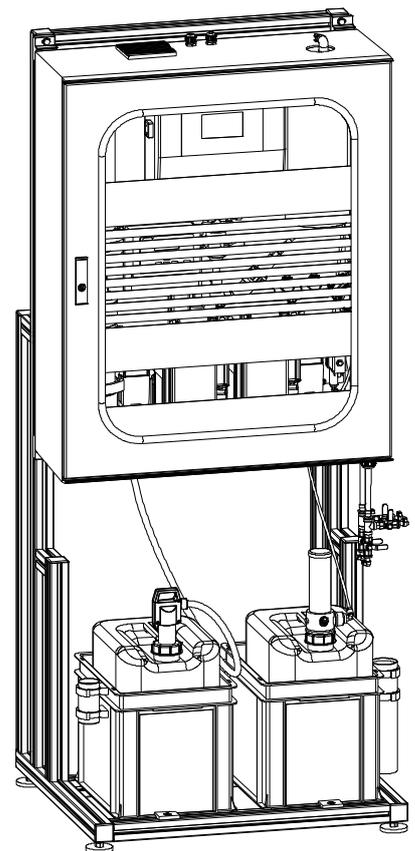


**Operation manual  
Chlorine dioxide generation systems  
GENO-Baktox MRX/RX/X  
starting from software version V1.08**



Edition August 2018  
Order no. 569 915-inter\_174

**Grünbeck Wasseraufbereitung GmbH**  
Josef-Grünbeck-Str. 1 · 89420 Hochstaedt  
GERMANY

☎ +49 9074 41-0 · 📠 +49 9074 41-100  
www.gruenbeck.com · info@gruenbeck.com



A company certified by TÜV SÜD  
in accordance with DIN EN ISO 9001,  
DIN EN ISO 14001 and SCC

---

---



---

**Table of contents**

<b>A General</b> .....	<b>4</b>
1   Preface	
2   How to use this operation manual	
3   General safety information	
4   Shipping and storage	
5   Disposal	
<b>B Basic information</b> .....	<b>8</b>
1   Laws, regulations, standards	
2   Functional principle	
3   System-specific information	
<b>C Product description</b> .....	<b>13</b>
1   Type designation plate	
2   System components	
3   Technical specifications	
4   Intended use	
5   Functional description of the chlorine dioxide generation systems GENO-Bakttox MRX/RX/X	
6   Scope of supply	
<b>D Installation</b> .....	<b>24</b>
1   General installation instructions	
2   Water installation	
3   Hydraulic connections	
4   Electrical installation	
<b>E Start-up</b> .....	<b>31</b>
1   How to check the installation	
2   How to switch on the system	
3   How to perform a leak test	
4   How to insert the binding agent into the GENO-Bakttox weiss suction lance	
5   How to add the gas neutralising agent	
6   How to produce the initial preparations	
7   Automatic mode	
8   How to calibrate the online chlorine dioxide measurement	
9   How to shut down the system temporarily	
<b>F Operation</b> .....	<b>35</b>
1   Touch screen - basic display	
2   How to operate the control unit	
3   How to switch off the ClO <sub>2</sub> production	
<b>G Troubleshooting</b> .....	<b>46</b>
1   Messages	
2   Troubleshooting	
<b>H Maintenance</b> .....	<b>53</b>
1   Basic information	
2   Inspection (by the customer/operator)	
3   Operation log	
Checklist for Grünbeck's technical service/authorised service company	
Checklist for the operator	
Operation log for concentration measurements	
Start-up log/checklist	
Safety data sheet GENO-Bakttox	
Safety data sheet GENO-Bakttox blau	
Safety data sheet GENO-Bakttox weiss	
Safety package GENO-Bakttox	

## **Publisher's information**

All rights reserved.

©Copyright by Grünbeck Wasseraufbereitung GmbH

Printed in Germany

Effective with the date of edition indicated on the cover sheet.

-We reserve the right to modifications, especially with regard to technical progress-

Reprints, translations into foreign languages, electronic storage or copying of this operation manual only with explicit written approval of Grünbeck Wasseraufbereitung GmbH.

Any type of duplication not authorised by Grünbeck Wasseraufbereitung is a copyright violation and subject to legal action.

Responsible for contents:

Grünbeck Wasseraufbereitung GmbH

Josef-Grünbeck-Str. 1, 89420 Hoechstädt/Germany

Tel. +49 9074 41-0 • Fax +49 9074 41-100

www.gruenbeck.com • service@gruenbeck.com

Print: Grünbeck Wasseraufbereitung GmbH

Josef-Grünbeck-Str. 1, 89420 Hoechstädt/Germany

grünbeck

**EU Declaration of Conformity**

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

If the system is modified in a way not approved by us, this certificate is void.

Manufacturer:	Grünbeck Wasseraufbereitung GmbH Josef-Grünbeck-Str. 1 89420 Hoechstädt/Germany
Responsible for documentation:	Markus Pöpperl
System designation:	Chlorine dioxide generation systems GENO-Bakttox MRX/RX/X
System size:	10, 20, 25, 30, 50/1, 50/2
Serial no.	Refer to type designation plate
Applicable guidelines:	Low voltage (2014/35/EU) EMC (2014/30/EU)
Applied harmonised standards, in particular:	DIN EN 61000-6-2; 2006-03, DIN EN 61000-6-3; 2011-09
Applied national standards and technical specifications, in particular:	
Place, date and signature:	Hoechstädt, 13.03.2018  i. V. M. Pöpperl Dipl.-Ing. (FH)
Function of signatory:	Head of Product Implementation and Product Launch

## **A General**

### **1 | Preface**

Thank you for opting for a Grünbeck product. Backed by decades of experience in the area of water treatment, we provide solutions for all kind of processes.

All Grünbeck systems and devices are made of high-quality materials. This ensures reliable operation over many years, provided you treat your water treatment system with the required care. This operation manual assists you with important information. Therefore, please read the entire operation manual before installing, operating or maintaining the system.

Customer satisfaction is our prime objective and providing customers with qualified advice is crucial. If you have any questions concerning this device, possible extensions or general water and waste water treatment, our field staff, as well as the experts at our headquarters in Hoechststedt, are available to help you.

#### **Advice and assistance**

For advice and assistance please contact your local representative (see [www.gruenbeck.com](http://www.gruenbeck.com)) or get in touch with our service centre which can be reached during office hours:

Phone: +49 9074 41-333

Fax: +49 9074 41-120

Email: [service@gruenbeck.de](mailto:service@gruenbeck.de)

We can connect you with the appropriate expert more quickly if you provide the required system data.

### **2 | How to use this operation manual**

This operation manual is intended for the operators of our systems. It is divided into several chapters which are listed in the "Table of contents" on page 1 in alphabetical order. In order to find the specific information you are looking for, check for the corresponding chapter on page 1.

The headers and page numbers with chapter information make it easier to find your way around in the manual.

Grünbeck's chlorine dioxide generation systems GENO-Baktox MRX/RX/X are manufactured in accordance with state-of-the-art technology and the recognised technical safety regulations.

Compliance with the applicable standards, guidelines and laws was confirmed (see page 3).

Only persons who have read and understood this operation manual are permitted to work with the system. The safety guidelines in particular are to be strictly adhered to. Furthermore, persons should be warned of potential risks remaining during normal use of the system and be shown measures to avoid damage.

### 3 | General safety information

#### 3.1 Symbols and notes

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



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



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



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



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



Tasks with this symbol may only be performed by Grünbeck's technical service/authorised service company or by persons expressly authorised by Grünbeck.



Tasks with this symbol may only be performed by trained and qualified electrical experts according to the VDE guidelines or according to the guidelines of a similar local institution.



Tasks with this symbol may only be performed by the local water supply companies or approved installation companies. In Germany, the installation company must be registered in an installation directory of a water company as per §12(2) AVBWasserV (German Ordinance on General Conditions for the Supply of Water).

#### 3.2 Operating personnel

Only persons who have read and understood this operation manual are permitted to work with the system. The safety guidelines in particular are to be strictly adhered to.

#### 3.3 Intended use

The system may only be used for the purpose outlined in the product description (chapter C). Strictly adhere to this operation manual as well as the applicable local guidelines concerning drinking water protection, accident prevention and occupational safety.

In addition, intended use also implies that the system may only be operated when it is in proper working order. Any malfunctions must be repaired at once.

## 3.4 Protection from water damage



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

- a sufficient floor drain system must be available or
- a water stop device (see chapter C Accessories) must be installed.



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

## 3.5 Indication of specific hazards

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

Danger due to mechanical energy! System parts may be subject to overpressure. Danger of injury and damage to property due to escaping water and unexpected movement of system parts. → Check the pressure pipes at regular intervals. Depressurise the system before starting repair or maintenance work on the system.

Hazardous to health due to contaminated drinking water! → The system may only be installed by a specialist company. Strictly adhere to the operation manual! Ensure that there is sufficient flow. Adhere to the pertinent guidelines when starting up the system after extended periods of standstill. Perform inspections and maintenance at the intervals specified!



**Note:** By concluding a maintenance contract, you ensure that all of the required tasks are performed on time. You may perform the interim inspections yourself.

## 4 | Shipping and storage

**Attention!** The system may be damaged by frost or high temperatures. In order to avoid damage of this kind:

Protect from frost during transportation and storage!

Do not install or store system next to objects which radiate a lot of heat.

The system may only be transported and stored in its original packing. Ensure that it is handled with care and placed the right side up (as indicated on the packing).

## 5 | Disposal

Comply with the applicable national regulations.

### 5.1. Packaging

Dispose of the packaging in an environmentally sound manner.

### 5.2. Product



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

Dispose of electrical and electronic products or components in an environmentally sound manner.



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

## B Basic information

### 1 | Laws, regulations, standards

In the interest of good health, rules cannot be ignored when it comes to the processing of drinking water. This operation manual takes the applicable German guidelines into account and provides all the information you need to safely operate your GENO-Baktox MRX/RX/X chlorine dioxide generation systems.

Among other things, the regulations stipulate that

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



**Note:** GENO-Baktox MRX/RX/X chlorine dioxide generation systems are classified as follows according to VDI 6023, part 1:

- Maintenance class C.
- Evaluation group 4.

### 2 | Functional principle

GENO-Baktox MRX/RX/X chlorine dioxide generation systems operate according to the chlorite/hydrochloric acid principle. GENO-Baktox (chlorine dioxide) with a concentration of approx. 0.9 g/l is produced using water, GENO-Baktox blau (sodium chlorite) and GENO-Baktox weiss (hydrochloric acid).

The chlorine dioxide solution is dosed in proportion to the volume of water by means of a water meter signal.

In the MRX version, the chlorine dioxide is dosed into the blending module and is delivered into the pipe system via the bypass by means of a circulation pump.

In case of the RX and X versions, the solution is dosed directly into the pipe system by means of dosing points.

The systems are preset to a dosing concentration of 0.20 mg/l of chlorine dioxide. This concentration is recommended according to the list of treatment substances and disinfection procedures provided in § 11 of the German Drinking Water Ordinance.

### 3 | System-specific information

#### 3.1 Specific safety information



**Warning!** GENO-Bakttox chlorine dioxide generation systems may only be operated with the following Grünbeck chemicals:

- GENO-Bakttox blau (sodium chlorite).
- GENO-Bakttox weiss (hydrochloric acid).

The two base materials GENO-Bakttox blau and GENO-Bakttox weiss as well as GENO-Bakttox (chlorine dioxide) are hazardous materials.

The safety data sheets at the end of this operation manual must be strictly observed.



**Warning!** Risk of irritation to the eyes, respiratory system and skin following the inhalation of chlorine dioxide. When replacing the chemical containers, wear protective clothes as per the German Accident Prevention Regulations (Germany: GUV-V D05, „Chlorination of Water“, dated January 1997).



**Warning!** Risk of explosion when using chemicals with too high a concentration.



**Warning!** Risk of explosion and serious damage to property and risk of personal injury as a result of disruptions due to a mix-up of chemical containers or suction lances. Observe the blue and white colour markings as well as the product designations on the suction lances, chemical containers and chemical collecting trays: GENO-Bakttox blau; GENO-Bakttox weiss.



**Warning!** Risk of burns if skin or clothing come into contact with GENO-Bakttox, GENO-Bakttox blau and GENO-Bakttox weiss. Thoroughly wash the affected skin parts and clothing immediately with water.

### 3.2 Responsibilities of the operator

The owner of the building and/or the operator of the GENO-Baktox MRX/RX/X chlorine dioxide generation systems must ensure the necessary safety at the installation site. This requires the preparation of an operation manual for the system in accordance with § 14 of the GefStoffV (German Ordinance on Hazardous Substances)/TRGS 555 (Technical Rules for Hazardous Substances).

Particular attention must be paid to the recognised occupational safety and accident prevention regulations as well as the use of protective clothing when handling chemicals in accordance with the national accident prevention regulations (GUV-V D05).

