

Fig. 1: Chlorine dioxide generation system GENO®-Bakttox MRX

Designated application

The chlorine dioxide generation systems GENO®-Bakttox MRX/RX/X are designed for the dosing of chlorine dioxide into drinking and industrial water. The chlorine dioxide GENO®-Bakttox is generated on site from GENO®-Bakttox weiß and GENO®-Bakttox blau.

GENO®-Bakttox 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).

When applied in the drinking water sector as well as in the food industry, the chlorine dioxide generation system GENO®-Bakttox type MRX is prescribed.

After disinfection by means of GENO®-Bakttox, the rate of renewed bacterial growth is considerably lower than if conventional disinfectants are used.

GENO®-Bakttox is dosed volume-controlled, triggered by a water meter signal. The systems are preset to a dosing concentration of 0.2 mg/l ClO₂.

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.

In general, GENO®-Bakttox is still effective in the drinking after 48 hours. As a rule, a concentration of 0.1 mg/l of ClO₂ is still adequate for the effective deactivation of free micro-organisms contained in the drinking water.

When handling GENO®-Bakttox, GENO®-Bakttox blau and GENO®-Bakttox

weiß, wearing the compulsory, personal safety equipment is essential.



Attention! The simultaneous use of other disinfectants is prohibited.

Function

When water is withdrawn, a water meter measures the water volume flowing through and then - according to the pulse interval of the water meter - transmits the control pulses to the GENODOS®-pump.

In case of the chlorine dioxide system GENO®-Bakttox type MRX with online chlorine dioxide measurement, the processing and transfer of the signals to the GENODOS®-pump takes place by means of the online chlorine dioxide measurement.

Thanks to the volume-controlled dosing of the disinfecting solution, a constant drinking water quality can be ensured. The GENO®-Bakttox solution is directly drawn in from the dosing tank of the chlorine dioxide generation system GENO®-Bakttox. For the chlorine dioxide generation systems GENO®-Bakttox MRX/RX/X, the GENO®-Bakttox concentration is 0.9 g/l.

In case of types RX and X, GENO®-Bakttox is directly dosed into the drinking water pipe via the dosing line and dosing valve.

In case of the chlorine dioxide generation system GENO®-Bakttox type MRX, GENO®-Bakttox 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. Thanks to the online chlorine dioxide measurement, a check measurement of the chlorine dioxide concentration takes place without any loss of measuring water.

Chlorine dioxide generation systems GENO®-Bakttox MRX/RX/X

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

Scope of supply

Standard equipment

Chlorine dioxide generation system GENO®-Bakttox mounted on PE mounting plate in plastic switch cabinet, consisting of the following components:

Microprocessor controller with TFT colour graphics display 4.3" 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 rate (only for chlorine dioxide generation system GENO®-Bakttox MRX).

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®-Bakttox blau and weiß, 3 leakage sensors, two chemical collecting basins, self-priming diaphragm dosing pump(s) automatically deaerating against pressure, injection valve(s), water meter with pulse cable.

All chlorine dioxide generation systems GENO®-Bakttox MRX/RX/X are completely pre-configured, the GENODOS®-pumps are preset and sealed.

Up to system types MRX 25/RX 25/ X 25, the chlorine dioxide generation system GENO®-Bakttox, features a GENODOS®-pump. For larger nominal diameters two GENODOS®-pumps are required.

Type: Chlorine dioxide generation system GENO®-Bakttox MRX

Mounted on a system rack, with online chlorine dioxide measurement and blending module. Indication of chlorine dioxide concentration and flow rate in the control unit GENO®-Bakttox X.

Type: Chlorine dioxide generation system GENO®-Bakttox RX

Mounted on system rack, without blending module and online chlorine dioxide measurement.

Type: Chlorine dioxide generation system GENO®-Bakttox X

For wall mounting, without blending module and online chlorine dioxide measurement.

