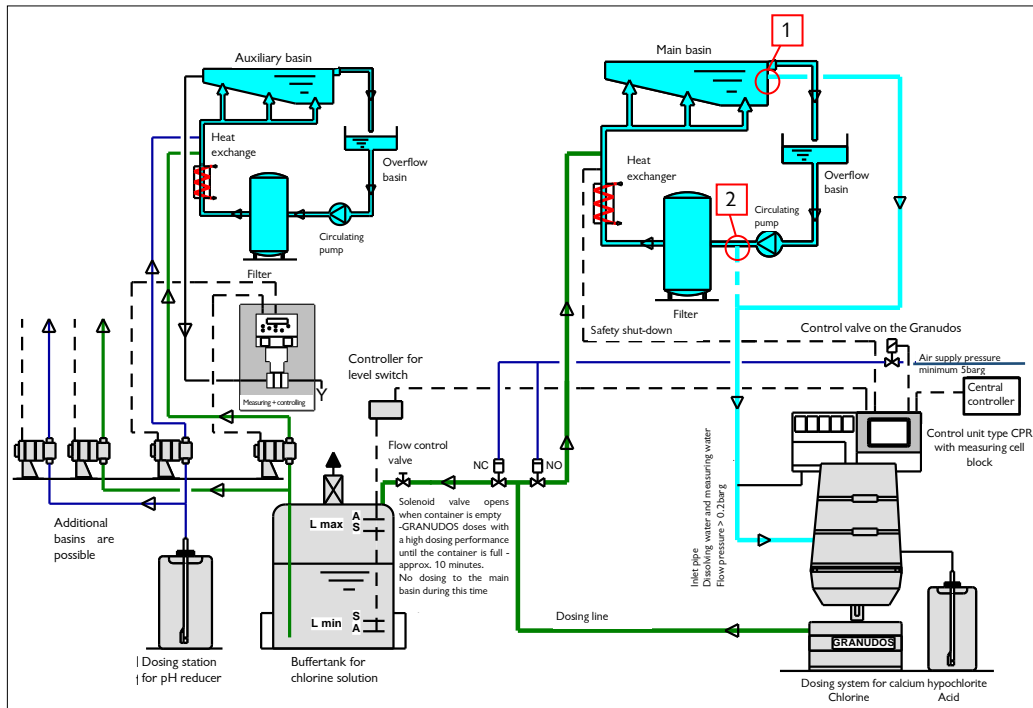


Figure 2, Flow diagram GRANUDOS 45/100-CPR Touch XL with buffertank



**ATTENTION!**

During installation, the locally applicable provisions must be observed, e.g., DIN 19643 in Germany.

Functional principle of the GRANUDOS 45/100-Touch and S5 dosing system

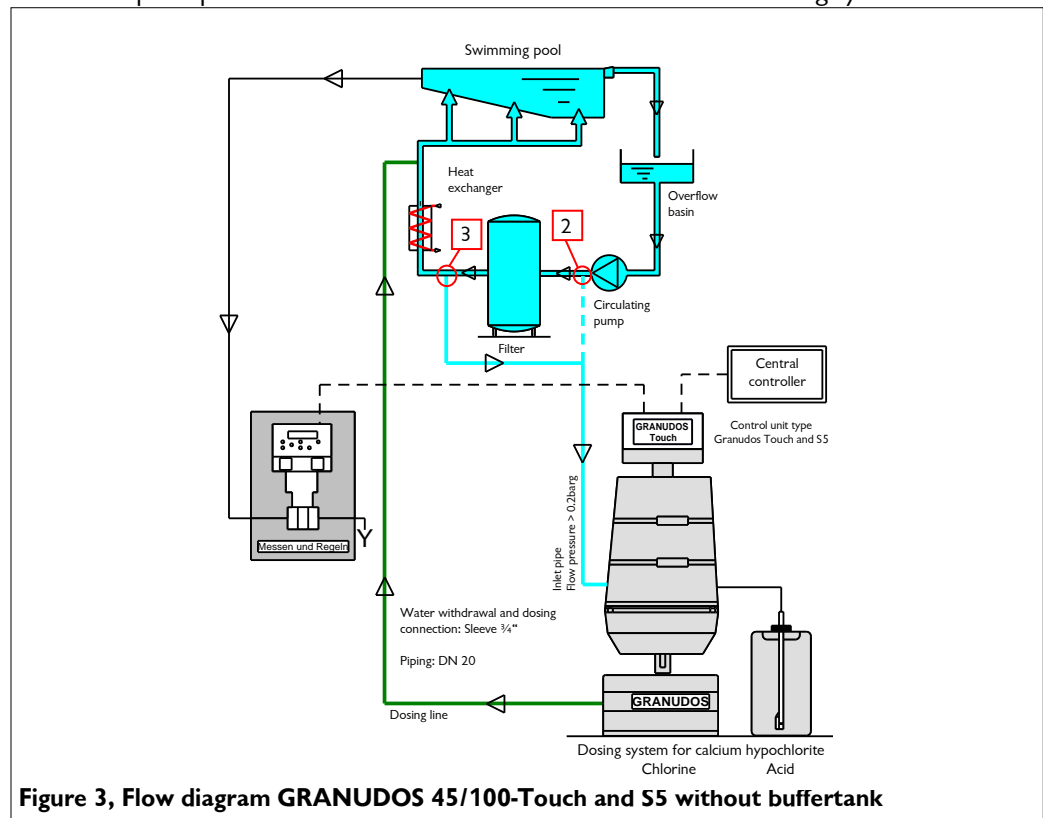


Figure 3, Flow diagram GRANUDOS 45/100-Touch and S5 without buffertank

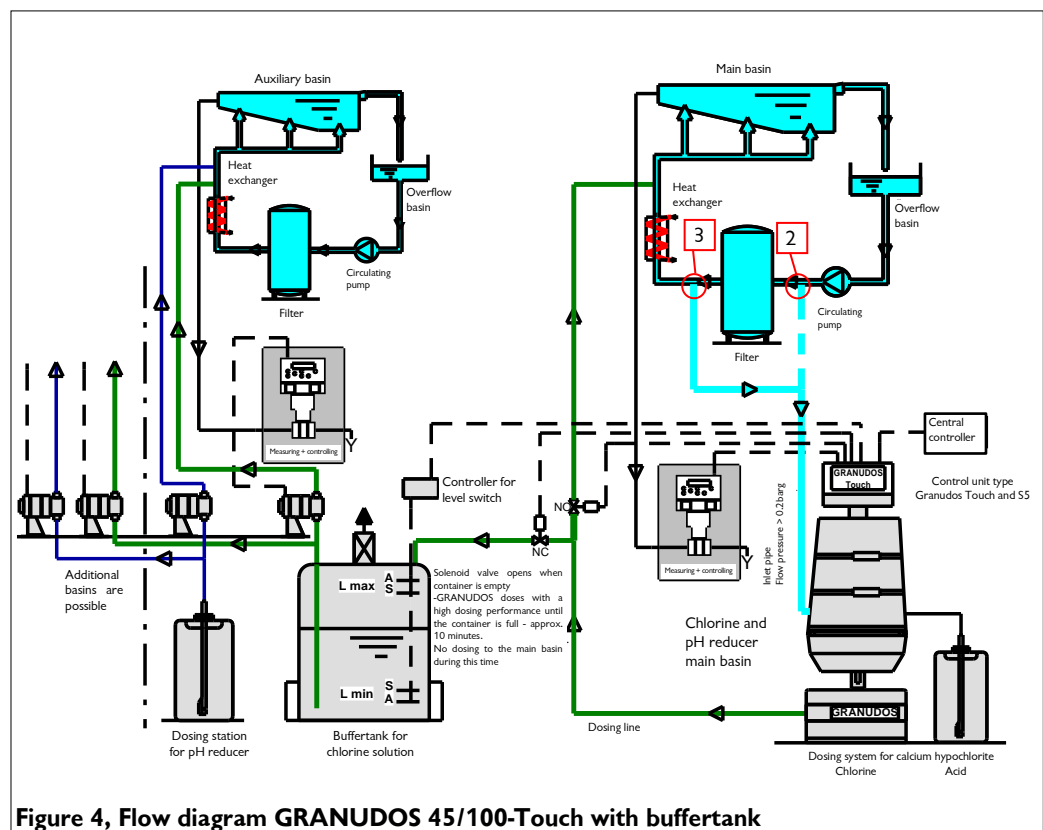


Figure 4, Flow diagram GRANUDOS 45/100-Touch with buffertank



**ATTENTION!**  
During installation, the locally applicable provisions must be observed, e.g., DIN 19643 in Germany.

3.2.2 Upright column with a rotatable drum holder (standard)

The rotatable drum holder is mounted on the stable upright column (3). The chlorine drum (7) is set on this drum holder and strapped to the rear wall with 2 tension bands (8). Together with the drum holder, the drum can be rotated into the dosing position. The spring bolt (14) is used to lock the drum holder in its respective position. The dosing pump (15) for the dosing of the pH reducer (acid) and the dirt filter (31) for the booster pump of the dissolving unit are installed on the upright column.

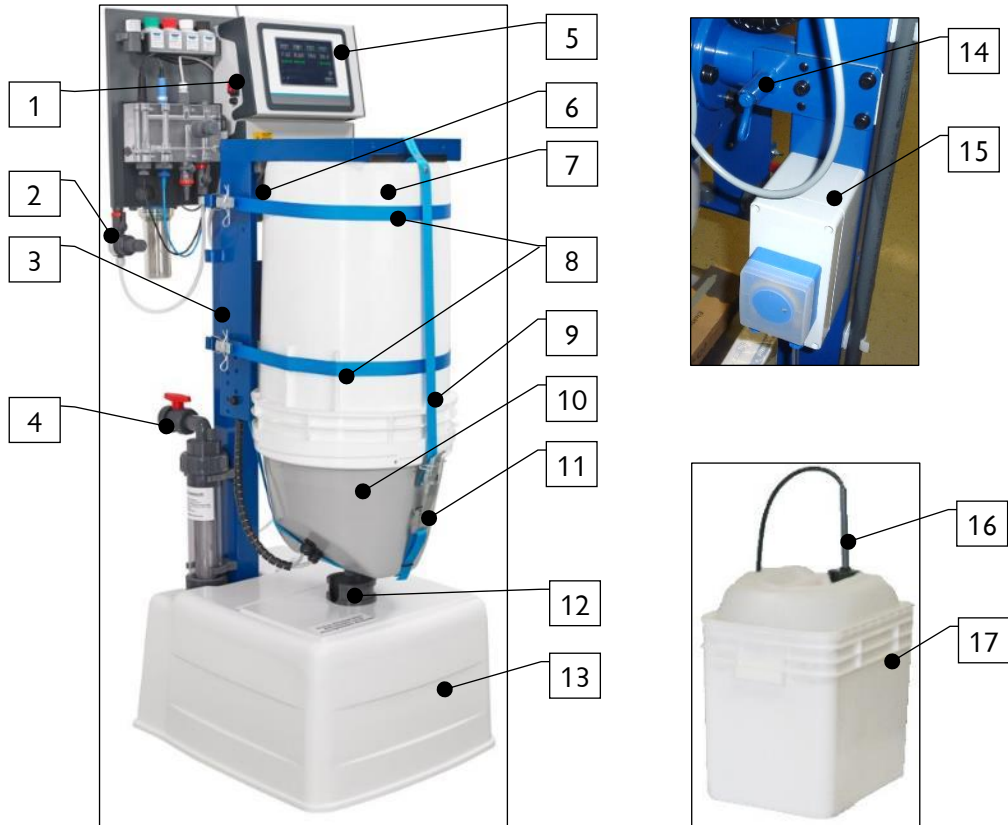


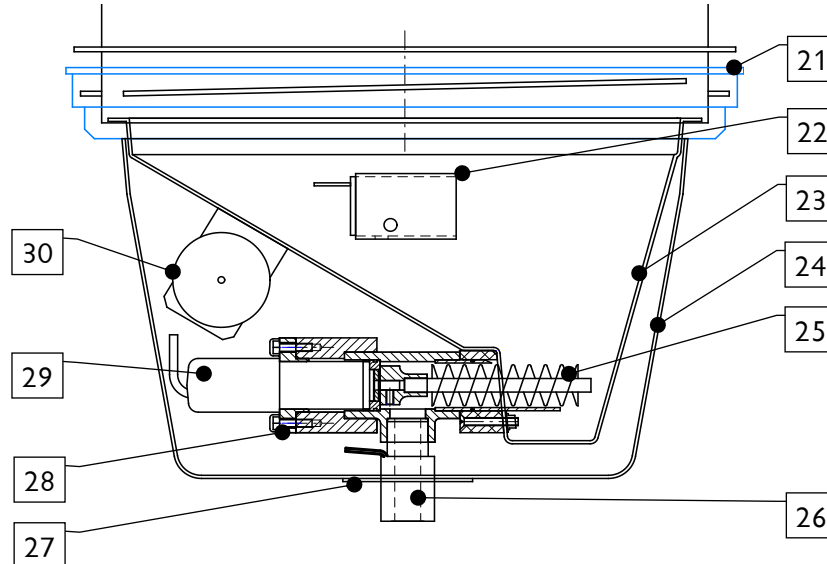
Figure 5, GRANUDOS 45/100

From GR45/100-CPR

1. Main switch
2. Pressure retention valve
3. Upright column with drum holder
4. Ball valve Inlet
5. Control unit
  - a) For **type CPR Touch XL with measuring cell block**, see separate operating instructions “CPR-Touch XL Measuring and control unit” no. **BA MR 001**)
  - b) For **type CPR Touch XL without measuring cell block**, see separate operating instructions “GRANUDOS Touch Control unit” no. **BA SW 010**)
  - c) For **type S5 without measuring cell block**, see separate operating instructions “GRANUDOS Touch Control unit” no. **BA SW 014**)
6. Nameplate (on the right side of the upright pipe, covered)
7. Chlorine drum
8. Tension bands
9. Safety belt
10. Chlorine dosing unit
11. Clamping lever for the safety belt
12. Dust protection
13. Dissolving and flushing unit for chlorine granulate with cover
14. Spring bolt for the turning device (on the right side of the upright pipe, covered)
15. Dosing pump for pH reducer (acid) (on the right side of the upright pipe, covered)
16. Suction lance for pH reducer
17. Canister for pH reducer (acid) with protective tub
18. Dust extraction (not illustrated), see Figure 11, Page 18

### 3.2.3 Chlorine dosing (standard)

The illustrated dosing head is screwed on the chlorine drum. It is used for dosing the chlorine granulate into the dissolving unit.



**Figure 6, dosing head for chlorine granulate**

- 21. Screw ring (with drum thread)
- 22. Chlorine empty switch
- 23. Dosing hopper
- 24. Protective cover
- 25. Dosing screw
- 26. Heating pipe (with dosing pipe)
- 27. Sealing washer
- 28. Motor bracket with screw tube
- 29. Dosing motor
- 30. Solenoid knocker

The dosing device consists of the dosing hopper (23) installed on the chlorine drum and the dosing unit. The latter consists of the dosing motor with flange (29), the dosing screw (25), the motor bracket (28) and the heating pipe (26).

The heating of the dosing pipe prevents the condensation of water vapour, which could lead to a dosing blockage.

The dosing screw (25) conveys the calcium hypochlorite granulate from the Dosing hopper (23) into the flushing pipe (34) of the underlying dissolving unit. A Solenoid knocker (30) is installed for breaking up the chlorine granulate; during each dosing process, the solenoid knocker delivers a short blow to the dosing hopper, thus preventing the granulate from bridging over the dosing screw.

The chlorine dosing is organized in alternating cycles with the acid and is monitored. See **OI "CPR-Touch XL Measuring and control unit", no.: BA MR 001.**

3.2.4 Dissolving unit (standard)

Overview dissolving unit

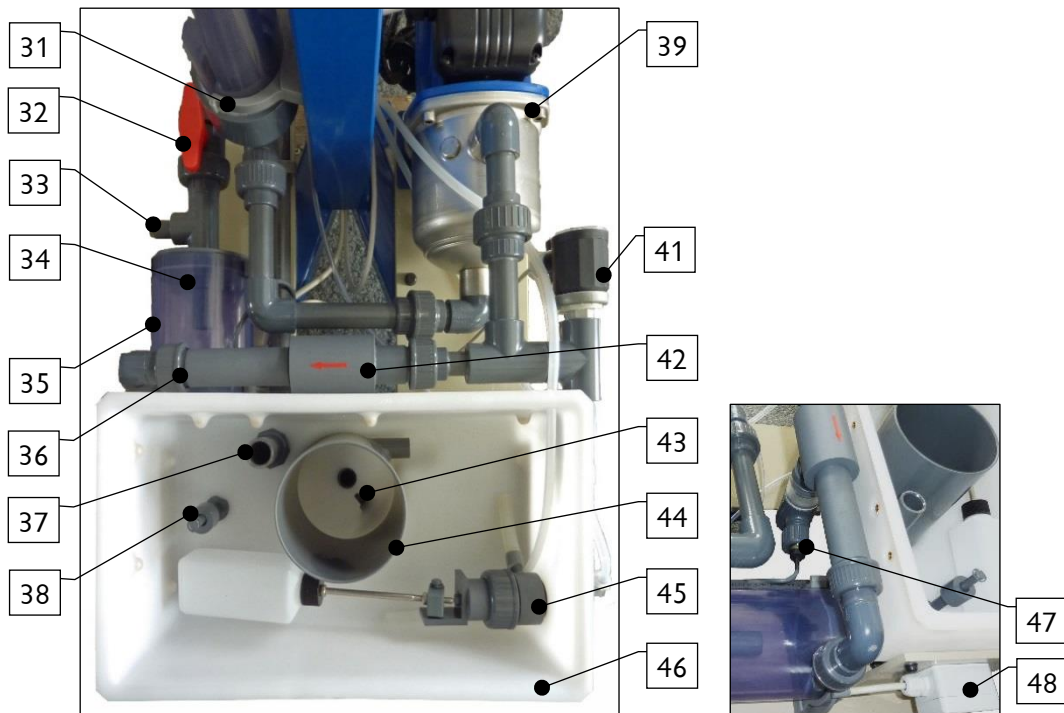


Figure 7, Dissolving unit from above

The dissolving unit consists of:

31. Dirt filter d75mm
32. Outflow ball valve for booster water
33. Connection for manometer
34. No chlorine switch / sensor on the cyclone (optional, not illustrated)
35. Dissolving and mixing cyclone
36. Screw connection with washer
37. Overflow flushing tank
38. Level switch min./max. Flushing tank
39. Booster pump (different designs)
40. —
41. Pressure switch
42. Injector
43. Dosing valve for pH reducer (acid)
44. Flushing pipe
45. Float control valve flushing tank Inlet
46. Flushing tank
47. Flow switch flushing tank
48. Connection socket for the switches
49. Motor for dust extraction (not illustrated, see Figure 11)
50. Fan for dust extraction (not illustrated, see Figure 11)
51. Suction hose for dust extraction (not illustrated, see Figure 11)
52. Connection line for dust extraction (not illustrated, see Figure 11)

In the dissolving unit, the dissolving water originating from the filter circuit is separated downstream of the booster pump (39), and the chemicals are dissolved separately. A partial flow is directed into the flushing tank (46) via the float control valve (45). From there, it is suctioned off by the injector (42), together with the additional chemicals dosed in the flushing pipe (44). The chlorine granulate and the pH reducer (acid) (liquid) are dosed in turns with intermittent breaks into the water flowing through the flushing pipe. Approx. 50% of the chlorine granulate

is dissolved in the injector; the remainder is kept in circulation in the dissolving cyclone (35) until it has been completely dissolved. Shortly after the dosing has started, the chlorine granulate can be seen in the cyclone. An optical sensor (34) records the dosed chlorine granulate, which can be seen in the cyclone shortly after the dosing has started. If no chlorine is recorded 8 seconds after the start of the 2nd dosing cycle, the controller reports a fault and the dosing is stopped. (This function is only active during the filling of the buffertank!)

