CleverTank 3000 Operating & Installation Manual

Contents

Designated use

Safety devices installed in the system by the manufacturer are only for the basic prevention of accidents. The main responsibility for an accident-free workflow mainly lies with the business owner who operates the system as well as with the individuals they nominate to operate the system, perform maintenance or carry out any other work on the system.

The appropriate operation according to the intended purpose and compliance with the care, service and maintenance measures, that are prescribed by the manufacturer, ensure the functionality as well as a high lifespan of the membrane modules and of the system components, thus helping to prevent work-related accidents and occupational injuries.

The staff intended to operate and maintain the system described in this document must read and understand the specific chapter written in the operation manual and must apply the instructions with due diligence. In the interest of operational safety and accident prevention, only staff who are well-trained may be assigned the task of handling the system. The staff must receive special instructions regarding any potential risk.

The manufacturer is not liable for any damage to persons or equipment, resulting from improper handling or non-compliance with the instructions indicated above. The Owner and/or the Operator of the system shall assume the full liability.

Operating the system in a different manner than that described in the operation manual will result in the loss of any warranty or warranty claims against the manufacturer.

General safety guidelines

CAUTION: Labelling regulations for all service water lines with "NOT POTABLE WATER"! apply e.g. an CleverTank labelling system.

Important: Potable Water Regulation (TrinkwV 2001) § 13 (3) “The business owner and other owners of systems that are intended for obtaining or providing water that does not meet the quality of water for human consumption, and which are installed domestically in addition to the water supply systems as defined in § 3, No. 2, must present these systems to the competent authority at the moment of commissioning. If such systems are already being operated, notification must be submitted immediately” (see Registration of grey water installation on page 18)

Important: Waste Water Regulation AbwV § 3 (2) “Prior to the installation of an own recovery system, the customer must inform the water utility company. The customer must take the appropriate steps to ensure that the own system will not have any repercussions on the public water supply network” (see Registration with the water utilities on page 19)

Restriction: Installation must be carried out by trained qualified staff.

CAUTION: When carrying out the installation the current technical rules for domestic installations must be observed (*DIN1988*, *EN1717*).

CAUTION: The system must be fitted with its own fuse protection (FI).

CAUTION: The installation room must be provided with floor drainage.

CAUTION: The grey water manifolds must be vented in such a way that the air blown into the wastewater system can escape freely via the vent of the grey water manifold.

Note: When operated correctly, the treated grey water will attain the quality stipulated in the *Bathing Water Directive of the EU*.

DANGER: The system must be **disconnected from the supply voltage** before performing any maintenance or repair work.

Restriction: Emptying of the grey water vessel must only be carried out by trained service staff. If the filter dries out, this will destroy the membrane.

CAUTION:

EN 12056-1 defines grey water as slightly contaminated wastewater, such as that accumulated from taking showers, or baths or from washing hands, and also that which comes out of the washing machine and can be used as service and process water when treated. A grey water treatment system is used exclusively for the treatment and recycling of slightly contaminated wastewater.

