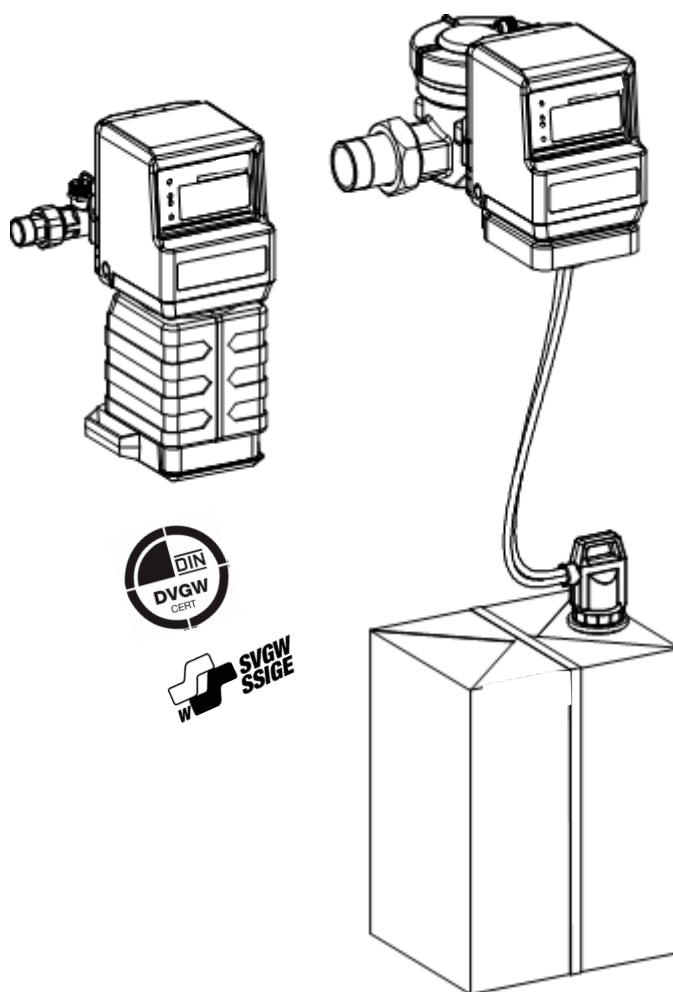


Operation Manual

Dosing Computer EXADOS®

EK 6, ES 6, ES 12, EGS 20, EGS 30, EGS 80, EGS 100



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

Contents

A	General information	5
	1 Preface	
	2 General safety instructions	
	3 Shipping and storage	
	4 Disposal of used parts and materials	
B	Basic information	9
	1 Laws, guidelines, standards	
	2 Selection of mineral-based EXADOS®-agents	
C	Product description	11
	1 Type designation plate	
	2 Design	
	3 Designated application	
	4 Function	
	5 Technical specifications/dimensions	
	6 Accessories (optional)	
	7 Conversion to supply tank	
D	Installation.....	16
	1 General installation instructions	
	2 Installation instructions	
	3 Installation examples	
E	Start-up.....	19
	1 Starting up the system	
F	Operation	21
	1 Replacement of dosing tank	
	2 Changing to a different mineral-based dosing agent	
G	Troubleshooting.....	23
H	Inspection/maintenance and wearing parts	24
	1 Basic information	
	2 Inspection (functional check)	
	3 Maintenance	
	4 Wearing parts	
	5 Inspection of the pump	
	6 Pump inspection after longer periods of standstill	
	7 Consumables	

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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-Straße 1 89420 Hoechstädt/Germany
Responsible for documentation:	Markus Pöpperl
System designation:	Dosing computer
System type:	EXADOS® EK 6, ES 6, ES 12, EXADOS® EGS 20, EGS 30, EGS 80, EGS 100
Serial number:	Refer to type designation plate
Applicable guidelines:	EMV (2014/30/EU) Low Voltage (2014/35/EU)
Applied harmonized standards, in particular:	DIN EN 61000-6-2:2006-03 DIN EN 61000-6-3:2011-09
Applied national standards and technical specifications, in par- ticular:	DIN 19635-100:2008-02
Place, date and signature:	Höchstädt, 12.07.2016 i. V.  M. Pöpperl Dipl.-Ing. (FH)
Function of signatory:	Head of Department Product Realisation and Product Launch

A General information

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.

Drinking water is classified as food and requires particular care. Therefore, always ensure the required hygiene in operating and maintaining systems for drinking water treatment. This also applies to the treatment of water for industrial or domestic use if repercussions for the drinking water cannot completely be excluded.