Changes in the dissolving unit's water supply that cause the dissolving unit to no longer operate properly are recorded by the level switch (38), the flow switch (47) and the pressure switch (41). In these cases, the dosing of chemicals and also the booster pump, if applicable, will be turned off to prevent potential subsequent damage. For detailed information, see:

OI "CPR-Touch XL, Measuring and control unit", no.: **BA MR 001**, or

OI "GRANUDOS Touch, Control unit", no.: **BA SW 010** or

OI "GRANUDOS S5, Control unit", no.: **BA SW 014**.

A pressure switch (41) is installed in the booster pump's pressure line. This is intended to turn off the GRANUDOS in case of a pressure drop or the Inlet of air to prevent the pump from running dry.

In addition, a monitoring switch can be connected to turn off the dosing in the event of a fault in the filter system, e.g., no flow in the clean water line.

The flow switch (47) installed in the injector's (42) suction line is of essential importance for the GRANUDOS' operational safety! If the injector's suction capacity (minimum 150l/h) is too low, the switching body that has been pushed upward by the upward flow in the suction pipe drops and the chemical dosing is turned off. This ensures that dosing only occurs in vigorously flowing water and the two chemicals **cannot** meet in the open area.

At the same time, the float control valve (45) blocks the Inlet to the flushing tank in the event of a downtime or malfunction of the device. However, these measures cannot guarantee an absolute separation from the circulation circuit. If this is required, securely sealing shut-off valves would have to be installed in the Inlet and dosing lines, or, corresponding to the pressure situation, non-return valves or self-closing pneumatic valves. The valves' pressure loss must be taken into consideration during operation.

The flushing tank overflow (37) conducts the - chlorine-free - excess water that occurs in case of the "water max" fault to the duct.

The pressure retention valve (02) is used to supply the measuring device with a constant pressure and prevents the overflow of the flushing tank when no water is suctioned off. It is preset by the factory.

To prevent the chlorine granulate and the acid from meeting and reacting with each other in the dissolving unit's open part, the following safety package has been installed:

- The dosing of the two chemicals occurs in set cycles with breaks between the dosing processes. The power supply of the two dosing motors is locked via a relay system in such a way that the **both motors can never be running at the same time!**
- The water supply and water flow are monitored by the pressure switch (41), level switch (38) and flow switch (47).
- Dosing only takes place when the water flow is ensured.
- In the event of any deviation from the set target values, the dosing system is turned off and a corresponding fault indication is generated.



### **ATTENTION!**

**The use of sulfuric acid is generally possible up to a concentration of 50%. With higher concentrations or when using other acids (e.g., hydrochloric acid, dissolved sodium bisulphate, etc.), pay attention to**

**a change in dosing performance and/or increased corrosiveness! We recommend consultation with the manufacturer!**

The dissolving water supply should be separated from the swimming pool's filter function. There are 2 options to do this: (see also illustration in Section 4.4.1 "Installation of the dissolving and measuring water supply").

**Possibility 1:**

Water withdrawal from the swimming pool

**Possibility 2:**

Water withdrawal from the pipe between the circulating pump and the filter prior to chemical dosing. **Only use this alternative in exceptional cases when possibility 1 cannot be realised!**

**Possibility 3:**

Water withdrawal between filter and heat exchanger, before chemical dosing with 3/4" sleeve. **The flow pressure at the GRANUDOS inlet must be at least 0.2 barg. Only use this alternative in exceptional cases when possibility 1 cannot be realised!**

3.2.5 Acid dosing (standard)

The acid dosing in the GRANUDOS 45/100 serves for the complete dissolving and neutralisation of the chlorine granulate and the correction of the pH value. It generates a hypochloric acid. For each kg of chlorine granulate, approx. 0.5-1 litres of 37% sulfuric acid must be added. For this purpose, a peristaltic pump (15) is installed as standard. The acid dosing is controlled automatically by the controller. However, acid dosing for filling the buffertank must be adjusted. Chlorine dosing must be adjusted during commissioning to ensure that the pH value of the chlorine solution in the buffertank is 6.8 - 7.2. The calcium hypochlorite is then completely dissolved. The solution is clear for practical purposes and has no strong chlorine smell. The solution smells strongly of chlorine and is more corrosive when the pH value is too low. The solution is murky and forms sediments or deposits in the buffertank and the dosing lines when the pH is too high. The correct dosing ratio is set after measuring the pH value.



Figure 8, Acid dosing pump

Hose pumps can transport very small dosing amounts in a reliable and continuous manner, even when air or gas bubbles are included in the suction line. Rotating rollers press the dosing hose against the housing wall, squeeze out the liquid in front of the rollers, and aspirate new liquid behind them. Hose pumps are extremely reliable and easy to operate.

The hose pump aspirates the acid out of the acid canister through a suction lance (Pos. 16, Page 12). The filling level in the acid canister is measured by a level switch for the empty message.

Use sulphuric acid with a saturation level of 37-50% as pH-reducer. Concentrated hydrochloric acid destroys the hose pump - dilute to below 10%. Dissolved sodium bisulphate solutions should not have concentrations higher than 20% (corresponds to 10% sulphuric acid). It must be considered whether this acid performance is sufficient for neutralisation.



**Hint!**

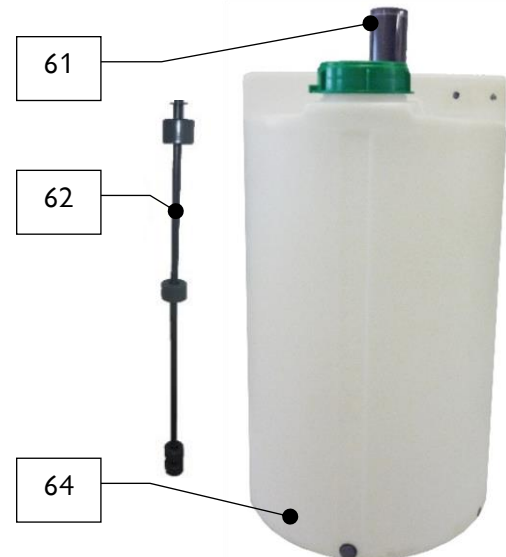
**In special cases, e.g. when water is very hard and/or has a high pH value and/or a very high dosing performance is required, it is recommended to use hydrochloric acid instead of sulphuric acid in order to prevent possible formation of gypsum residues due to high sulphate concentrations in the buffertank.**



### 3.2.6 Buffertank

The buffer container has a 4-way level switch installed. Filling the buffertank is elusively controlled with a level switch in the buffertank. The dissolving water supply is blocked by a solenoid valve once the buffertank has been filled with chlorine solution.

- 61. Active carbon filter
- 62. Collecting tray PP, not shown
- 63. 4-stop level switch,  
Level minimum alarm;  
Level minimum;  
Level maximum;  
Level minimum alarm;
- 64. Alarm switch in collecting tray (not shown)
- 65. Buffertank 300 l PE



**Figure 9, Buffertank without protective tray**

- 1. Buffertank filling is started at the minimum buffertank control level.
- 2. Buffertank filling is stopped at the maximum buffertank control level. This is followed by a rinsing cycle to clean the dissolving system: First 20 seconds with acid, then another 20 seconds with plain water.
- 3. An alarm message is shown on the display at minimum alarm level.
- 4. An alarm message is shown on the display at maximum alarm level.

#### **Contact positions**

The contacts of the level switches are set as follows when the container is half full:

<u>Level position</u>	<u>Contact</u>
Level minimum	opened
Level minimum alarm	opened
Level maximum	opened
Level maximum alarm	closed

An active carbon filter (61) is screwed on top of the buffertank. It is used to clean the chlorine-polluted air during filling of the buffertank and for ventilating and bleeding.

However, for the filling of the buffertank, the acid dosing must be adjusted. During commissioning, the chlorine dosing must be adjusted so that the chlorine solution has a pH value between 6.8 and 7.2 in the buffertank. In that case, the calcium hypochlorite solution is completely dissolved. The solution is practically clear and lacks a strong chlorine smell. If the pH value is too low, the solution has a strong chlorine smell and acts more corrosive. If the pH value is too high, the solution is cloudy and precipitation or deposits form in the buffertank and in the dosing lines. The correct dosing ratio is set after measuring the pH value.

The acid dosing is performed using a peristaltic pump. Peristaltic pumps are able to convey even the smallest dosing quantities reliably and evenly, even when air or gas bubbles are trapped in the suction line. Rotating rollers press the dosing hose against the casing wall, which pushes the liquid in the hose out from the rollers while simultaneously feeding behind it. It is exceptionally reliable and easy to operate.

The peristaltic pump sucks the acid through the suction lance (16) from the acid canister. The fill level in the acid canister is determined for the empty signal using a level switch.

Use acid based on 37-50% sulphuric acid as a pH reducer. Concentrated **hydrochloric acid** destroys the peristaltic pump – **dilute to below 10%!** In solutions consisting of **sodium bisulphate** "dry acid", **do not use concentrations above 20%** (approx. equivalent to 10% sulphuric acid). It must be considered whether the acid capacity is sufficient for the neutralisation.



Figure 10, Acid dosing pump



**Tip!**

**In special cases, e.g., if the water is very hard and/or has a high pH value and/or a high dosing performance is required, it is recommended to use hydrochloric acid instead of sulfuric acid, to prevent the potential formation of gypsum residue due to high sulphate concentrations in the buffertank (optional).**

3.2.7 Granudos Control unit

- See operating instructions "Measuring and control unit **CPR-Touch GRANUDOS CPR Touch XL**", no. **BA MR 001**.
- See operating instructions "Control unit **GRANUDOS Touch**", no. **BA SW 010**.
- See operating instructions "Control unit **GRANUDOS S5**", no. **BA SW 014**.

3.2.8 Dust extraction (optional)

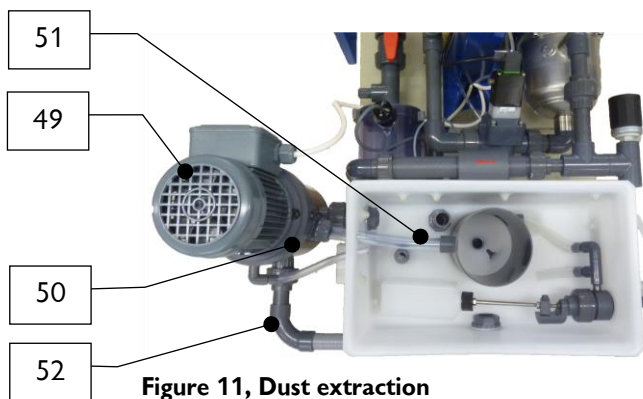


Figure 11, Dust extraction

The dust extraction serves to support the prevention of dust in the GRANUDOS dosing system. The use of granulates with an increased dust content may lead to a minor dust discharge at the device. This will subsequently settle on the protective cover. To prevent this, a slight underpressure is generated by means of a motor (49) with a fan (50). The dust is suctioned through the flushing

pipe into the fan container via a hose (51). The dust remains in the Granudos' dissolving system via the connection line (52) to the flushing tank and the circulating water.

The stirrer is mounted on the stirring container's cover. To ensure aeration, a bent nozzle is attached on the lid on the side for the water recirculation.

### 3.3 Identification of device / nameplate

Enter the data from the nameplate of your device here.

Field 1: Complete the type identification

Field 2: Enter drum type

Field 3: Article no.:


Field 4: Serial no.:

Field 5: Enter date of manufacturing


#### Nameplate GRANUDOS 45/100-CPR Touch

<b>Typ:</b> GR <input type="text"/> CPR-Touch / <input type="text"/>
<b>Art.:</b> <input type="text"/> <b>Serien-Nr.:</b> <input type="text"/>
230V/AC 1Ph ~ 50Hz I max. 3,15 A
Dosierleistung CI 2,0 kg/h-pH 3,0 l/h
Herstellung <input type="text"/>
 WDT - Werner Dosiertechnik GmbH & Co. KG
Hettlinger Str. 17
D-86637-Wertingen

#### Nameplate GRANUDOS 45/100-Touch

<b>Typ:</b> GR <input type="text"/> Touch / <input type="text"/>
<b>Art.:</b> <input type="text"/> <b>Serien Nr.:</b> <input type="text"/>
230V/AC 1Ph ~ 50Hz I max. 3,15 A
Dosierl. CI 2,0 kg/h- pH 2,0 l/h
Herstellung <input type="text"/>
 WDT - Werner Dosiertechnik GmbH & Co. KG
Hettlinger Str. 17
D-86637-Wertingen

#### Nameplate GRANUDOS 45/100-S5

<b>Typ:</b> GR <input type="text"/> S5 <input type="text"/>
<b>Art.:</b> <input type="text"/> <b>Serien Nr.:</b> <input type="text"/>
230V/AC 1Ph~50Hz I max. 3,15 A
Dosierleistung CI 4 kg/h-pH 3,0 l/h
Herstellung <input type="text"/>
 WDT - Werner Dosiertechnik GmbH & Co. KG
Hettlinger Str. 17
D-86637-Wertingen

# Granudos 45/100-CPR Touch XL + Touch + S5

## Dosing unit

### 3.4 Technical data

	GRANUDOS 45/100-CPR Touch XL	GRANUDOS 45/100-Touch
<b>Dimensions and weights:</b>		
Device dimensions	W 60cm, D 70cm, H 140cm	W 60cm, D 70cm, H 140cm
Device space requirement (base)	W 130cm, D 80cm, H 200cm	W 130cm, D 80cm, H 200cm
Space requirement, incl. operation and maintenance	W 140cm, D 170cm, H 210cm	W 140cm, D 170cm, H 210cm
Empty weight / operating weight	approx. 40kg / 85kg	approx. 38kg / 83kg
<b>Connection data</b>		
Electric connection data	230VAC/50Hz ± 10%, 350W, I max. 3.15A, safety plug	230VAC/50Hz ± 10%, 350W, I max. 3.15A, safety plug
Protection class	IP 54	IP 54
Hydraulic connection data	Inlet DN25 Outlet DN20 Overflow dissolving unit DN20 Drain collecting basin DN25/32	Inlet DN25 Outlet DN20 Overflow dissolving unit DN20 Drain collecting basin DN25/32
Required duct connection	At least DN25	At least DN25
Operating pressure	max. 2.5barg	max. 2.5barg
Required inlet pressure	min. 0.2barg	min. 0.2barg
Counter-pressure	0 - 1.5barg (depending on inlet pressure)	0 - 1.5barg (depending on inlet pressure)
Water supply	from the clean water line: Flow pressure min. 0.2barg  <u>In exceptional cases:</u> Between circulating pump and filter, before chemical dosing Flow pressure min. 0.2barg	Between circulation pump and filter, or filter and heat exchanger, before chemical dosing using the booster pump;  Flow pressure min. 0.2barg
<b>Operating data:</b>		
max. dosing performance <b>GR 45-</b>	Chlorine: 1-2kg/h <sup>(1)</sup> Acid: max. 3l/h <sup>(2)</sup>	Chlorine: 1-2kg/h <sup>(1)</sup> Acid: max. 3l/h <sup>(2)</sup>
<b>GR 100</b>	Chlorine: 2-4kg/h <sup>(1)</sup> Acid: max. 3l/h <sup>(2)</sup>	Chlorine: 2-4kg/h <sup>(1)</sup> Acid: max. 3l/h <sup>(2)</sup>
Water flow	approx. 800 – 1000l/h	approx. 800 – 1000l/h
Filling capacity of the dosing device	max. 1200l/h	max. 1200l/h
Booster pump	0.33kW, 230V, 1.95A	0.33kW, 230V, 1.95A
Medium temperature	5°C to 35°C	5°C to 35°C
Ambient temperature	5°C to 35°C	5°C to 35°C
Humidity engineering room	Max: 70%	Max: 70%
Concentration hypochloric acid	GR 45: max. 0.2% GR 100: max. 0.35%	GR 45: max. 0.2% GR 100: max. 0.35%
Room ventilation (in and out)	The locally applicable provisions must be observed, e.g., DIN 19643 in Germany	
Material	Upright column: Steel, galvanised and painted Other functioning parts: PVC or PE Gaskets: EPDM, viton	Upright column: Steel, galvanised and painted Other functioning parts: PVC or PE Gaskets: EPDM, viton

#### Footnotes for the technical data

- (1) The dosing performance for the chlorine granulate depends on the type of granulate: In case of a high dust content in the granulate or with very coarse materials > 3 mm or elongated grains, the dosing performance may be significantly reduced. If the maximum dosing performance is required, a granulate with a low dust content must be used.
- (2) This performance is required for neutralisation with a high chlorine dosing performance, using sulfuric acid between 37% and 50%.