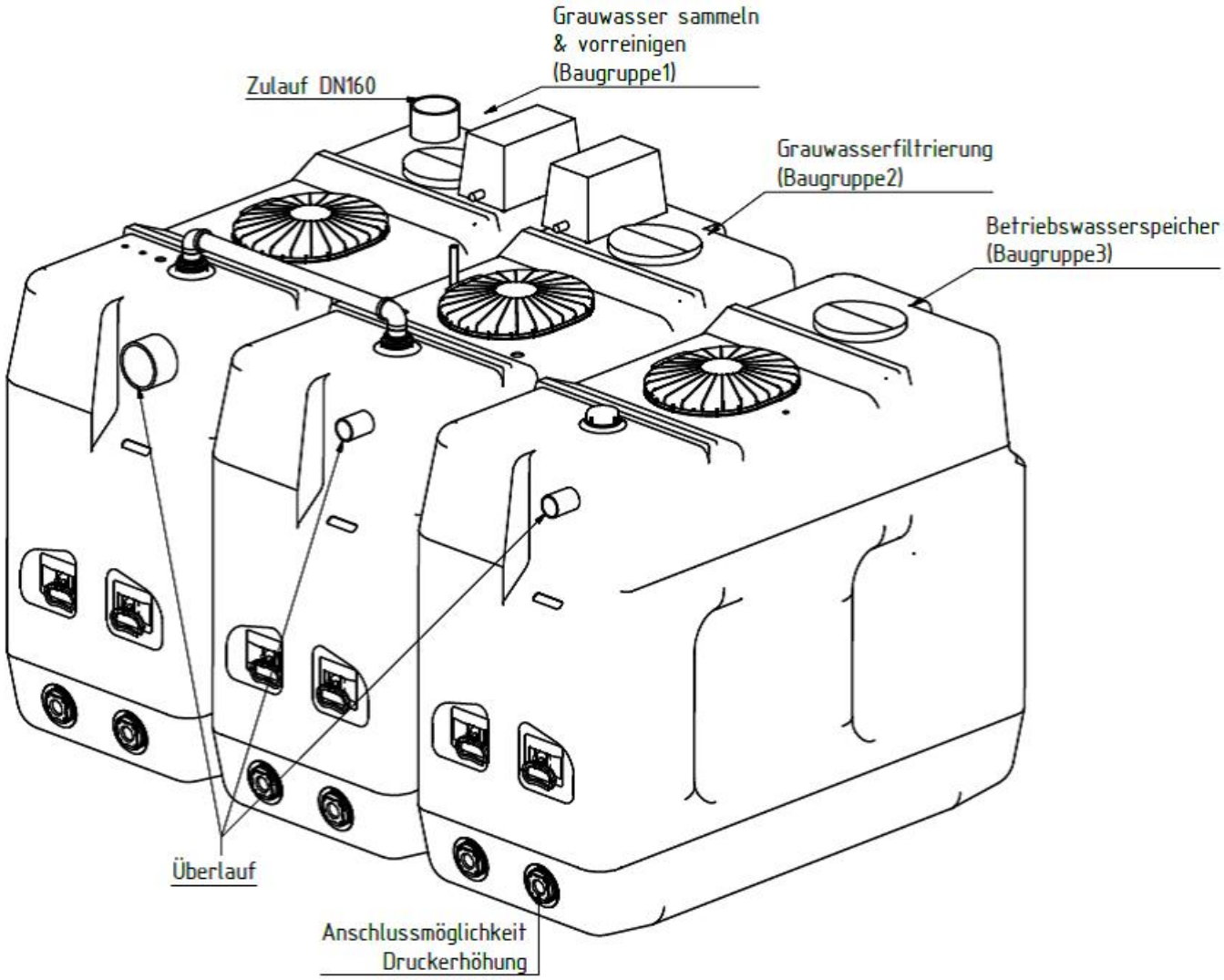
Due to the fat content, a kitchen drain should not be connected.

In the case of highly contaminated wastewater from toilets, kitchen drains or washing machines, quality objectives of treatment will not be achieved and damage to the membrane cannot be ruled out.

The supply of strong alkaline cleaning products (chlorine cleaner etc.), dispersion paints, lacquers, hair dyes, oils and fats affects the performance of the membrane and the quality of the service water and must be avoided. Large amounts of fats and oils in particular can cause irreversible damage to the membrane.

Product description

The systems are intended for multi-stage treatment of grey water and provision of service water. The system comprises multiple assembly groups.



- **Group 1:** Collect and purify grey water

  In the first assembly group, grey water is collected and purified.
- **Group 2:** Grey water filtration

  The second assembly group is for grey water filtration with the CleverTank membrane modules.
- **Group 3:** Service water storage

  In this assembly group the filtered grey water is stored as service water. In addition, the last tank has a potable water feed in order to ensure the supply of service water to the network.
- **Group 4:** Control system

  CleverTank grey water systems are equipped with a fourth assembly group, a fully automatic control system for regulating and monitoring. It is provided with a potential-free contact to integrate fault indications in the building management system.

Tank volumes can vary according to the type of system.

Delivery scope

The grey water system CleverTank 3000 is delivered with the following components:

Group 1

- 1 x tank 2000l
- 1 x ventilation system
- 1 x permeate pump

Group 2

- 1 x tank 2000l
- 1 x membrane unit
- 1 x ventilation system
- 1 x permeate pump