Accessories

Personal safety set GENO®-Bakttox
Order no. 569 815

Set of safety stickers GENO®-Bakttox
Order no. 569 810

Digital test device Scuba+
(to regularly check the ClO₂ concentration at the withdrawal points)
Order no. 211 145

Room air monitoring for chlorine dioxide, chlorine and ozone
Order no. 569 820

Consumables

GENO®-Bakttox blau
20 kg canister
Order no. 170 490

GENO®-Bakttox weiß
20 kg canister
Order no. 170 485

Neutralisation powder
for GENO®-Bakttox
Order no. 569 838

Gas neutralising agent
for GENO®-Bakttox
Order no. 569332

Indicator for Scuba+
(reagents for the determination of chlorine dioxide)
Order no. 211 221

A set of GENO®-Bakttox blau and weiß canisters, is sufficient to treat approx. 3800 m³ of water.

Installation requirements

 **Note:** For the online chlorine dioxide measurement, a minimum conductivity of the water to be treated of 150 µS/cm is required.

For the proper adjustment of the online chlorine dioxide measurement right at start-up, we recommend replacing the pipe section between the connections of the bypass as well.

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

The distance between the return point of the measuring water and the withdrawal point of the measuring water should be 1 – 2 m and the pressure max. 0.3 bar. Built-in parts, pipe elbows, etc. in-between should be avoided as far as possible as these would result in an increased pressure loss.

In case of devices with a free outlet (e.g. filling of a tank) downstream of the system, a valve must be provided which is located downstream of the system and upstream of the withdrawal point and which generates a back pressure. Take into consideration that the flow will decrease due to this restriction.

There must not be any withdrawal pipe between the two connections.

 **Note:** Due to the degradation of the biofilm during the application of chlorine dioxide, odours may develop temporarily. This can be reduced by conducting an air/water rinsing in advance.

An ideal type of installation is indicated in fig. 2. Fig. 3 on the other hand depicts a negative example of an installation which should be avoided, if possible.

The chlorine dioxide generation systems GENO®-Bakttox MRX/RX/X must always be preceded by a fine filter. In case water heaters (boilers, flow-through heaters, etc.) are installed downstream, a non-return valve must be installed. As the water meter of the chlorine dioxide generation systems GENO®-Bakttox MRX/RX/X features an integrated non-return valve, the water meter must not be installed between the water heater and its overpressure valve.

Dosing into the cold water pipe and into the make-up water feed of the warm water pipe is possible. For the electrical connection, a shock-proof socket (230 V / 50 Hz) is required within a range of approx. 3 m of the system.

According to DIN EN 1717, chlorine dioxide generation systems GENO®-Bakttox MRX/RX/X used in drinking water treatment need to be secured by means of a system

separator when they are connected to the public water supply. The operator needs to make sure that all requirements for a structurally and technically safe and optimum operation of the system as indicated below are fulfilled before installing the system.

 **Note:** Only for temporary continuous dosing.

The operator must provide an installation site that complies with the following requirements

- It must be protected against sunlight, dust and vapours. It must be frost-proof, well ventilated and sufficiently illuminated (system must not be installed outdoors).
- In rooms that are hard to ventilate, room air monitoring is advised in general.

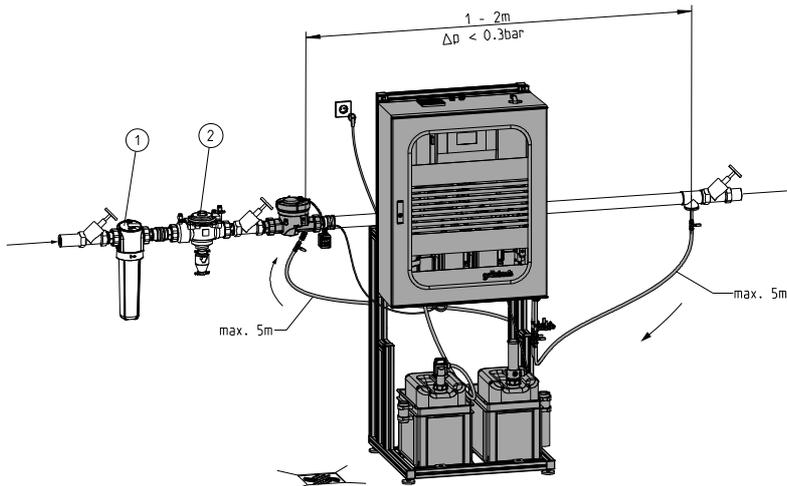
 **Note:** If the room is not well-ventilated, we recommend only installing the system starting from a room capacity of > 50 m³ When changing the base chemical GENO®-Bakttox weiß, at least, there is a temporary risk of an increased concentration of hydrochloric acid in the room air.