The following points must be observed:

- Consider this manual as part of the product and keep it clearly visible in the immediate vicinity of the system for the entire service life of the system.
- The installation requirements prescribed by the manufacturer must be fulfilled (required water connections and fittings, environmental conditions, electrical connections).
- Ensure that water pipes and fittings are regularly checked, serviced and maintained.
- Obtain official authorisation for the storage of chemicals, if necessary.
- Train users in the operation of the system.
- Affix the enclosed GENO-Baktox set of safety stickers (order no. 569 810) at the installation site so that they are clearly visible.
- Ensure that the accident prevention regulations at the installation site are observed. Provide every user and all maintenance personnel with protective clothing in accordance with GUV-V D05.

The personal protective equipment (PPE) consists of:

- Face protection.
- Protective apron.
- Gloves.
- Rubber boots.
- Breathing mask with filter (type B/grey) or self-contained breathing apparatus.



**Note:** For chlorine dioxide, a value of 0.1 ml/m<sup>3</sup> or ppm (parts per million) in the room air is stipulated as the maximum workplace concentration (MAK).

The operator must carry out a risk analysis for the workplace or installation site of the system in accordance with the BetrSichV (German Health and Safety at Work Regulations) to be able to assess whether the MAK value can be observed on site. In this context, the size of the room as well as the ventilation play a particularly crucial role.

Optional room air monitoring (order no. 569 820) can be installed as an additional safety measure to monitor the chlorine dioxide concentration in the room air.

**3.3 Requirements at the installation site**

A potential installation site must fulfil the following requirements:

- It must be protected from direct sunlight, dust and vapours, be frost-proof, well ventilated and adequately lit. The system must not be placed outdoors.
- In rooms that are hard to ventilate, room air monitoring is advised as a general rule.



**Note:** If the room is not well ventilated, we recommend only installing the system starting from a room capacity of > 50 m<sup>3</sup>. There is a risk of a temporarily increased concentration of hydrochloric acid in the room air, at least when changing the GENO-Bakttox weiss base chemical.

- The room must meet the conditions specified in the technical specifications with regard to air temperature, humidity, permissible operating temperature of the components and the quality of the dilution water.
- It must have a power supply.
- It must provide access to the main water pipe.
- It must have a floor drain to rinse off chemicals.
- It must have separate storage rooms for empty and full chemical canisters.
- It must be separated from other rooms in a fire-safe way.
- It must be secured against unauthorised access and comply with the accident prevention regulations.
- Staff should not stay in the room for longer periods of time (max. stay in the room: 2 hours/day).
- If the floor adversely affects the stability of the system, the rack must be anchored on the floor or the wall in order prevent the system from tipping over.

**3.4 Storage of chemicals**

- GENO-Bakttox blau and GENO-Bakttox weiss chemicals must only be stored in the appropriately labelled original plastic containers.
- Store the canisters separately in amply sized chemical collection trays.
- Do not store the chemicals near grease, highly flammable substances, oils, oxidising substances, acids or salts.
- The ambient temperature must not exceed 35 °C.
- Keep empty and full containers closed and only store them in places that are suitable for storage in accordance with the current national accident prevention regulations (in Germany: GUV-V D05)

**3.5 Disposal and/or neutralisation of residual chemicals in the canisters**

See chapter H, paragraph 2.1.

### 3.6 Procedure in case of an emergency

The general safety regulations and the regulations on the proper conduct in emergencies specified in EN 12671: 2007 (D) do apply.

#### Emergency numbers:

Fire service:	112 (or local emergency number).
Poison emergency number in Munich:	+ 49 89-19240 (or any other poison centre).
Grünbeck laboratory:	+49 9074-41304 (this number is only manned during office hours).

#### Initiate first aid measures:

- In case of contact with the eyes, immediately rinse with plenty of water for at least 15 minutes. Consult a doctor.
- In case of contact with the skin, immediately rinse with plenty of water.
- Remove contaminated clothing.
- Move the accident victim to fresh air if gas is inhaled. Avoid deep breathing. Consult a doctor (watch out for an accelerated pulse rate, vasodilatory treatment may be necessary).

#### Measures in case of spillages, leakages and escaping gas

- In case of contact with clothing, remove clothes immediately and wash them out with plenty of water.
- Flush away small quantities of leaked chlorine dioxide solution (leakage quantities, e.g. reaction mixture of sodium chlorite and hydrochloric acid) with an excess of sodium thiosulphate solution or sodium sulphite solution and dilute with water. The reaction product can be released into the drainage system, observing the local regulations on the discharge of substances. Afterwards, ventilate the room properly and clean any contaminated objects as well as the floor.
- When larger quantities escape, precipitate the resulting chlorine dioxide gas with spray water.
- Do not soak up sodium chlorite solution with flammable substances (e.g. paper towels). There is a risk of spontaneous combustion if the solution dries.

#### Fire-fighting:

- Aqueous solutions with chlorine dioxide are not immediately combustible. Extinguish fire in adjacent areas with water - preferably using a sprinkler system - to dilute the surrounding gas.
- Provide the fire service with information on the installed production capacity and the stored GENO-Baktox blau and GENO-Baktox weiss base chemicals in order to initiate protective measures with regard to any possible risks.



**2 | System components**

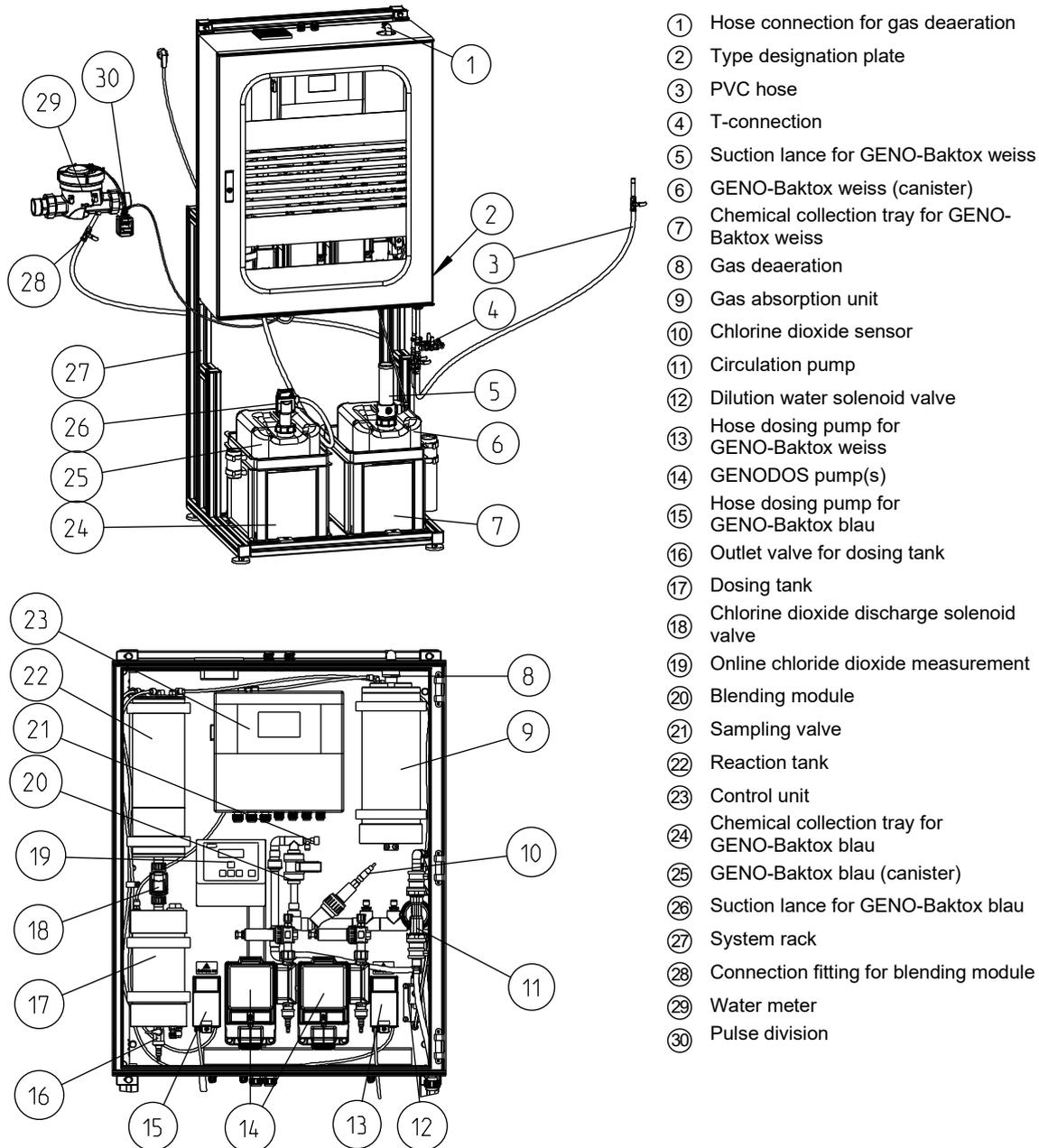


Fig. C-2: System components of chlorine dioxide generation systems GENO-Bakttox MRX

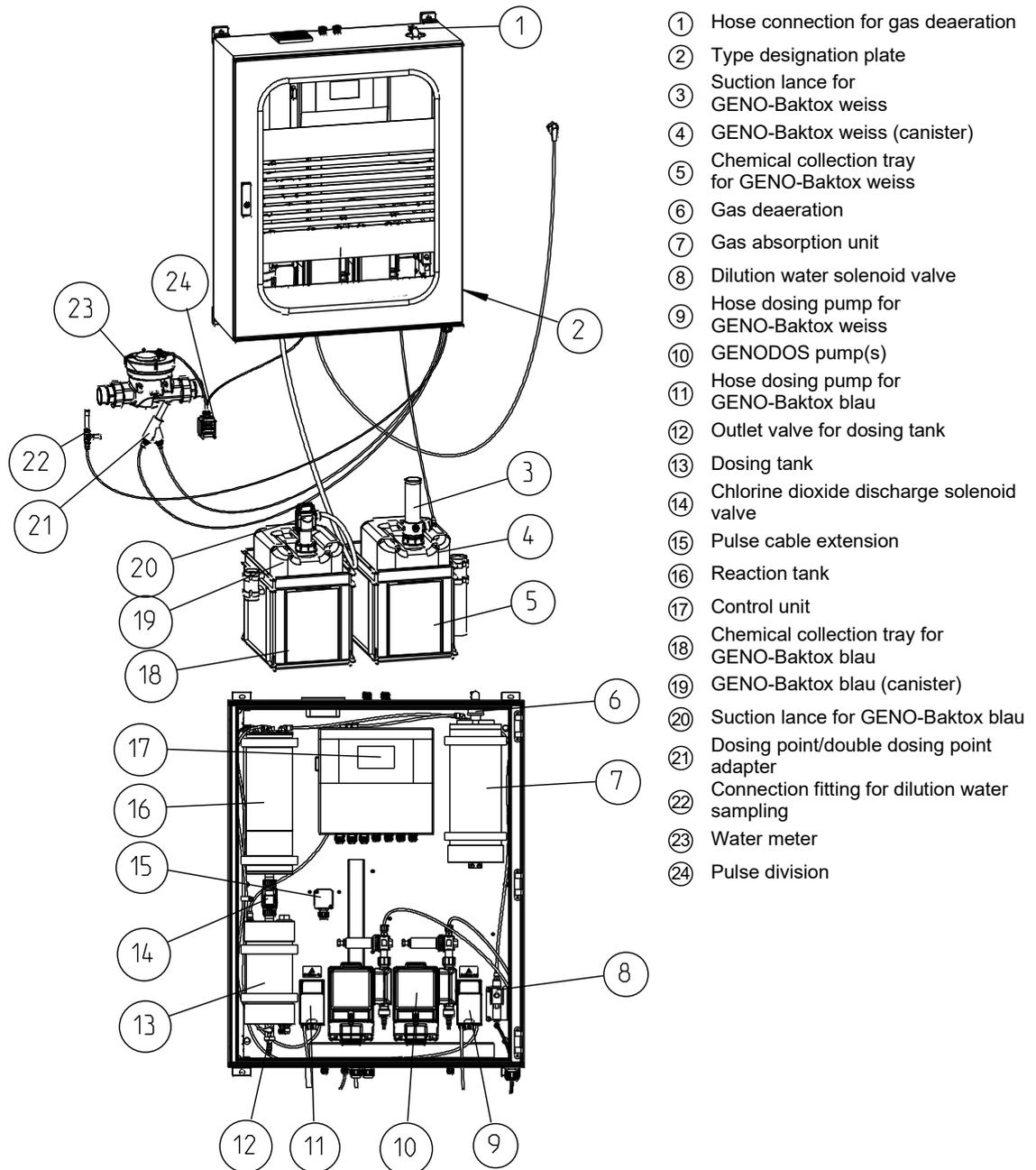


Fig. C-3: System components of chlorine dioxide generation systems GENO-Bakttox X

### 3 | Technical specifications

All the data on the chlorine dioxide generation systems GENO-Bakttox MRX/RX/X is summarised in table C-1.

The information refers to the standard version of the GENO-Bakttox chlorine dioxide generation systems. Possible deviations in case of special versions are communicated separately, if applicable.