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

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

Advice and assistance For advice and assistance please contact your local representative (refer to www.gruenbeck.com) or get in touch with our service centre which can be reached during office hours:

Tel.: +49 9074 41-333

Fax: +49 9074 41-120

E-Mail: service@gruenbeck.de

We can transfer you to the appropriate expert more quickly if you provide the required system data. In order to have this data handy at all times, please copy it from the type designation plate to the overview on page C-1.

2 | General safety instructions

Operating personnel

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

Symbols and notes

Important notes in this operation manual are characterized by symbols. Please pay particular attention to these notes in order to ensure a danger-free, safe and productive system operation.



Danger! Failure to adhere to these notes will cause serious or life-threatening injury, extreme damage to property or inadmissible contamination of drinking water.



Warning! Failure to adhere to these notes may cause injury, damage to property or contamination of the drinking water.



Attention! Failure to adhere to these notes may result in damage to the system or other objects.



Note: This symbol characterizes notes and tips to make your work easier.



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



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

Indication of special dangers

Danger due to mechanical energy! System parts may be subject to overpressure. Danger of injury due to escaping water and unexpected movement of system parts. → Check pressure pipes regularly. Depressurize 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 qualified and approved sanitary and heating company. The operation manual must be strictly adhered to! Ensure that there is sufficient flow. The pertinent guidelines must be followed for the start-up of the system after longer periods of standstill. Inspections and maintenance must be performed 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.

3 | Shipping and storage

Attention! The system may be damaged by frost or high temperatures. Protect from frost during transport and storage! Do not install or store the 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).

4 | Disposal of used parts and materials

Used parts and materials are to be disposed of, or made available for recycling purposes, according to the applicable local guidelines.

If a material is subject to specific regulations, adhere to the notes indicated on the packing.

If in doubt, contact your local waste disposal authority or the manufacturer for more information.

B Basic information

1 | Laws, guidelines, 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 water treatment system.

Among other things, the regulations stipulate

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

2 | Selection of mineral-based EXADOS®-agents

Mineral-based agents

- The shelf life of the mineral-based agents is at least 3 years (keep cool and protect against light).
- Use within 6 months after opening the tank.
- We certify that the mineral substances contained in the liquid concentrates meet the requirements of the German Food and Commodities Act, the Act on Handling Additives and the current version of the Drinking Water Ordinance as well as all relevant standards (DIN EN 869, DIN EN 1198, DIN EN 1209, DIN EN 1212).
- The different mineral-based EXADOS®-agents may not be mixed as this might lead to a malfunction of the dosing computer.
- The mineral-based agents are packed hygienically, they are sterile and sealed.
- Ready-to-use concentrates which are adapted to the pumping capacity of 100 ml/m³ of the dosing computer.



Attention! We point out that the warranty for our devices shall be void if the purchaser uses mineral-based agents supplied by other manufacturers and if the quality and composition of such agents is beyond Grünbeck's control.

You may order these consumables from your approved sanitary and heating company. However, should none of your local dealers carry our make, please contact your local Grünbeck representation (sales office), our technical customer service/authorised service company or our headquarters.

Table B-1: Mineral-based EXADOS®-agents

EXADOS®	Tasks and application objectives	Hardness range*
spezial	Sanitation and corrosion protection for systems made of galvanized ferrous materials which are already corroded ("brown water") by the quick formation of a protective silicate layer. Note: Switch to a different EXADOS®-product after sanitation.	Sanitation: 1 - 3 (soft - hard)** up to 21 °dH Corrosion protection: 1 (soft) up to 8.4 °dH
spezial P	Corrosion protection for systems made of galvanized ferrous materials which are already corroded by means of alkalisation and formation of a protective silicate-phosphate layer.	1 (soft) up to 8.4 °dH
blau	Corrosion protection for systems made of metallic materials in case of soft water with high carbon dioxide concentrations. Corrosion protection due to the binding of free carbon dioxide and pH increase.	1 (soft) 3 up to 8.4 °dH
rot	Corrosion protection for systems made of metallic materials by formation of a stable protective phosphate-silicate layer.	1 (soft) 3 up to 8.4 °dH > 2 °dH carbonate hardness
grün ST	Corrosion protection and anti-scaling for systems made of metallic materials by formation of a stable protective phosphate layer. Hardness stabilisation up to 80 °C; even downstream of water softeners at a residual hardness of > 3 °dH; corrosion protection up to 60 °C.	1 - 2 (soft to medium) 3 up to 14 °dH 2 up to 10 °dH carbonate hardness
grün	Anti-scaling and corrosion protection for systems made of metallic materials by formation of a stable protective phosphate layer. Hardness stabilisation up to 80 °C; also suitable for fluctuating hardness ranges (mixed water); corrosion protection up to 60 °C.	2 - 3 (medium to hard)** > 14 up to 21 °dH 5 up to 15 °dH carbonate hardness
gelb	Anti-scaling up to 80 °C and in solar systems ; in case of decentralized installation of the dosing system in the hot water.	3 (hard)** starting from 15 °dH
light	Anti-scaling and corrosion protection for systems made of metallic materials by formation of a stable protective phosphate layer. Hardness stabilisation up to 80 °C; corrosion protection up to 60 °C. Complementary dosing in case of centralised dosing by the waterworks.	1 - 3 (soft to hard)** up to 21 °dH

* Depending on the designated application and after consultation with Grünbeck's experts, the mineral-based EXADOS®-agents may also be used for different hardness ranges.