Group 3

- 1 x tank 2000l
- potable water backfeed

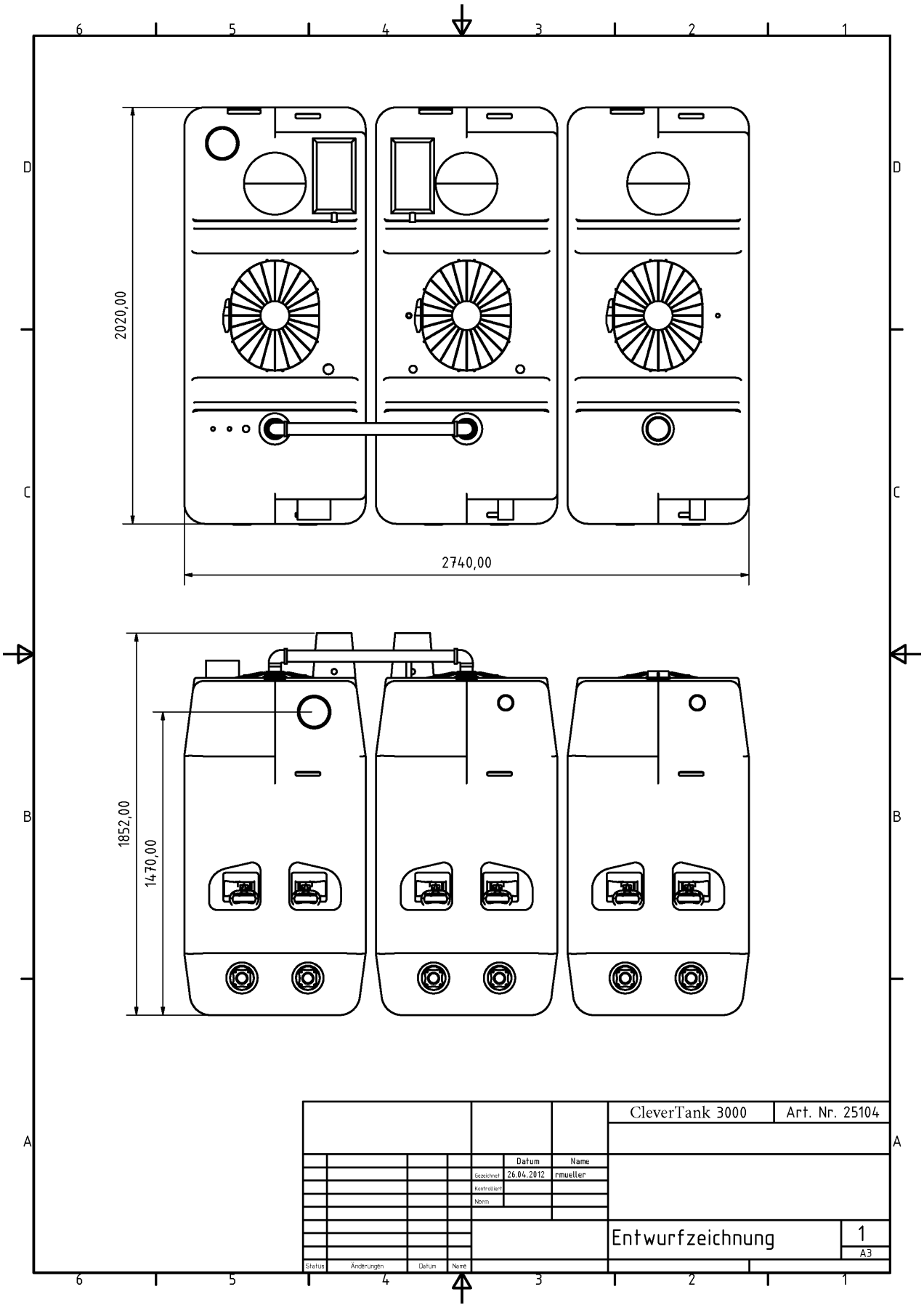
Group 4

- control system

Related reference

Dokumentation Membraneinheit MX-010-BX on page 20
Documentation of airfilter maintenance on page 22
Documentation permeat pump on page 23
Documentation potable water backfeed on page 23
Feed pump on page 23

Diagram


2020,00
2740,00
1852,00
1470,00
CleverTank 3000
Art. Nr. 25104
Datum
Name
Gezeichnet
26.04.2012
rmueller
Kontrolliert
Norm
Entwurfzeichnung
1
A3
Status
Änderungen
Datum
Name

Installing CleverTank 3000

Attention:

- In case of non-compliance, warranty claims will be void!
- After proper setup and installation of the system, perform the electrical installation and check the tightness of all water connections.
- Avoid tempering with other system components, the control module, the pumps or any individual additional components.