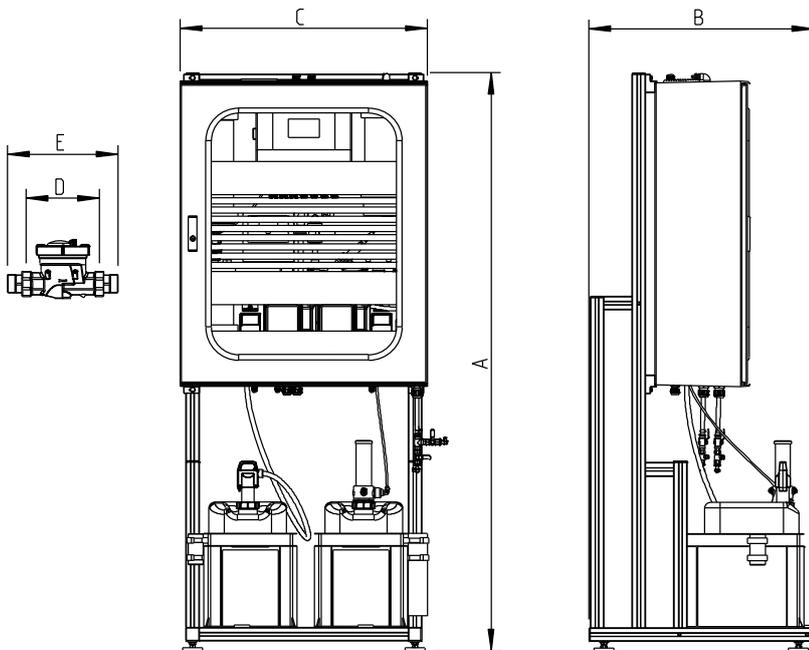


Fig. C-4: Dimensional drawing of GENO-Bakttox MRX/RX

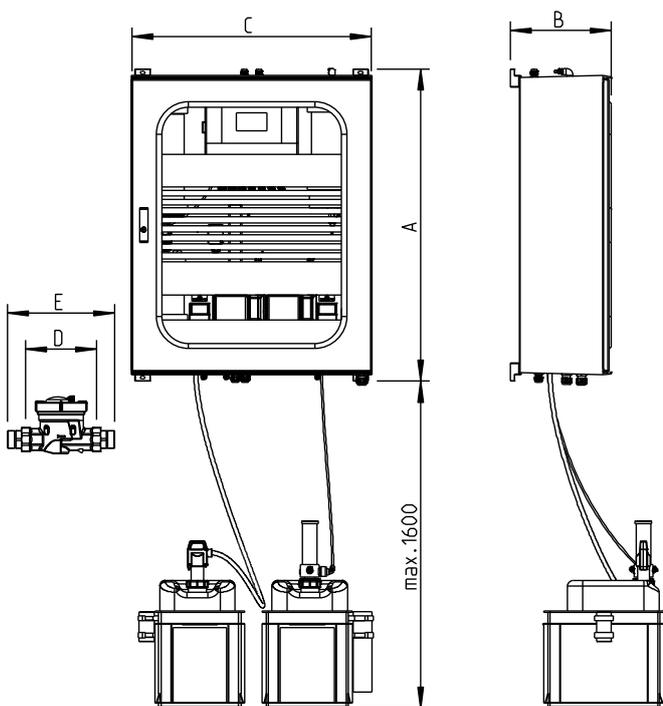


Fig. C-5: Dimensional drawing of chlorine dioxide generation systems GENO-Bakttox X

Table C-1: Technical specifications		Chlorine dioxide generation systems					
		GENO-Bakttox MRX/RX/X					
MRX version		10	20	25	30	50/1	50/2
<b>Connection data</b>							
Nominal connection diameter of water meter		DN 32 (R 1¼")	DN 40 (R 1½")	DN 50 (R 2")	DN 50 (R 2")	DN 80	DN 100
Power supply		230 V, 50 Hz					
Power input, min./max. [VA]		37/63			37/80		
Protection/protection class		IP 54/⊕					
Connections of blending module		2 x ¼" (female thread)					
<b>Performance data</b>							
Chlorine dioxide generation capacity [g/h]		10					
Maximum admissible flow Q <sub>max</sub> [m³/h]		10	20	25	30	50	
Pressure loss at Q <sub>max</sub> [bar]		0.6	0.4	0.7	0.9	0.5	
Pulse sequence of water meter [l/pulse]		0.33	1.33			1	
Nominal pressure		PN 8					
Admissible pressure for withdrawal of dilution water [bar]		2 - 8					
<b>Dimensions and weights (entire system)</b>							
A Approx. total height [mm]		1900					
B Approx. depth [mm]		725					
C Approx. width [mm]		800					
Empty weight, approx. [kg]		80					
<b>Dimensions (water meter)</b>							
D Installation length without screw connection [mm]		190	240	240	240	-	-
E Installation length with screw connection [mm]		280	375	356	356	-	-
Installation length with flange connection [mm]		-	-	-	-	310	
<b>GENODOS-pump</b>							
Quantity		1			2		
GENODOS-pump GP (GENO-Bakttox version)		6/40					
<b>Ambient data</b>							
Water temperature, min./max. [°C]		5/30					
Ambient temperature, min./max. [°C]		5/30					
Rel. humidity, max. [%]		70					
Order no.		569 310	569 325	569 340	569 355	569 370	569 385

RX version		10	20	25	30	50/1	50/2
<b>Dimensions and weights (entire system)</b>							
A Approx. total height [mm]		1900					
B Approx. depth [mm]		725					
C Approx. width [mm]		800					
Empty weight, approx. [kg]		75					
<b>Connection data</b>							
Connection for withdrawal of dilution water		1 x ¼" (female thread)					
Connection of dosing point		1 x ¼" (female thread)					
Order no.		569 305	569 320	569 335	569 350	569 365	569 380

X version		10	20	25	30	50/1	50/2
<b>Dimensions and weights (entire system)</b>							
A Approx. total height [mm]		1050					
B Approx. depth [mm]		340					
C Approx. width [mm]		800					
Empty weight, approx. [kg]		55					
<b>Connection data</b>							
Connection for withdrawal of dilution water		1 x ¼" (female thread)					
Connection of dosing point		1 x ¼" (female thread)					
Order no.		569 300	569 315	569 330	569 345	569 360	569 375

### 4 | Intended use

The chlorine dioxide generation systems GENO-Baktox MRX/RX/X are used to add chlorine dioxide to drinking and industrial water. The chlorine dioxide is produced on site from GENO-Baktox weiss and GENO-Baktox blau.

GENO-Baktox is mainly used where common disinfectants either fail (e.g. GENO-Chlor A in case of high pH values) or have an adverse effect due to undesired side effects (e.g. odours, formation of ammonium compounds, THMs or bromates). After disinfection by means of GENO-Baktox, the rate of renewed bacterial growth is considerably lower than if conventional disinfectants were used.

GENO-Baktox is dosed in proportion to the water volume, triggered by a water meter signal. The systems are preset to a dosing concentration of 0.2 mg/l ClO<sub>2</sub>. This value is recommended in the list of treatment agents and disinfection processes as per § 11 of the German Drinking Water Ordinance.

The chlorine dioxide concentration has to be checked every day by means of a manual measurement and must be recorded in the operation log. If continuous measuring and data storage are applied, however, the daily measurements may be omitted.

The chlorine dioxide generation systems GENO-Baktox MRX/RX/X are designed exclusively for use in industrial and commercial applications.



**Note:** The use of the MRX version is mandatory for applications in the drinking water sector as well as in the food industry.

## 5 | Functional description of the chlorine dioxide generation systems GENO-Baktox MRX/RX/X

When water is withdrawn, a water meter measures the water volume flowing through and then - according to the pulse interval of the water meter - transmits the control pulses to the GENO-DOS-pump. Thanks to the volume-controlled dosing of the disinfecting solution, a constant drinking water quality can be ensured. The GENO-Baktox solution is directly drawn in from the dosing tank of the chlorine dioxide generation system GENO-Baktox. In case of the chlorine dioxide generation systems GENO-Baktox MRX/RX/X, the GENO-Baktox concentration is 0.9 g/l.

In case of the GENO-Baktox MRX chlorine dioxide generation systems with online chlorine dioxide measurement, the subsequent processing of the signal and its transmission to the GENODOS-pump is done by means of the online chlorine dioxide measurement.

In case of the GENO-Baktox X and RX chlorine dioxide generation systems, the GENO-Baktox is dosed via a dosing line and dosing valve directly into the drinking water pipe.

In case of the GENO-Baktox MRX chlorine dioxide generation systems, the GENO-Baktox is dosed into the blending module. The blending module has a partial flow circulating between the water meter with dosing point and the withdrawal point for measuring water, thus preventing clouding in case of fluctuating water withdrawal and periods of standstill. In this blending section, neither another dosing point nor another water meter must be installed. The online chlorine dioxide measurement provides a check measurement of the chlorine dioxide concentration without any loss of measuring water.

Thanks to the level control in the dosing tank, a new GENO-Baktox preparation is started in the reaction unit above the dosing tank in due time.

### 5.1 Chlorine dioxide generation

The chlorine dioxide generation in the reaction tank proceeds as follows:

- First of all, feed water is filled in by means of the dilution water hose and the inlet solenoid valve.
- In a next step, first GENO-Baktox weiss and then GENO-Baktox blau are delivered to the reactor by means of the two GENO-Schlauflex hose dosing pumps.
- The mixture then reacts for approx. 6 minutes and a concentrated chlorine dioxide solution is produced.
- Then the reaction tank is filled with water up to the upper level. The finished solution has a concentration of approx. 0.9 g of ClO<sub>2</sub> per litre of water.
- By opening the discharge solenoid valve between the reaction and the dosing tank, the finished chlorine dioxide is filled into the dosing tank
- After the dosing tank has been filled, a new generation cycle starts again from the beginning, i.e. ready-made chlorine dioxide solution is prepared in the reactor. As soon as the empty signal level is reached in the dosing tank, new chlorine dioxide is refilled immediately.
- The finished ClO<sub>2</sub> solution is dosed from the storage container using the GENODOS pump.
- All reaction steps are level-controlled and time-monitored as well.

### 5.2 Chlorine dioxide dosing



**Note:** In the drinking water sector, disinfectants may only be dosed in proportion to the water volume; i.e. the dosing is carried out as a function of the water meter signal.

The chlorine dioxide concentration must be checked by way of with manual measurements on a daily basis and recorded in the operation log. If continuous measuring and data storage are applied, however, the daily measurements may be omitted.

**MRX version:**

The water meter measures the flow rate of the water in the main water pipe and transmits the pulses to the controller of the online chlorine dioxide measurement. The controller calculates the required dosage of ClO<sub>2</sub> in relation to the water flow in the main pipe and transmits the appropriate output signals to the GENODOS-pump.

The GENODOS-pump doses the appropriate volume of ClO<sub>2</sub> solution from the dosing tank into the blending module and thus into the main water pipe. A sensor connected to the online measurement in the blending module monitors the ClO<sub>2</sub> concentration in the main water pipe.

**RX/X version:**

The water meter measures the flow rate of the water in the main water pipe and directly transmits the pulses to the GENODOS-pump(s). The chlorine dioxide is dosed via the dosing point directly into the main water pipe.



**Note:** The use of the MRX version is mandatory for applications in the drinking water sector as well as in the food industry.

**5.3 Online chlorine dioxide measurement (MRX version only)**

The online chlorine dioxide measurement measures the concentration of free chlorine dioxide in the water. The online chlorine dioxide measurement features an integrated limit value monitoring and a relay which control the GENODOS-pump and the circulation pump.

As soon as you switch on the online chlorine dioxide measurement, it automatically controls the connected actuators and thus the dosing.

The online chlorine dioxide measurement has a data connection to the control unit of the GENO-Baktox MRX chlorine dioxide generation system. The values measured for the chlorine dioxide concentration, the flow as well as warning and fault messages are shown in the display of the control unit. All relevant information can therefore be read off at the control unit.



**Note:** The water to be treated must have a minimum conductivity of 150 µS/cm.

### 6 | Scope of supply

#### **Standard equipment:**

Chlorine dioxide generation systems GENO-Baktox MRX/RX/X installed on a PE mounting plate in a plastic switch cabinet, consisting of the following components:

Microprocessor controller with TFT colour graphics display 4.3" in diagonal, 480 x 272 pixels, analogue touch panel, schematic diagram of the system flow chart with all components, indication of operating states, error and warning signals, voltage-free contacts for collective fault and warning signals, possibility to connect optional room air monitoring, integrated data logging on SD card: error memory, measured value for chlorine dioxide and flow (MRX version only).

Reaction and dosing tank, gas absorbing unit filled with neutralising agent, solenoid valve for dilution water, solenoid valve between reaction and dosing tank to discharge the finished chlorine dioxide solution, two hose pumps with suction lances for the base materials GENO-Baktox blau and weiss, 3 leakage sensors, 2 chemical collection trays, self-priming diaphragm dosing pump(s) automatically deaerating against pressure, pressure maintaining valve(s), injection valve(s), water meter with pulse cable.