** Starting from a hardness of > 21 °dH, a water softener is to be recommended. For a detailed product description, please refer to our product data sheets.

C Product Description

1 | Type designation plate

The type designation plate is located beneath the green covering cap. Please specify the data shown on the type designation plate when contacting Grünbeck for inquiries or orders. Simply copy the information from the type designation plate to the form below so that all the required information is available when needed.

Dosing computer EXADOS®
EK 6, ES 6, ES 12, EGS 20, EGS 30, EGS 80, EGS 100

EXADOS®

Serial number: /

Order number:

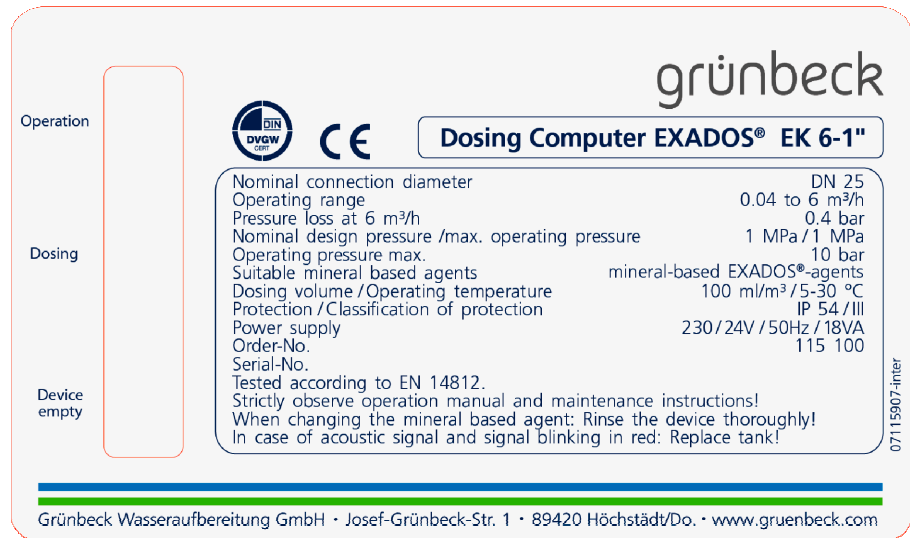


Fig. C-1: Type designation plate (example) of dosing computer EXADOS® EK 6

2 | Design

The EXADOS® dosing computers will be installed into pipes. The material used is zinc-reduced brass.

3 | Designated application

The dosing computers EXADOS® EK, ES, EGS are designed for the dosing of mineral-based EXADOS®-solutions into the drinking and industrial water of residential buildings. They protect the water pipes and the connected water carrying system components (fittings, devices, operating facilities, boilers, production systems, etc) from malfunctions and damage caused by scale deposits and/or corrosion.

4 | Function

When water is withdrawn, a contact water meter measures the water quantity flowing through. Even at a low flow rate (see technical specifications), the water meter is transmitting pulses to the control electronics via the pulse cable, triggering the dosing strokes required. At each dosing stroke, a defined quantity of the mineral-based solution is sucked in by the pump via a suction lance and is added to the water flowing by via a dosing point.

The electronics of modern modular technology and in cassette design (self-regulating) controls the driving motor of the dosing pump and checks the exact addition of the mineral-based solution.

The dosing frequency is indicated by the alternating blinking of two yellow light-emitting diodes. An electronic level control switches off the pump automatically when the tank for the mineral-based solution is empty; thus the pump is protected against dry-running. The necessary replacement of the tank is indicated visually (blinking of a red light-emitting diode) and additionally by an acoustic alarm (an interrupted acoustic signal tone).

In case of possible disturbances the self-control system of the electronics avoids an inadmissible over-dosage by switching off the device.