# Granudos 45/100-CPR Touch XL + Touch + S5

## Dosing unit



Werner Dosiertechnik

	GRANUDOS 45/100-S5	Buffertank GRANUDOS-PB (optional) for CPR-Touch XL und Touch
<b>Dimensions and weights:</b>		
Device dimensions	B 60cm, T 70cm, H 140cm	D 80cm, H 130cm
Device space requirement (base)	B 130cm, T 80cm, H 200cm	W 90cm, D 90cm, H 180cm
Space requirement, incl. operation and maintenance	B 140cm, T 170cm, H 210cm	W 90cm, D 170cm, H 210cm
Empty weight / operating weight	Ca. 38kg / 83kg	200l = 10/210kg 300l = 15/315kg
<b>Connection data</b>		
Electric connection data	230VAC/50Hz ± 10%, 350W, I max. 3.15A, safety plug	
Protection class	IP 54	
Hydraulic connection data	Inlet DN25 Outlet DN20 Overflow dissolving unit DN20 Drain collecting basin DN25/32	Inlet DN20 Outlet DN15 (suction lance)
Required duct connection	At least DN25	
Operating pressure Required inlet pressure Counter-pressure	max. 2.5barg min. 0.2barg 0 - 1.5barg (depending on inlet pressure)	Pressureless
Water supply	Between circulation pump and filter, or filter and heat exchanger, before chemical dosing using the booster pump;  Flow pressure min. 0.2barg	
<b>Operating data:</b>		
max. dosing performance <b>GR 45-</b> <b>GR 100</b>	Chlorine: 1-2kg/h <sup>(1)</sup> Acid: max. 3l/h <sup>(2)</sup> Chlorine: 2-4kg/h <sup>(1)</sup> Acid: max. 3l/h <sup>(2)</sup>	
Water flow	approx. 800 – 1000l/h	
Filling capacity of the dosing device	max. 1200l/h	
Filling volume	—	200l/300l
Booster pump	0.33kW, 230V, 1.95A	
Medium temperature Ambient temperature Humidity engineering room	5°C to 35°C 5°C to 35°C Max: 70%	5°C to 35°C 5°C to 35°C Max: 70%
Concentration hypochloric acid	GR 45: max. 0.2% GR 100: max. 0.35%	max. 0.35%
Room ventilation (in and out)	The locally applicable provisions must be observed, e.g., DIN 19643 in Germany	
Material	Upright column: Steel, galvanised and painted Other functioning parts: PVC or PE Gaskets: EPDM, viton	Container: PE Connections: PVC

### 3.4.1 Requirements for the calcium hypochlorite granulate

Based on the experience gained in the past 30 years with the dosing of calcium hypochlorite granulate using the GRANUDOS we discovered that the quality of the granulate has a significant impact on the dosing safety. Since safety is of extraordinary importance in swimming pool technology, we define here our minimum requirements for the calcium hypochlorite granulate. If these quality criteria are met, a proper dosing operation can be assumed.

The following can be checked upon delivery to gain an initial impression of the quality:  
The granulate must be white, free of clumps, and no strong chlorine smell must be present when opening the drum.

#### Specification:

- Calcium hypochlorite concentration: higher than 70 %
- Water-insoluble (Ca(OH)<sub>2</sub>, CaCO<sub>3</sub>): less than 4 %
- Water (crystal water due to safety): higher than 10 %

#### Grain size:

- Dust: smaller than 0.15 mm (100 mesh) smaller than 1 %
- Fraction of coarse particles: smaller than 2.5 mm (8 mesh) smaller than 5 %

### 3.5 Transport / storage

Please check the devices immediately upon receipt for potential transport damage.



#### **ATTENTION!**

**The systems and devices can be damaged by frost or high temperatures. Avoid exposure to frost during transport and storage! Do not store systems and devices next to objects with strong heat emission or in direct sunlight. The device may only be transported and stored in its original packaging. Please ensure careful handling.**

#### Storage of chemicals

#### **DANGER!**

**Please comply with the chemicals manufacturer's safety data sheets!**



In addition, please observe the provision regarding the **storage of chemicals TRGS 515!**

#### General requirements

- Store chlorine dry and cool
- Keep a chlorine supply at hand for less than 6 months

## 4 Installation

### 4.1 Select the installation site

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The following should be observed in regard to the installation site:

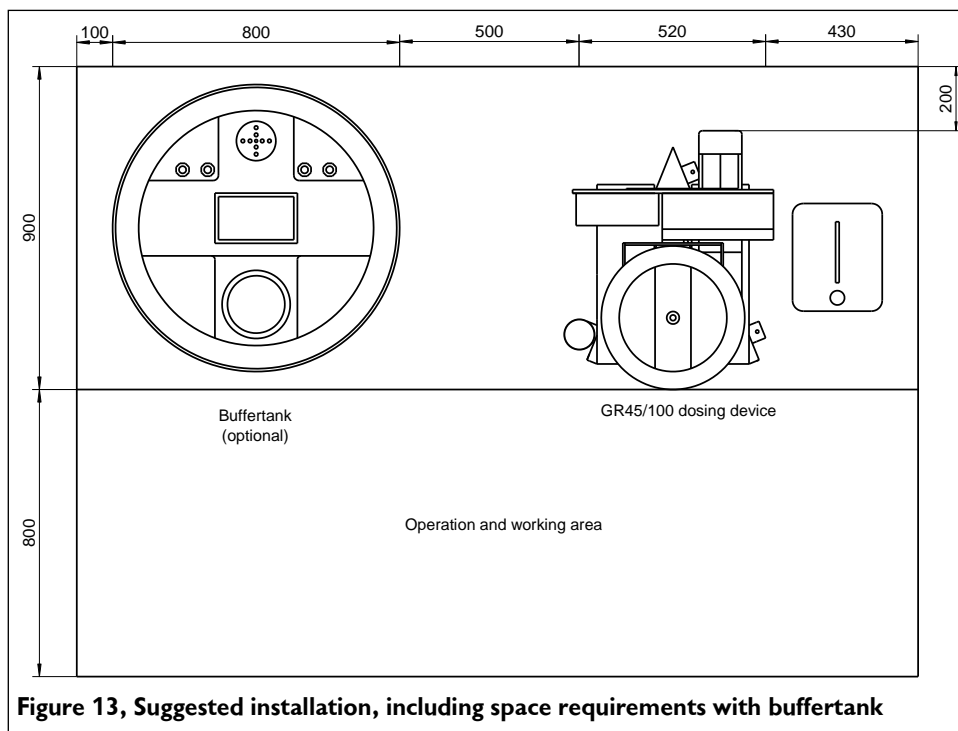
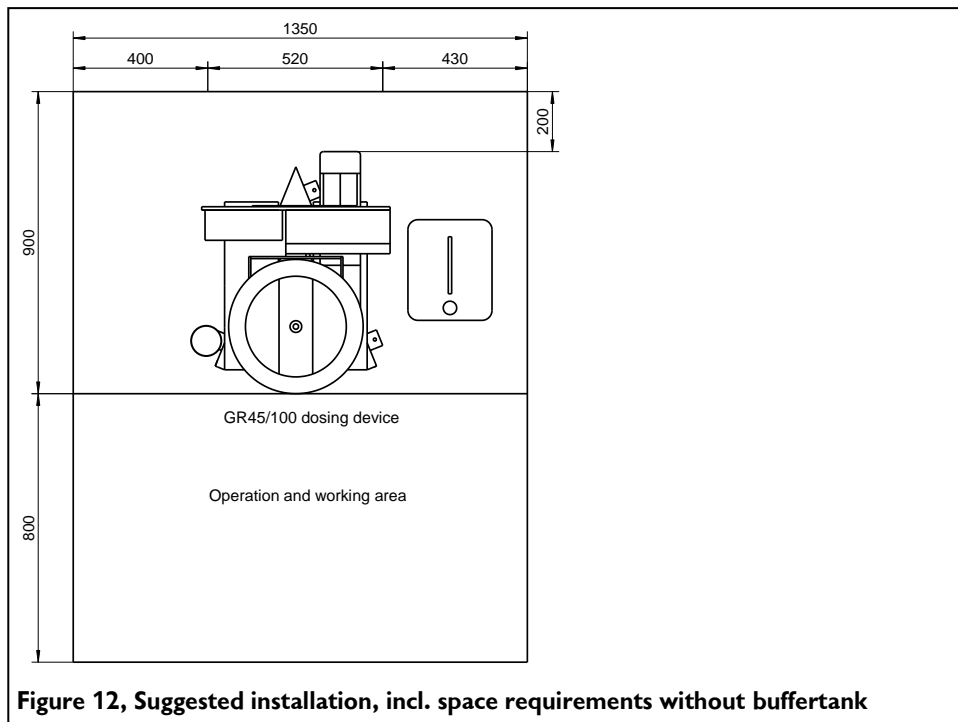
1. A freely accessible assembly location should be selected to facilitate operations and subsequent maintenance tasks.
2. Meet the dimensions for the floor drain and the temperature specifications for the ambient air and medium in accordance with *Section 3.4 Technical Data*. No flammable vapours, dust or gases may be present in the immediate vicinity of the device.
3. The device must not be exposed to the elements. It may not be installed outdoors. The device must be protected from frost and direct sunlight.
4. An electricity grid connection and a duct connection must be available. Depending on the device configuration, an Internet connection may also be required.
5. The operating room must not be used as a recreational space. (max. 2 hours per day), consult the locally applicable accident prevention regulations (Germany BGR-GUV-R 108).
6. It must be possible to vent and aerate technical areas so that hazardous substances do not occur in health-hazardous concentrations (from accident prevention regulations BGR-GUV-R 108). If these conditions are met, there should be no problems with the dosing. However, a strong air flow at the dosing device must be avoided.
7. Collecting basins must be available for use with the chemical canisters and the buffertank, if applicable.
8. It must comply with the accident prevention regulations and should not be accessible to unauthorised persons. A separate storage space must be available for the chemicals.

### 4.2 Installation instructions / installation suggestion

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- Remove transport safety devices
- Attach warning and notice signs in accordance with the locally applicable accident prevention regulations (Germany: BGR-GUV-R 108) at the designated positions.

Suggested installation





### 4.3 Mechanical installation

The dosing device is delivered completely pre-assembled with the controller and the dirt filter.  
**Ensure that there is sufficient clearance for operating and servicing the device!**

#### 4.3.1 Installation of the GRANUDOS 45/100 dosing system

Place and align the GRANUDOS dosing system on a suitable, level foundation in the engineering room.

Ensure that there is sufficient clearance for operating and servicing the device.



#### **ATTENTION!**

**The GRANUDOS 45/100 must be attached to the floor using the 3 screws included in the delivery!**

#### Installation materials

Spare part bag with manometer, gaskets, membranes



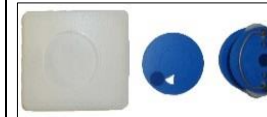
Maintenance set for dosing motor



2 ball valves d25 with adhesive nipple d25-3/4"



Options for acid pump



#### 4.3.2 Installation of the buffertank (option) with / without protective tub

Place and align the protective tub on a suitable, level foundation in the engineering room. Place the empty buffertank in the protective tub and check for secure footing. The buffertank may only be operated with a suitable protective tub. (protective tub may be supplied by the customer, if applicable)

Ensure that there is sufficient clearance for operating and servicing the device.

4.4 Hydraulic installation

Integration into the water circuit:

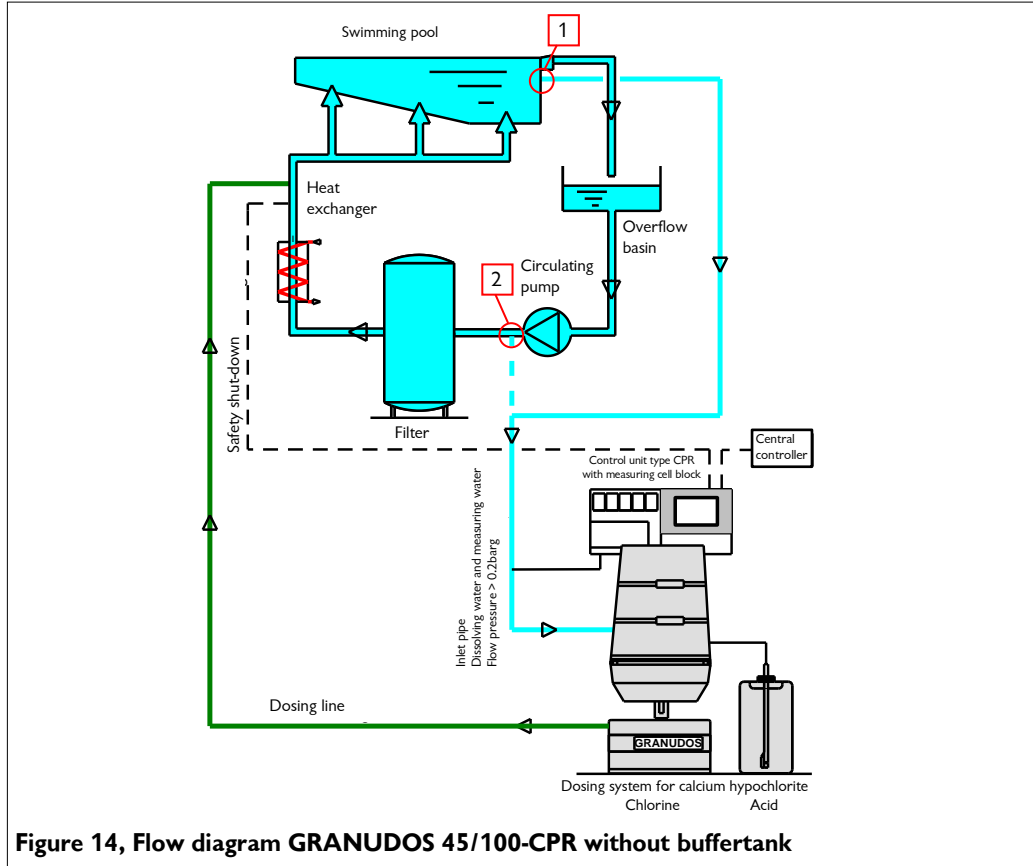


Figure 14, Flow diagram GRANUDOS 45/100-CPR without buffertank

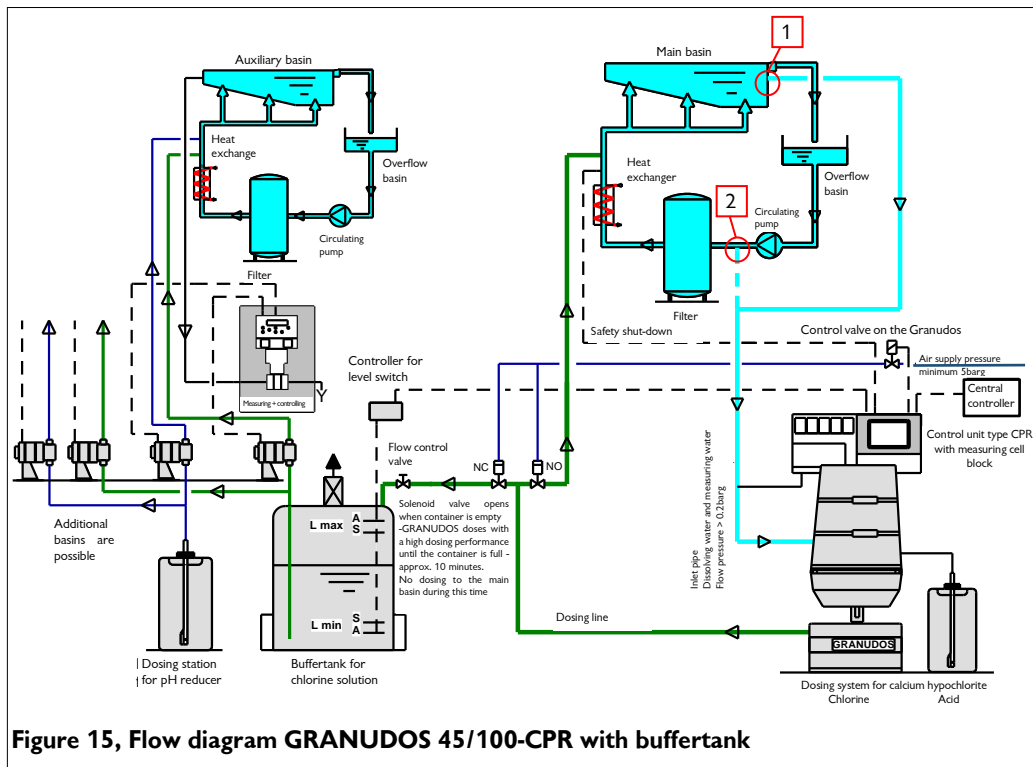


Figure 15, Flow diagram GRANUDOS 45/100-CPR with buffertank

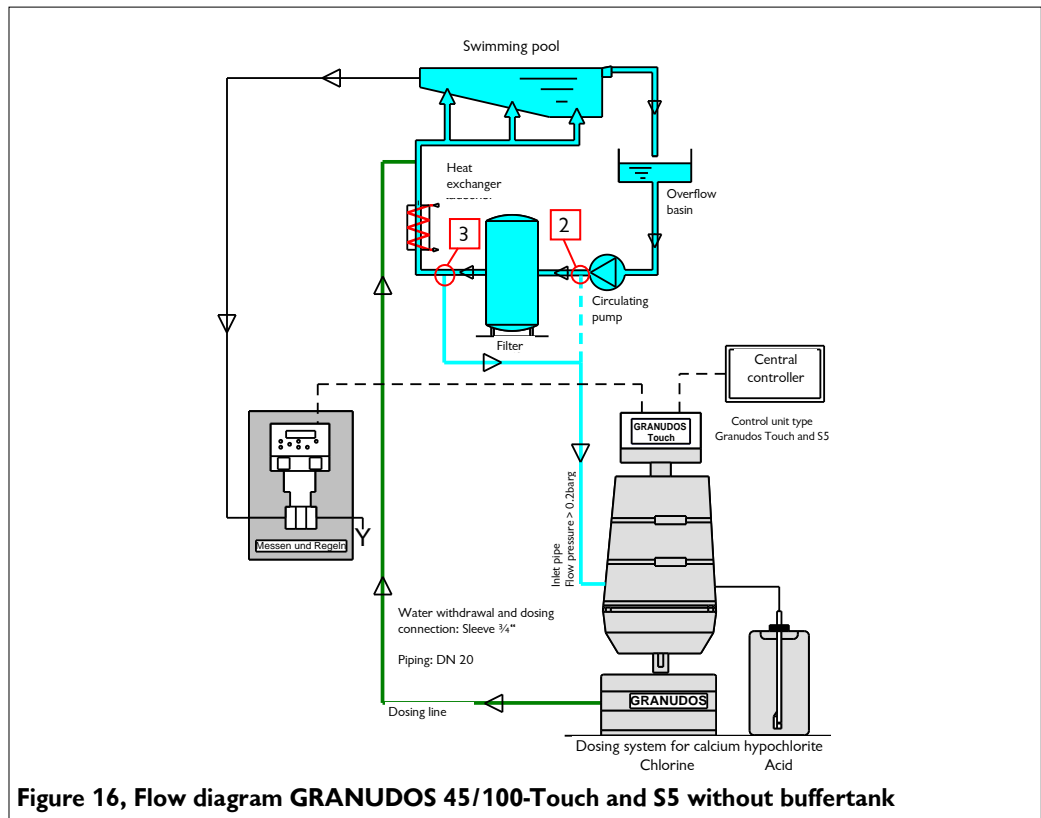


Figure 16, Flow diagram GRANUDOS 45/100-Touch and S5 without buffertank

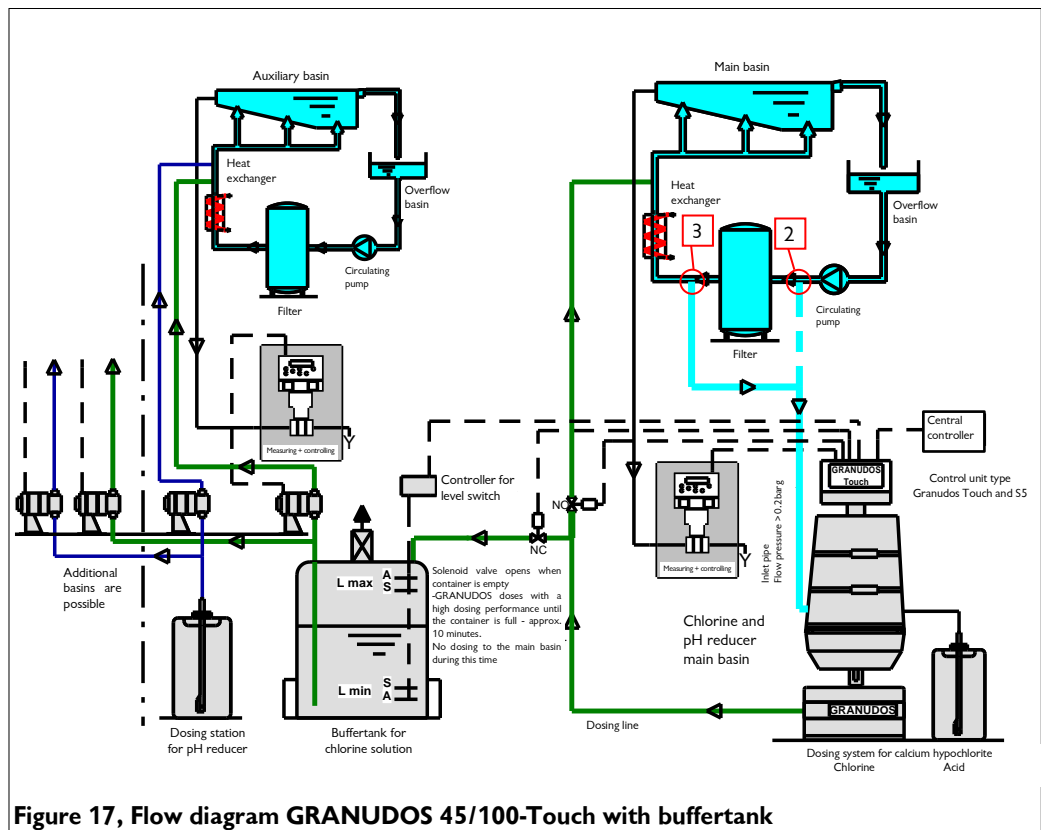


Figure 17, Flow diagram GRANUDOS 45/100-Touch with buffertank

When connecting the GRANUDOS 45/100 to the water circulation, special attention must be paid to the pressure conditions to avoid an impact of the swimming pool circulation on the uninterrupted supply with dissolving water.

The GRANUDOS was tested under the following conditions:

At inlet pressure	1.2 barg	→	possible counter-pressure	1.4 barg
	0.6 barg	→		1.1 barg
	0.3 barg	→		0.9 barg

The respective pressure values are listed on the dosing device, without the inserted orifice plate. In addition, pressure loss in the piping must be taken into account; therefore, pressure loss should be kept at a minimum. The dosing device's inlet and drain are equipped with hose connections where the pressure during operation can be measured by means of the included manometer. In case of a higher counter-pressure, a stronger pump may be used.



### **ATTENTION!**

**Before beginning any connection works, ensure that all of the ball valves are closed.**

#### 4.4.1 Installation of the dissolving and measuring water supply

The dissolving and measuring water supply for the GRANUDOS 45/100 should be separated from the swimming pool filter circuit so that the swimming pool circuit does not affect the uninterrupted supply with dissolving water.

#### Flow

Only a proper basin flow can achieve a satisfactory control of the auxiliary hygiene parameters, i.e., free chlorine, pH value and redox voltage. The dosed chemicals must reach all areas of the basin within a short time. Even under stress, the concentrations measured in different areas of the basin must be approximately the same.

#### Water withdrawal

A partial flow of the dissolving water is used as measuring water. (GRANUDOS **Touch** does not have a measuring water device; this has no effect on the connection of the devices). Choosing the correct measuring water withdrawal point is crucial for the effectiveness of the measuring and control technology. If possible, the measuring water should be identical to the basin water; it should be possible to detect changes to the water quality in the basin as quickly as possible by metrological means. This is the only way to ensure a quick compensation of changes in the basin water quality by means of additional chemical dosing. The optimal withdrawal point can be located by measuring the chlorine concentration at different points (e.g., downstream of the circulating pumps, mixed water, etc.) and comparison with the values from the basin water in various operating conditions.



### **ATTENTION!**

**No chemicals may be dosed upstream of the measuring water withdrawal point. This would distort the measuring results.**

If the basin water is conducted through an overflow gutter and an compensation basin (splash water basin) that is also used for the freshwater feed-in, only a sampling of the measuring water directly from the swimming pool basin will lead to satisfactory measuring and control results.

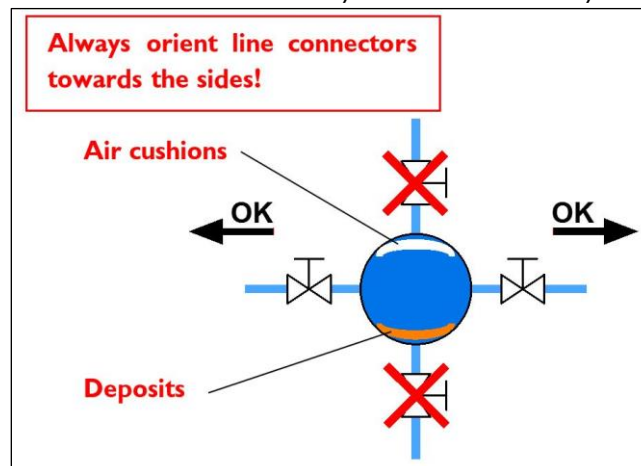
In new systems, measuring water must be withdrawn directly from the basin, in accordance with DIN 19643!

If there are any existing connections, ensure that they are not blocked. The pipes should be kept as short as possible. The piping of the supply line in PVC must be executed in the dimension d25-3/4". Increase the nominal width for lines longer than 20m or in case of poor pressure conditions.

Ensure that the connection sleeves for the water withdrawal and the dosing point are completely open (metal sleeves may be rusted shut)

### Line connection design

Line connections should always be installed laterally.



**Figure 18, Line connections**

Connect the Inlet ball valve (Pos 4, Figure 5) of the GRANUDOS 45/100 to the water withdrawal point. The separation of dissolving and measuring water occurs in the dosing device.

There are 3 possibilities for the water withdrawal point:

### **Possibility 1**, Swimming pool water directly from the pool (CPR Touch XL only)

- Water withdrawal at least 80cm below the upper edge of the water. The flow pressure at the GRANUDOS Inlet must be at least 0.2barg. Install the GRANUDOS 45/100 a short distance below the level of the withdrawal point. The height difference between the GRANUDOS and the water surface should be at least 2m.
- Avoid a rising and falling of the Inlet line in the piping to the GRANUDOS 45/100. This can lead to the formation of air cushions that may subsequently enter the pump during operation.

### **Possibility 2**, Swimming pool water before the swimming pool filter (for CPR Touch XL + Touch and S5)

**Only use this alternative only in exceptional cases when Possibility 1 cannot be realised!**

- Water withdrawal between circulating pump and filter, prior to chemical dosing with 3/4" sleeve. The flow pressure at the Granudos Inlet must be at least 0.2barg. It may be necessary to add the measuring water separately if the distortion is too strong on the way through the splash water basin. Check the water quality!

### **Possibility 3**, Swimming pool water downstream of the swimming pool filter (for Touch + S5)

- Water withdrawal between filter and heat exchanger, before chemical dosing with 3/4" sleeve. The flow pressure at the GRANUDOS inlet must be at least 0.2barg.

If the dosing device must be installed above the basin level

- Install a free-flowing non-return valve in the supply line to the GRANUDOS.
- Install a spring-loaded non-return valve in the dosing line to the clean water piping to avoid the flushing tank from draining when the system is turned off. (see installation diagram above - corresponding non-return valves are available)

If an overflow shall be excluded when the device is turned off or in the event of faults

- Install a solenoid valve 3/4" in the Inlet and a non-return valve d25 or d32 in the drain. Check for minor pressure loss! Therefore, a supply pressure > 0.4barg is required at commissioning!

Measuring water return flow (only CPR Touch XL)

The measuring water is automatically conducted into the dosing device's flushing unit and is thereby returned to the water circulation.

#### 4.4.2 Installation of the dosing line



### **ATTENTION!**

**Due to the chlorine solution's concentration, thick-walled pipes in PVC PN16 must be used.**

At a minimum, the piping of the dosing lines must be executed in the dimension d25x2.8mm in PVC PN16 (thick-walled). For longer dosing lines (above approx. 15m) it is recommended to use the dimension d32x3,6mm in PVC PN16 (thick-walled), due to the potentially higher pressure loss.

Install the dosing line from the GRANUDOS outlet to the injection point. **Measuring water may never be withdrawn downstream of the injection point! A ball valve must be installed at the injection point.**

#### 4.4.3 Installation of the overflow line for the flushing tank

Screw the overflow nozzle into the flushing tank and install a correspondingly-sized pipe to the gully.

#### 4.4.4 Connect buffertank (optional)



### **ATTENTION!**

**Due to the chlorine solution's concentration, thick-walled pipes in PVC PN16 must be used.**

The buffertank is connected to the chlorine line. 2 pneumatic valves are installed downstream of the chlorine dosing line's branch-off point, according to the flow diagram. These are supplied with air via a solenoid valve and are thus controlled. Connect the pneumatic valves' control lines to the solenoid valve. The solenoid valve is connected to the on-site air supply. The chlorine solution can be dosed from the buffertank via on-site pumps at the auxiliary basins.

4.5 Electric installation



**DANGER DUE TO ELECTRICAL VOLTAGE!**

Electrical installation must only be carried out by qualified personnel! Before any electrical works are carried out, the power supply must be switched off and secured against being reactivated!



**ESD SENSITIVE!**

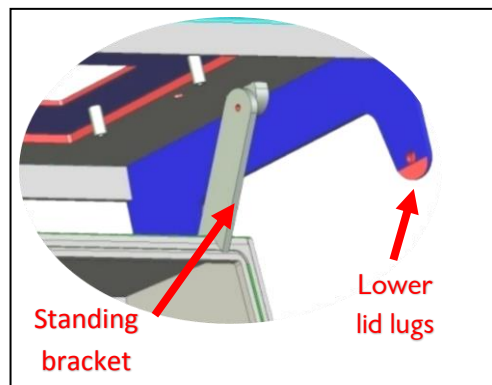
The electronic components in the devices are sensitive to electrostatic discharges. The generally accepted safety precautions for ESD-sensitive devices must be observed when handling the devices.

The following applies, in particular:

- 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.

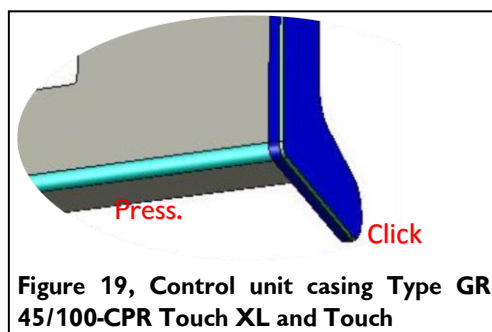
Electrical connection

4.5.1 Open and close the housing, GRANUDOS CPR Touch and Touch



The casing is equipped with an easy lock-in closure. In order to open the display lid or the small connection space cover, the side lid lugs must be gently lifted outwards from the main casing. The display lid can then be pulled forward. The upper lid lugs run in guide grooves up to the front lock-in position.

Afterwards, the display lid is raised. The display lid can be supported on the main casing using a standing bracket so that it remains raised for work on the terminals.



In order to close the casing, the standing bracket must be unlocked with a backward motion and the lid closed by moving it downward. The upper lid lugs must now be unlocked and the lid pushed backward onto the main casing. In order to ensure that it has been completely resealed, press gently on the four corners of the casing.

The casing lid will close with a soft, audible click. Please ensure that all of the lid lugs have been securely bolted using the safety bolts each time.

**Figure 19, Control unit casing Type GR 45/100-CPR Touch XL and Touch**

The device must be supplied with continuous voltage. I.e., the voltage supply must not be locked with the filter system. **A digital input is available for interlocking the dosing with the swimming pool's filter system.**

For electrical installation, see also wiring diagrams in the controller's terminal casing or in Section 9.2.

Signals to and from outside, see wiring diagrams

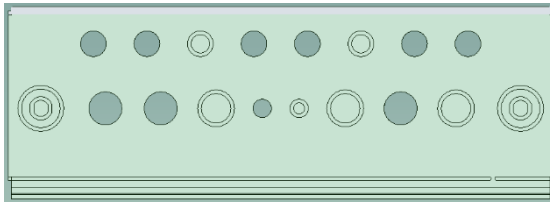


**ATTENTION!**

**External control of the inputs must be carried out in isolation. The maximum contact current capacity of the relay contacts must be observed.**

The power supply for the dosing device must always be ensured. The external control inputs and outputs (shut-down in the event of fault, disinfectant dosing during backwashing etc.) must be clamped to the clamping connectors of the baseplate in the controller casing. For potential-free connections, 3m flexible cable 7x0.52 are included in the scope of delivery. Please do not use any fixed wire conductors. see *wiring diagram in Section 9.2.*

Insert lines



The casing comes with several factory-made free screw connections. Several push-outs for metric cable screw connections are available for additional insertions. The two external screw connections with M25 are intended for the insertion of a preassembled interface cable with RJ45 plug.



**ATTENTION!**

**Please pay attention to the spatial separation between energy and signal lines when inserting additional lines. The crossing of energy and signal lines must be avoided!**

Upon completion of the work, the casing must be properly closed again!

The device is equipped with a temperature control. This temperature control can be used to regulate the basin water temperature. If the basin is heated by means of a flow-through heat exchanger, it must be ensured that the associated heating circuit pump can only be activated when the filter system is in operation!

Please remember that the regulation of the basin temperature can only be guaranteed if the filter operation times are set to an appropriate duration.

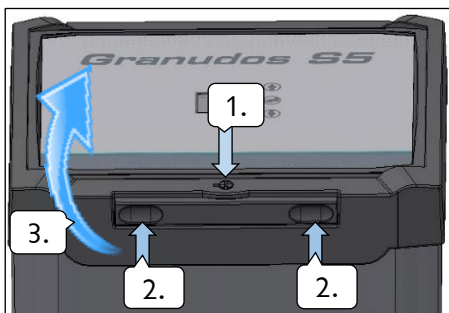
In order to achieve a precise measuring result, the sensor must be installed by means of an immersion sleeve in the swimming pool's piping in front of the filter!



**ATTENTION!**

**Immersion sleeves that come into contact with the swimming pool water must be corrosion-proof.**

4.5.2 Open and close the housing, GRANUDOS S5



1. Unlock the screw cap
2. Press down on both recessed grips until the housing snaps open.
3. Fold the lid upward

Close the housing in reverse sequence. The housing lid will close with a soft, audible click. Ensure that the housing lid is securely locked.

Figure 20, Control housing GR 45-S5



## 5 Commissioning

### 5.1 Commissioning - remarks



#### **ATTENTION!**

**This chapter must also be observed every time recommissioning occurs after an operating pause. Do not switch on the GRANUDOS 45/100 until the flushing tank has been filled.**

The work described here may only be carried out by trained specialist personnel from a specialist company. Prior to commissioning, the installed systems must be checked for proper installation and leaks.

Please use the commissioning protocol from *Section 9.3*. for commissioning. The device is delivered with defined factory settings. You can find the setting values in the operation data sheet in *Section 9.4*.



#### **ATTENTION!**

**During the installation of the piping and the electrical system, foreign bodies may have fallen into the flushing unit, which could lead to potential faults in the float valve or the suction pipe of the flow switch. Remove foreign bodies!**

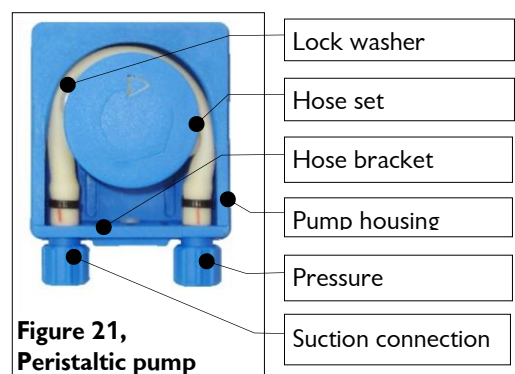
### 5.2 Commissioning

Prior to starting the commissioning, ensure that the ball valves are connected to the measuring cell block of the control unit (541).

#### 5.2.1 Installation of peristaltic pump, roller support

The acid pump is installed on the right side of the UPRIGHT COLUMN of the GRANUDOS 45/100.

1. Remove the clipped-in, transparent pump cover and the blue lock washer. Pull the hose bracket forward out of the guide in the casing.



