

Operation Manual

Dosing systems GENODOS® DM-T 6, DM-T 10, DM-T 20, DM-T 30, DM-T 80, DM-T 100

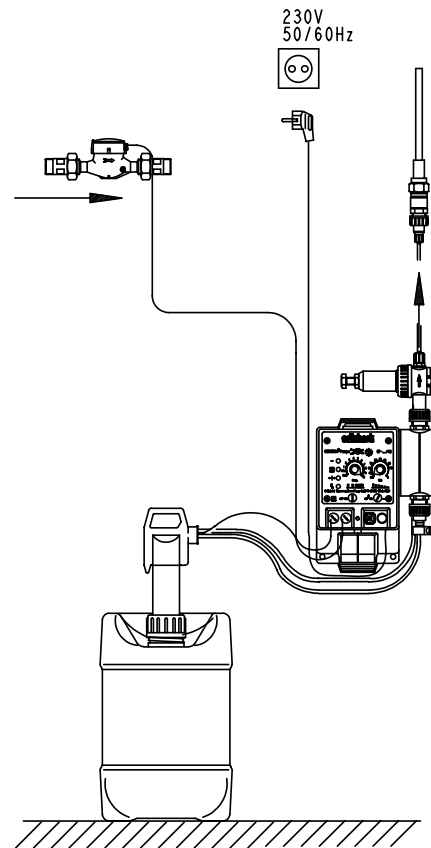


Fig.: Dosing system DM-T

Edition 03/2009
Order no. 163 942-gb

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DIN EN ISO 9001, DIN EN ISO 14001,
DIN EN ISO 13485 and SCC
certified company (TUV SUD)

Table of Contents

General information4

Please note.....6

1 General information on dosing systems6

2 Designated application7

3 Function7

4 Start-up.....7

5 Dosing capacity of the GENODOS®-pump.....8

6 External drive unit (water meter)9

7 GENODOS®-suction lance, 465 mm long with pre-alarm for GP-../40.....9

8 Installation and maintenance of dosing point type 2.70 (Viton "F")10

9 Pressure maintaining valve DHV 410

10 Technical specifications / dimensions11

11 Installation of dosing systems DM-T 6 / DM-T 100.....11

12 Factory-setting of GENODOS®-pump (pulse division), 4 bar counter-pressure (DHV 4)12

13 Troubleshooting12

14 Scope of delivery13

15 Accessories.....13



EC 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.

System designation: GENODOS® dosing systems


System type: DM-T6, DM-T 10, DM-T 20, DM-T 30, DM-T 80, DM-T 100

System number: Refer to type designation plate

Applicable EC guidelines: EC Machine Guideline (98/37/EC)
EC Guideline EMV (89/336/EC in the version of 92/31/ECC)
EC Low Voltage Guideline (2006/95/EC)

Applied harmonized standards, in particular: DIN EN ISO 12100 - 1, DIN EN ISO 12100 - 2
DIN EN 50 081-1, DIN EN 50 082-2,
9th Guideline on Device and Product Safety
(Machine Guideline – 9. GPSGV).
1st Guideline on Device and Product Safety
(Ordinance on the Marketing of Electrical Operating Materials to
be used within specific voltage limits – 1. GPSGV).

Applied national standards and technical specifications, in particular: _____

Date/Signature of manufacturer: 18.03.09 
i. V. M. Pöpperl
Dipl.-Ing. (FH)

Function of signatory: Head of Engineering Department for Standardised Products

General information

Please read and observe these operating instructions carefully prior to the installation and start-up of the dosing system. Strict observation of the information given in this operation manual ensures the system's effective and economic operation.

Please handle the system with care and operate, inspect and maintain it according to this operation manual in order to ensure its long and trouble-free operation.

The dosing system may only be operated, maintained and repaired by persons who are familiar with this operation manual.

When installing, operating or maintaining the system, always take into consideration that special care and hygiene are required when dealing with drinking water.

The use of genuine parts which can be ordered from your sanitary and heating company, our customer service/authorised service company or directly from our headquarters will ensure the function and long service life of your system.

GENODOS® dosing system	Order no.	Serial no.
<input type="checkbox"/> DM-T 6	163 140
<input type="checkbox"/> DM-T 10	163 150
<input type="checkbox"/> DM-T 20	163 160
<input type="checkbox"/> DM-T 30	163 170
<input type="checkbox"/> DM-T 80	163 180
<input type="checkbox"/> DM-T 100	163 190

You may order this operation manual separately: order no. 163 942-gb.