All chlorine dioxide generation systems GENO-Baktox MRX/RX/X are completely pre-configured; the GENODOS-pumps are preset and under seal.

Chlorine dioxide generation systems up to size MRX/RX/X 25 feature one GENODOS-pump. For larger nominal diameters, two GENODOS-pumps are required.

#### **Version: Chlorine dioxide generation systems**

##### **GENO-Baktox MRX:**

Chlorine dioxide generation system mounted on a system rack with online chlorine dioxide measurement and a blending module. Display of the chlorine dioxide concentration and flow in the control unit.

#### **Version: Chlorine dioxide generation systems**

##### **GENO-Baktox RX:**

Chlorine dioxide generation system mounted on a system rack without blending module and online chlorine dioxide measurement.

#### **Version: Chlorine dioxide generation systems**

##### **GENO-Baktox X**

Chlorine dioxide generation system for wall mounting without blending module and online chlorine dioxide measurement.

<b>6.1 Optional accessories</b>	Personal safety set for GENO-Baktox (face mask, protective apron, gloves)	Order no. 569 815
	Personal safety set for GENO-Baktox II (in addition also including a breathing mask with carrier, combi-filter for chlorine dioxide, chlorine and ozone)	Order no. 569 805
	Test kit for chlorine dioxide 0.02 - 0.55 ppm	Order no. 170 430
	Manual analysis device Chematest 25 (for the determination of chlorine dioxide)	Order no. 203 185
	Room air monitoring for chlorine dioxide, chlorine and ozone	Order no. 569 880
<b>6.2 Consumables</b>	GENO-Baktox blau (20 kg container)	Order no. 170 490
	GENO-Baktox weiss (20 kg container)	Order no. 170 485
	Neutralising powder for GENO-Baktox	Order no. 569 838
	Gas neutralising agent	Order no. 569 332
	Oxycon Start, 45 ml for Chematest Free chlorine/chlor dioxide/bromine/iodine Reagent 1	203 147
	DPD-Reagent Nr. 1a+1b, 45 ml for Chematest Reagent 2	203 149
<b>6.3 Wearing parts</b>	Due to chemical and mechanical impact, certain system components wear out. This applies to hoses and membranes, amongst others. For the sake of completeness, Grünbeck's trained technical service/authorised service company therefore resorts to pre-defined maintenance kits. Subject to the respective maintenance assignment (semi-annual or annual) and system equipment (1 or 2 dosing pumps), all relevant components are combined.	

## D Installation

### 1 | General installation instructions

The installation site must offer adequate space. A sufficiently dimensioned foundation that has an adequate load-carrying capacity resp. a load-bearing and vertical wall must be provided. The required connections must be provided prior to the installation of the system. For dimensions and connection data, please refer to table C-1.



**Note:** The operator must ensure that all conditions for the structurally and technically safe and optimum operation of the system are met before starting the installation.

This also includes ensuring that there is hazard labelling on the system and that personal protective equipment is available. The GENO-Baktox set of safety stickers (order no. 569 810) and the GENO-Baktox Pro personal safety set (order no. 569 815) are available for this purpose. Please refer to the GENO-Baktox safety package sheet at the end of the operation manual for more detailed information. This also provides instructions on the correct installation of the signs.



**Note:** The detailed requirements on the installation site are described in chapter B.

#### 1.1 Preliminary work

1. Unpack all system components.
2. Check for completeness and soundness.
3. Set up the chlorine dioxide generation systems GENO-Baktox MRX/RX/X at the designated installation site. Install the GENO-Baktox X chlorine dioxide generation system against a load-bearing and vertical wall using the fixing material supplied.



**Note:** For the installation of systems with optional accessories (refer to Chapter C, paragraph 6.1), also observe the operation manuals supplied with these components.

## 2 | Water installation

Certain rules must always be observed when installing chlorine dioxide generation systems GENO-Bakttox MRX/RX/X. Additional recommendations are given in order to facilitate the handling of the system. The installation information described below is also illustrated in Fig. D-1 and D3.

### Binding rules



The installation of the chlorine dioxide generation systems GENO-Bakttox MRX/RX/X represents a major interference with the drinking water system. Therefore, only authorised experts may install such devices.

- Observe local installation guidelines and general regulations.
- Upstream of the water meter, a fine filter and system separator have to be installed.
- GENO-Bakttox MRX chlorine dioxide generation systems: The distance between the recirculation point of the measuring water and the measuring water sampling point should at least be 2 m and the pressure loss must not exceed 0.3 bar max. Built-in parts, bends in the pipe, etc. in between should be avoided, if possible, as this would result in a higher pressure loss. We recommend completely replacing said pipe section.
- Between the two connections, there must not be any withdrawal lines.
- In case of systems with a free outlet (e.g. filling of a tank) downstream of the system, a valve must be provided. Said valve must be located downstream of the system and upstream of the withdrawal point and is designed to generate a back pressure. Take into consideration that due to the restriction, the flow will decrease.
- An optimum installation is illustrated in Fig. D-1. Fig. D-2 on the other hand shows a negative example that should be avoided, if possible.
- When installing the water meter in the cold water pipe of the main water pipe, make sure that the water meter is located upstream of the first withdrawal point.
- When dosing into the hot water circulation, the water meter must only be located in the make-up water feed pipe.



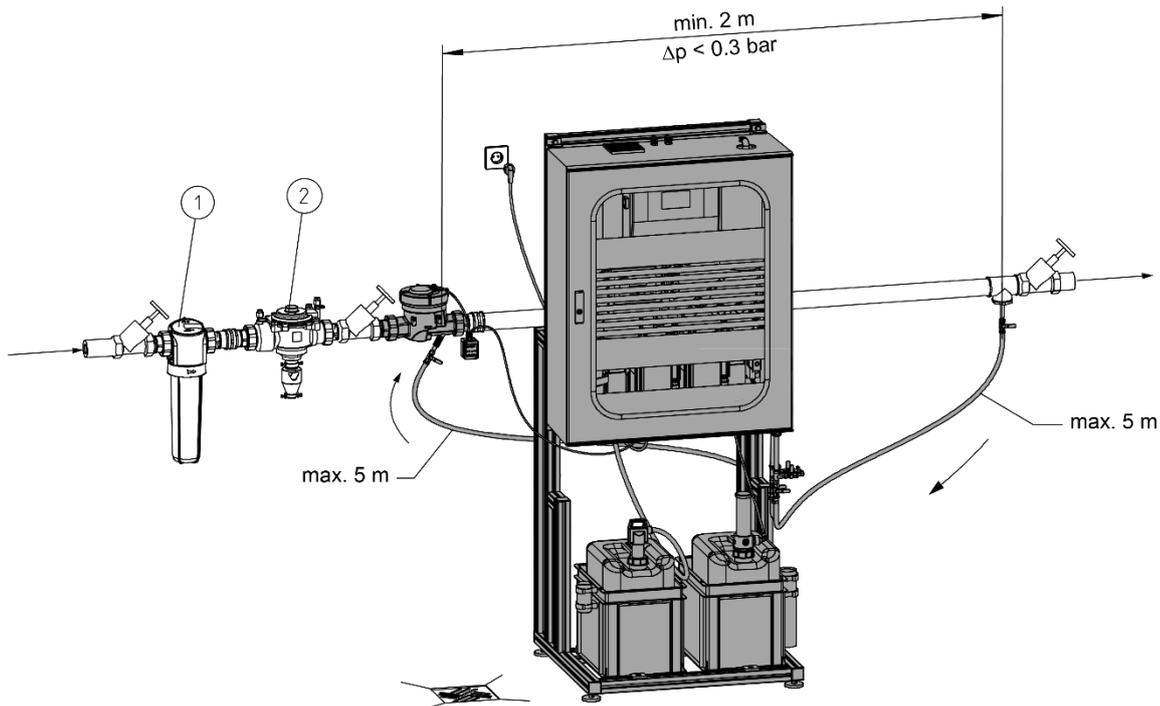
**Warning!** Do not install the water meter into the circulation pipe. Risk of concentration of the disinfectant.



**Warning!** The installation room must have a floor drain of sufficient size.

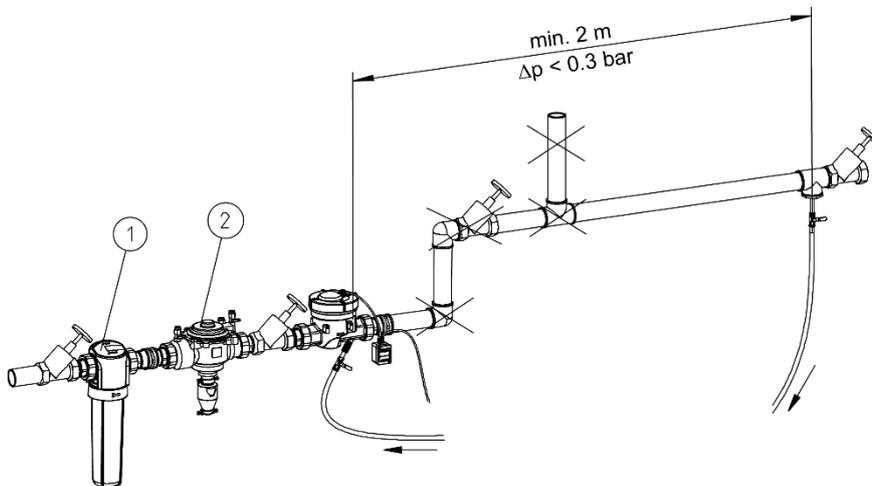


**Note:** The chlorine dioxide generation systems GENO-Bakttox MRX/RX/X should be installed as close to the water meter as possible to keep the hoses for the dilution water and dosing line and/or the connection hoses for the blending module as short as possible. When installing the hoses ensure that they are laid without any bends and kinks.



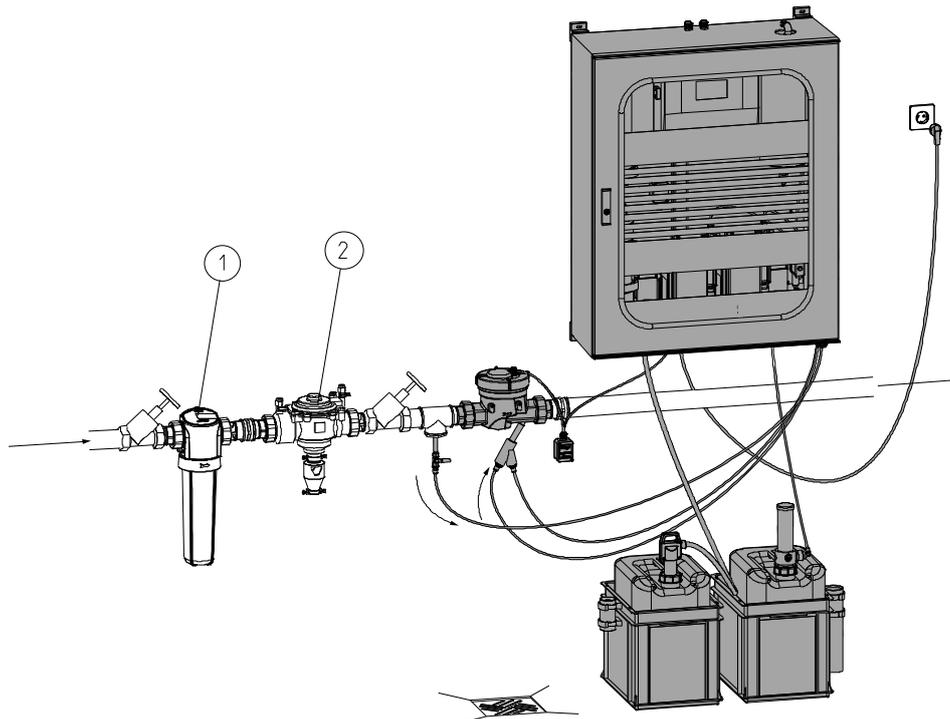
- ① GENO-fine filter (optional)
- ② Euro-system separator GENO-DK (optional)

Fig. D-1: Installation diagram of the GENO-Bakttox MRX chlorine dioxide generation system



- ① GENO-fine filter (optional)
- ② Euro-system separator GENO-DK (optional)

Fig. D-2: Example for an unfavourable installation of the GENO-Bakttox MRX chlorine dioxide generation system



- ① GENO-fine filter (optional)
- ② Euro-system separator GENO-DK (optional)

Fig. D-3: Installation diagram of the GENO-Bakttox X chlorine dioxide generation system

### 3 | Hydraulic connections

#### 3.1 Hydraulic connection of GENO-Bakttox MRX chlorine dioxide generation systems

The pre-assembled connection fitting (Fig. D-4, item 1) with a ¼" male thread (consisting of a double pipe nipple, ball valve and hose nozzle) for the measuring water sampling should be mounted at a distance of 2 m downstream of the water meter, see installation diagram (Fig. D-1). Observing the minimum distance ensures sufficient mixing and thus a proper measurement.