1. Align and position the tanks
2. Connect tanks
3. Mount the overflow (backflow device and/ or lifting system provided on-site)
4. Connect pressure booster unit to the tank
5. Connect potable water backfeed
6. Connect inlet
7. Connect pressure booster unit to the service water network
8. Make the necessary electrical connections

Assembly space requirements

The grey water system with its PE tank must be erected on an even, levelled, clean and solid surface in order to prevent any malfunction during operation of the system.

Install the system at a sufficient distance (working space) to adjacent walls: laterally min. 0.5 m and at the back min. 0.5 m.

When erecting the individual PE storage tanks please make strict use of the technical drawings in the operating and installation manual. Each PE storage tank is to be labelled and marked accordingly.

The control system has been designed for mounting on the wall.

Assembly

Assembling group 1

Please refer to the technical data sheet for all connecting dimensions.

1. Locate the grey water inflow from the building.
2. Connect the inflow.

   Venting must be ensured via the inflow.
3. Connect the overflow.

   The grey water overflow must be provided with an on-site connection to the existing wastewater line.

   Please ensure an adequate backflow device in the overflow line.
4. Connect the tubes of the filtration pump to the nozzles of assembly group 2 (observe designation/colour coding).

Related reference

Technical data on page 16

Assembling group 2

1. Connect the grey water filtration overflow to the on-site wastewater line.
2. Connect vent.

   In addition, the assembly group with tank 1 must be vented via an accompanying connection to assembly group 2.
3. Connect the tube of the feed pump.
4. The tubes of the filtration pump must be connected to the nozzles of assembly group 3, provided for that purpose (observe designation/colour coding).

Related reference

Technical data on page 16

Assembling group 3

The transfer point of service water is mounted on this tank. Eventually, an external pressure booster unit can be connected here.

Please apply all connecting dimensions according to the technical data sheet.

1. The overflow of the service water group must also be connected on-site to the existing wastewater line.
2. In order to ensure the supply to the service water network, the potable water backfeed must be connected on-site by means of a pressure line.
3. Connect the tube of the filtration pump of assembly group 2.

Related reference

Technical data on page 16

Connecting the system to the control panel

Make sure all indicated connections have been made by a professional.

1. Connect the cables of assembly groups 2 and 3 to the control panel (see Circuit diagram/ Terminal diagram, observe designation).
2. Fill the system with grey water.

Initial operation

After all the guidelines regarding the assembly space and the assembly have been carried out by a professional, you can put the system into operation.

Please check the following points once more and carry them out in the given order.

1. Perform tightness tests on all connections.
2. Switch the main switch of the system to **OFF** (control box).
3. Open the gate valve of the potable water line.
4. Keep the pressure line for service water behind an external pressure boosting system closed.
5. Switch the main switch in the control box to **ON**.
6. When switching on for the first time, you must adjust the date and time and confirm using the **OK** button.

   The system is now immediately switched to automatic mode.

   Since assembly group 3 does not have any service water yet, the solenoid valve of the potable water line opens immediately and the service water reservoir will be filled to the minimum level.

   After achieving the minimum water level in the service water tank, the solenoid valve switches off immediately, and the shut-off valve in the pressure line for service water can be opened.
7. The external pressure booster unit can now be put into operation . (see Operation Manual of the Manufacturer – Pressure Increase).

8. Grey water should now flow to the first assembly group via the grey water inflow. If necessary, please allow some connected showers, bathtubs or washbasins to run for assembly group 1 to be sufficiently filled with water.
9. The water will be aerated at time intervals.
10. On achieving the max. level in assembly group 1, allow the feed pump in assembly group 2 to run during manual mode until the membranes are covered with at least 5 cm of water (refer to Operation of the control system).

The system can now be used in automatic mode.

Only when sufficient grey water has entered the system and the levels in grey water and filter groups have reached the maximum values, will grey water be filtered and collected in assembly group 3.