Publisher's information

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Printed in Germany

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Warranty

All devices and systems supplied by Grünbeck Wasseraufbereitung GmbH are manufactured according to the most recent technical standards and subjected to a comprehensive quality assurance system. All warranty claims are subject to our General Terms and Conditions (see below):

Terms and Conditions of Sale and Delivery (excerpt)

.....

11. Warranty

- | | |
|--|--|
| <p>a) If goods and services are supplied which are obviously defective, the Customer must report such defects within 8 (eight) days after receipt of such goods and services in order to maintain the liability claims.</p> <p>b) If the defect is of such a nature that only a spare part needs to be replaced, Grünbeck shall have the right to request the Purchaser to replace the new part delivered by us if the costs for sending a technician to the Purchaser's site are unreasonably high.</p> <p>c) The warranty periods are:</p> <ul style="list-style-type: none"> - two years: for devices for private use (natural persons) - one year: for devices for industrial or commercial use (companies) - two years: for all DVGW-tested devices, also for industrial or commercial use within the framework of the liability agreement with the ZVSHK. <p>after delivery/acceptance. This excludes electrical parts and parts which are subject to wear and tear. The warranty period shall only apply if the operating instructions are observed meticulously, if the device is mounted, commissioned, operated and maintained properly, and/or if a maintenance contract is made within six months. If these requirements are not met, the warranty shall be void. The warranty shall be void if the purchaser uses dosing agents or chemicals supplied by other manufacturers and if the quality and composition of such dosing agents or chemicals is beyond Grünbeck's control.</p> | <p>Grünbeck shall not be liable for defects or damage resulting from inept handling or operation.</p> <p>d) Grünbeck shall only be liable if the Customer performs the maintenance work as stated in the operating instructions or has the maintenance work performed in such a way and if the Customer uses spare parts supplied or recommended by Grünbeck.</p> <p>e) Grünbeck shall not be liable for damages resulting from frost, water or electrical over-voltage or from parts which are subject to wear and tear. This applies in particular to electrical parts.</p> <p>f) The claims of the Purchaser are limited to repair or replacement, as the case may be, at the discretion of Grünbeck. Grünbeck shall have the right to several attempts to repair. If Grünbeck fails to repair or re-place the defective delivery within a reasonable time, the customer shall have the right to either cancel the contract or demand an appropriate reduction of the purchase price.</p> <p>g) In case of complaints with regard to systems that are not installed in Germany, the warranty claim will be settled by the local technical customer service authorised by Grünbeck. If no technical customer service is designated in the specific country, the assignment of Grünbeck's technical customer service shall end at the German border. All additional cost, apart from the material required, shall be borne by the customer.....</p> |
|--|--|

General safety information

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

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



Danger! Failure to adhere to these notes will cause serious or life-threatening injury, extreme damage to property or inadmissible contamination of the 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 characterises notes and tips to make your work easier.



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



Tasks with this symbol may only be performed by personnel instructed in electrical engineering 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 works or an approved installation company.

Please note

All Grünbeck products are made of high-quality materials in order to ensure a long and trouble-free operation.

In order to maintain the characteristics of the system for many years, please treat the system with care and operate and service it according to our operation manual.

A maintenance contract is the best way to ensure the proper and safe functioning of the system, even beyond the warranty period.

We are not liable for any damage caused by inexperienced handling, operation and repair of our systems.

Within the warranty period agreed upon, you must not tamper with or modify the system, unless explicitly authorised by us. In case of non-observance, the warranty will be void.

Always keep sufficient amounts of GENO[®]-dosing solution on stock in order to ensure the functioning of the system.

You may order dosing solutions and spare parts either from your sanitary and heating company, our customer service/authorised service company or directly from our headquarters.

On request, we are prepared to name sources of supply for any standard chemicals that we do not carry in our product range. For the replacement of empty chemical containers, only containers indicated by Grünbeck may be used. Non-observance will cause the warranty to become void.

In order to ensure the trouble-free operation of your system, please check and inspect your dosing system at regular intervals by means of the proper water test kits that we can provide you with.

In case of inquiries, please be as kind as to indicate the system number, the serial number, the system type and the year of construction, so that we will be in a position to quickly and correctly provide the respective answers.