2. Push the yellow roller support provided with the delivery onto the axle.



Figure 22,  
Insert roller support

3. Insert the hose bracket into the guides of the casing until it firmly snaps into place.



Figure 23,  
Insert the hose bracket

4. Turn the roller support counter-clockwise while carefully pushing the hose inside the housing until the entire hose is contained in the housing.



Figure 24,  
Turn roller support

Now replace the lock washer and the transparent pump cover. This completes the installation of the roller support.

For dismantling the roller support and the hose bracket, please proceed in the reverse sequence.

Plug the safety plug in a corresponding socket.

### 5.2.2 Prepare acid dosing for operation



#### **PROTECTIVE CLOTHING!**

**Personal safety equipment must be put on before starting work with chemicals: Protective gloves, apron, face protection, boots.**

**The specifications for each chemical listed in the safety data sheets must be observed.**

#### Connect/change acid canister

Toxic fumes may occur when handling acids. Do not inhale any fumes.

1. Unscrew the screw cap with the suction lance from the empty acid canister, place the suction lance in the collecting basin, and immediately close the empty canister, using the original screw cap. (not applicable during initial commissioning)
2. Lift the empty canister out of the collecting basin.
3. Put the full acid canister into the collecting basin

4. Unscrew the screw cap from the full acid canister, immediately insert the suction lance into the canister and close it securely.
5. Store the original screw cap of the acid canister until the next time the acid is replaced.

### 5.2.3 Attach/change the drum



#### **PROTECTIVE CLOTHING!**

**Personal safety equipment must be put on before starting work with chemicals: Tight-sealing goggles, protective gloves, apron, face protection, boots**

**The safety data sheets for each chemical must be observed.**



#### **ATTENTION!**

**At the time of the order, the GRANUDOS 45/100 was manufactured for a certain type of chlorine drum. As a rule, the dosing head does not fit on chlorine drums by other manufacturers. If a dosing head is improperly installed on a different drum, it may detach from the drum during turning, causing the chlorine granulate to drop to the ground. The removal of the chlorine is unpleasant and time-consuming! This circumstance should be taken into account when purchasing the chlorine.**

**The chlorine granulate and the acid must not be mixed with each other or with other chemicals or substances!**

**Remove potential encrustations from the *dosing hopper (23)* to avoid faults in the chlorine dosing.**

The following can be checked upon delivery to gain an initial impression of the quality:  
The granulate must be white, free of clumps, and no strong chlorine smell must be present when opening the drum.


More detailed chlorine specification, see Section 3.4.1 on page 22



#### **Tip!**

**It is recommended to roll the new, sealed drum several times on the floor prior to attaching it to the dosing device to loosen any potential clumps in the granulate.**

5.2.3.1 Attach the drum with tension band and safety belt

To change the drum, stop the dosing with the  button.



**DANGER!**

**When changing the drum, ensure that the dissolving unit is covered.  
Negligence or a lack of cover can cause deflagration!**

Overview GRANUDOS 45/100-CPR Touch XL and GRANUDOS Touch

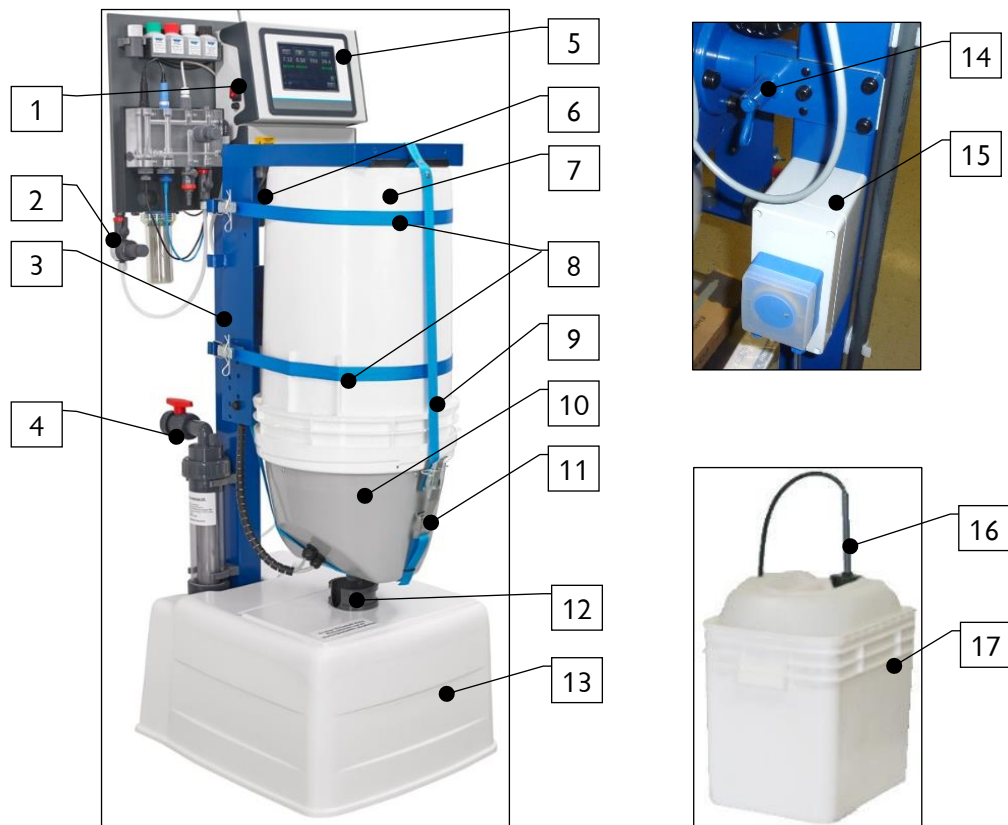


Figure 25, GRANUDOS 45/100-CPR

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Main switch</li> <li>2. Pressure retention valve (only CPR design)</li> <li>3. Upright column with drum holder</li> <li>4. Ball valve Inlet and dirt filter</li> <li>5. Control unit             <ol style="list-style-type: none"> <li>a. For <b>type CPR Touch XL with measuring cell block</b>, see separate operating instructions “CPR-Touch XL Measuring and control unit” no. <b>BA MR 001</b> (with measuring cell block)</li> <li>b. For <b>type CPR Touch XL without measuring cell block</b>, see separate operating instructions “GRANUDOS Touch Control unit” no. <b>BA SW 010</b></li> <li>c. For <b>type S5 without measuring cell block</b>, see separate operating instructions “GRANUDOS Touch Control unit” no. <b>BA SW 014</b></li> </ol> </li> <li>6. Nameplate (on the right side of the upright pipe, covered)</li> <li>7. Chlorine drum</li> </ol> | <ol style="list-style-type: none"> <li>8. Tension bands</li> <li>9. Safety belt</li> <li>10. Chlorine dosing unit</li> <li>11. Clamping lever for the safety belt</li> <li>12. Dust protection</li> <li>13. Dissolving and flushing unit for chlorine granulate with cover</li> <li>14. Spring bolt for the turning device (on the right side of the upright pipe, covered)</li> <li>15. Dosing pump for pH reducer (acid) (on the right side of the upright pipe, covered)</li> <li>16. Suction lance for pH reducer</li> <li>17. Canister for pH reducer (acid) with protective tub</li> <li>18. Dust extraction (not illustrated), see Figure 11, Page 18</li> </ol> |
|---|---|

Replace the drum:

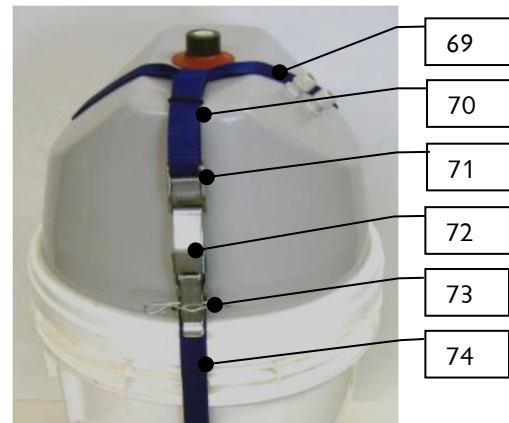
1. Push the dust protection pipe (12) downward.
2. Release the spring bolt (14) of the drum holder and rotate the turning device with the empty drum clockwise from the dosing position upward; while doing so, keep the dosing pipe covered with a finger to prevent any granulate from escaping. Relock the turning device. (This point does not apply during the initial commissioning.)
3. Release the safety belt (9) and the tension bands (8). Remove the empty drum from the turning device. Unscrew the dosing hopper with a counter-clockwise turn and place it next to the dosing device. (This point does not apply during the initial commissioning.)
4. Unscrew the lid from the new drum and remove the measuring cup, if present.
5. Place and screw the dosing hopper on the drum so that the drum's recessed grips are oriented laterally and the control cable is on the right side.



**ATTENTION!**

**Ensure that the dosing hopper correctly engages with the drum's thread without jamming and that a proper connection exists after it has been screwed in.**

6. Place the new drum on the turning device so that it is leaning against the posterior tracks and the lower spacers and the holding rod engages with the drum's cross ribs.
7. Next, pull the tension bands around the drum and close the tension lever. The tension lever must be tightly closed; however, do not use excessive force when turning the tension lever. The length of the tension band must be adjusted correspondingly at the screw ends.
8. Insert the safety pins in the tension lever!
9. Pull the safety belt's support belt (69) over the heating pipe from behind so that the bolt's clamp lock (71) is located on the front of the hopper. Insert the tension belt's (74) clamping lever (72) in the clamp lock (71), pull it tight and secure with the safety pin. If the tension belt is not tight, adjust the length of the adjusting belt (70) correspondingly. Insert the safety pin (73)!



**Figure 26, Dosing head**



**ATTENTION!**

**Ensure that all safety pins have been inserted!**

10. Unlock the drum holder by turning the spring bolt (14) upward. Cover the dosing pipe with a finger and slowly turn the drum counter-clockwise in the dosing position. Lock the drum holder by turning the tension bolt downward. Ensure that the control cable does not get entangled.
11. Orient the dust protection pipe in the flushing tank lid so that any potential air current does not blow away the fine chlorine dust. (Distance of the protection pipe's upper edge from the dosing hopper approx. 1-2cm). Minimise air draft - close doors!

5.2.3.2 Attaching with drum bracket FH2 (optional)

1. Release the spring bolt (14) of the drum holder. Rotate the turning device with the empty drum clockwise upward; while doing so, keep the dosing pipe covered with a finger to prevent any granulate from escaping. Relock the turning device. (This point does not apply during the initial commissioning.)
2. Remove the safety pins (78) at the lower support belts and open the clamp lock (79).
3. Press the retaining ring (76) upward over the hood until it snaps into place.
4. Remove the empty drum (77) from the turning device, unscrew the dosing hopper (75) and place it on the floor to the side.
5. Remove the lid from the new drum and remove the measuring cup, if present.
6. Place and screw the dosing hopper on the drum so that the drum's recessed grips are oriented laterally and the control cable is pointing backward.
7. Lift the drum with the dosing hopper onto the turning device.



Figure27, Barrel holder Type FH 2



**ATTENTION!**

**The sloped sides of the hopper hood must point forward and back; otherwise, the retaining ring does not fit! – See illustration - Watch the dosing hopper's control cable to prevent the protective pipe from being bent!**

8. Pull the retaining ring (76) down until it rests on the hopper's edge and fasten the retaining belt; insert safety pins (78)



**ATTENTION!**

**Ensure that all safety pins have been inserted!**

9. Rotate the turning device with the drum counter-clockwise downward into the dosing position. Once again, cover the dosing pipe with a finger. Lock the turning device.
10. Orient the dust protection pipe (12) so that any potential air current does not blow away the fine chlorine dust. (Distance of the protection pipe's upper edge from the dosing hopper approx. 1-2cm).

### 5.2.4 Venting of the booster pump and the piping to the GRANUDOS 45/100

The pump and the piping must be carefully vented prior to each commissioning of the GRANUDOS 45/100. To prevent the booster pump from running dry, observe the following during installation and commissioning:

1. Check manually whether the rotary pump turns easily. To do so, you can check the smooth running of the shaft at the fan propeller in the back, using a screwdriver. If the shaft does not turn smoothly, the mechanical seal is clogged. Try to loosen this by turning it back and forth. If this does not solve the problem, the pump must be deinstalled and disassembled to loosen the mechanical seal.



#### **ATTENTION!**

**If the pump is switched on with a blocked mechanical seal, the pump's failure is preprogrammed.**

2. During commissioning, open the ball valve at the water withdrawal point and the dosing point; then open the prefilter and wait until the flushing tank is half full. This ensures that water has flowed through the pump and the pump has been vented. Then open the shut-off valve upstream of the cyclone. Only now switch on the GRANUDOS at the main switch (1).
3. The piping to the GRANUDOS must be carefully vented. To do so, observe the prefilter d75. If the filter's water level shows a significant drop when the pump is switched on, turn off the GRANUDOS, open the venting screw on top of the filter and allow water to flow back into the filter before switching the machine back on. If necessary, repeat the process several times until the filter remains full; a few air bubbles in the upper filter area are inconsequential.



#### **ATTENTION!**

**If the pump draws air while in operation or during unmonitored activation, the pump's mechanical seal will run dry, overheats and starts to leak. This can be the case with an installation above the swimming pool level, when draining the supply line or when turning off the filter system. In this installation scenario, the following installation information must be observed.**

1. Install a free-flowing non-return valve in the supply line to the dosing device.
2. Install a spring-loaded non-return valve in the dosing line to the clean water piping to avoid the flushing tank from draining when the system is turned off. Corresponding non-return valves are available.
3. If it is intended or necessary to prevent an overflow when the device is turned off or in case of a fault, install a solenoid valve 3/4" in the Inlet and a non-return valve d25 or d32 in the drain. Check for minor pressure loss! For safe operation, a supply pressure of more than 0.4 barg is therefore required!
4. A venting valve that can be attached to the venting connection is optionally available. Here, the escaping water is conducted back into the dissolving basin.

### 5.2.5 Setting the water flow in the dissolving unit

The further proceedings are only possible when the device is turned on.

Turn the device on, using the main switch on the left side of the control unit. The booster pump starts up. When the device is turned on, the pump is in permanent operation, except when the pressure switch (41) or the level switch min (38) respond.

The washer in the screw connection (36) behind the injector (42) adjusts the injector's suction performance to the pressure conditions. If the water level in the flushing tank (46) drops during commissioning, an orifice with a smaller bore must be inserted in the screw connection.

If the water level rises, or if the flow switch's (47) switching body is not clearly pushed upward, an orifice with a larger bore is required, or the orifice must be removed entirely. An orifice with 6mm is installed by the factory; orifices with 5.5mm and 7mm are available in the enclosed spare parts bag.

#### Overview dissolving unit

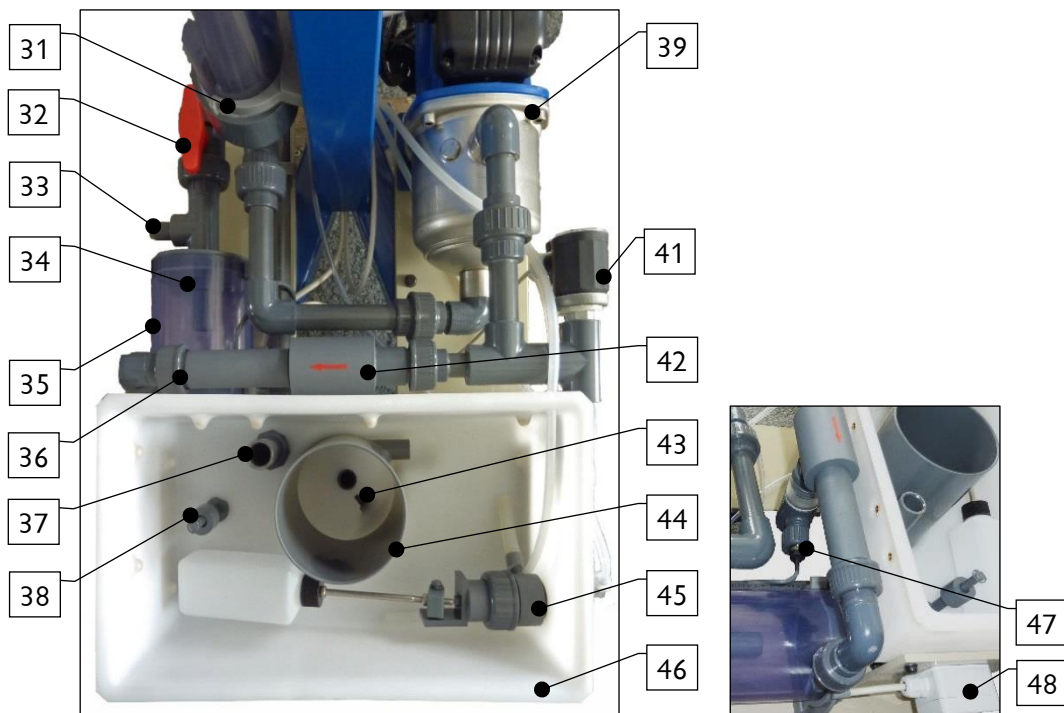


Figure 28, Dissolving unit from above (without dust extraction)

#### The dissolving unit consists of:

- |  |   |
|--|---|
| 31. Dirt filter d75mm  | 42. Injector  |
| 32. Outflow ball valve for booster water                                   | 43. Dosing valve for pH reducer (acid)                        |
| 33. Connection for manometer   | 44. Flushing pipe   |
| 34. No chlorine switch / sensor on the cyclone (optional, not illustrated) | 45. Float control valve flushing tank Inlet                   |
| 35. Dissolving and mixing cyclone  | 46. Flushing tank   |
| 36. Screw connection with washer   | 47. Flow switch flushing tank                                 |
| 37. Overflow flushing tank   | 48. Connection socket for the switches                        |
| 38. Level switch min./max. Flushing tank                                   | 49. Motor for dust extraction (not illustrated, see Figure 7) |
| 39. Booster pump (different designs)                                       | 50. Fan for dust extraction (not illustrated, see Figure 7)   |
| 40. —  |   |
| 41. Pressure switch  |   |




### Setting the pressure switch (41)

The installed pressure switch (41) records the booster pump's (39) effective pressure. In the event of air Inlet or a pressure drop in the water supply, the GRANUDOS dosing device switches off when the value falls below the switching pressure. In addition to the electric locking, this ensures that:

- The dosing is turned off if the booster pump does not convey enough water.
- The booster pump is not exposed to the risk of cavitation.