Dosing Computer EXADOS®

Types EK 6, ES 6, ES 12, EGS 20, EGS 30, EGS 80, EGS 100

5 | Technical specifications/dimensions

Table C-1: Technical specifications	Dosing Computer EXADOS®						
	EK 6	ES 6	ES 12	EGS 20	EGS 30	EGS 80	EGS 100
Connection data							
Nominal connection diameter	R 1" DN 25	R 1" DN 25	R 1 ¼" DN 32	R 1 ½" DN 40	R 2" DN 50	DN 80	DN 100
Protection/Protection class	IP 54/⚡						
Connected load operation = max./standby [VA]	18/15					26/15	
Power supply	230 V/50 Hz operation with protective low voltage 24 V/50Hz						
Contact type	Hall						
Performance data							
Operating range [l/h]	40-6000	40-6000	40-10000	50-20000	1000-30000	100-80000	100-100000
Nominal pressure [bar]	PN 10						
Pressure loss at max. flow [bar]	0,4	0,4	0,7	0,7	0,8	0,6	0,8
Tank volume	3 l	standard 10/20 kg, 100/200 l on request					
Dosing sequence [l/imp.]	0.33	0.33	0.5	0.93	1.33	3.8	3.8
Dimensions and weights							
Overall length of water meter with screw connections [mm]	272	272	280	312	356	-	-
Overall length with flange connection [mm]	-	-	-	-	-	310	310
Overall length of water meter without screw connections [mm]	190				240	-	-
Min. distance from wall to centre of pipe [mm]	55	55	55	65	90	100	110
Height of dosing computer [mm]	415	260					
Suction height [mm]	250	1200					
Operating weight, approx. [kg]	9.2	6.3	6.5	7.7	12	23	24
Consumption data							
Mineral-based EXADOS®-agents [ml/m³]	100						
Mark of conformity/Certification mark							
DVGW registration no.	NW-9101CM0333						
SVGW certificate no.	8211 - 1236						
Ambient data							
Max. water temperature. [°C]	30						
Max. ambient temperature [°C]	40						
Order number	115 100	115 200	115 300	115 400	115 500	115 501	115 502

6 | Accessories (optional)



Note: It is possible to retrofit existing systems with optional components. For more detailed information, please contact your local Grünbeck representative or our headquarters in Hoechststedt/Germany.

Switch box

For voltage-free signal (empty signal and disturbance signal) to the central control station. Including connecting cable with plug to dosing computer.

Order no. 115 700

Dimensions: 105 x 105 x 60 mm.

Supply tank

Made of shock-resistant plastics (PE, transparent) with impressed litre graduation, filling hole with screwed lid, suction lance made of PVC with 1.5 m suction and return line made of PVC and level control with cable and coupling plug for connection to the control/pump unit.

Supply tank 100 l:

Order no. 115 800

Ø 465 mm, height 870 mm

Supply tank 200 l:

Order no. 115 810

Ø 560 mm, height 1045 mm

Suction lances with level control for supply tank

Suction lances made of PVC with 1.5 m suction and return line made of PVC and level control with cable and coupling plug for connection to the control/pump unit.

Suction lance for 100 l supply tank

Order no. 115 545

Suction lance for 200 l supply tank

Order no. 115 548

Dosing pulse generator

Order no. 115 622

Measuring cylinder for dosing volume

Order no. 115 630

M-Bus measuring transducer D-DAM complete

To transmit the flow and counter reading as well as the statistical values of a water meter via M-Bus (IEC 870). In addition, flow-controlled pulse output, analogue output and relay contacts to Grünbeck control unit.

Order no. 115 850

Dimensions: 160 x 240 x 160 mm

7 | Conversion to supply tank



Attention! The DVGW-mark of conformity will be void if the dosing system is converted to a supply tank. According to EN 1717, in this case the dosing system has to be secured by means of a system separator.

For the later conversion to a 100/200 litre supply tank, the following has to be observed:

- Due to the longer suction lance contained in the scope of delivery, the old suction lance has to be removed from the device.
- Disconnect the device from mains.
- Flip the green covering cap upwards.
- Unscrew the black lid by means of the two cross-head screws.
- Pull the pump to the front and remove it from the bottom guiding.
- Hold the valves tight and pull off the hose line downwards.
- Loosen both plugs of the empty signal cable from the suction lance.
- Plug in the new hose lines.
- Connect the empty signal to the system.
- Place the pump into the guiding and connect it to the eccentric cam.
- Fasten the lid and close the covering cap.
- Connect to mains.
- Visually check the device for perfect suction of the dosing agent.

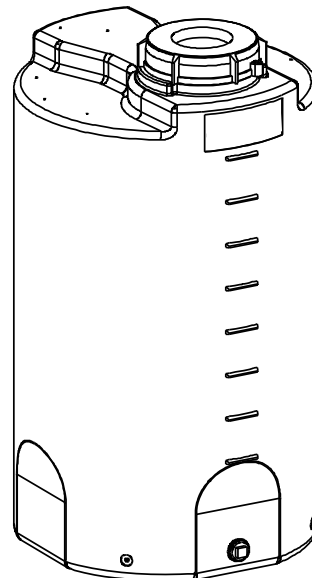


Fig. C-2: Supply tank 100 and 200 litres

D Installation

1 | General installation instructions

The installation site must offer sufficient space. The necessary connections have to be provided prior to the installation work. Dimension and connection data are summarized in table C-1.