1 General information on dosing systems



Warning! When applying disinfection processes, the materials used on site must be checked for their chemical and corrosion resistance.

1. Our dosing systems must be installed by an authorised and approved sanitary or heating company.
2. Prior to installation, check the dosing system for possible transport damage.
3. When installing the system, local installation directives, general guidelines and regulations (e. g. WVU, DIN, DVGW, ÖVGW or SVGW) as well as technical specifications must be observed.
4. If a dosing system or a water softener is installed, dirt particles must be removed from the water upstream by means of a fine filter (DIN 1988, DIN 50930). In case of warm water systems (boilers, flow-through heaters, etc.) installed downstream, a non-return safety device must be installed. As the water meters of the dosing systems feature an integrated non-return valve, they must not be installed between the hot water boilers and their relief pressure valve. The water meters must be installed in a horizontal position.
5. According to DVGW data sheet W 293, a dosing system for chemical disinfectants (e. g. chlorine) should be provided as preventive or corrective measure in case of system failures if UV systems are used.
6. In the area downstream of the dosing point, chlorine resistant material should be applied. Make sure a sufficiently dimensioned reaction length for the dosing is provided.
7. When handling GENO[®]-Chlor A, the common precautions need to be taken. When working with GENO[®]-Chlor A it is mandatory to wear protective goggles and rubber gloves, e. g. when filling the disposable container into the supply tank.
8. The installation site must be frost-proof and protect the system from sunlight, chemicals, dyes, solvents and vapours. The ambient temperature should not exceed max. 30 °C.
9. For the electrical connection, a socket with direct power supply (230 V / 50 Hz) is required within approx. 1.5 m from the dosing system.
10. According to EN 1717, dosing systems used in the treatment of drinking water must be secured by a system separator if they are connected to the public drinking water supply.

2 Designated application

The dosing systems DM-T are used in the drinking water sector to add GENO[®]-Chlor A which disinfects the treated water.

The effect of GENO[®]-Chlor A is based on the concentration of activated carbon by which germs and bacteria are killed (also refer to the product data sheet GENO[®]-Chlor A).

A dosing volume of 0.1 mg of free chlorine per litre of water is taken as design basis for the treatment of drinking water. From experience it can be assumed that a concentration of free chlorine between 0.1 to 0.3 mg of chlorine per litre of water will materialise in the water to be disinfected (chlorine demand).



Note: If the dosing pumps are used at locations where little water withdrawal and longer periods of standstill are to be expected (e. g. 1 – 2 people homes, holiday homes, etc.), the chlorine concentration in the water may fluctuate. In order to minimise this effect, the pump should be mounted as close as possible to the dosing tank. It would be ideal if the body of the pump were on the same level as the upper edge of the suction lance.

3 Function

When water is withdrawn, a water meter measures the water volume flowing through and transfers the control pulse to the electronics of the dosing pump according to the pulse interval of the water meter.

The electronics control the dosing pump. Due to the flow-controlled dosing of the agent, a steady water quality is guaranteed. By means of a suction lance with integrated empty signal, the dosing solution is sucked directly from the disposable containers in case of dosing systems DM-T 6 resp. DM-T 10 or from the supply tank in case of dosing systems DM-T 20 – DM-T 100.

By means of the dosing pump, the dosing solution is sucked in and pumped into the drinking water pipe via the dosing line and the dosing point with non-return valve.

The electric level control indicates the required replacement of the container visually by means of a yellow LED at the control electronics and the operation of the pump is stopped. As pre-alarm signal the yellow LED starts blinking and the pump continuous dosing. When the tank is empty, the LED is illuminated permanently and the dosing pump stops dosing.

4 Start-up

- The dosing system comes pre-assembled respectively pre-adjusted.
- Fasten the pump on the slip-on pump foot (refer to fig. 4) at max. 1.5 m (in case of agents with a density of 1.0 g/ml) above the tank bottom, preferably as low as possible, however (in case of dosing systems DM-T 20 – DM-T 100 on the dosing tank).
- The dosing line to the dosing point must be installed safely and without bends.
- The dosing point 2.70 must be mounted according to the installation drawing (fig. 8).
- Insert the plug for the empty signal at the dosing pump (level sensor).
- Plug in the water meter cable at the dosing pump.
- The dosing pump must be supplied with a mains voltage of 230 V, 50 Hz.
- For more information, please refer to the operation manual of the GENODOS[®]-pump.