To set the switching point, the dosing device must operate in automatic mode. Remove the lid from the pressure switch, turn the adjustment knob 0.25bar to the right and wait for 6 seconds. If the dosing device continues to run, repeat the process until the dosing device

stops and the fault indication  "Pressure too low" appears. The GRANUDOS dosing device stops. Now turn the adjustment knob 0.25bar to the left and acknowledge the alarm message. The dosing device will start up again. Now, the dosing device will throw a fault at a pressure drop of 0.25bar.

A switching point of 1.5barg is factory-set.

### 5.2.6 Setting the water level in the flushing tank

The water level in the flushing tank can be changed by screwing the float at the float control valve (45) in or out. A higher level is achieved by unscrewing the float, a lower level by screwing the float in. One revolution corresponds to approx. 1cm. Adjust the float in the flushing tank so that the water level corresponds approximately with the centre of the flushing tank.



### **Tip!**

**The commissioning of the dosing unit is now complete. For further commissioning, and the operation and setting of the control unit, continue reading the Operating Instructions.**

See operating instructions Control unit:

- Operating instruction "Measuring and control unit **CPR Touch XL**", no. **BA MR 001**.
- Operating instruction "Control unit **GRANUDOS Touch**", no. **BA SW 010**.
- Operating instruction "Control unit **GRANUDOS S5**", no. **BA SW 014**.

## 6 Operation / service

The nationally applicable accident prevention regulations in Germany: Operation of swimming pools BGR/GUV-R 108 must be observed.

### 6.1 General

For the operation and setting of the dosing device, continue reading the Operating Instructions for Control unit:

- Operating instruction “Measuring and control unit **CPR Touch XL**“, no. **BA MR 001**.
- Operating instruction “Control unit **GRANUDOS Touch**“, no. **BA SW 010**.
- Operating instruction “Control unit **GRANUDOS S5**“, no. **BA SW 014**.

### 6.2 Replenish consumables



#### **PROTECTIVE CLOTHING!**

**Personal safety equipment must be used when handling chemicals:  
Tight-sealing goggles, protective gloves, apron, face protection, boots  
The safety data sheets for each chemical must be observed.**

- Replenish acid

Replacing the acid canister, see *Section 5.2.2, Connecting acid canister*.

The specifications for each chemical given in the safety data sheets must be observed!

- Replenish chlorine granulate

Replacing the chlorine granulate, see *Section 5.2.3, Attach/change the drum*.

## 7 Maintenance, care, faults

### 7.1 Device maintenance

We recommend that you assign a specialist firm to carry out regular maintenance.



#### **Tip!**

The maintenance work required for trouble-free operation is listed in the maintenance protocol in **Section 9.5**.

For opening the control unit casing, see **Section 4.5.2**.



#### **DANGER FROM ELECTRICAL VOLTAGE!**

Before any electrical works are carried out, the device must be disconnected from the power supply and secured against being reactivated!

#### 7.1.1 Cleaning dirt filter

When working on lines that carry water, always close the inlet and outlet valves! It is important that the prefilter is kept clean so that the device can function properly. A dirty filter can lead to cavitation in the booster pump, thereby damaging the pump.

To clean the filter, unscrew the upper and lower union nut at the filter and remove the filter from its bracket. Pull out the filter insert under running water. Clean the filter hood and the filter insert under running water.

#### 7.1.2 Replacing the dosing screw and the dust gasket



#### **ATTENTION!**

The protective cover must be removed prior to any work described in **Section 7.1.2!**

##### Deinstallation / installation of the protective cover

1. Push the dust protection pipe (12) downward.
2. Release the spring bolt (14) of the drum holder and rotate the turning device with the drum clockwise from the dosing position upward; while doing so, keep the dosing pipe covered with a finger to prevent any granulate from escaping. Relock the turning device.
3. Release the safety belt (9).
4. Unscrew the attachment screws of the protective cover, remove the cover - pull the cables slightly inward to ensure improved cover mobility
5. To install the protective cover, follow the procedure in reverse sequence

##### Replacing the dosing screw

When only replacing the dosing screw, also renew the gasket in the dust protection cover. Sealing washers made of EPDM and felt are included in the scope of delivery.



#### **PROTECTIVE CLOTHING!**

Personal safety equipment must be put on prior to starting the work

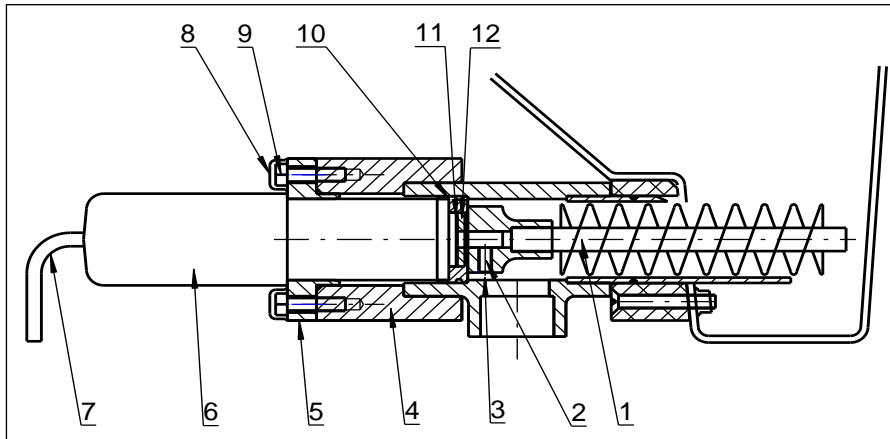


Figure 29, Dosing motor with dosing screw

Required tools for replacing the dosing screw or the dosing motor

- Phillips screwdriver PZ2 to unscrew the screws in the cover and controller
- Flat-head screwdriver 2mm to loosen the cable clamps,
- Wrench 8mm to loosen the dosing motor
- Measuring device (multimeter) for measuring the voltage
- Small knife or screwdriver to clean the grub screw
- Allen wrench 2.5mm for grub screw on the dosing screw

#### 7.1.2.1 Deinstallation of the dosing motor and the dosing screw

- Open the connection socket at the dosing hopper if the motor shall be uninstalled.
- Remove the protective covers from the attachment screws M5x20 (8) and unscrew the screws (9) using a key SW 8,
- pull the motor with the dosing screw from the bracket - to do so, hold a flat collection tub under the motor bracket to avoid scattering any chlorine granulate. Clean the inside of the motor bracket and remove scattered chlorine grains.
- Clean the screw - Is the chlorine granulate inside the screw heavily solidified or does the granulate easily scatter from the screw when this is pulled out?
- If the granulate is solidified, it may be too moist or have an excessive dust content. It is also possible that the screw is too worn and the granulate is no longer conveyed properly

#### 7.1.2.2 Maintenance of the dosing motor

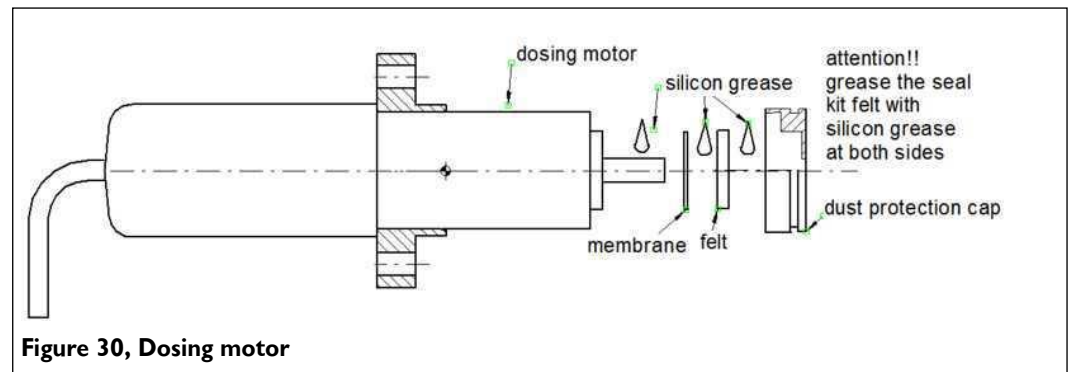
- Disconnect the motor cable at the hopper and pull the cable from the grommet.
- Use a small screwdriver, knife, etc., to scrape the sealing putty from the thread hole of the attachment screw (3) on the dosing screw's PVC collar.
- Unscrew the attachment screw with an Allen wrench SW 2.5 and pull the dosing screw from the shaft.
- Pull the dust cover from the dosing motor and remove the old sealing washers.
- Spread silicon grease on both sides of the felt washer.
- Fill the bearing indentations at the dosing motor with silicon grease.
- First push the sealing washer EPDM (rubber) on the shaft, followed by the greased felt washer, and firmly reattach the dust cover.
- Remove the old O-ring from the dust cover's groove, insert a new O-ring, apply approx. 2 layers of Teflon tape.
- Spread silicon grease on the front surfaces of the dosing motor/PVC dust cover and the dosing screw.

- j) Push the dosing screw on the shaft so that the attachment screw is located on the flat part of the motor shaft.
- k) Press the dosing screw against the motor and fasten the threaded pin.



**ATTENTION!**

**Do not fasten too tightly, as this may strip the PVC thread.**



- Figure 30, Dosing motor**
- l) Thoroughly close the thread bore with sealing putty.
  - m) Insert cable in the connection socket - apply a small amount of silicon grease, if needed, connect the cables: white on white, brown on brown
  - n) Test the dosing motor's functioning.
  - o) Push the dosing motor into the - cleaned - motor bracket and evenly screw tight with the new screws M5x20, attach the protective covers.



**ATTENTION!**

**Without sealing putty, the screw will heavily corrode within a short time and can no longer be unscrewed. If the dosing screw or the motor must be replaced again at a later time, both parts would have to be replaced together!**

7.1.2.3 Individually replace the dosing motor

- a) Entirely unscrew the threaded pin from the old dosing screw and insert a new threaded pin.
- b) Clean the front surface of the old dosing screw's adapter and cover with silicon grease.
- c) Open the connection socket at the dosing hopper, loosen the connectors of the dosing motor cable (brown - white), pull in a new motor cable and clamp tight: brown on brown, white on white.
- d) Push the dosing screw on the shaft so that the threaded pin is located on the flat part of the motor shaft, press firmly against motor and tighten the threaded pin.
- e) Push the motor with the dosing screw into the cleaned bracket, tighten the flange - not too tight - and push the protective covers on the screw heads.
- f) Place a new O-ring on the dosing screw's guide pipe, wrap with Teflon tape (approx. 3 layers), grease and push the dosing unit into the bracket.

### 7.1.2.4 Individually replace the dosing screw

- Pull the dust cover from the dosing motor, remove the old gasket set from the dust cover, thoroughly clean the dosing motor's shaft, apply fresh silicon grease to the ball bearings, press sealing washer 19/4x0.5 EPDM (11) on the shaft. Thoroughly grease and attach the felt washer (12), push the dust cover over it, undo the old Teflon tape and apply approx. 3 layers of new tape.
- Apply a layer of silicon grease to the front surface of the new dosing screw's adapter.
- Push the dosing screw on the shaft so that the threaded pin is located on the flat part of the motor shaft, press firmly against motor and tighten the threaded pin.
- Push the motor with dosing screw back into the cleaned (!) bracket, tighten the flange - not too tight - and push the protective covers on the screw heads.

### 7.1.3 Injector with flow switch

#### Overview flow switch:

- Flow switch with LED
- Union nut for flow switch
- Viton hose to the flushing tank
- 
- Switching body (in the suction pipe)
- Suction pipe
- Union nut injector Inlet
- Injector
- Injector nozzle with installed flow limiter
- Union nut; and injector outlet

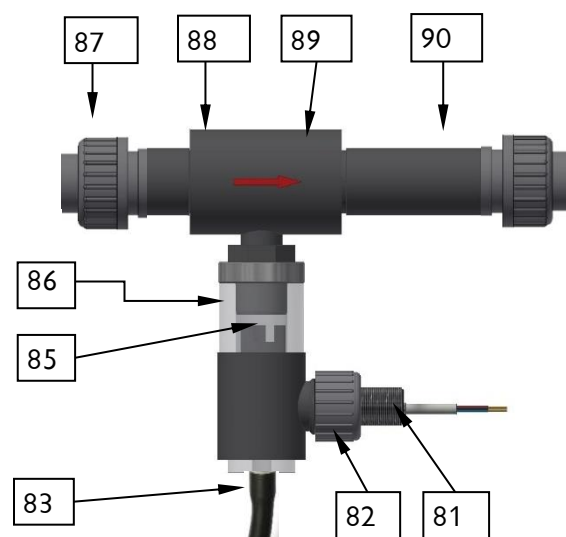


Figure 31, Flow switch d-40

#### Replace the orifice:

Unscrew the union nuts (87 + 90) and remove the injector. The nozzle is sealed with an O-ring at the end of the injector nozzle's (89) inner thread. Lever out the disc with a small screwdriver and replace it with another, or leave the orifice uninstalled. As needed.

7.1.4 Maintaining and setting the rinsing tray inlet floater control valve

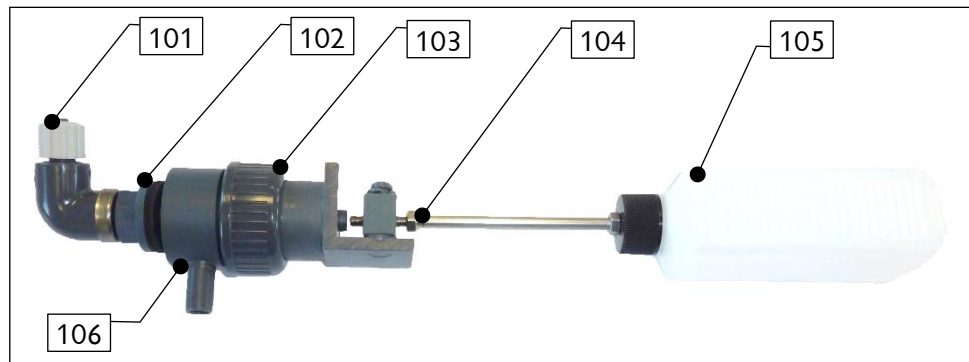


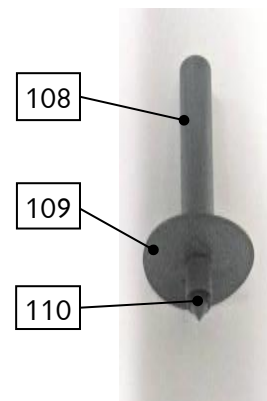
Figure 32, Float control valve, complete and tappet for float valve

Overview float valve, complete

- 101. Hose connector for flushing water hose 6x1mm with O-ring
- 102. 3/8" nut with gasket (not illustrated)
- 103. Union nut for float assembly
- 104. Adjustment screw for water level
- 105. Float 250ml
- 106. Float valve body

Overview Tappet for float valve

- 108. Membrane piston
- 109. Sealing membrane
- 110. Valve cone with O-ring gasket



Replace the sealing membrane

- a) Unscrew the union nut (103) and remove the upper part of the float valve.
- b) Remove the inner membrane valve assembly (108-110), pull the valve cone from the membrane piston (108) and install a new sealing membrane (109) on the valve cone.
- c) Replace the O-ring on the valve cone (109) as well.
- d) Reinstall in the reverse sequence.
- e) Reset the water lever in the flushing tank. See Section 5.2.6.

### 7.1.5 Replace and set the Chlorine empty switch at the dosing hopper

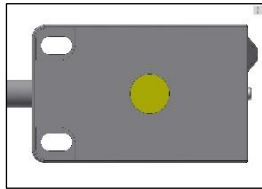


Figure 33, Empty switch for GR 45/100

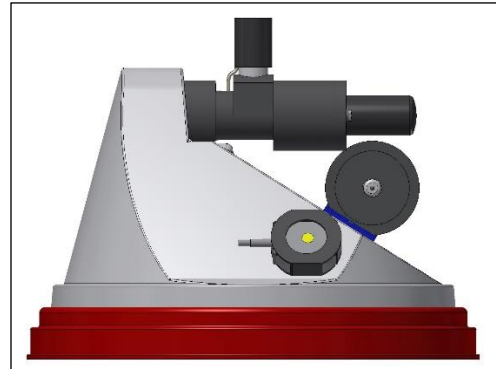





Figure 34, Empty switch installed on GR 45/100

At the GRANUDOS 45/100, the empty switch can be accessed after removing the protective cover. The small adjustment screw with the switch LED can be seen on top of the narrow side. When the drum is empty or the dosing hopper with the drum has been turned upward, this LED must **not** be illuminated; the display must show the Disinfection Level .

If the switch LED is illuminated, turn the adjustment screw to the left until the LED light goes out. The Disinfection Level  fault display at the controller reacts with a 6-second delay. If the switch does not react to the adjustment potentiometer or if the adjustment screw has been destroyed, a new switch must be installed.

#### Adjust the empty switch (drum rotated upward)

- Turn the adjustment screw to the right until the switch LED is illuminated,
- then carefully turn it back, until the switch LED goes out, followed by an additional 10° turn.
- The Disinfection Level  fault is displayed at the controller. After rotating a drum that is **not empty** into the dosing position, the fault display at the controller goes out.

#### Replace empty switch

1. The switch is pushed into a bracket.
2. Open the connection socket and undo the 3 switch wires, pull out the cable.
3. Push the old switch out.
4. Push the new switch into the bracket.
5. Insert the cable in the connection socket and clamp on according to the wiring diagram.
6. Close the terminal housing and fill the screw heads with grease to prevent any corrosion.
7. Adjust the switch - see previous paragraph

### 7.1.6 Replace the dosing hose of the dosing pump

Additional procedure see *Section 5.2.1, Installation of peristaltic pump*, roller support



### 7.1.7 Clean the dust extraction (optional)

- Turn off the device and secure it against being reactivated.
- Unscrew the two lateral screws.
- Lift the motor from the fan housing in an upward direction.
- Clean the fan and the container
- Dismount the transparent hose and clean with the included brush.
- Reinstall in the reverse sequence

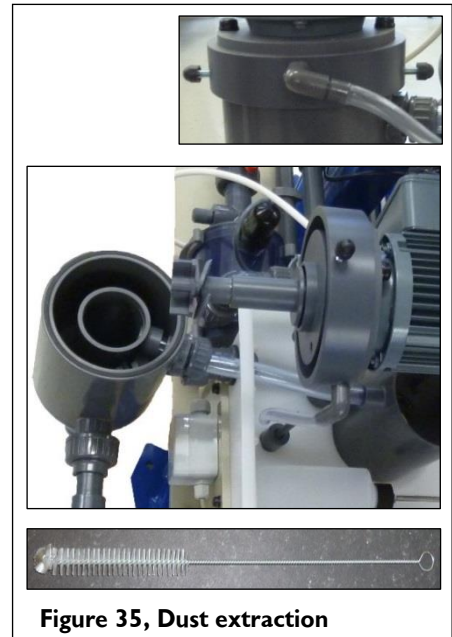


Figure 35, Dust extraction

Clean the transparent hose only



### **ATTENTION!**

In daily operation, the transparent hose must be cleaned with a brush at least every 2 weeks. In case of heavy contamination, clean at shorter intervals.