In the section between the water meter and the double pipe nipple, there must not be any withdrawal option (branch connection). For a correct setting of the online chlorine dioxide measurement, we recommend replacing this pipe section entirely.

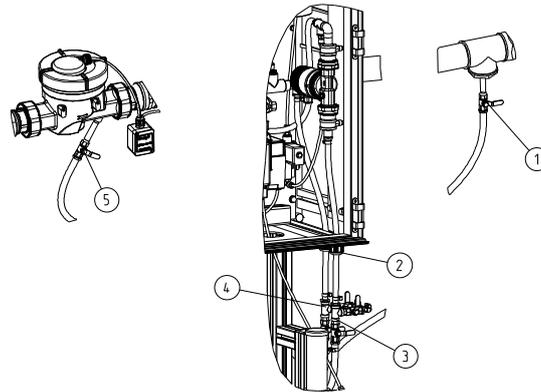
Remove the brass plug on the water meter and install the second connection fitting (Fig. D-4, item 5) for the recirculation of the measuring water at this point.

Fix two flexible PVC hoses (quantity delivered: 10 m) to the hose nozzles of the T-connections (Fig. D-4, item 3 and item 4) and connect them to the blending module to establish a hydraulic connection with the main pipe.



**Note:** The hoses must be cut to length on site and adapted to the prevailing conditions.

Fix the measuring water sampling hose to the vertical hose nozzle of the front T-connection and connect it to the circulation pump (blending module inlet, IN label) (Fig. D-4, item 3). Fit the measuring water recirculation hose to the other T-connection (Fig. D-4, item 4) (downstream of the dosing point, OUT label). The horizontal nozzles are used to connect an optional calibration set. For more information, refer to the technical service manual (order no. 569 916).



- ① Connection fitting for measuring water sampling
- ② Cable screw connections
- ③ T-connection piece for measuring water sampling hose
- ④ T-connection piece for measuring water recirculation hose
- ⑤ Connection fitting for measuring water recirculation

Fig. D-4: Connections of GENO-Baktox MRX chlorine dioxide generation system

### 3.2 Hydraulic connection for chlorine dioxide generation systems GENO-Bakttox RX/X

#### Dilution water connection:

Install the pre-assembled connection fitting (Fig. D-5, item. 5) with a 1/4" male thread (consisting of a double pipe nipple, ball valve and screw-in connection) in the pipe. Connect the green PTFE hose (quantity delivered: 5 m) to the screw-in connection and connect it to the inlet solenoid valve (Fig. D-5, item 2).

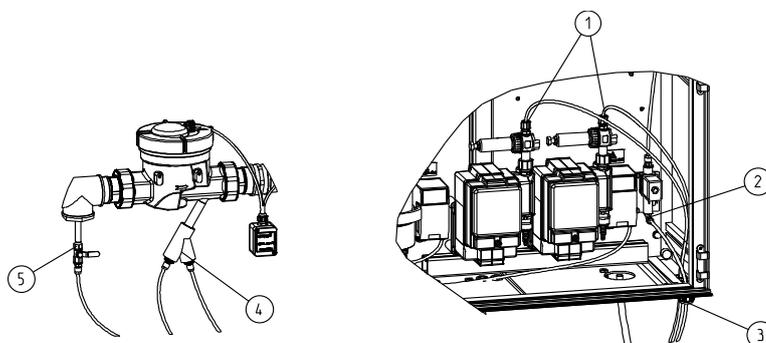
#### Dosing hose:

Remove the brass plug on the water meter.

If there is one GENODOS-pump, install the dosing valve at the water meter. When using two GENODOS pumps, screw the double dosing adapter for two dosing valves into the water meter (Fig. D-5, item 4).

Connect the GENODOS-pump to the dosing point using the black PTFE dosing hose (each 5 m in length) (Fig. D-5, item 1).

Insert the hoses through the two cable screw connections M25 at the bottom right-hand side of the switch cabinet (Fig. D-5, item 3). Use the triple seal inserts to do so in order to achieve a strain relief for the hoses.



- ① Hose connection for GENODOS-pump
- ② Dilution water sampling
- ③ Cable screw connections
- ④ Double dosing adapter
- ⑤ Connection fitting for dilution water sampling

Fig. D-5: Connections of GENO-Bakttox RX/X chlorine dioxide generation system

### 4 | Electrical installation

---



Operate the chlorine dioxide generation systems GENO-Bakttox MRX/RX/X with a power supply of 230 V/50 Hz.

The GENO Bakttox X control unit has the following connections:

- Power cable 3 m in length.
  - Pre-warning and fault signal output, terminals 53...57.
  - External fault signal input from the chlorine dioxide room air monitoring (order no. 569 820), terminals 46...47.
- 

The NCCs of the pre-warning and fault signal outputs are actively closed as long as the power supply is connected and no pre-warning or fault occurs.

The cable screw connections on the upper part of the plastic switch cabinet should preferably be used for the connection of the pre-warning and fault signal cables as well as for the room air monitoring.

The water meter cable must be connected at the installation site. The control unit of the GENODOS-pump is subject to the version used.

**GENO-Bakttox MRX chlorine dioxide generation system:**

A water meter cable of 5 m in length is connected to the online chlorine dioxide measurement. Connect the cable to the pulse divider of the water meter (order no. 119 604). To do so, the cable already in place there must be removed.

**Chlorine dioxide generation systems GENO-Bakttox RX/X:**

The water meter cable of 5 m in length is connected to the pulse cable extension and must be connected to the pulse divider of the water meter (order no. 119 604). To do so, the cable already in place there must be removed.

## E Start-up

### 1 | How to check the installation



The work described below may only be performed by trained experts. We recommend having Grünbeck's technical service/authorised service company start up the system.



**Note:** Prior to start-up, check the system for leakages and make sure that has been installed properly. The chlorine dioxide generation systems GENO-Bakttox MRX/RX/X are delivered pre-assembled.



**Note:** Only the general matters are listed below. For detailed information on the start-up, contact Grünbeck's technical service/authorised service company or persons expressly authorised by Grünbeck.

The entire system is pre-assembled and preset. Only the following activities still need to be carried out on site:

- Check whether the system hydraulics and electrics have been installed properly, see chapter D.
- Connect the pulse cable to the online chlorine dioxide measurement, refer to chapter D.
- Supply the system with power.
- Insert both suction lances into the proper chemical canisters.



**Note:** Only Grünbeck's GENO-Bakttox blau and GENO-Bakttox weiss may be used; the use of third-party chemicals will invalidate the warranty.

- Perform a leak test.
- Put the system into operation.
- Calibrate the online chlorine dioxide measurement (MRX version only).
- Complete the acceptance report (including instructions).

### 2 | How to switch on the system

- Switch on the main switch.
- The basic display will appear in the display.
- And a message will appear indicating that the neutralising agent for the gas absorption unit must be filled in.

## 3 | How to perform a leak test

### Chlorine dioxide generation systems

#### GENO-Baktox MRX version:

Open the ball valves for the measuring water sampling and recirculation and check whether all joints are tightly connected.

### Chlorine dioxide generation systems

#### GENO-Baktox RX, X version:

Open the ball valve for the dilution water sampling and check whether the joints are tightly connected.

## 4 | How to insert the binding agent into the GENO-Baktox weiss suction lance

The binding agent supplied with the system must be inserted into the cylinder on the suction lance before putting the suction lance into the canister.

The binding agent must be replaced at regular intervals. A bluish discolouration signals the end of its service life. It needs to be replaced at this point. For more information, refer to the technical service manual (order no. 569 916).

## 5 | How to add the gas neutralising agent

The gas neutralising agent supplied with the system as well as the filling material must be filled into the gas absorption unit.

For more information, refer to the technical service manual for the chlorine dioxide generation system GENO-Baktox X (order no. 569 916).

## 6 | How to produce the initial preparation

The first chlorine dioxide production can be started after the gas neutralising agent has been filled in.



**Note:** The initial preparation must be prepared in the start-up program as no monitoring times are active here.

### 6.1 Preparation

- Put on personal protective equipment (PPE).

### 6.2 How to produce the initial preparation

- Select start-up program (see Chapter F, Operation).



**Note:** The operating mode “start-up-program” is code-protected and reserved for Grünbeck’s trained technical service/authorised service company.

## 7 | Automatic mode

After the initial preparation has been produced properly, the control unit switches to automatic operation.

## 8 | How to caibrate the online chlorine dioxide measurement (chlorine dioxide generation systems GENO-Baktox MRX only)



**Note:** We recommend having Grünbeck's technical service/authorised service company calibrate the system. We recommend using the calibration kit!

1. The calibration can be started once the first chlorine dioxide preparation has been produced in automatic mode and the dosing tank is filled. The filling level in the dosing tank is shown in yellow on the display.
2. Control unit of online chlorine dioxide measurement:  
**K100:**  
 Press the buttons as follows: "Right arrow" → For information: display goes from "Manual" to "Auto," circulation pump starts running.  
 Dosing pump starts pulse-dependent dosing.  
 "Cleaning in progress" flashes on the display.  
**NEON DES:**  
 Press the button „Arrow down“ → Press the button „Mode“ until „Auto“ appears, circulation pump starts running.  
 Dosing pump starts pulse-dependent dosing.  
 "Cleaning in progress" flashes on the display.



**Note:** The measurement is deactivated while cleaning is in progress.

3. Samples are taken via the hose attached to the sampling valve and with a clean measuring vessel.
4. Hold the vessel under the measuring water sampling point and open the sampling valve slowly, take a sample and measure the temperature.
5. Control unit of online chlorine dioxide measurement:  
**K100:**  
 Set the temperature: Press the buttons as follows: „Bottom arrow“ → „Temp. compens.“ → „Right arrow“ → „Code“ → „Right arrow“ → Set code 142 → „Left arrow“ → „Top arrow“ → „Right arrow“ → „Temp. compens.“ → „Manual comp.“ → „Bottom arrow“ → „Default temp. 12.0 °C“ → "Right arrow" → Set temperature → "Left arrow" → „M“.  
**NEON DES**  
 Press the button „Arrow down“ → Button „Code“ → Enter Code 1612 and confirm with „OK“, button „ON/OFF“ → Button „Temp“ → Selection mode: „Hand/Manu“ manual value: enter value and confirm with „OK“.
6. Calibrate the online chlorine dioxide measurement:  
 Set the flow to 100 l/h.



**Note:** The value displayed may differ considerably as the online chlorine dioxide measurement has not yet been calibrated. It is important to attain a constant display (increase the flow, if necessary).

- At a constant flow (indication in the display: min. 1.5 m<sup>3</sup>/h), take three samples (min. volume of the sample 5 l).
- Only open the sampling valve to the point that the flow remains constant at approx. 100 l/h.
- Make a note of the corresponding measuring value that is displayed (value displayed should roughly match; maximum fluctuation +/- 0.05 mg/l of ClO<sub>2</sub>).



**Note:** Strictly observe the shelf life of the DPD reagents!

- Carry out the measurements.
- Calculate the average value and enter it as the calibration value in the online chlorine dioxide measurement by pressing the following buttons (if the corresponding measurement display indicates the value measured at the time when the sample was taken).
- **K100:**  
Press the buttons as follows: "Bottom arrow" → "DPD calibr." → "Right arrow" → "Code" → "Right arrow" → Set code 142 → "Left arrow" → "Top arrow" → "Right arrow" → "DPD calibr." → "Right arrow" → Enter measured value → Press "Right arrow" and "Left arrow" at the same time (= accept measured value) → "Top arrow" → "M."
- **NEON DES:**  
Press the buttons: „Arrow down“ → „CAL“ → „Reference“ → Enter measured value and accept with „OK“.  
Wait until values appear and then save them.



**Note:** The chlorine dioxide display may fluctuate if there is no flow in the pipe. Then, the chlorine dioxide concentration displayed corresponds to the value in the blending module and not to the one in the pipe.



**Note:** The online chlorine dioxide measurement only works if the water meter delivers at least 3 pulses/min.

## 9 | How to shut down the system temporarily

A few points must be observed if the chlorine dioxide generation system needs to be shut down for a certain period of time to ensure that it can be started up again at a later date without any problems:

- Shutting down the system for  approx. 3 days:  
Requirement: The system is in automatic mode and free of failures (also refer to chapter F, operation), the reaction vessel is displayed in yellow.
  7. Switch off the system at the mains switch of the control unit = shut down.
  8. Switch on the system at the mains switch = restart operation.
  9. Shutting down the system for > approx. 3 days:  
Notify Grünbeck's technical service/authorised service company.

## F Operation

### 1 | Touch screen - basic display

The basic display provides an overview of the processes currently taking place in the system.

The buttons for the functions are located in the bar above the flow chart view.

- Time, date, daylight saving time/standard time.
- Access to programming levels (screw wrench).
- Display of software version (i).
- Selection of menu language (flag).
- Selection of operating mode.