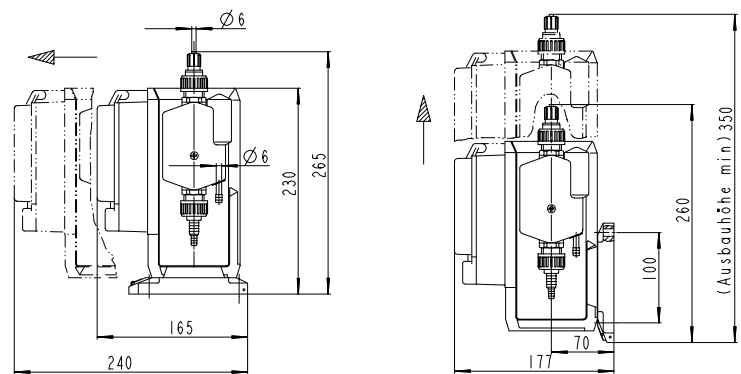


Fig. 4: Dimension drawing

System is in operation.



Attention! In order to ensure the trouble-free operation of the pump, the suction, pressure and deaeration valves at the pump must be cleaned monthly and replaced on the occasion of the yearly maintenance performed by Grünbeck's customer service/authorised service company. Furthermore, the non-return valve of the dosing point has to be exchanged once a year as well.

5 Dosing capacity of the GENODOS®-pump

The dosing volume per stroke is adjusted continuously from 0 – 100 by means of the stroke length controller F at the operating panel of the dosing pump. The efficient setting range of the stroke length controller is between 30 – 100 on the scale. The dosing volume depends on the system counter pressure. In addition, the dosing capacity can be set continuously and with a nearly linear increase via a potentiometer at the controller of the GENODOS®-pump GP-../.40. From setting „INT“ with approx. 6 dosing strokes/min. to setting “10” with max. 109 dosing strokes/min.



Note: The setting may only be made during operation and during a pump stroke!



Warning! In general, we recommend installing an overflow valve. The overflow valve is a safety device to protect the dosing pump, the corresponding fittings and pipes. It prevents an inadmissible pressure increase on the delivery side of the dosing pump which – for example - may occur if the valves are closed although the pump is running.

Dosing capacity of the DM-T systems in combination with DHV4 and dosing group 2.70 (109 strokes/min, 50 Hz)

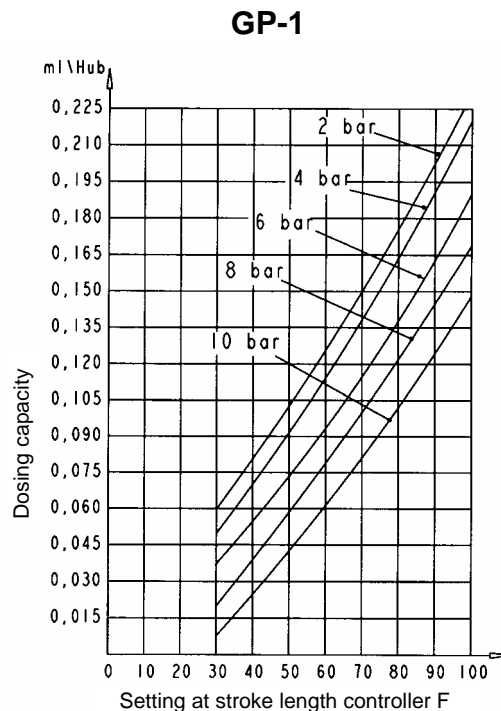


Fig. 5: Dosing capacity [ml/stroke]

The dosing volume can be increased or reduced according to demand at the stroke length controller F of the dosing pump!

6 External drive unit (water meter)

When using an external drive unit such as the water meter used, the contact cable for the external drive must be connected to the corresponding input of the pump.