### **Tip!**

The brush can be inserted into the hose starting at the dissolving unit. This does not require the disassembly of the dust extraction.

### 7.2 Trouble-shooting



### **Tip!**

Faults are indicated in the display in the IN and OUT list by the appropriate symbol. See also separate operating instructions:

- for GRANUDOS CPR Touch XL, “CPR-Touch XL Measuring and control unit” no. BA MR 001 (with measuring cell block) in Section 7.3.
- for GRANUDOS Touch, “GRANUDOS Touch Control unit” no. BA SW 010, in Section 7.3.
- for GRANUDOS S5, “GRANUDOS S5 Control Unit” no. BA SW 014, in Section 7.3.

The flushing tank must not overflow when the GRANUDOS is shut down. Should this occur, one of the following elements is leaking:

- Float valve → Replace membrane
- Switching body in the suction pipe → Remove foreign objects
- Pressure retention valve in the measuring water line (in the Inlet line to the measuring cell) → Replace valve



### **Tip!**


Encrustations of chlorine granulate at the dosing hopper can lead to malfunctions. Clean the dosing hopper according to the maintenance protocol.

## 8 Decommissioning – Storage – Disposal

### 8.1 General

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

### 8.2 Decommissioning of the GRANUDOS 45/100 dosing device

1. Remove the suction lances from the dosing canister and place it in a bucket filled with clean water.
2. Thoroughly remove any remnants of calcium hypochlorite in the device and allow the system to run for an additional 10 minutes.
3. Stop dosing via the  button. (**CPR Touch XL and Touch**) or via the arrow keys (**S5**) (DOS OFF)
4. Dismount the chlorine drum and close it securely.
5. Empty and thoroughly clean the dosing hopper.
6. Disassemble the dosing motor with the dosing screw from the dosing hopper, thoroughly clean the dosing motor with dosing screw and store in a dry place. - no chlorine grains must be left on the ground!
7. Remove the roller support from the peristaltic pump in order to relieve the dosing hose.
8. Thoroughly clean all parts of the GRANUDOS 45/100.
9. If there is a risk of frost, drain all of the water-conveying parts; in particular, do not forget the suction pipe and the pump.
10. Deactivate the dosing device at the main switch. – Or, in very cold and moist rooms - keep the dosing device activated to prevent potential condensation in the controller casing.

Also observe *Section 8.3*



### **ATTENTION!**

**When recommissioning, it is essential that the instructions in the chapter on "Commissioning" are observed and the points contained in the commissioning protocol implemented.**

### 8.3 Buffertank (optional)

Empty and clean the buffertank.

Vacuum the sediment deposits from the buffertank, if necessary. Any tightly adhering deposits can be removed with diluted hydrochloric acid.

### 8.4 Disposal of used parts and operating materials





Clean dismantled, contaminated parts thoroughly first and dispose of them, or have them recycled, in accordance with the regulations applicable at the operating location.

Observe 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 components/materials as hazardous waste.

**9 Documents**

9.1 Declaration of conformity

<p><b>WDT Werner Dosiertechnik GmbH &amp; Co. KG</b>                  Hettlinger Straße 17   D-86637 Wertingen                  Tel. 0049 8272 98697-0   Fax 0049 8272 98697-19                  info@werner-dosiertechnik.de   www.werner-dosiertechnik.de</p>			
<p><b>EG-Konformitätserklärung</b>  <b>EC declaration of conformity</b>  <b>Déclaration de conformité UE</b></p> <p>im Sinne der EG-Maschinenrichtlinie 2006/42/EG, Anhang II 1.A                  as defined in the ECMachinery Directive 2006/42 / EC, Annex II, Part 1A                  selon la directive européenne machines 2006/42 / CE, annexe II 1.A</p>			
<p><b>Hersteller</b> WDT - Werner Dosiertechnik GmbH &amp; Co. KG  <b>Manufacturer</b> Hettlinger Str. 17  <b>Fabricant</b> 866637 Wertingen-Geratshofen</p>			
<p><b>Beschreibung und Identifikation des Produktes:</b>  <b>Description and identification of the product:</b>  <b>Description et identification du produit :</b></p>			
<p>Typenbezeichnung:</p> <ul style="list-style-type: none"> <li>• Granudos 10, Granudos 10-CPR Touch, Granudos 10-Touch, Granudos 10-S5</li> <li>• Granudos 15, Granudos 15-PC, Granudos 15-S5</li> <li>• Granudos 45/100-PB, Granudos 45/100-S4, Granudos 45/100-Plus V70 Touch, Granudos 45/100-CPR Touch, Granudos 45/100-Touch, Granudos 45/100-S5</li> <li>• Granudos FB</li> </ul>		<p>Art: Maschine</p>	
<p><b>Funktion:</b> Das Dosiersystem dient zur Desinfektion von Schwimmbadwasser mit Calciumhypochloridgranulat.  <b>Function:</b> The dosing system is intended for swimming pool disinfection using calcium hypochlorite granules  <b>Fonction:</b> Le système de dosage est utilisé pour la désinfection des piscines avec des granulés d'hypochlorite de calcium</p>			
<p><b>Es wird ausdrücklich erklärt, dass das Produkt allen einschlägigen Bestimmungen der folgenden EG-Richtlinien entspricht:</b>  <b>It is expressly stated that the product complies with all relevant provisions of the following EC directives</b>  <b>Il est explicitement dit que le produit est conforme à toutes les dispositions pertinentes des directives CE suivantes :</b></p>			
<p>2006/42/EG RICHTLINIE 2006/42/EG DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG (Neufassung)</p>			
<p><b>Die folgenden harmonisierten Normen nach Artikel 7 (2) wurden angewandt:</b>  <b>The following harmonized standards as defined in Article 7 (2) were applied:</b>  <b>Les normes harmonisées suivantes selon l'article 7 (2) ont été appliquées :</b></p>			
<p>EN ISO 12100:2010 Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze - Risikobeurteilung und Risikominderung                  EN 60204-1:2006 Sicherheit von Maschinen – Elektrische Ausrüstung von Maschinen – Teil 1: Allgemeine Anforderungen                  EN ISO 14120:2015 Anforderungen an Gestaltung und Bau von feststehenden und beweglich trennenden Schutzeinrichtungen</p>			
<p><b>Die in der Gemeinschaft ansässige Person, die für die Zusammenstellung der technischen Unterlagen bevollmächtigt ist:</b>  <b>The designated person who is authorized to draw up the technical documentation:</b>  <b>La personne établie dans la communauté qui est autorisée à constituer le dossier technique:</b></p>			
<p>Name: Werner Dosiertechnik GmbH &amp; Co KG                  Straße/Nr.: Hettlinger Straße 17                  PLZ Stadt: 86637 Wertingen</p>			
<p>Wertingen, 04.04.2019                  Ort/City/Place, Datum/Date</p>		<p>                  Unterschrift/ signature Jochen Rieger, Director</p>	
			
<p>CE SW 001 Konformitätserklärung Granudos.docx</p>			

### 9.2 Wiring diagrams

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The wiring diagrams for the standard version of the devices can be found in the respective operating instructions for the control unit:

- for GRANUDOS **CPR Touch XL**, “*CPR-Touch XL Measuring and control unit*” no. **BA MR 001** in Section 9.2.
- for GRANUDOS **Touch**, “*GRANUDOS Touch Control unit*” no. **BA SW 010**, in Section 9.2.
- for GRANUDOS **S5**, “*GRANUDOS S5 Control Unit*” no. **BA SW 014**, in Section 9.2.

The special wiring diagrams attuned to the optimal furnishing of the dosing device are located in the device's terminal box.

### 9.3 Commissioning protocol

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The commissioning protocol for the respective device is located in the accompanying documentation.

### 9.4 Operation data sheet

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See operating instructions Control unit:

- for GRANUDOS **CPR Touch XL**, “CPR-Touch XL Measuring and control unit” no. **BA MR 001** in Section 9.4.
- for GRANUDOS **Touch**, “GRANUDOS Touch Control unit” no. **BA SW 010**, in Section 9.4.
- for GRANUDOS **S5**, “GRANUDOS S5 Control Unit” no. **BA SW 014**, in Section 9.4.

The maintenance protocol for the respective device is located in the accompanying documentation.

### 9.6 Spare parts list, wear parts list, consumables

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

#### Spare + ware part list GRANUDOS 45/100-CPR Touch XL, 45/100-Touch and 45/100-S5

Device part		Designation	Item no.
Chlorine dosing	0	Dosing hopper, various types	upon request
	0	Hood D hopper GR45-K	12866
	0	Dosing motor PLG 30-35	11676
	0	Dosing motor PLG 30-60 0.6m with maintenance set	11546
	0	Motor bracket PLG-d32 GR 45	11542
	0/X	Dosing screw d6/D26	11550
	0	Dosing pipe, heated GR	11556
	0	Knocker GR 45 complete	11558
	1/2	Empty switch cap. GPL white	11536
	3	Empty switch cap. GR/PAK,	10337-1
	0	Dust protection	11561
	0	Tension band GR/PAK	11500
	0	Safety belt GR 45 – complete set	17978
	0	Safety belt GR45 - HTH25/Bü40/Tri40 - complete set	17979
	Flushing tank	0	Flushing tank GR45 PE processed with NIG
0		Flushing pipe/swirler GR 45/100	25078
0		Suction connection to the flushing tank PE GR45/100 3/4"	25052
0		NIG 2P 3/8" GR/PAK 0.35m	10496
Acid dosing	0	Acid pump Sa complete	11628
	0	Gear motor to peristaltic pump Sa	13557
	0	Pump housing Sa blue	14140
	0/X	Roller support Sa	12609
	0/X	Dosing hose Sa 4,8x1,6 Ph	13414
	0	Union nut Sa pump 4x1	16379
	0	Lock washer blue for roller support Sa	13633
	0	Cover for pump housing Sa, transparent	14259
	0	Hose bracket Sa 4.8 complete with dosing hose + marking red	12703
	0	Suction set N 30I GR45 complete	12523-1
	0	Level switch 1/4" PVC/PP 3m	10495
	0	Dosing valve 1KFa 3/8"-GR acid	15099
	0/X	Maintenance set for D valve 3/8" 1KFa	15764
Filter	0	Filter d75 GR10/45/HT complete	12745
	0	Filter top with ball valve d25	12304
	0	Filter housing GR	12746
	0	Filter insert d75 GR/PAK VA complete	11640
	0	O-ring filter GR	11258
Float valve	0	Float valve d25 GR45 as of 5/05 complete	17006
	0	Valve body for float valve d25, GR 10-100	17004
	0	Screw-on part for float valve d25	17005
	0	Membrane/plug/tappet for float valve d25	11284
	0	Membrane 34x4x0.5 for float valve	16367
	0	Float	11621



# Granudos 45/100-CPR Touch XL + Touch + S5

## Dosing unit

Pump	0	Booster pump 1HM04 GR/PAK-SIC/SIC	24618-1
	0	Mechanical seal 1HM-2HMS SIC/SIC as of 01/2002	12800-1
	0	Pump connection GR45/100 suction side 1"	24823
	0	Pump connection GR45/100 pressure side 1"	24824
	2/3	Flushing water distribution GR + GPL	17279
	1	Flushing water distribution GR 45/ CPR-Touch	25077
	0	Connecting angle filter d75 - Lo pump	15907
	0/X	Condensator Lo 2HMS3/A	14805
	1/2	Pressure switch M10 1-3b V70T complete	23364
	3	Pressure switch 1-3 bar M10x1 GR complete	17275
Suction pipe	0	Suction pipe 1/2" d40 with switching body	25659
	0	Flow switch ind.18x1- 0.7m	25671
	0	Hose to suction pipe 10x2x190Vi GR	11565-1
Injector	0	Injector Ti 1/2" GR/PAK/HT complete	24997
	0	Orifice set for injector	11594
	0	Connecting angle injector - cyclone	12308
Cyclone	3	Dissolving cyclone GR 45	11612
	1/2	Dissolving cyclone for GPL and PB 45/100	11613
	1/2	IR sensor 18x1 GPL/PAK/PB complete	11609
Maintenance set	0/X	Gaskets, fuses, maintenance protocol	12631
Dust extraction	0	Stirrer motor - gear motor SA	25156
	0	Ball bearing	25927
	0	Suction hose	from 19835

### Footnotes to spare parts list:

Parts marked with "0" are suitable for **all GRANUDOS 45/100** types.

Parts marked with "1" are specifically designed for type **45/100-CPR Touch XL**.

Parts marked with "2" are special for type **45/100-Touch**.

Parts marked with "3" are special for type **45/100-S5**.

Parts marked with "\*" are included in the **maintenance set item no. 12631**.

Parts marked with "X" are **wear parts**.

### Consumables

Please comply with the chemicals manufacturer's safety data sheets!

**10 Appendices**

- Commissioning protocol
- Maintenance protocol

**Personal notes**

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# Commissioning protocol IP 47

## Granudos 45/100-CPR Touch XL



This protocol is to be completed by the commissioning technician! All warranty claims expire when no completed and signed commissioning protocol is available!

Object: \_\_\_\_\_ Date: \_\_.\_\_.\_\_\_\_  
 City, Street, Street number: \_\_\_\_\_  
 Device type: \_\_\_\_\_ Year of construction: \_\_\_\_\_ Serial no.: \_\_\_\_\_

	Activity	Completed	Comment
<b>1</b>	<b><u>Dissolving system and measuring cell block (consider 6 seconds switching delay!)</u></b>		
1.1	Close the ball valves at the measuring cell (upstream of pre-filter)	<input type="checkbox"/>	
1.2	Install the roller carriers of the hose pumps, see operating instructions, section 5.2	<input type="checkbox"/>	
1.3	Connect the dosing canister and attach the chlorine barrel	<input type="checkbox"/>	
1.4	Bleed the operating water pump	<input type="checkbox"/>	
1.5	Adjust the water flow in the dissolving system	<input type="checkbox"/>	
1.6	Check the pressure switch (41) Ball valve intake closed, device stopped, fault display	<input type="checkbox"/>	
1.7	Adjust the pressure switch (41)	<input type="checkbox"/>	
1.8	Check flow switch: Outlet ball valve closed, dosing stopped, fault indication	<input type="checkbox"/>	
1.9	Set the water level in the rinsing tray	<input type="checkbox"/>	
1.10	Check level switch: Switching body high - dosing stopped, fault indication	<input type="checkbox"/>	
1.11	Check the level switch: Switching body low - device stopped, fault indication	<input type="checkbox"/>	
1.12	Check the floater valve function - flow reacts gently	<input type="checkbox"/>	
<b>2</b>	<b><u>Chlorine dosing technology</u></b>		
2.1	Heating function: Dosing pipe warm?	<input type="checkbox"/>	
2.2	"Empty-switch" function: Drum turning - fault indication	<input type="checkbox"/>	
2.3	Dosing motor function: Chlorine starting test program	<input type="checkbox"/>	
2.4	Check the tensioning straps and safety belt	<input type="checkbox"/>	
2.5	Introduction to drum changing, see operating instructions, section 5.2.3	<input type="checkbox"/>	
<b>3</b>	<b><u>pH-reducer dosing system</u></b>		
3.1	Check the empty switch: Pull the suction lance out of the canister - see display	<input type="checkbox"/>	
3.2	Check the dosing pump: Acid starting test program	<input type="checkbox"/>	
<b>4</b>	<b><u>Control - after opening the controller</u></b>		
4.1	All connectors firmly latched	<input type="checkbox"/>	
<b>5</b>	<b><u>Buffer tank (option)</u></b>		
5.1	Check function of the control and alarm switches in the tank: Indication on the display	<input type="checkbox"/>	
5.2	Check prevention of the on site dosing pump reflux	<input type="checkbox"/>	
5.3	Check the reflux prevention in filling system	<input type="checkbox"/>	

# Commissioning protocol IP 47 Granudos 45/100-CPR Touch XL



<b>6</b>	<b>Measuring cell block; see operating instructions, part 2, MR001 for CPR Touch XL</b>		
6.1	Fill in cleaning beads	<input type="checkbox"/>	
6.2	Insert electrodes	<input type="checkbox"/>	
6.3	Open the ball valve at the measuring cell feed, set the measuring cell flow	<input type="checkbox"/>	
6.4	Adjust the regulation parameters	<input type="checkbox"/>	
<b>7</b>	<b>Other</b>		
7.1	Clean the GRANUDOS system	<input type="checkbox"/>	
7.2	Discuss the operating instructions and hand them over	<input type="checkbox"/>	

Other comments:

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Commissioning and instruction performed by: \_\_\_\_\_

Persons instructed: \_\_\_\_\_

Signature of commissioner: \_\_\_\_\_

Countersigned by operator: \_\_\_\_\_

# Maintenance protocol WP 53

## Granudos 45/100-CPR Touch XL



This protocol must be completed by the maintenance technician! We reserve the right to determine the warranty conditions when no completed and signed maintenance protocol is available.