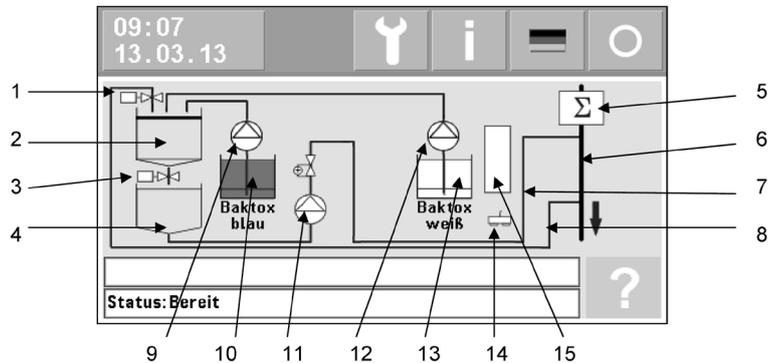
**Operating modes:**

- AUTO - Automatic mode.
- HAND/MANU – Manual mode<sup>(\*)</sup> for the initial start-up, maintenance, etc).
- FLUSHING<sup>(\*)</sup> (for maintenance).
- START-UP PROGRAM (\*)
- OFF (all output signals are switched off).

(\*) Reserved for Grünbeck's trained technical service/authorised service company.

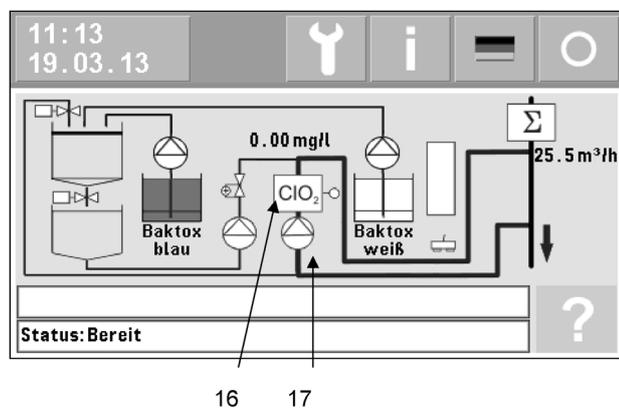
The status indicator, a signal or error text message - if applicable -, as well as the "?" button that supplies further information about messages or errors, is located in the bar below the flow chart.

### 1.1 Chlorine dioxide generation systems GENO-Bakttox RX/X version



- 1 Dilution water solenoid valve
- 2 Reaction tank
- 3 Chlorine dioxide discharge solenoid valve
- 4 Dosing tank
- 5 Water meter
- 6 Main water pipe
- 7 Measuring water recirculation/dosing line
- 8 Measuring or dilution water sampling line
- 9 Hose dosing pump for GENO-Bakttox blau
- 10 GENO-Bakttox blau canister
- 11 GENODOS-pump
- 12 Hose dosing pump for GENO-Bakttox weiss
- 13 GENO-Bakttox weiss canister
- 14 Floor sensor
- 15 Gas absorption unit

### 1.2 Chlorine dioxide generation systems GENO-Bakttox MRX version



- 16 Online chlorine dioxide measurement, consisting of a sensor + measuring transducer
- 17 Circulation pump

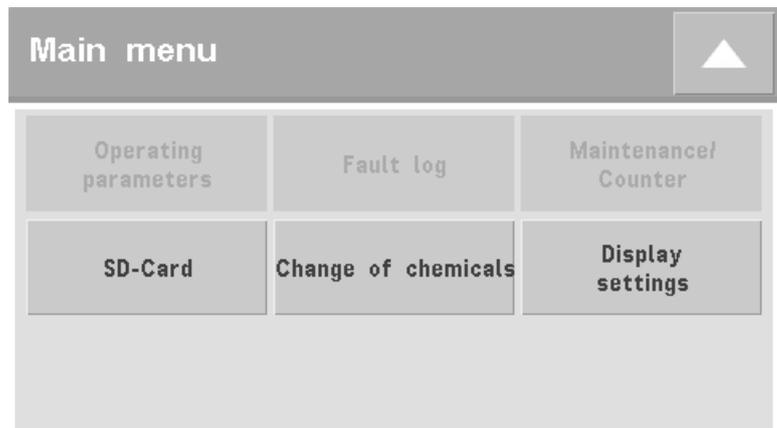
### 1.3 Illustration of the display symbols

Active symbols are displayed in animated form in order to present the system processes in a more comprehensible way:

- The filling levels of the Baktox weiss, Baktox blau and ClO<sub>2</sub> dosing tanks as well as the reactor are indicated in colour. The following colour coding applies:
  - light blue = water
  - white = Baktox weiss
  - dark blue = Baktox blau
  - yellow = chlorine dioxide (suitable for dosing)
  - dark grey (only reactor and ClO<sub>2</sub> dosing tank) = medium must be discarded and neutralised due to a malfunction.
- The triangle flashes if a pump is working.
- An open solenoid valve is depicted in green.
- A defective component or triggered floor sensor has a flashing symbol.  
Exception: In case of the chlorine dioxide measuring transducer, it can also mean that there is no water withdrawal in the main water pipe.

### 1.4 Access to the menus

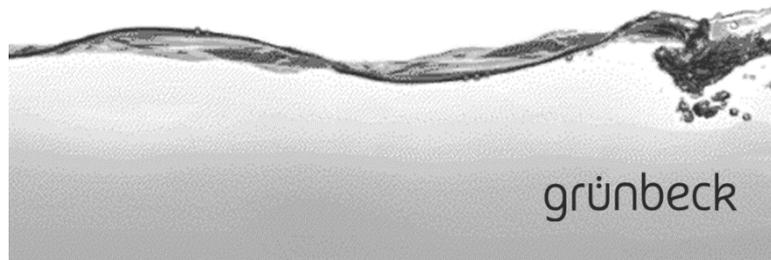
The “screw wrench” button provides access to the code requests. Both menus, which are accessible without any basic system knowledge, can be accessed by pressing the  button and do not require a code.



The three menus SD card, change chemicals and display setting are available.

### 1.5 Screen saver

The screen saver is displayed automatically if the screen is not touched for 5 minutes (or for an adjustable period of time).



Here too, the status bar of the basic display is shown at the bottom and in case of the GENO-Bakttox MRX version of the chlorine dioxide generation systems, the ClO<sub>2</sub> online measurement and the flow in the main water pipe are displayed as well.

Upon touching, the screen display returns to the basic display.

## 2 | How to operate the control unit

The mains switch for the entire system is fitted to the left side wall of the green control unit housing.

The arrow buttons in the header are used for navigation when a menu is open:



Return to the basic display of the flow chart.



Go to the next menu page within a menu.



Return to the previous menu page within a menu or to the higher-level menu.

Numeric input is required for various parameters.

1	2	3	+/-	ESC
4	5	6	,	←
7	8	9	0	↵

ESC rejects entries made and returns to the higher-level menu

← Deletes the last character entered.

↵ Saves the input and initiates a return to the higher-level menu.

**2.1 How to program date and time**

The button with the date/time display opens the following window:

The Yes/No button enables the automatic switch-over from daylight saving time to standard time and vice versa.

The date and time buttons navigate to menus, as shown below: The decimal points in the date and the colon in the time do not have to be entered. Instead, the cursor automatically goes to the next double-digit group of numbers after you have entered two figures.

**2.2 How to define the menu language**

The “flag” button takes you to the selection of the menu language. The following languages are provided:

### 2.3 How to set the operating mode



OFF – All outputs are switched off.



HAND/MAN/U – Manual mode, code-protected and reserved for Grünbeck's trained technical service/authorised service company.



AUTO – Automatic mode, automatically produces ClO<sub>2</sub> preparations and doses them into the main water pipe in proportion to the water volume.



FLUSHING – Flushing program, code-protected and reserved for Grünbeck's trained technical service/authorised service company.



START-UP PROGRAM - (Re-)Starting the system automatically and automatic switch-over into automatic mode.

### 2.4 How to change the chemical dosing containers

If the Baktox weiss and Baktox blau base chemicals are running low, a query window is displayed automatically.



**Note:** Between the pre-empty alarm and the empty signal of the suction lances, a volume of approx. 3.5 l is still remaining. The remaining volume of the dosing agent is sufficient for approx. 67 preparations of chlorine dioxide. In full load operation (50 m<sup>3</sup>/h), this is sufficient for a duration of approx. 13 h before the empty signal will be displayed.

**Change of chemicals**

Chemical based substance  
will soon be empty!  
Change dosing agent tank?

Yes

No

By pressing "Yes," the suction lances can be removed and inserted into a full chemical dosing container without a fault occurring. In conclusion, the subsequent window can be closed by pressing "OK."

However, if the query window is closed by pressing "No", the rest remaining in the containers will be sucked in until the containers are empty.

As long as one dosing agent container is empty, no new preparation will be started. If the dosing medium containers are replaced during an ongoing preparation, a fault will result which can only be remedied by Grünbeck's trained technical service/authorised service company!

You can also open the query window manually. Access is gained via the "Change chemicals" menu and by pressing the button which subsequently changes to "Yes."

**Change of chemicals**

Change dosing  
tank

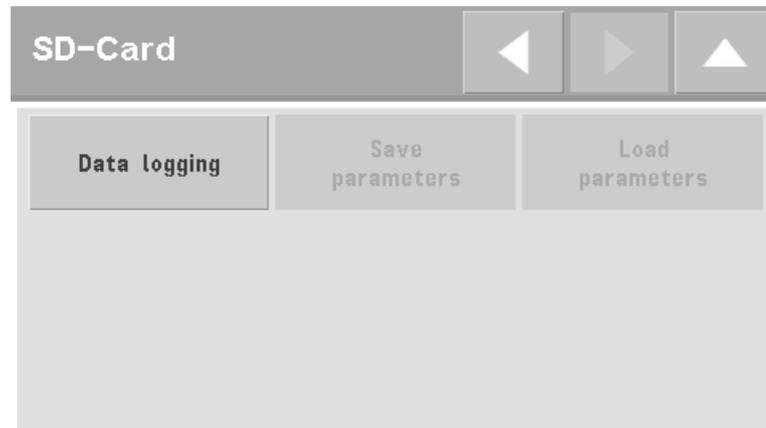
No

### 2.5 Data logger menu

The use of an integrated data logger is particularly useful with the GENO-Baktox MRX chlorine dioxide generation systems because that way, the record keeping requirements stipulated in § 16 of the German Drinking Water Ordinance (TrinkwV) can easily be met.

Apart from date and time, the measured ClO<sub>2</sub> and flow are stored in a \*.txt file and can therefore also be read with Microsoft Excel, for example, and a graphical signal curve can be produced.

A standard SD card (FAT32 formatting) can be used as a storage medium. We recommend proper formatting instead of quick formatting. The socket for the SD card is located on the control board in the cover of the control unit.



**Note:** If no data logger is available for the online chlorine dioxide measurement, the concentration must be checked manually and recorded on a daily basis.

The following window will open up when the "Data logging" button is pressed:



Recording begins once the "Start data logging" button has been pressed; the button text then changes to "Stop data logging." The logging interval can be set using the "--h" button.

A logging interval of 24 h is required for the logging in accordance with § 16 of the Drinking Water Ordinance (TrinkwV).

When the logging stops and you want to remove the SD card, press the "Stop data logging" button.

---



**Attention!** The card must not be removed if the LED at the SD card socket is illuminated!

---

The following information is logged:

**"Measured values.txt" file**

Date	Time	ClO <sub>2</sub> [mg/l]	Flow [m <sup>3</sup> /h]
------	------	-------------------------	--------------------------

The flow refers to the water meter in the main water pipe.

**"Error mem.txt" file**

Comes	Time	Goes	Time	Error
Date	Time	Date	Time	...

Comes: An error has occurred.

Goes: The error was acknowledged.

---

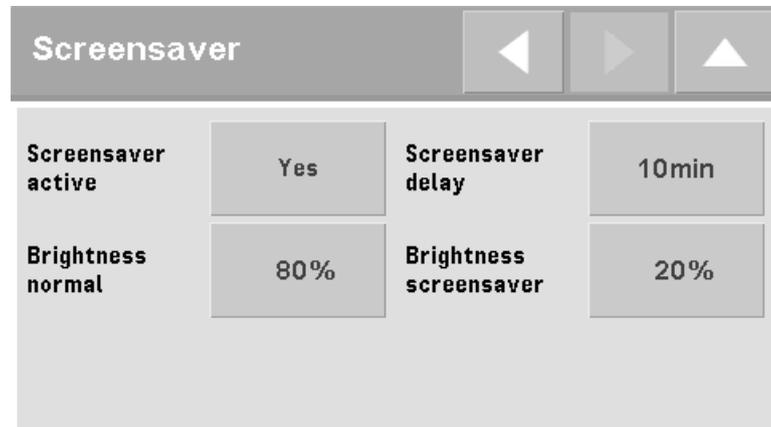
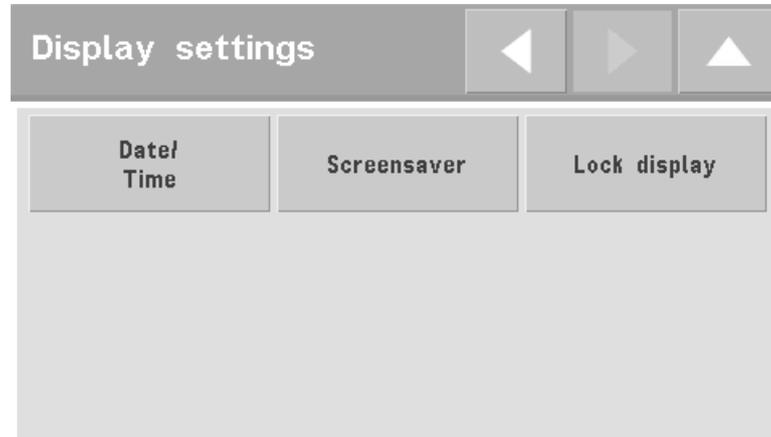


**Note:** As long as no water is withdrawn from the main pipe (flow 0.0 m<sup>3</sup>/h), no chlorine dioxide measurement is possible either. In this case, a value of --- mg/l is being logged.