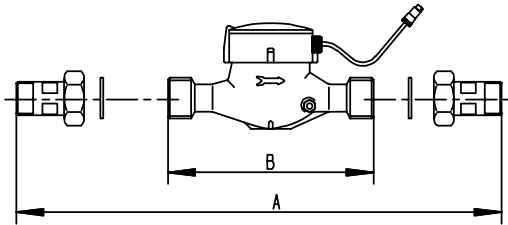


Fig. 6.1: Water meter DM-T 6 / DM-T 30

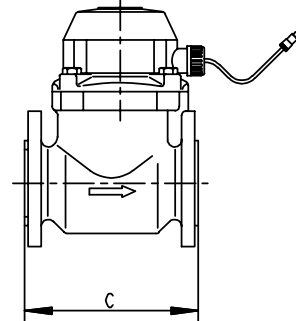


Fig. 6.2: Water meter DM-T 80 / DM-T 100

7 GENODOS®-suction lance, 465 mm long, with pre-alarm for GP-./40

1. The PVC/PPO suction lance with two voltage-free float switches for empty signal and pre-alarm as well as the connection plug to the GENODOS®-pump are completely pre-assembled.
2. Fasten the suction hose at the lower connection set of the dosing pump.
3. Connect the return hose to the hose adaptor of the dosing pump.
4. Insert the suction lance with corresponding union nut into the full tank and tighten the union nut.
5. Insert the plug of the empty signal into the specified connector at the dosing pump. If the empty signal is activated, the pump is switched off and the switch-off is indicated by means of the yellow LED at the pump.

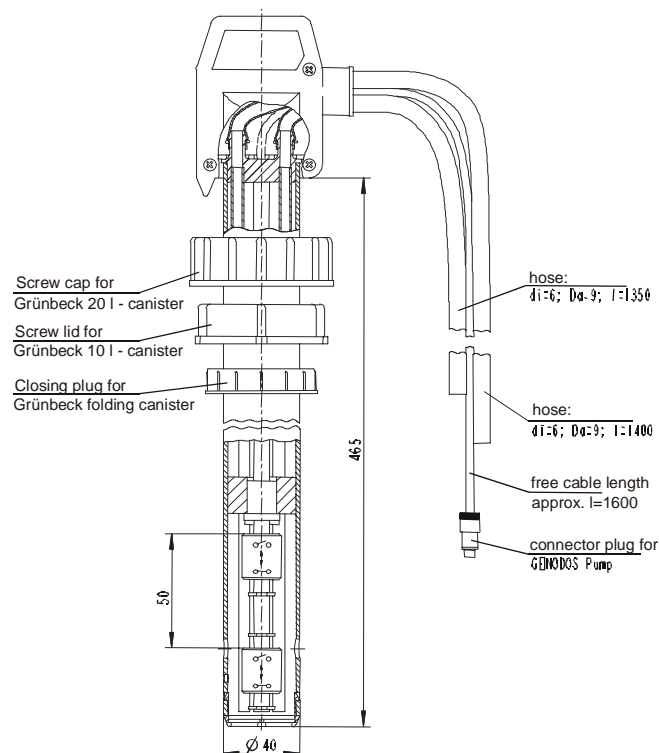


Fig. 7: GENODOS®-suction lance B 10/20, 465 mm long, with pre-alarm and empty signal (order no. 118 510) for DM-T 6 / DM-T 10

8 Installation and maintenance of dosing point type 2.70 (Viton "F")

The dosing point must be installed in a way that a shut-off device is provided upstream and downstream to ensure the easy dismounting of the dosing point in case of maintenance or replacement.

If possible, a 16 mm hole has to be drilled into a double-walled PVC pipe or fitting resp. an adhesive sleeve of 16 mm must be produced.

Glue the DN 10 pipe in place.

Six hours after the adhesive joint has settled, the dosing point can withstand a load of 6 bar (overpressure) and is ready for operation.

Only use Grünbeck dosing chemicals. If dosing chemicals provided by other manufacturers are used, the warranty shall become void.

The non-return valve at the dosing group 2.70 must be maintained every 6 months resp. checked for deposits and cleaned. It must be replaced once a year by Grünbeck's customer service/authorised service company.