Operating the system

Normal service

Vacation service

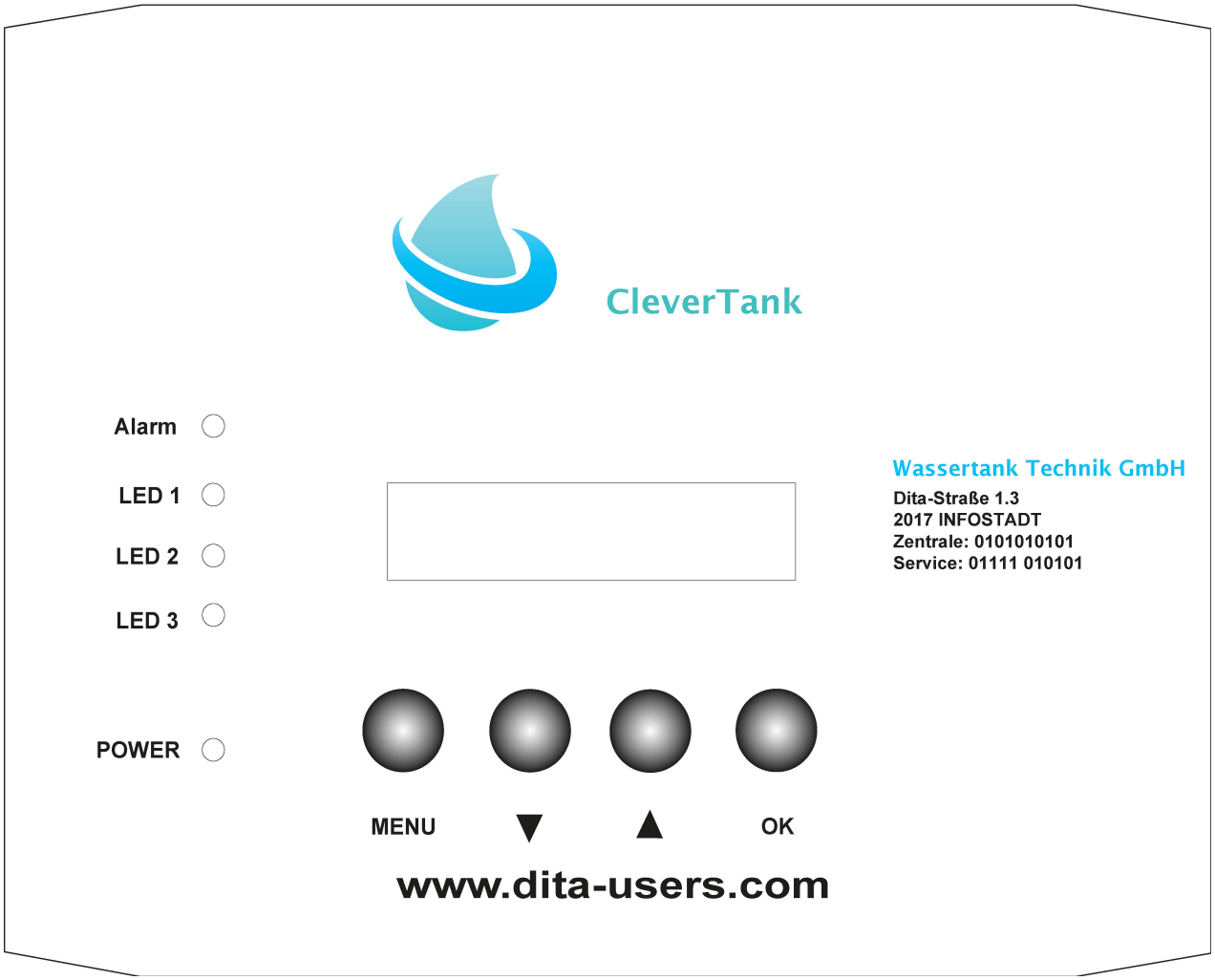
Summer and Winter service

Setting date and time

Controls

The control system is equipped with 4 buttons and a display, where functions, operating parameters and faults can be pre-set or read.

The display has a two-line view.



The buttons **MENU**, ▼, ▲ and **OK** are for setting and displaying individual menu items.

Switch

Control panel

Inspection and maintenance

Checklists

Forms

Troubleshooting

Error: Vent T1

Leaking tube

- Run electrical test

Defective sensor

- Check sensor, if necessary replace
- Run electrical test

Compressor not functioning

- Check supply voltage in manual mode
- Run electrical test

Error: Vent T2

Leaking tube

- Run electrical test

Defective sensor

- Check sensor, if necessary replace
- Run electrical test

Compressor not functioning

- Check supply voltage in manual mode
- Run electrical test

Potable water not open

Leak in the pressure line

- Check pressure line

Connected incorrectly

- Check terminal diagram
- Run electrical test

Fault in flow monitoring

- Check flow meter
- Run electrical test

Ball valve closed

- Open ball valve

Error: external DEA

Error message when using external DEA

- Refer to Manual of external DEA

Error: Collector

Tripping of a fuse in control box

1. Refer to circuit diagram
2. Check electric circuit
3. Electric test

Error: Feed pump T1

Defective sensor

- Run electrical test

Pump does not deliver

- Run electrical test

Leaking tube

- Run electrical test

Error: Membrane T2

Sensor on suction side shows too high a negative pressure (vacuum)

- Check tube for buckling
- Membrane is blocked. Please observe the Section “Maintenance” of the Operation Manual.