---

2.6 Menu  
Display settings

Apart from the date and the time, you can also adapt the brightness of the display and the screen saver to the conditions on site in this sub-menu.



Use the "Lock screen" function to clean the touch screen without triggering a control function.



**Note:** The protective foil covering the touch screen may only be wiped with a damp cloth and a mild solution at most! Never use cleaning agents for plastics or stronger cleaning agents! Otherwise there is a risk that the foil will assume a milky colour and therefore will be difficult to read!



### 3 | How to switch off the ClO<sub>2</sub> production

Switching off the production using the operating modes OFF and switching Automatic on and off, generally results in a fault as a preparation that has already been started cannot readily be cancelled and continued at the same point.

The ClO<sub>2</sub> production must therefore preferably be switched off and on again using the mains switch. The control unit remembers the last status and continues at the same point again, provided the filling level in the reactor is the same.

## G Troubleshooting

Messages and errors are displayed above the status bar on the display. Messages and errors can be acknowledged by tapping on the text.



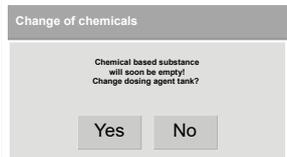
**Note:** The operator is not always permitted to acknowledge a message or error. In some cases, it is required that Grünbeck's trained technical service/authorised service company remedies the malfunction.



**Note:** The "?" button can be used to call up more information on a message or error. It might also provide you with information on whether possible problems on site caused the occurrence of the message or error.

### 1 | Messages

The signal contact (terminals 55 ... 57, joint common with the collective fault contact) is actively closed, i.e. it opens in case of a power failure or in case a signal occurs.

Table G-1: Eliminating messages			
Message text	Causes	What to do	Acknowledge
<b>Message on the display</b>			
<p>W022: Blue storage container resp. W021: White storage container (in the basic display, the containers are depicted as not completely empty yet) This results in a query window</p> 	<p>Base chemical Baktox blau or Baktox weiss will soon be empty (1)</p>	<p>If there are full storage containers of Baktox blau and Baktox weiss available:</p> <ul style="list-style-type: none"> <li>Press "Yes" in the query window and change both containers.</li> </ul> <p>If there are no full storage containers available:</p> <ul style="list-style-type: none"> <li>Order both containers without delay and – as soon as they are delivered – press the "Change dosing container" parameter in the "Change chemicals" menu (see chapter F, paragraph 2.4) and then change the containers.</li> <li>Disadvantage: Changing the chemicals during an ongoing preparation process may result in a malfunction.</li> </ul>	<p>Not required if the change of the chemicals was initiated via the query window "Yes".</p>

Continuation Table G-1:			
Message text	Causes	What to do	Acknowledge
<b>Message on the display</b>			
E069: Bakttox weiss dosing container empty or E068: Bakttox blau dosing container empty. (containers are depicted as completely empty in the basic display).	Base chemical empty, pre-warning has been ignored. (1)	<ul style="list-style-type: none"> <li>• Insert new dosing containers.</li> </ul>	Confirm in the menu "Change chemicals" that a new container was inserted.
W023: Maintenance due	Maintenance interval has expired	Notify Grünbeck's trained technical service/authorised service company	No
ClO <sub>2</sub> measuring transducer is flashing in red (no message text)	MRX chlorine dioxide generation system only: ClO <sub>2</sub> concentration too low	<ul style="list-style-type: none"> <li>• Check the limit values</li> <li>• Check to determine whether there is any flow</li> <li>• Check setting of the variable area flow meter</li> <li>• Determine the concentration by manual measurement, if necessary</li> </ul>	No

(1) When changing the storage containers, it is essential to use personal protective equipment in accordance with GUV-V D05 and to observe the regulations and procedures in accordance with chapter H!

## 2 | Troubleshooting

The signal contact (terminals 53 ... 55, joint common with the signal contact) is actively closed, i.e. it opens in case of a power failure or if a malfunction occurs.

Table G-2: Troubleshooting			
Error message	Causes	What to do	Acknowledge
<b>Message on the display</b>			
E067: Hose dos Baktox weiss defective or E066: Hose dos Baktox blau defective.	<ul style="list-style-type: none"> <li>Monitoring time has been triggered because the chemical was dosed too slowly.</li> <li>The suction lance was removed from the base chemical container without inserting a full container.</li> </ul>	Notify Grünbeck's technical service/authorised service company and check whether leakages might have occurred in the system cabinet.	Yes, if there is no leak.
E108: Control unit defective.	Hose dosing pump has dosed base chemical unchecked.	Notify Grünbeck's technical service/authorised service company, switch off the system at the mains switch and leave it switched off.	No
E070: Discharge solenoid valve blocked.	Monitoring time has been triggered because the finished ClO <sub>2</sub> preparation has not drained into the ClO <sub>2</sub> dosing tank quickly enough.	Notify Grünbeck's technical service/authorised service company and leave the system switched on.	No
W032: Slope error of the sensor.	Signal error of ClO <sub>2</sub> sensor.	Notify Grünbeck's technical service/authorised service company and leave the system switched on.	No

<sup>(1)</sup> When changing the storage containers, it is essential to use personal protective equipment in accordance with GUV-V D05 and to observe the regulations and procedures in accordance with chapter H!

Continuation Table G-2:			
Error message	Causes	What to do	Acknowledge
E071: Defective dosing pump.	GENODOS-pump has signalled a malfunction to the control unit.	Notify Grünbeck's technical service/authorised service company and leave the system switched on.	No
W031: Connection to the ClO <sub>2</sub> measuring transducer interrupted.	<ul style="list-style-type: none"> <li>• ClO<sub>2</sub> measuring transducer defective.</li> <li>• Control unit defective.</li> <li>• Connection between the measuring transducer and control unit interrupted.</li> <li>• Incorrect system size set, in general, this malfunction can only occur on the chlorine dioxide generation system GENO -Bakttox MRX.</li> </ul>	Notify Grünbeck's technical service/authorised service company and manually measure and document the ClO <sub>2</sub> concentration on a daily basis until the malfunction has been remedied.	No
W033: Error ClO <sub>2</sub> input.	Only for chlorine dioxide generation system GENO-Bakttox MRX: <ul style="list-style-type: none"> <li>• ClO<sub>2</sub> sensor defective.</li> <li>• Measuring transducer defective.</li> </ul>	Notify Grünbeck's technical service/authorised service company and manually measure and document the ClO <sub>2</sub> concentration on a daily basis until the malfunction has been remedied.	No
W036: Error as limit value was exceeded.	Only for chlorine dioxide generation system GENO-Bakttox MRX: Measured ClO <sub>2</sub> value is too high.	Notify Grünbeck's technical service/authorised service company if the fault continues to occur.	Yes
E073: Filling level detection defective.	Invalid level position in the reactor.	Notify Grünbeck's technical service/authorised service company, switch off the system at the mains switch and leave it switched off.	No
E074: Lack of water or inlet solenoid valve defective.	Monitoring time has been triggered because the water feed has filled too slowly.	Check water pressure and restore, if necessary. If the fault occurs again once it has been acknowledged, notify Grünbeck's technical service, switch off the system at the main switch and leave it switched off.	Yes

Continuation Table G-2:			
Error message	Causes	What to do	Acknowledge
E091: or E097: Discharge solenoid valve leaking.	The level has dropped following the water supply or during the reaction period.	Notify Grünbeck's technical service/authorised service company, switch off the system at the mains switch and leave it switched off.	No
E086: Outlet ball valve leaking or open.	ClO <sub>2</sub> may possibly be leaking unchecked from the maintenance ball valve at the ClO <sub>2</sub> dosing tank. <b>⚠ Warning!</b> Danger due to gaseous or liquid ClO <sub>2</sub> !	Check whether the ball valve is open or leaking and close immediately, if necessary! If there already is a leak in the cabinet or below the system, it is essential to observe the information on eliminating leaks in accordance with chapter H! Observe the ClO <sub>2</sub> safety data sheet!	Yes, if the ball valve was merely open and not leaking.
E090: Solenoid valve defective or lack of water.	<ul style="list-style-type: none"> <li>• Inlet solenoid valve leaking.</li> <li>• Monitoring time has been triggered because the dilution water has filled too slowly.</li> <li>• After the power failure the level setting is different from before the power failure.</li> </ul>	Notify Grünbeck's technical service/authorised service company, switch off the system at the mains switch and leave it switched off. In addition, shut off the water supply.	No
E100: Reactor brimful	<ul style="list-style-type: none"> <li>• Inlet solenoid valve leaking.</li> <li>• Strong vibrations at the installation site.</li> </ul>	Notify Grünbeck's technical service/authorised service company, switch off the system at the mains switch and leave it switched off. In addition, shut off the water supply. If the vibrations are actually considered the cause of the malfunction: <ul style="list-style-type: none"> <li>• Eliminate the cause if possible or at least</li> <li>• fasten the system rack firmly at the wall and/or on the floor.</li> <li>• If both of these alternatives are not possible or unsuccessful, then choose a different installation site.</li> </ul>	No

Continuation Table G-2:			
Error message	Causes	What to do	Acknowledge
E077: Ext. signal for operational release absent.	<ul style="list-style-type: none"> <li>• Jumper at terminals 44/45 has been removed.</li> <li>• Room air monitoring has been triggered.</li> </ul> <p>⚠ Warning! Danger due to gaseous or liquid ClO<sub>2</sub>!</p>	<p>If no room air monitoring is connected: Insert the jumper again.</p> <p>If room air monitoring is connected:</p> <ul style="list-style-type: none"> <li>• Check whether the room air monitoring alarm contact is correctly configured and connected (refer to operation manual).</li> <li>• If ClO<sub>2</sub> has escaped: Observe information on removing leakages in accordance with chapter H!</li> </ul> <p>Observe the ClO<sub>2</sub> safety data sheet!</p>	<p>Yes, but only at the initial start-up.</p> <p>No</p>
		<ul style="list-style-type: none"> <li>• After a power failure in the room air monitoring: Upon return of power, the sensor requires up to 5 minutes to correctly measure the gas concentration in the room air. During this time, the operational release for the GENO-Bakttox system is locked.</li> </ul>	<p>Yes, (after approx. 5 minutes)</p>
E078: Leakage detected.	<p>One of the three floor sensors has detected a liquid film.</p> <p>⚠ Warning! Danger due to gaseous or liquid ClO<sub>2</sub>, hydrochloric acid or sodium chlorite!</p>	<p>Observe information on removing leakages in accordance with chapter H!</p> <p>Observe the safety data sheets!</p> <p>Notify Grünbeck's technical service/authorised service company, switch off the system at the mains switch and leave it switched off. In addition, shut off the water supply.</p>	No

<b>Continuation Table G-2:</b>			
<b>Error message</b>	<b>Causes</b>	<b>What to do</b>	<b>Acknowledge</b>
E092: Hose dos Bakttox weiss TMin or E094: Hose dos Bakttox blauTMin	Solenoid valve for dilution leaking.	Shut off water supply to GENO-Bakttox X/RX/MRX and notify Grünbeck's technical service/authorised service company.	No
E093: Hose dos Bakttox weiss TMax or E095: Hose dos Bakttox blau TMax	Respective hose dosing pump defective.	Notify Grünbeck's technical customer service/authorised service company.	Yes
E081 ... E085: Level xxx defective	Malfunction of filling level detection in the ClO <sub>2</sub> reactor.	Notify Grünbeck's technical customer service/authorised service company.	No
E 101: Level positional error after power ON	Solenoid valve leaking.	Shut off water supply to GENO-Bakttox X/RX/MRX and notify Grünbeck's technical service/authorised service company.	No

## H Maintenance

### 1 | Basic information

- In order to guarantee the reliable function of the chlorine dioxide generation systems GENO-Bakttox MRX/RX/X over a long period of time, certain maintenance work has to be carried out at regular intervals. In particular when it comes to dosing in the drinking water supply, the required measures are defined in the pertinent regulations and guidelines. All regulations and guidelines which apply at the installation site must be strictly adhered to.
- DIN 1988 Part 8/A 11 stipulates that:  
Annual maintenance has to be carried out by an authorised specialist company or by Grünbeck's technical service/authorised service company.  
The chlorine dioxide generation systems - in particular - are subject to a semi-annual maintenance interval.
- Furthermore, the operator has to check the system for leaks at least every two months as well as each time a canister is replaced.