The installation site must be frost-proof. The system must be protected against chemicals, dyes, solvents and vapours.

In case of new installations, the pipe has to be flushed according to DIN 806-4. Furthermore, we recommend installing a fine filter upstream of the pulse generator.

The dosing computer is installed either centrally downstream of drinking water filter (for example BOXER® RD incl. pressure reducer) or upstream of the manifold.

In case of systems for the generation of hot water (boilers, flow-through heaters, etc.) mounted downstream, a non-return valve must be installed. The blending controller of a water softener with DVGW-registration number as well as the water meter of the dosing computer feature a built-in non-return valve and therefore must not be installed between the hot water heater and its overpressure fuse.



Our dosing computers must be installed by an approved sanitary and heating company.

Strictly observe the flow direction indicated by arrows on the pulse generator or the turbine water meter.

When installing the system, the guidelines of the German Association of the Gas and Water Industry (DVGW, DIN 1988-200), of the SVGW in Switzerland and the ÖVGW in Austria as well as the local guidelines must be observed.

Excerpt from DIN 1988-200 below:

A mechanical filter must be installed directly after the water meter system.

When existing drinking water installations are expanded or larger sections of an installation are replaced, it may be advantageous to install an additional mechanical filter at the transfer point so as to avoid solid particles being swept in from existing line sections.

The electric connection must always carry current (230 V, 50 Hz) and must be independent of any light switches. In a transformer equipped with approx. 1.5 m of cable, the mains voltage is reduced to protective low voltage of 24 V.

After termination of the installation, a leakage test must be carried out.

2 | Installation instructions

Install the system at a frost-proof location and protect it against chemicals, solvents, cleaning agents, dyes and vapours of all kind.

In case of dosing computers EXADOS® EGS 20, EGS 30, EGS 80, and EGS 100 the pulse generator cap at the water meter must not be cleaned with soap, alcohol or other flushing agents or detergents.

Water temperature: max. 30°C

Ambient temperature: max. 40°C

3 | Installation examples

In principle, the system consists of 2 components:

1. The flow meter as turbine water meter (EK 6, ES 6, ES 12) or pulse generator (EGS 20, 30, 80, 100) with connecting cable to the EXADOS®-electronics.
2. The actual difference between the dosing computer EXADOS® EK (fig. D-1) and the dosing computers EXADOS® ES and EGS is that the compact system EK features a 3 litre dosing tank while the dosing computers EXADOS® ES and EGS are equipped with a suction lance and a separate, disposable 10/20 kg canister. A 100 l or 200 l supply tank is available on request.

First, install the water meter horizontally at a suitable place. The dosing computer itself has to be installed only at start-up of the complete building services.

The water meter has to be installed in a horizontal position. If installed in rising pipes, the lower starting limit will increase.

Now check, how the dosing computer should be installed:

- The dosing computer can be mounted with a distance of max. 1.5 meters (dosing hose) from the water meter.
- Either by means of the supplied wall plugs and screws, directly to the wall, e.g. next to the socket.
or directly on the water meter (fig. D-2, D-3) by means of the fastening holes and the supplied screws

Please make sure that at least 250 mm of space is available beneath the compact system EK for the replacement of the dosing tank (fig. D-1).