Related tasks

Inspection and maintenance on page 12

Error: Filtration T2

No flow through filtration pump

- Electric test on filtration pump
- Check flow meter
- Run electrical test

Error: Floater 1SX

Illogical sequence of floater in Tank 3/ Storage Tank

if 1S2 is OFF, 1S3 cannot be ON

- Check floater for contamination
- Run electrical test

Error: Floater 9SX

Illogical sequence of floater in Tank 2/ Storage Tank

e.g.: if 9S5 is OFF, 9S6 cannot be ON

- Check floater for contamination
- Run electrical test

Error: Storage

Memory module defective

- Restart the system

Shutting down CleverTank 3000

Safety notes for the disposal

Disposing of CleverTank 3000

Technical data

	CleverTank 3000
Height	ca. 1770mm
Width	ca. 2740mm
Depth	ca. 2020mm
Max. filled weight	ca. 5750kg
Connection grey water inflow	DN160
Connection grey water overflow	DN160
Connection service water overflow	DN75
Connection potable water backfeed	1″ nominal 20mm
Connection service water transfer	2″
Membrane surface	6,4m²
Treatment capacity	ca. 3000l/day
Tank volume assembly group 1	ca. 1800l
Tank volume assembly group 2	ca. 1900l
Tank volume assembly group 3	ca. 1900l
Supply voltage	230V/50Hz
Back-up fuse	16A
Max. power consumption	ca. 650W

Warranty

The statutory warranty according to Civil Code § 437 BGB applies.

We will rectify functional interferences that were caused by production or material defects within the warranty period free of charge. These refer to interferences which have occurred despite a proven connection in accordance with the specifications, the proper handling and the compliance with the instructions in the operating and installation manual.

Warranty contact

Country	**Partner**	**Telephone**
Germany	CleverTank GmbH	+49 4455 1124
Austria	CleverTank AT GmbH	+43 7833 9983
Switzerland	CleverTank AG	+41 8844 2243

General contact

Contacts

Contacts

Wassertank Technik GmbH

1.3 Dita Street

2017 INFOSTADT

Office: 0101010101

Service: 01111 010101

Internet: www.dita-users.com

CE Certificate of conformity

EG-Konformitätserklärung im Sinne der EG-Richtlinie

Elektromagnetische Verträglichkeit 2004/108/EG

Niederspannungsrichtlinie 2006/95/EG

Maschinenrichtlinie 2006/42/EG

Hiermit erklären wir, dass nachfolgend bezeichnete Produkttypen aufgrund ihrer Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführungen den grundlegenden Sicherheits- und Gesundheitsanforderungen der einschlägigen grundlegenden EG-Richtlinien entspricht. Bei einer mit uns nicht abgestimmten Änderung des Produktes verliert diese Erklärung ihre Gültigkeit.

Produktbezeichnung:	Grauwasseranlage
Typenbezeichnung:	CleverTank 3000
Angewandte harmonisierte Normen:	EN 292; EN 60335-1; EN 60335-2-41; EN 61000-6-1; EN 61000-6-3
Angewandte national Normen:	DIN 1988 Teil 4, DIN EN 1717

Die Anlagen sind zur mehrstufigen Aufbereitung von Grauwasser und Bereitstellung von Betriebswasser vorgesehen. Die Anlagen sollen in einem trockenen, frostfreien und belüfteten Raum installiert werden. Das Betreiben der Anlagen in Industrieumgebungen mit Staubentwicklung ist unzulässig. Der Betriebs- und Installationsanleitung ist unbedingt Folge zu leisten.

01.08.2012/ _____

Datum / Hersteller

Appendix

Registration of grey water installation

ANZEIGE EINER BETRIEBSWASSERANLAGE

Name/Anschrift:

Anschrift des Anlagenbetreibers:

Hiermit wird die Inbetriebnahme einer Betriebswassernutzungsanlage gemäß AVBWasserV §3 (2) angezeigt.