- It must fulfil the requirements stated in the technical specifications regarding air temperature, humidity, admissible operating temperature for the components and quality of 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 (GUV-VD5).
- 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.

Technical specifications	Chlorine dioxide generation systems GENO®-Bakttox MRX/RX/X					
	10	20	25	30	50/1	50/2
Connection data						
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/I					
Connection of blending module	2 x ¼" (female thread)					
Performance data						
Chlorine dioxide generation capacity [g/h]	10					
Maximum admissible flow Q _{max} [m³/h]	10	20	25	30	50	
Pressure loss at Q _{max} [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) [bar]	8					
Admissible pressure for withdrawal of dilution water [bar]	2 - 8					
Dimensions and weights (entire system)						
Total height approx. [mm]	1900					
Depth, approx. [mm]	725					
Width, approx. [mm]	800					
Empty weight, approx. [kg]	80					
Dimensions (water meter)						
Installation length without screw connection [mm]	190	240	240	240		
Installation length with screw connection [mm]	280	375	356	356		
Installation length with flange connection [mm]					310	
GENODOS®-pump						
Number	1			2		
GENODOS®-pump GP (GENO®-Bakttox version)	6/40					
Ambient data						
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

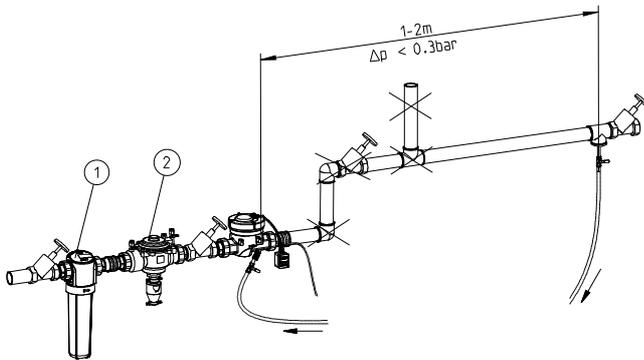
RX version	10	20	25	30	50/1	50/2
Dimensions and weights (entire system)						
Total height approx. [mm]	1900					
Depth, approx. [mm]	725					
Width, approx. [mm]	800					
Empty weight, approx. [kg]	75					
Connection data						
Connection for withdrawal of dilution water	1 x ¼" (female thread)					
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
Dimensions and weights (entire system)						
Total height approx. [mm]	1050					
Depth, approx. [mm]	340					
Width, approx. [mm]	800					
Empty weight, approx. [kg]	55					
Connection data						
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



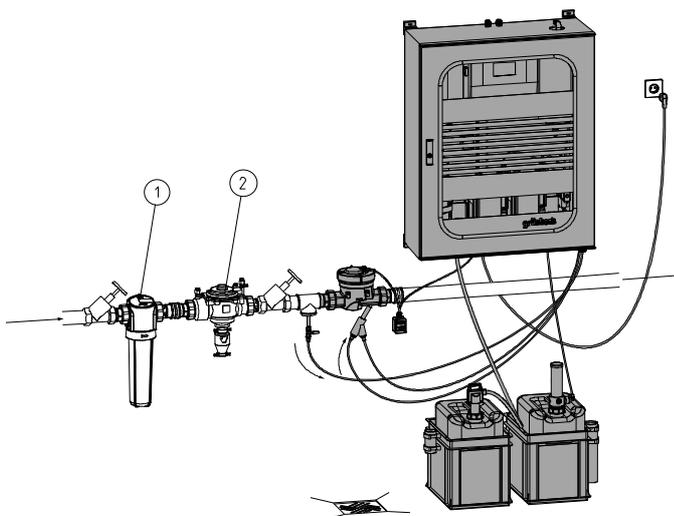
- ① GENO®-fine filter (optional)
- ② Euro-system separator GENO®-DK (optional)

Fig. 2: Installation diagram chlorine dioxide generation system GENO®-Bakttox MRX



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

Fig. 3: Example for an unfavourable installation of the chlorine dioxide generation system GENO®-Bakttox X



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

Fig. 4: Installation diagram chlorine dioxide generation system GENO®-Bakttox X