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

The maintenance work performed must be documented in the checklist, refer to appendix "Operation log".



**Note:** For additional maintenance work, please contact Grünbeck's technical service/authorised service company or persons expressly authorised by Grünbeck.



**Note:** For the chlorine dioxide generation systems GENO-Bakttox MRX/RX/X, semi-annual maintenance is compulsory.

### 2 | Inspection (by the customer/operator)

The following items have to be checked visually at regular intervals, but at least each time a chemical canister has been replaced. We recommend documenting the check in a corresponding inspection log.

- Rinse off chemical droplets, e.g. in the tray, at the rack or on the floor with a lot of water.
- Check the hose pumps, solenoid valves, reaction and dosing tanks, blending module and hose connections to the main water pipe for leaks.
- GENO-Bakttox MRX chlorine dioxide generation systems:  
Check the flow at the blending module and readjust, if necessary (should be 100 l/h).
- GENO-Bakttox MRX chlorine dioxide generation systems:  
Read out the chlorine dioxide measurements on the SD card.

**2.1 Neutralisation of residual chemicals in the containers**



**Note:** Put on personal protective equipment prior to starting work.

**Accessories:**

- |  |                   |
|--|-------------------|
| 1 x Neutralising powder for GENO-Bakttox | Order no. 569 838 |
| 1 x Personal safety set GENO-Bakttox     | Order no. 569 815 |
| 1 x 10 l bucket                          |                   |

**How to proceed:**

1. Put on protective equipment.
2. Pour approx. 2 litres of water into the bucket.
3. Add approximately  $\frac{3}{4}$  of the contents of the neutralising powder (corresponds to approx. 120 g) to the bucket. Save the remaining powder.
4. Pour the canister contents alternately, always starting with GENO-Bakttox Weiss, into the bucket. Ensure uniform mixing by carefully swirling it or stirring it with a rod.
5. Add no more of the canister contents once the yellowish chlorine dioxide generated no longer discolours = is neutralised.
6. Then add the remaining neutralising powder (approx. 30 g), so that the bucket contents are colourless.
7. Leave it to react for 30 minutes.
8. It can now be disposed of safely via the sewage system.





**Note:** All work must be carried out in accordance with the technical service section of the operation manual of the chlorine dioxide generation systems GENO-Baktox MRX/RX/X!

<b>Maintenance work on the chlorine dioxide generation systems GENO-Baktox MRX/RX/X</b>			
<b>Checklist for Grünbeck's technical service/authorised service company</b>			
Please enter measured values. Confirm checks with OK or enter repair work performed.			
Maintenance performed (date)	Start-up		
Work on chlorine dioxide generation systems			
Hose pumps maintained			
Gas neutralising agent replaced			
Gas absorption unit cleaned			
Solenoid outlet valve for chlorine dioxide checked			
Pre-filter cleaned/replaced			
Solenoid valve for dilution water maintained			
GENODOS-pump maintained			
Dosing valve replaced			
Online chlorine dioxide measurement (MRX)			
ClO <sub>2</sub> sensor calibrated			
ClO <sub>2</sub> sensor replaced			
Miscellaneous			
<b>Remarks</b>			

Service technician: \_\_\_\_\_

Company: \_\_\_\_\_

Work time certificate (no.) \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_



**Note:** All work must be carried out in accordance with the technical service section of the operation manual of the chlorine dioxide generation systems GENO-Bakttox MRX/RX/X!

Maintenance work on the chlorine dioxide generation systems GENO-Bakttox MRX/RX/X Checklist for Grünbeck's technical service/authorised service company			
Please enter measured values. Confirm checks with OK or enter repair work performed.			
Maintenance performed (date)	Start-up		
Work on chlorine dioxide generation systems			
Water meter reading (residential water meter)			
Hose pumps maintained			
Gas neutralising agent replaced			
Gas absorption unit cleaned			
Solenoid outlet valve for chlorine dioxide checked			
Pre-filter cleaned/replaced			
Solenoid valve for dilution water maintained			
GENODOS-pump maintained			
Dosing valve replaced			
Online chlorine dioxide measurement (MRX)			
ClO <sub>2</sub> sensor calibrated			
ClO <sub>2</sub> sensor replaced			
Miscellaneous			
<b>Remarks</b>			

Service technician: \_\_\_\_\_

Company: \_\_\_\_\_

Work time certificate (no.) \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_



**Note:** All work must be carried out in accordance with the technical service section of the operation manual of the chlorine dioxide generation systems GENO-Baktox MRX/RX/X!

<b>Maintenance work on the chlorine dioxide generation systems GENO-Baktox MRX/RX/X</b>			
<b>Checklist for Grünbeck's technical service/authorised service company</b>			
Please enter measured values. Confirm checks with OK or enter repair work performed.			
Maintenance performed (date)	Start-up		
Work on chlorine dioxide generation systems			
Hose pumps maintained			
Gas neutralising agent replaced			
Gas absorption unit cleaned			
Solenoid outlet valve for chlorine dioxide checked			
Pre-filter cleaned/replaced			
Solenoid valve for dilution water maintained			
GENODOS-pump maintained			
Dosing valve replaced			
Online chlorine dioxide measurement (MRX)			
ClO <sub>2</sub> sensor calibrated			
ClO <sub>2</sub> sensor replaced			
Miscellaneous			
<b>Remarks</b>			

Service technician: \_\_\_\_\_

Company: \_\_\_\_\_

Work time certificate (no.) \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_



















### 1 | Storage of chemicals

	Yes	No
The stored chemicals are placed in separate collection trays.	<input type="checkbox"/>	<input type="checkbox"/>

The following chemicals are used:

GENO-Bakttox blau	<input type="checkbox"/>	<input type="checkbox"/>
GENO-Bakttox weiss	<input type="checkbox"/>	<input type="checkbox"/>



**Note:** No warranty when other chemicals are used!



**Danger!** It is forbidden to transfer any remaining chemicals from one container to another when changing the containers. Mixing up the containers can lead to fatal accidents.

	Yes	No
The operator has been informed that both chemicals must not be mixed outside of the system. (Reason: the possibility of spreading contamination in the transfer process).	<input type="checkbox"/>	<input type="checkbox"/>

**2 | Construction and equipment**

**Note:** The respective provision for this is the Regulation on Accident Prevention "Chlorination of water" GUV-V D 5, here: ClO<sub>2</sub> systems using NaClO<sub>2</sub> and HCl, edition January 1997.

**2.1 Installation rooms**

	Aes	No
Is the installation room lockable (as per § 3 para. 1)?	<input type="checkbox"/>	<input type="checkbox"/>
Is the installation room intended for the permanent presence of people, i.e. do people spend more than 2 hours a day in this room (as per § 3 para. 2)?	<input type="checkbox"/>	<input type="checkbox"/>
If so, is the system secured against unauthorised access in terms of the chemicals and are only the chemicals available that are needed to proceed with the work (as per § 3 para. 3)?	<input type="checkbox"/>	<input type="checkbox"/>
Has a check been made to ensure that the temperature in the installation room cannot drop below 5 °C (as per § 3 para. 4)?	<input type="checkbox"/>	<input type="checkbox"/>
Has a check been made to ensure that the temperature in the installation room cannot exceed 35 °C (as per § 3 para. 4)?	<input type="checkbox"/>	<input type="checkbox"/>
Can the installation room be ventilated (as per § 3 para. 5)?	<input type="checkbox"/>	<input type="checkbox"/>
Is it possible to remove neutralised chemicals safely from the room, e.g. by means of a water connection and floor drain (as per § 3 para. 6)?	<input type="checkbox"/>	<input type="checkbox"/>

**2.2 Operation**

	Yes	No
Are operating instructions available (as per § 9 para. 1)?	<input type="checkbox"/>	<input type="checkbox"/>
Have the operating instructions been distributed to the supervisors (as per § 9 para. 2)?	<input type="checkbox"/>	<input type="checkbox"/>
Have operating instructions (or an abridged version) in durable form been affixed in the area of the chlorination system (as per to § 9 para. 2)?	<input type="checkbox"/>	<input type="checkbox"/>
Is the chlorine dioxide system operated and maintained by trained persons (as per § 10)?	<input type="checkbox"/>	<input type="checkbox"/>
Are the rooms secured against unauthorised access (as per § 11)?	<input type="checkbox"/>	<input type="checkbox"/>

<b>2.3 Personal protective equipment</b>		Yes	No
	Is personal protective equipment available, such as rubber boots, protective gloves, an apron, face protection and breathing protection (as per § 12 para. 1)?	<input type="checkbox"/>	<input type="checkbox"/>
	Are employees familiar with the use of protective equipment?	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.4 Handling the containers</b>		Yes	No
	Are the empty or full chemical containers stored in an admissible manner within the rooms (as per § 14 para. 1)?	<input type="checkbox"/>	<input type="checkbox"/>
	Are the full or empty chemical containers always kept closed (as per § 14 para. 3)?	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.5 Handling GENO-Baktox, GENO-Baktox blau and GENO-Baktox weiss</b>		Yes	No
	Has a check been made to ensure that GENO-Baktox blau will not come into contact with greases, oils, oxidising substances, acids and other salts as long as this is not required as part of the process (§ 18 para. 1)?	<input type="checkbox"/>	<input type="checkbox"/>
	Has a check been made to ensure that GENO-Baktox blau is not stored near greases and highly flammable substances (§ 18 para. 2)?	<input type="checkbox"/>	<input type="checkbox"/>
	Is smoking prohibited in the room in which GENO-Baktox blau is stored (§ 18 para. 6)?	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.6 Inspection</b>		Yes	No
	Have the chlorine dioxide generation systems GENO-Baktox MRX/RX/X been inspected by a specialist from Grünbeck's technical service/authorised service company or by persons expressly authorised by Grünbeck prior to their initial start-up (§ 19 para. 1)?	<input type="checkbox"/>	<input type="checkbox"/>
	Is the chlorination system inspected by Grünbeck's technical service/authorised service company every six months and each time before the system is started up again (§ 19 para. 2)?	<input type="checkbox"/>	<input type="checkbox"/>
	Can written evidence be provided on the results of the inspection (§ 19 para. 4)?	<input type="checkbox"/>	<input type="checkbox"/>

**3 | Installation**

	Yes	No
In case of the X version: The plastic cabinet has been fixed securely to a load-bearing and vertical wall.	<input type="checkbox"/>	<input type="checkbox"/>
In case of the MRX, RX versions: The rack is safely and firmly placed.	<input type="checkbox"/>	<input type="checkbox"/>
The chemical containers are positioned under the system.	<input type="checkbox"/>	<input type="checkbox"/>
A Euro system separator is installed in the water supply pipe.	<input type="checkbox"/>	<input type="checkbox"/>
Every hose connection in the system has been checked.	<input type="checkbox"/>	<input type="checkbox"/>
The pressure maintaining valve in the dosing line between the system and the dosing point has been checked.	<input type="checkbox"/>	<input type="checkbox"/>

**4 | Measurement of the chlorine dioxide concentration in the water**

The treated water has been tested for chlorine dioxide according to the DPD method with the following results:

The on-site temperature has been set.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Directly after being added to the main water pipe (at the sampling valve in the blending module).	_____	mg/l
In the outlet further downstream (at the first withdrawal point).	_____	mg/l
Measuring equipment used (name).	_____	



Note: Depending on the biofilm present and other substances contained in the water, the intensity of the chlorine dioxide consumption varies in degree.

**5 | Online chlorine dioxide measurement**

Available  Yes  No

Slope after DPD calibration.

**K100:**

Press the buttons as follows: "Bottom arrow" → "Right arrow" → "Right arrow" → Code → Enter code 290 → "Left arrow" → "Top arrow" → "Right arrow" → "Bottom arrow" → Slope \_\_\_\_\_ mV.

**NOEN DES:**

Press the buttons: „Arrow down“ → „CAL“ → „INFO“ → Slope \_\_\_\_\_ mV.

**6 | System operation and maintenance**

The operating personnel have been trained in the operation of the system and the measuring technology as well as in handling the chemicals.

They have been informed about all the safety aspects described in the acceptance report.

The operating personnel is in possession of an operation manual for the system and will read this immediately after completing this training.

Only the following trained personnel are permitted to operate the system:

- 1.
- 2.
- 3.

**7 | Remarks**

---

---

---

---

---

---

---

---

**8 | The system is ready for use**

Place: \_\_\_\_\_

Date: \_\_\_\_\_

System operator: \_\_\_\_\_

Signature \_\_\_\_\_

Instructor: \_\_\_\_\_

Signature \_\_\_\_\_

**9 | One copy has to be passed on to the customer.**

**The original remains with Grünbeck's local technical service personnel.**