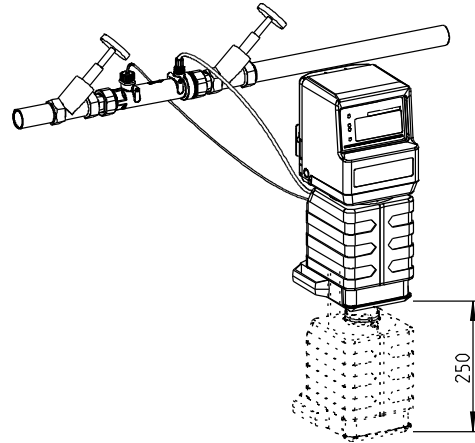


Fig. D-1: Dosing computer EXADOS® EK 6

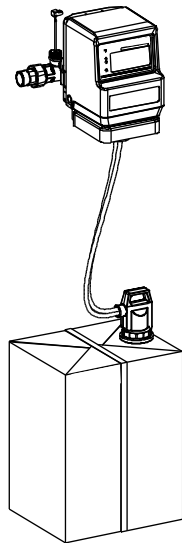


Fig. D-2: Dosing computer EXADOS® ES 6, ES 12

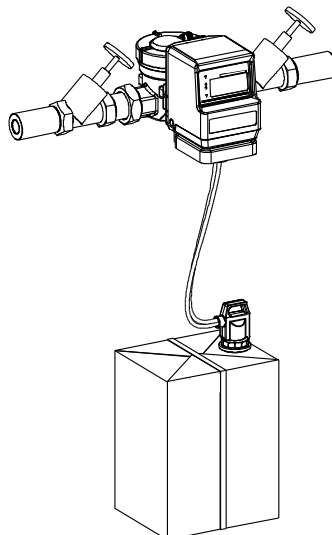


Fig. D-3: Dosing computer EXADOS® EGS 20, EGS 30

Dosing Computer EXADOS®

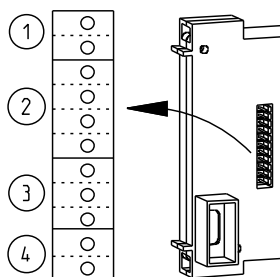
Types EK 6, ES 6, ES 12, EGS 20, EGS 30, EGS 80, EGS 100

E Start-up



The work described in this chapter may only be performed by trained personnel. We recommend having the start-up performed by Grünbeck's technical service/authorised service company or by an approved professional.

1 | Starting up the system



- ① Transformer (black, brown)
- ② Motor (black, grey, green, grey)
- ③ Pulse cable (white, green, brown)
- ④ Suction lance cable (Empty signal (green, brown))

Fig. E-1: Allocation of EXADOS®-control unit

After the installation of the dosing computer, the pulse cable (1) of the water meter (2) is led under the connecting cap (10) and through the bottom opening of the EXADOS® back wall (5) into the device. The Panduit plug is now connected to the free plug-in position of the EXADOS® electronics. (refer to fig. E-1).

After moving the union nut including the collet and the O-ring, shorten the dosing line (6) to the required length. Then connect the line to the injection valve (4) at the top of the water meter for EK 6, ES 6 and ES 12 resp. the bottom of the water meter (7) for EGS 20 - EGS 100 and plug in the mains plug.

In case no full dosing tank has been connected yet, there is a signal "tank empty" (refer to F-1 „Replacement of the dosing tank“).

Excessive cable length can be pulled into the casing and rolled up on the cable bearer (3). To do so, open the covering cap (8) by means of the two locking keys at the sides (9), (refer to fig. E-2).

For excessive cable and hose of suction lance use the connecting cap (10) as holder.

Let undercooled devices acclimate before connection to mains supply.

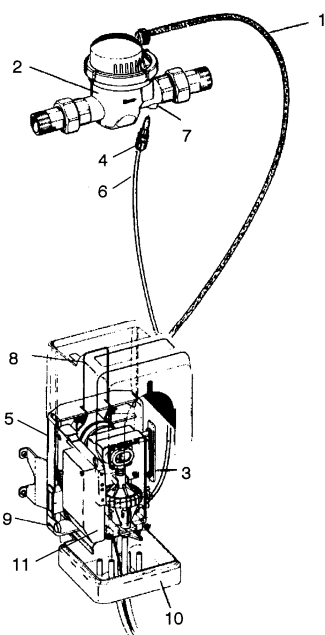


Fig. E-2: Connection pulse generator EGS 30

In order to control the device, four LEDs are placed at the front panel:

- **Green** → device is electrically ready for use
 - **Yellow – yellow alternating** → dosing pulses
 - **Red blinking with interrupted acoustic signal** → dosing tank is empty
-



Warning! In case of the following signals, immediately disconnect the system from mains by pulling the mains plug and call Grünbeck's technical service/authorised service company!

Acoustic signal:

1. Green diode is blinking and a humming sound is audible
2. Permanent acoustic signal, no illuminated diodes

Likely measures:

Replacement of the electronics (refer to fig. E-2, item 11).

F Operation

1 | Replacement of the dosing tank

EK 6

As soon as "Tank empty" is indicated, remove the tank and replace it by a new dosing tank (see fig. F-1, pos. 1).

At the compact unit EK 6, this is done by pressing the two locking keys (see fig. F-1, pos. 2) simultaneously which are placed at the rear of the tank console.

Together with the tank, the console may then be moved downwards (see fig. F-1, pos. 3), .

Now a new dosing tank may be placed and the tank console can be brought into the final operating position (4) by lifting it up until it noticeably snaps into the final position (4).