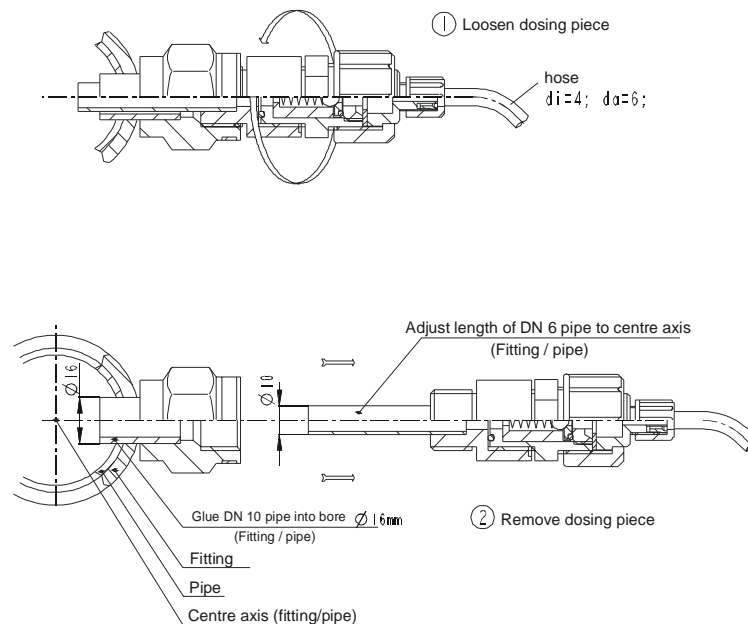


Fig. 8: Installation drawing dosing group 2.70

9 Pressure maintaining valve DHV 4

The pressure maintaining valve DHV 4 (spring-loaded membrane valve) is required in combination with the dosing pump in order to achieve proper dosing. During start-up, the valve must be mounted onto the pressure valve of the dosing pump and connected to the dosing point by means of the pressure hose.



Warning! This valve must not be used as non-return valve to prevent backflow.

Operating range: Adjustable up to 10 bar

Factory setting: 4 bar

10 Technical specifications / dimensions	Dosing system					
	DM-T 6	DM-T 10	DM-T 20	DM-T 30	DM-T 80	DM-T 100
Connection data						
Nominal connection diameter	R 1" DN 25	R 1 1/4" DN 32	R 1 1/2" DN 40	R 2" DN 50	DN 80	DN 100
Operating range* [m³/h]	6	10	20	30	80	100
Electrical data	230 V / 50/60 Hz / 18/21 VA					
Performance data						
Pressure loss at max. flow rate [bar]	0.5	0.5	0.8	0.8	0.6	0.8
Nominal pressure (PN) [bar]	10					
Dimensions and weights						
A Length of water meter with screw connections [mm]	276	280	312	356	-	-
B Length of water meter without screw connections [mm]	190	190	190	240	-	-
C Length water of meter with flange connection [mm]	-	-	-	-	310	310
D Space required [mm]	-	-	450	450	545	545
E Space required [mm]	-	-	620	620	1010	1010
F Space required [mm]	-	-	1000	1000	1400	1400
GENODOS®-pump						
GENODOS®-pump	GP-1/40 (4G)					
Pulse interval of water meter [l/pulse]	0.33	0.5	0.93	1.33	3.80	3.80
Tank volume [l]	20	20	60	60	200	200
Ambient data						
Water temperature [°C]	30					
Ambient temperature [°C]	30					
Order no.	163 140	163 150	163 160	163 170	163 180	163 190

The GENODOS®-pump is factory-set to pulse division T and then led.

* In case of very little water withdrawal, fluctuating chlorine concentrations may occur (refer to note in chapter 2).