Anlagenstandort

Straße _____

ggf. Gebäudeteil _____

PLZ / Ort _____

Tel./ Email _____

Ein Teil des Wassers aus der Betriebswassernutzungsanlage wird verwendet für:

- ◯ Gartenbewässerung
- ◯ Toilettenspülung
- ◯ Waschmaschine
- ◯ Gewerbe / Industrie
- ◯ sonstiges _____

Die Installation wurde fachgerecht nach DIN 1989 und DIN 1988 ausgeführt, so dass keine Rückwirkung in das öffentliche Wasserversorgungsnetz möglich ist.

Ausführender Fachunternehmer: _____

_____ _____

Ort, Datum Unterschrift des Anlagenbetreibers

Registration with the water utilities

Anzeige an den Wasserversorger

Name/Anschrift:

Anschrift des Wasserversorgers:

Hiermit melde ich gemäß AVBWasserV §3 (2) dem zuständigen Wasserversorger:

- ◯ den Betrieb einer bestehenden Regenwassernutzungsanlage
- ◯ die Inbetriebnahme einer Regenwassernutzungsanlage

Anlagenstandort

Straße _____

ggf. Gebäudeteil _____

PLZ / Ort _____

Tel. / Email _____

Ein Teilbedarfs des Wassers aus der Regenwassernutzungsanlage wird verwendet für:

- ◯ Gartenbewässerung
- ◯ Toilettenspülung
- ◯ Waschmaschine
- ◯ Gewerbe / Industrie
- ◯ sonstiges _____

Die Installation wurde fachgerecht nach DIN 1989 ausgeführt, so dass keine Rückwirkungen in das öffentliche Wasserversorgungsnetz möglich ist.

Ausführender Fachunternehmer: _____

Die Richtigkeit vorstehender Angaben wird bescheinigt:

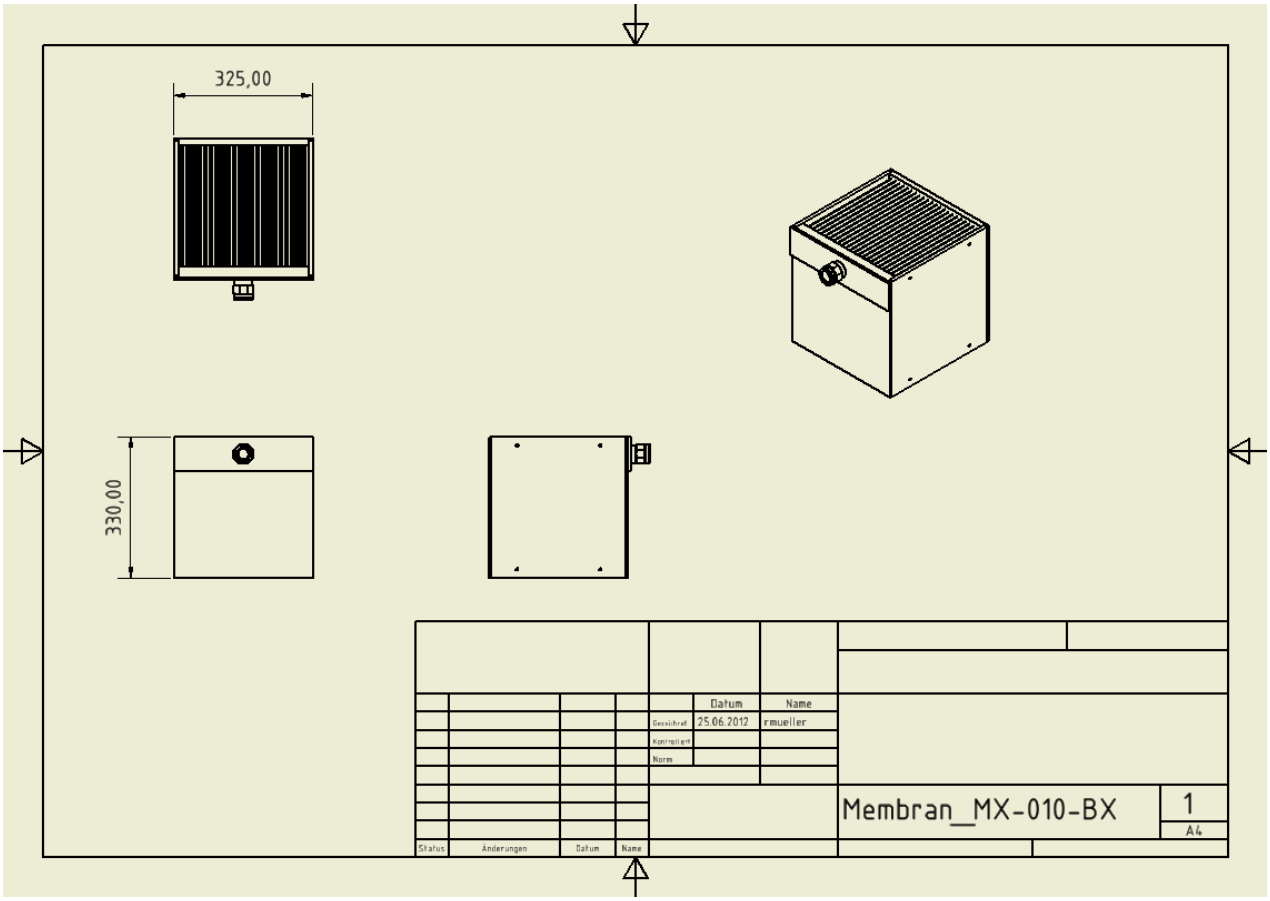
_____ Datum

_____ Unterschrift Hauseigentümer

Dokumentation Membraneinheit MX-010-BX

Membrane data		
Membranfläche	m^2	3,0
Material		PES
Trenngrenze	kDa	150
Permeabilität, Reinwasser	$l/(m^2*h*bar)$	> 300
Filtrationsleistung, Belebtschl. (kommunal)	$l/(m^2*h)$	15...25
Betriebskonzentration, Belebtschl. (kommunal)	g/l	8...15
Betriebsdifferenzdrücke	mbar	20...250
Rückspüldruck	mbar	< 50
pH Betrieb		4...9
Temperaturbereiche	°C	5 - 50
erwartete Standzeit		zwischen 2 und 5 Jahren
Further module data		
Taschenausführung		Sandwich-Bauweise
Verguss		wasser- und abwasserbeständiger Kunststoff
Modulgehäuse		seitliche Schutzplatten, Kunststoff
Außenmaße		
Breite	mm	325 ± 2,5
Höhe	mm	330 ± 0,0
Tiefe	mm	331 ± 2,5
Tiefe mit Filtratleitung	mm	je nach Anschluss
Trockengewicht	kg	12
Nassgewicht	kg	ca. 26
Anzahl Absaugungen vorne	Stk	1
Höhe Aufströmkanal	mm	--
Betriebsweisen Modul		kontiflow Puls / Pause aktiv und gravity flow
Filtratleitung		1/2" IG
Data for airing the membrane		
Belüfter		mittelblasig

Anströmfläche	m^2	0,09
spezif. Luftbedarf / Anströmfläche	m^3/m^2	100
=> Luftbedarf / Modul	m^3/h	9,0
Druckverlust Belüfter	mbar	belüfterspezifisch
chemical cleaning		
Reinigung		Laugen, Oxidationsmittel, Tenside, Säuren
Reinigungsintervall		abhängig vom Abwasser
Verbrauch an Reinigungslösung je Modul	ltr	ca. 15
pH Reinigung		2...11



Documentation of airfilter maintenance

Documentation permeat pump

Documentation potable water backfeed

Feed pump

Glossary

Booster station (DEA)

Eine Druckerhöhungsanlage (DEA) ist eine automatisch gesteuerte Pumpe oder eine Kombination aus Pumpen und weitere technischer Einrichtungen zur Erhöhung des Versorgungsdrucks in der Wasserversorgung. Technische Herausforderung ist dabei einen konstanten Versorgungsdruck bei schwankenden Abgabemengen zu gewährleisten. Dies ist bei Wasser wesentlich schwieriger als bei gasförmigen Medien, da Wasser kaum komprimierbar ist.

Grey water

EN 12056-1 defines grey water as slightly contaminated wastewater, such as that accumulated from taking showers, or baths or from washing hands, and also that which comes out of the washing machine and can be used as service and process water when treated.

Grey water system

A grey water treatment system is used exclusively for the treatment and recycling of slightly contaminated wastewater.

Polyethylene (PE)

a polymer of ethylene; especially :any of various partially crystalline lightweight thermoplastics $(CH_2CH_2)_x$ that are resistant to chemicals and moisture, have good insulating properties, and are used especially in packaging and insulation

Potable water

Service water