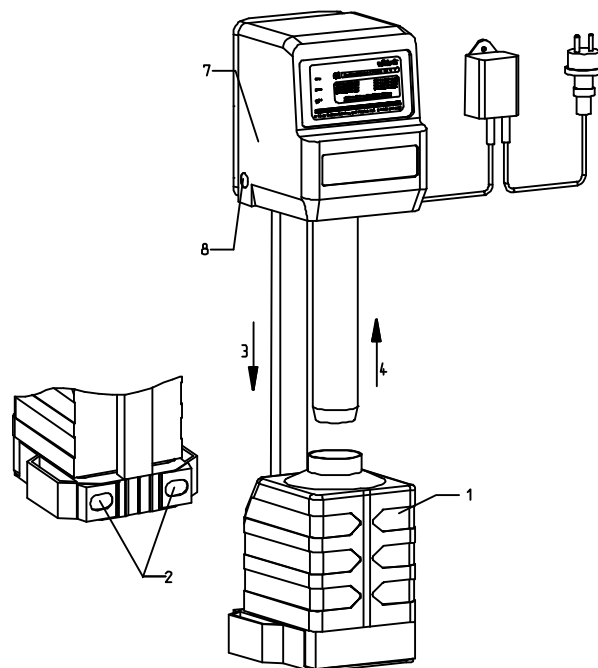


Fig. F-1: Replacement of the dosing tank EXADOS® EK 6



Please observe the notes on the mineral-based dosing tank!

Do not mix residual quantities of mineral-based dosing solution with new solution.

The seal which closes the mineral-based dosing tank hygienically must not be damaged.

If no mineral-based dosing agent is available for the replacement, the pump has to be disconnected by pulling the mains plug. As an alternative, the old tank may also be filled with fully demineralized water.



Warning! For hygienic reasons, the transfilling of larger tanks into smaller ones is not acceptable (e.g. transfilling of 10 kg into 3 l tanks) as transfilling may contaminate the dosing agent.

2 | Changing to a different mineral-based dosing agent



The work described in this chapter may only be performed by trained personnel. We recommend having the changing of the mineral-based dosing agents and the corresponding work performed by Grünbeck's technical service/authorised service company or by an approved professional.

In case it is necessary to switch to a different type of mineral-based dosing agent due to a change in the water composition or after sanitation has been carried out, the system must be rinsed with fully softened, demineralized or distilled water until a water volume, consumed during approx. 1 day, has flown through. This equals a consumption of rinsing solution of approx. 0.05 – 0.1 l (500 – 1000 l water consumption). The pump and suction lance may also be rinsed manually, refer to chapter H-6. As an alternative, the used pump as well as the dosing line and the injection valve may be replaced by new ones. Only then, the canister containing the new mineral-based dosing agent may be inserted. By rinsing resp. replacing the pump, the mixing of different mineral-based dosing agents is prevented.



Attention! Changing to a different mineral-based dosing agent without prior rinsing resp. replacing of the pump may lead to the precipitation of the mineral-based agent and the subsequent damage of the pump.

G Troubleshooting

Even carefully designed and manufactured technical systems that are operated properly can experience malfunctions. Table G-1 provides an overview of possible problems that may occur during the operation of a dosing computer EXADOS®. It also indicates the causes and remedies.



Note: Grünbeck's technical service/authorised service company (refer to www.gruenbeck.com) must definitely be notified in case of malfunctions that cannot be remedied with the information provided in table G-1! When you contact the technical service, please provide the following information: system designation and serial number.

Table G-1: Troubleshooting

What you observe	Why it happened	What to do
Leakage at hose connections	Hose expanded too much.	Loosen the hose at the respective hose connection and cut off approx. 2 cm. Then slip on the hose again and fasten it.
Dosing capacity decreases.	Crystalline deposits and contamination of parts contacting the medium.	Rinse the dosing computer thoroughly. Replace valves or complete pump. Replace dosing valves. Clean or replace hoses.
Dosing computer does not suck despite full stroke motion.	Suction height exceeded (max. 1.2 m).	Reduce suction height.
	Liquid level too low (empty signal).	Place new tank.
	Valve dry.	Lift suction line briefly. Rinse pump thoroughly by hand (refer to chapter H, item 6).
	Suction line bent or dirty/clogged.	Replace or clean suction line.
Dosing capacity too high or too low (EGS 20, 30, 80, 100).	Jumper at the pulse divider of the water meter is plugged in incorrectly.	Open pulse divider. Check jumper position according to the operation manual of the pulse divider and correct, if necessary.
Green diode is blinking, humming sound is audible.	Defective electronics.	Replace electronics.
Permanent acoustic signal, diodes are not illuminated.		

H Inspection/maintenance and wearing parts

1 | Basic information

In order to ensure the proper functioning of the dosing computers EXADOS® on a long-term basis, some work must be performed regularly. The required measures are stipulated in standards and guidelines and apply in particular if the dosing is performed into the drinking water supply. The regulations which are valid at the place of installation must be strictly observed in any case. DIN EN 806-5 stipulates:

- The operator must check the system for tightness at least every two months (inspection).
- Depending on operating conditions, however, within intervals of less than **6 months**, an inspection by the operator or the installing company must be carried out.
- An **annual** extended maintenance is to be carried out by an approved specialist company or by Grünbeck's technical service/authorised service company.