Object: \_\_\_\_\_ Year of maintenance: 20\_\_

City, Street, Street number: \_\_\_\_\_

Device type: \_\_\_\_\_ Year of construction: \_\_\_\_\_ Serial no.: \_\_\_\_\_

	Activity	Maintenance interval in	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Comment / additional work
<b>1</b>	<b><u>Dissolving system</u></b>														
1.1	Check the level switch	6						<input type="checkbox"/>						<input type="checkbox"/>	
1.2	Check the pressure switch, adjust as required	6						<input type="checkbox"/>						<input type="checkbox"/>	
1.3	Check the flow switch	6						<input type="checkbox"/>						<input type="checkbox"/>	
1.4	Replace the float valve membrane and cone seal	12												<input type="checkbox"/>	
1.5	Check and adjust the float valve function	6						<input type="checkbox"/>						<input type="checkbox"/>	
1.6	Replace the hose to the suction pipe	12												<input type="checkbox"/>	
1.7	Check the pump impeller and lid (only for Calpeda pumps)	12												<input type="checkbox"/>	
1.8	Check pump floating ring seal for tightness	6						<input type="checkbox"/>						<input type="checkbox"/>	
1.9	Check pump roller bearings for noises	6						<input type="checkbox"/>						<input type="checkbox"/>	
1.10	Clean the dirt filter	3			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	
1.11	Replace all O-rings	12												<input type="checkbox"/>	
1.12	Check nozzle diameter diffuser < 6 mm; (use 6mm drill piece to inspect passage)	12												<input type="checkbox"/>	
<b>2</b>	<b><u>Chlorine dosing device</u></b>														
2.1	Heating function: Dosing pipe warm?	6						<input type="checkbox"/>						<input type="checkbox"/>	
2.2	Check the chlorine-empty switch	6						<input type="checkbox"/>						<input type="checkbox"/>	
2.3	Clean and check the dosing screw	6						<input type="checkbox"/>						<input type="checkbox"/>	
2.4	Dosing motor: Replace the seals	12												<input type="checkbox"/>	
2.5	Replace the dust cap seal	12												<input type="checkbox"/>	
<b>3</b>	<b><u>Acid dosing system</u></b>														
3.1	Check function of the hose pump and check for moisture and corrosion	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.2	Check function of the empty switch	6						<input type="checkbox"/>						<input type="checkbox"/>	
3.3	Replace dosing hose	12												<input type="checkbox"/>	
3.4	Replace the seals of the acid dosing valve	12												<input type="checkbox"/>	
<b>4</b>	<b><u>Dust extraction (option)</u></b>														
4.1	Check motor	3			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	
4.2	Clean blower, tank and transparent hose	3			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	
<b>5</b>	<b><u>Buffer tank (option)</u></b>														
5.1	Check function of the level switch	6						<input type="checkbox"/>						<input type="checkbox"/>	
5.2	Clean the buffer tank with water and diluted acid	12												<input type="checkbox"/>	
5.3	Replace the active carbon filter	12												<input type="checkbox"/>	

# Maintenance protocol WP 53

## Granudos 45/100-CPR Touch XL



Activity	Maintenance interval in	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Comment / additional work
<b>6 Control</b>														
6.1 Check all inputs	12												<input type="checkbox"/>	
6.2 Check all outputs	12												<input type="checkbox"/>	
6.3 Check parameter settings and correct it if required	12												<input type="checkbox"/>	
<b>7 Measuring cell block</b>														
7.1 Check and clean preliminary filter	12												<input type="checkbox"/>	
7.2 DPD1 measurement, adjust free chlorine	12												<input type="checkbox"/>	
7.3 pH measurement, adjust the pH electrode	12												<input type="checkbox"/>	
7.4 Adjust the reference counter electrode	12												<input type="checkbox"/>	
7.5 Chlorine electrode, replace seal set	12												<input type="checkbox"/>	
7.6 Replace redox electrode, seal set	12												<input type="checkbox"/>	
7.7 Replace flow controller, maintenance set	12												<input type="checkbox"/>	
7.8 Replace the membrane of the pressure control valve (2)	12												<input type="checkbox"/>	
<b>8 Other work</b>														
8.1 Thoroughly clean the dosing system	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.2 Check dosing line for strength and wall thickness	12												<input type="checkbox"/>	
<b>9 Maintenance work at each drum exchange</b>														
9.1 Clean the solution pipe for pollution	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9.2 Clean dosing hopper from incrustations	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9.3 Test chlorine and acid dosing	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9.4 Take note of pumping noises	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9.5 Check the system for tightness	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9.6 Check the transparent hose of the dust extraction (option) and clean it if necessary	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Other comments:

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Maintenance carried out and system checked for correct working: \_\_\_\_\_ Date: \_\_\_\_\_  
Signature

Countersigned by operator: \_\_\_\_\_  
Signature

# Commissioning protocol IP 48

## Granudos 45/100 Touch



This protocol is to be completed by the commissioning technician! All warranty claims expire when no completed and signed commissioning protocol is available!

Object: \_\_\_\_\_ Date: \_\_.\_\_.\_\_\_\_

City, Street, Street number: \_\_\_\_\_

Device type: \_\_\_\_\_ Year of construction: \_\_\_\_\_ Serial no.: \_\_\_\_\_

	Activity	Completed	Comment
<b>1</b>	<b><u>Dissolving system (consider 6 seconds switching delay!)</u></b>		
1.1	Install the roller carriers of the hose pumps, see operating instructions, section 5.2	<input type="checkbox"/>	
1.2	Connect the dosing canister and attach the chlorine barrel	<input type="checkbox"/>	
1.3	Bleed the operating water pump	<input type="checkbox"/>	
1.4	Adjust the water flow in the dissolving system	<input type="checkbox"/>	
1.5	Check the pressure switch (41) Ball valve intake closed, device stopped, fault display	<input type="checkbox"/>	
1.6	Adjust the pressure switch (41)	<input type="checkbox"/>	
1.7	Check flow switch: Outlet ball valve closed, dosing stopped, fault indication	<input type="checkbox"/>	
1.8	Set the water level in the rinsing tray	<input type="checkbox"/>	
1.9	Check level switch: Switching body high - dosing stopped, fault indication	<input type="checkbox"/>	
1.10	Check the level switch: Switching body low - device stopped, fault indication	<input type="checkbox"/>	
1.11	Check the floater valve function - flow reacts gently	<input type="checkbox"/>	
<b>2</b>	<b><u>Chlorine dosing technology</u></b>		
2.1	Heating function: Dosing pipe warm?	<input type="checkbox"/>	
2.2	"Empty-switch" function: Drum turning - fault indication	<input type="checkbox"/>	
2.3	Dosing motor function: Chlorine starting test program	<input type="checkbox"/>	
2.4	Check the tensioning straps and safety belt	<input type="checkbox"/>	
2.5	Introduction to drum changing, see operating instructions, section 5.2.3	<input type="checkbox"/>	
<b>3</b>	<b><u>pH-reducer dosing system</u></b>		
3.1	Check the empty switch: Pull the suction lance out of the canister - see display	<input type="checkbox"/>	
3.2	Check the dosing pump: Acid starting test program	<input type="checkbox"/>	
<b>4</b>	<b><u>Control - after opening the controller</u></b>		
4.1	All connectors firmly latched	<input type="checkbox"/>	
<b>5</b>	<b><u>Buffer tank (option)</u></b>		
5.1	Check function of the control and alarm switches in the tank: Indication on the display	<input type="checkbox"/>	
5.2	Check prevention of the on site dosing pump reflux	<input type="checkbox"/>	
5.3	Check the reflux prevention in filling system	<input type="checkbox"/>	
<b>6</b>	<b><u>Other</u></b>		
6.1	Clean the GRANUDOS system	<input type="checkbox"/>	
6.2	Discuss the operating instructions and hand them over	<input type="checkbox"/>	

Continue to page 2

# Commissioning protocol IP 48 Granudos 45/100 Touch



Other comments:

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Commissioning and instruction performed by: \_\_\_\_\_

Persons instructed: \_\_\_\_\_

Signature of commissioner: \_\_\_\_\_

Countersigned by operator: \_\_\_\_\_



# Maintenance protocol WP 54

## Granudos 45/100 Touch



This protocol must be completed by the maintenance technician! We reserve the right to determine the warranty conditions when no completed and signed maintenance protocol is available.

Object: \_\_\_\_\_ Year of maintenance: 20\_\_\_\_

City, Street, Street number: \_\_\_\_\_

Device type: \_\_\_\_\_ Year of construction: \_\_\_\_\_ Serial no.: \_\_\_\_\_

	Activity	Maintenance interval in	Month												Comment / additional work	
			Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12		
<b>1</b>	<b><u>Dissolving system</u></b>															
1.1	Check the level switch	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.2	Check the pressure switch, adjust as required	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.3	Check the flow switch	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.4	Replace the float valve membrane and cone seal	12													<input type="checkbox"/>	
1.5	Check and adjust the float valve function	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.6	Replace the hose to the suction pipe	12													<input type="checkbox"/>	
1.7	Check the pump impeller and lid (only for Calpeda pumps)	12													<input type="checkbox"/>	
1.8	Check pump floating ring seal for tightness	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.9	Check pump roller bearings for noises	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.10	Clean the dirt filter	3			<input type="checkbox"/>				<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	
1.11	Replace all O-rings	12													<input type="checkbox"/>	
1.12	Check nozzle diameter diffuser < 6 mm; (use 6mm drill piece to inspect passage)	12													<input type="checkbox"/>	
<b>2</b>	<b><u>Chlorine dosing device</u></b>															
2.1	Heating function: Dosing pipe warm?	6							<input type="checkbox"/>						<input type="checkbox"/>	
2.2	Check the chlorine-empty switch	6							<input type="checkbox"/>						<input type="checkbox"/>	
2.3	Clean and check the dosing screw	6							<input type="checkbox"/>						<input type="checkbox"/>	
2.4	Dosing motor: Replace the seals	12													<input type="checkbox"/>	
2.5	Replace the dust cap seal	12													<input type="checkbox"/>	
<b>3</b>	<b><u>Acid dosing system</u></b>															
3.1	Check function of the hose pump and check for moisture and corrosion	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.2	Check function of the empty switch	6							<input type="checkbox"/>						<input type="checkbox"/>	
3.3	Replace dosing hose	12													<input type="checkbox"/>	
3.4	Replace the seals of the acid dosing valve	12													<input type="checkbox"/>	
<b>4</b>	<b><u>Dust extraction (Option)</u></b>															
4.1	Check motor	3			<input type="checkbox"/>				<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	
4.2	Clean blower, tank and transparent hose	3			<input type="checkbox"/>				<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	
<b>5</b>	<b><u>Buffer tank (option)</u></b>															
5.1	Check function of the level switch	6							<input type="checkbox"/>						<input type="checkbox"/>	
5.2	Clean the buffer tank with water and diluted acid	12													<input type="checkbox"/>	
5.3	Replace the active carbon filter	12													<input type="checkbox"/>	

# Maintenance protocol WP 54

## Granudos 45/100 Touch



	Activity	Maintenance interval in	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Comment / additional work
<b>6</b>	<b>Control</b>														
6.1	Check all inputs	12												<input type="checkbox"/>	
6.2	Check all outputs	12												<input type="checkbox"/>	
6.3	Check parameter settings and correct it if required	12												<input type="checkbox"/>	
<b>7</b>	<b>Other work</b>														
7.1	Thoroughly clean the dosing system	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.2	Check dosing line for strength and wall thickness	12												<input type="checkbox"/>	
<b>8</b>	<b>Maintenance work at each drum exchange</b>														
8.1	Clean the solution pipe for pollution	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.2	Clean dosing hopper from incrustations	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.3	Test chlorine and acid dosing	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.4	Take note of pumping noises	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.5	Check the system for tightness	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.6	Check the transparent hose of the dust extraction (option) and clean it if necessary	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Other comments:

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Maintenance carried out and system checked for correct working: \_\_\_\_\_ Date: \_\_\_\_\_  
Signature

Countersigned by operator: \_\_\_\_\_  
Signature

# Commissioning protocol IP 60 Granudos 45/100-S5



This protocol has to be completed by the commissioning technician! All warranty claims expire when no completed and signed commissioning protocol is available!

Object: \_\_\_\_\_ Date: \_\_.\_\_.\_\_\_\_

City, Street, Street number: \_\_\_\_\_

Device type: \_\_\_\_\_ Year of construction: \_\_\_\_\_ Serial no.: \_\_\_\_\_

	Activity	Completed	Comment
<b>1</b>	<b><u>Dissolving system (consider 6 seconds switching delay!)</u></b>		
1.1	Install the roller carriers of the hose pumps, see operating instructions, section 5.2.1	<input type="checkbox"/>	
1.2	Connect the dosing canister and attach the chlorine barrel	<input type="checkbox"/>	
1.3	Bleed the operating water pump	<input type="checkbox"/>	
1.4	Adjust the water flow in the dissolving system	<input type="checkbox"/>	
1.5	Check the pressure switch (41) Ball valve intake closed, device stopped, fault display	<input type="checkbox"/>	
1.6	Adjust the pressure switch (41)	<input type="checkbox"/>	
1.7	Check flow switch: Outlet ball valve closed, dosing stopped, fault indication	<input type="checkbox"/>	
1.8	Set the water level in the rinsing tray	<input type="checkbox"/>	
1.9	Check level switch: Switching body high - dosing stopped, fault indication	<input type="checkbox"/>	
1.10	Check the level switch: Switching body low - device stopped, fault indication	<input type="checkbox"/>	
1.11	Check the floater valve function - flow reacts gently	<input type="checkbox"/>	
<b>2</b>	<b><u>Chlorine dosing technology</u></b>		
2.1	Heating function: Dosing pipe warm?	<input type="checkbox"/>	
2.2	"Empty-switch" function: Drum turning - fault indication	<input type="checkbox"/>	
2.3	Dosing motor function: Chlorine starting test program	<input type="checkbox"/>	
2.4	Check the tensioning straps and safety belt	<input type="checkbox"/>	
2.5	Introduction to drum changing, see operating instructions, section 5.2.3	<input type="checkbox"/>	
<b>3</b>	<b><u>pH-reducer dosing system</u></b>		
3.1	Check the empty switch: Pull the suction lance out of the canister - see display	<input type="checkbox"/>	
3.2	Check the dosing pump: Test program	<input type="checkbox"/>	
<b>4</b>	<b><u>Control - after opening the controller</u></b>		
4.1	All connectors firmly latched	<input type="checkbox"/>	
<b>5</b>	<b><u>Buffer tank (option)</u></b>		
5.1	Check function of the control and alarm switches in the tank: Indication on the display	<input type="checkbox"/>	
5.2	Check prevention of the on site dosing pump reflux	<input type="checkbox"/>	
5.3	Check the reflux prevention in filling system	<input type="checkbox"/>	
<b>6</b>	<b><u>Other</u></b>		
6.1	Clean the GRANUDOS system	<input type="checkbox"/>	
6.2	Discuss the operating instructions and hand them over	<input type="checkbox"/>	

Continue to page 2

# Commissioning protocol IP 60 Granudos 45/100-S5



Other comments:

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Commissioning and instruction performed by: \_\_\_\_\_

Persons instructed: \_\_\_\_\_

Signature of commissioner: \_\_\_\_\_

Countersigned by operator: \_\_\_\_\_

# Maintenance protocol WP 66

## Granudos 45/100-S5



This protocol has to be completed by the maintenance technician! We reserve the right to determine the warranty conditions when no completed and signed maintenance protocol is available.

Object: \_\_\_\_\_ Year of maintenance: 20\_\_\_\_

City, Street, Street number: \_\_\_\_\_

Device type: \_\_\_\_\_ Year of construction: \_\_\_\_\_ Serial no.: \_\_\_\_\_

	Activity	Maintenance interval in	Month												Comment / additional work	
			Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12		
<b>1</b>	<b><u>Dissolving system</u></b>															
1.1	Check the level switch	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.2	Check the pressure switch, adjust as required	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.3	Check the flow switch	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.4	Replace the float valve membrane and cone seal	12													<input type="checkbox"/>	
1.5	Check and adjust the float valve function	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.6	Replace the hose to the suction pipe	12													<input type="checkbox"/>	
1.7	Check the pump impeller and lid (only for Calpeda pumps)	12													<input type="checkbox"/>	
1.8	Check pump floating ring seal for tightness	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.9	Check pump roller bearings for noises	6							<input type="checkbox"/>						<input type="checkbox"/>	
1.10	Clean the dirt filter	3			<input type="checkbox"/>				<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	
1.11	Replace all O-rings	12													<input type="checkbox"/>	
1.12	Check nozzle diameter diffuser < 6 mm; (use 6mm drill piece to inspect passage)	12													<input type="checkbox"/>	
<b>2</b>	<b><u>Chlorine dosing device</u></b>															
2.1	Heating function: Dosing pipe warm?	6							<input type="checkbox"/>						<input type="checkbox"/>	
2.2	Check the chlorine-empty switch	6							<input type="checkbox"/>						<input type="checkbox"/>	
2.3	Clean and check the dosing screw	6							<input type="checkbox"/>						<input type="checkbox"/>	
2.4	Dosing motor: Replace the seals	12													<input type="checkbox"/>	
2.5	Replace the dust cap seal	12													<input type="checkbox"/>	
<b>3</b>	<b><u>Acid dosing system</u></b>															
3.1	Check function of the hose pump and check for moisture and corrosion	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.2	Check function of the empty switch	6							<input type="checkbox"/>						<input type="checkbox"/>	
3.3	Replace dosing hose	12													<input type="checkbox"/>	
3.4	Replace the seals of the acid dosing valve	12													<input type="checkbox"/>	
<b>4</b>	<b><u>Dust extraction (Option)</u></b>															
4.1	Check motor	3			<input type="checkbox"/>				<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	
4.2	Clean blower, tank and transparent hose	3			<input type="checkbox"/>				<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	
<b>5</b>	<b><u>Buffer tank (option)</u></b>															
5.1	Check function of the level switch	6							<input type="checkbox"/>						<input type="checkbox"/>	
5.2	Clean the buffer tank with water and diluted acid	12													<input type="checkbox"/>	
5.3	Replace the active carbon filter	12													<input type="checkbox"/>	

# Maintenance protocol WP 66

## Granudos 45/100-S5



	Activity	Maintenance interval in	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Comment / additional work
<b>6</b>	<b>Control</b>														
6.1	Check all inputs	12												<input type="checkbox"/>	
6.2	Check all outputs	12												<input type="checkbox"/>	
6.3	Check parameter settings and correct it if required	12												<input type="checkbox"/>	
<b>7</b>	<b>Other work</b>														
7.1	Thoroughly clean the dosing system	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.2	Check dosing line for strength and wall thickness	12												<input type="checkbox"/>	
<b>8</b>	<b>Maintenance work at each drum exchange</b>														
8.1	Clean the solution pipe for pollution	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.2	Clean dosing hopper from incrustations	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.3	Test chlorine and acid dosing	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.4	Take note of pumping noises	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.5	Check the system for tightness	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.6	Check the transparent hose of the dust extraction (option) and clean it if necessary	F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Other comments:

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Maintenance carried out and system checked for correct working: \_\_\_\_\_ Date: \_\_\_\_\_  
Signature

Countersigned by operator: \_\_\_\_\_  
Signature