11 Installation of dosing systems DM-T 6 / DM-T 100

Fig.11.1: Installation drawing
DM-T 6 / DM-T 10

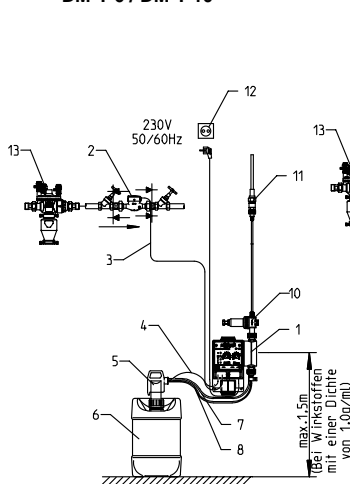


Fig.11.2: Installation drawing
DM-T 20 / DM-T 30

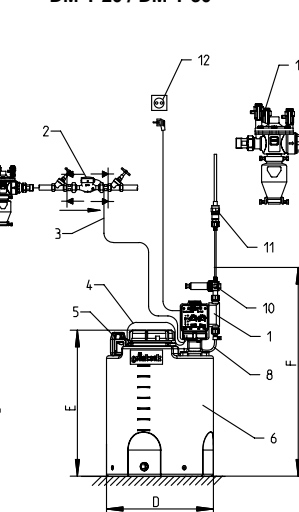
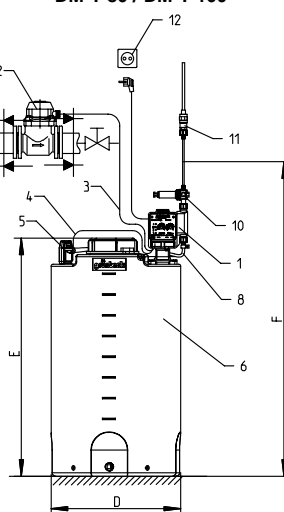
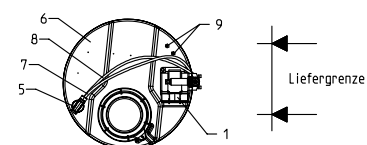


Fig.11.3: Installation drawing
DM-T 80 / DM-T 100



- | | |
|---------------------------|---|
| 1. GENODOS®-pump | 8. Suction hose |
| 2. Contact water meter | 9. Connections for overflow valve resp. water inlet |
| 3. Drive cable | 10. Pressure maintaining valve |
| 4. Cable for empty signal | 11. Dosing group |
| 5. Suction lance | 12. Power supply 230 V / 50 Hz |
| 6. Dosing tank | 13. System separator |
| 7. Return hose | |



12 Factory-setting of the GENODOS[®]-pump (pulse division), 4 bar counter-pressure (DHV 4)

	Dosing system type					
	DM-T 6	DM-T 10	DM-T 20	DM-T 30	DM-T 80	DM-T 100
GENODOS [®] -pump (4G)	GP-1/40	GP-1/40	GP-1/40	GP-1/40	GP-1/40	GP-1/40
Position of pulse division T	5	4	4	3	2	2
Factor _(pump)	0.066	0.1	0.1	0.125	0.2	0.2

The GENODOS[®]-pump is factory-set to pulse division T and to the factor (pump).

13 Troubleshooting

Should the dosing pump encounter malfunctions, refer to the operation manual of the GENODOS[®]-pump

This is what you observe	This is the cause	This is what to do
Leakages at the connection sets	Hose expanded too much	<ul style="list-style-type: none"> – Remove hose at the respective connection set and cut off approx. 1 cm. – Re-plug the hose and fasten it again
Reduced dosing capacity	Crystalline deposits and impurities on chemical carrying components	<ul style="list-style-type: none"> – Rinse dosing system thoroughly – Clean resp. replace valves at the dosing pump and dosing point – Clean resp. replace hoses
	A different dosing chemical is used (concentration)	11. Thoroughly clean the dosing system 12. Replace chemical contacting parts

If the malfunction cannot be remedied with the information indicated above, please contact Grünbeck's customer service/authorised service company.

14 Scope of delivery

Dosing system, consisting of:

Self-priming, continuously adjustable membrane dosing pump with automatic deaeration against pressure, synchronous motor 230 V / 50 Hz, with connections available for empty signal, external drive and voltage-free fault signal output.

GENODOS®-pump GP-1/40

Order no. 118 200 4G

Contact water meter with pulse cable to GENODOS®-pump.

Order no. please inquire

Dosing group 2.70 made of PVC with non-return valve.

Order no. 163 210

Pressure maintaining valve DHV 4, 10 bar, factory-set to 4 bar.

Hose id=4; od=6, G 5/8.

Order no. 163 089

PTFE hose

1.5 m, id=4; od=6.

Order no. 163 607

DM-T 6- DM-T 10

Suction lance for disposable container 10/20 litres, made of PVC, with integrated empty signal and pre-alarm, 465 mm long.

Order no. 118 510

DM-T 20 / DM-T 30

Dosing tank complete, 60 l and suction lance with empty signal, coloured black.

Order no. 163 286

DM-T 80 / DM-T 100

Dosing tank complete, 200 l, and suction lance with empty signal, coloured black.

Order no. 163 288

15 Accessories

Test kit for chlorine and pH value

To determine the chlorine and pH value.

Measuring range: chlorine 0.1 – 1.5 mg/l; pH value 6.8 – 7.8.

Order no. 170 105

Dosing group 2.72

Made of PVC with non-return valve and ball valve

Order no. 163 220

Also refer to Technical Information, order no. 118 950-gb, "Accessories for GENODOS®-pumps"