Note: By concluding a maintenance contract, you ensure that all required maintenance work is carried out on time.

2 | Inspection (functional check)

- Check the system for tightness.
- Check the content of the mineral-based dosing tank and the shelf-life of the mineral-based agent.
- Assess the consumption of mineral-based agent against the water consumption.
- Functional check of the dosing computer by withdrawal of water (alternating blinking of the two yellow LEDs).

3 | Extended maintenance



Refer to “small maintenance”, additionally:

- Check the dosing volume.
- Replace injection valve (fig. E-2, item 4).

4 | Wearing parts

The following parts are considered to be wearing parts:

- Injection valve, fig. E-2, item 4
- Pump, fig. H-1
- Excenter
- Output drive gear

Although these are wearing parts, we grant a limited warranty period of 6 months. The same applies for electrical components.

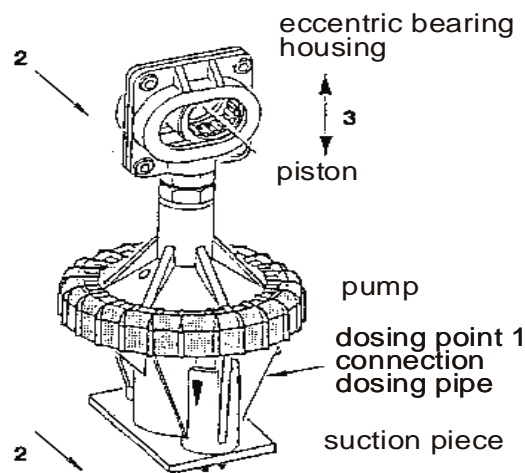


Fig. H-1: EXADOS®-pump

The pulse generator cap at the water meter of the dosing computers EXADOS® EGS 20, EGS 30, EGS 80, and EGS 100 must not be cleaned with soap, alcohol and other dishwashing liquids or detergents.

5 | Inspection of the pump

- Remove the cover of the pump body (see fig. E-2).
- Remove pump (see fig. H-1).
- Operate the pump manually until liquid leaks from the dosing hose. (see fig. H-1).
- Reinsert pump and screw on the cover.

6 | Pump inspection after longer periods of standstill

Longer periods of standstill may cause the seats of seals to dry out with the result that the automatic self-priming and self-deaerating of the pump does not take place. Unscrew the dosing hose from the dosing point and remove the pump from the pump carrier (2). Operate the pump manually (3) until the dosing agent leaks from the dosing point. Afterwards screw on the dosing hose again and fix the pump in the pump carrier (refer to fig. H-1).

7 | Consumables



Note: In this context we point out that the warranty shall be void if the purchaser uses mineral-based agents supplied by other manufacturers and if the quality and composition of such mineral-based agents is beyond Grünbeck's control.

Dosing Computer EXADOS®

Types EK 6, ES 6, ES 12, EGS 20, EGS 30, EGS 80, EGS 100

Table H-1: Table on the consumption of mineral-based EXADOS®-agents

Mineral-based agent	Packing unit	Dosing volume per filling, approx. (standard systems 100 ml/m ³)
EXADOS®-spezial	- \triangle 3 l	30 m ³
	10 kg \triangle 8.8 l	88 m ³
	20 kg \triangle 17.6 l	176 m ³
EXADOS®-spezial P	- \triangle 3 l	30 m ³
	10 kg \triangle 8.4 l	84 m ³
	20 kg \triangle 16.8 l	168 m ³
EXADOS®-blau	- \triangle 3 l	30 m ³
	10 kg \triangle 9.1 l	91 m ³
	20 kg \triangle 18.2 l	182 m ³
EXADOS®-rot	- \triangle 3 l	30 m ³
	10 kg \triangle 9.5 l	95 m ³
	20 kg \triangle 19.0 l	190 m ³
EXADOS®-grün ST	- \triangle 3 l	30 m ³
	10 kg \triangle 9.4 l	94 m ³
	20 kg \triangle 18.8 l	188 m ³
EXADOS®-grün	- \triangle 3 l	30 m ³
	10 kg \triangle 9.4 l	94 m ³
	20 kg \triangle 18.8 l	188 m ³
EXADOS®-gelb	- \triangle 3 l	30 m ³
	10 kg \triangle 9.6 l	96 m ³
	20 kg \triangle 19.2 l	192 m ³
EXADOS®-light	- \triangle 3 l	30 m ³
	10 kg \triangle 9.5 l	95 m ³
	20 kg \triangle 19 l	190 m ³