Installation instructions

Polyethylene sewage collection tank

Ganges 5000L Series

Version 05-2025

nautilus
WASSERSYSTEME

Table of Contents

1. Overview Volume, Dimensions, Curb Weights

Ganges series

Table 1: Overview of volume, dimensions, curb weight

Volume	Dimensions L x W x H	Tare
Ganges 5,000 liters	2950 x 2300 x 1217	**220kg**

Weight specifications without equipment

2. General information on underground tanks

2.1 Safety

The relevant accident prevention regulations according to BGV C22 must be observed during all work. When inspecting the containers, a 2nd person is required for protection.
The systems must always be put out of operation during work or maintenance and secured against unauthorised switch-on.
The container lid must be kept closed, except when working in the container, otherwise there is a high risk of accidents.
Installation must only be carried out by companies that have professional experience, suitable equipment and facilities and sufficiently trained personnel. In order to avoid dangers to employees and third parties, the relevant accident prevention regulations must be observed.
Installation and commissioning or decommissioning must comply with the customary local standards and be carried out in accordance with the operating instructions. The work may only be carried out by qualified specialists.
Commissioning must only take place when the installation is fully completed and the plant is fully operational.

2.2 Labelling obligation

There is no obligation to mark the collection pit.
However, the facility should be child-proof and protected against unauthorized entry.
It is pointed out that harmful gases may be present in the container (danger to life!).

2.3 To this guide

Please read these instructions carefully and completely before installing and commissioning the containers. The points described above must be observed. For any additional items that may be purchased, you may find (depending on the product) separate installation instructions in the transport packaging.
Please keep these instructions in a safe place so that you can refer to them in the future if necessary.
The underground tanks are made of polyethylene as a single piece (monolithic), i.e. without welds or similar joints, using the rotational sintering process. The material is resistant to almost all chemicals and is biologically harmless.

2.4 Legal situation / official conditions

The construction of a drainless collection pit may be subject to approval in individual cases. Please ask your responsible association, municipality, special-purpose association and/or water authority.

2.5 Accountability

The manufacturer is not liable for damage caused by:

- Wrong choice of location
- Installation and compaction errors
- Groundwater, strata water and backwater
- Misuse

The tanks are intended exclusively for underground installation. Above-ground filling is not permitted.

The tank and its internals must be checked for integrity. Any transport damage must be reported to the carrier in writing upon receipt of the goods.

Compliance with the information in this manual is part of the warranty conditions. Failure to comply with this will void any warranty claim.

This guide cannot cover all the specifics and details of installing rainwater harvesting systems.

If covers and/or manhole extensions are used, which have not been purchased from the manufacturer, are listed or defined, the warranty service may be void, as conformity may not be given or heights may be exceeded, etc.

We reserve the right to a tolerance of +/- 3% for all dimensions and contents contained in our catalogues, installation instructions and other documentation. Depending on the equipment, the usable volume of the underground tanks can be up to 10% lower than the nominal volume. Errors and article changes of individual products are reserved within the framework of technical development.

3. Choice of location and site conditions

3.1 Soil conditions

The subsoil must be sufficiently load-bearing and the surrounding soil must be permeable (a soil survey should be requested from the local building authority to determine the soil physical conditions). Special features for groundwater and strata water: See below.

3.2 Special installation situations

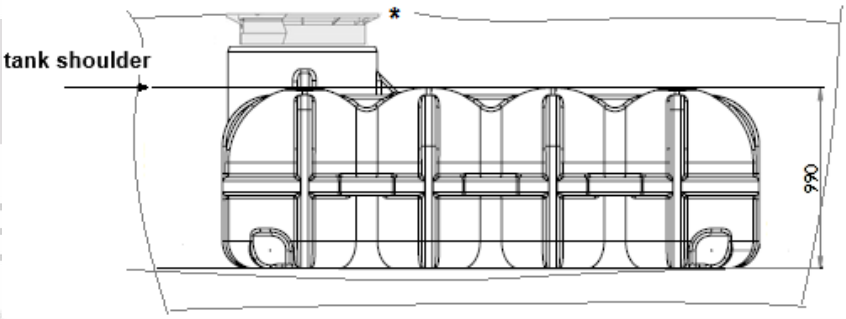
Tree populations, existing pipes, groundwater flows, etc. must be taken into account in such a way that impairments and hazards are excluded.

The containers cannot be subject to the constraints of primary, stratified withstand backwater or traffic areas in combination!

3.3 Installation for groundwater, strata water or cohesive soils

The tank is designed for installation in groundwater, stratification or backwater in cohesive soils suitable as follows:

Immersion depths calculated from the bottom of the tank:

Immersion depths of the container **Ganges 5000 liters 0,99m** The tanks may be temporarily immersed in groundwater, stratification water and backwater up to the specified immersion depth. stand with cohesive soils!	 Immersion depth using the example **of Ganges** 5000 liters ***Immersion depth associated with at least PE cover 95.0050.0070**

If the specified values are permanently exceeded, precautions must be taken to prevent this! (Drainage with pump shaft)
Please ask your installation company or specialist dealer about this.

When installing the tanks in areas with permanent or temporary groundwater, stratification or backwater, the tanks must be separately secured against buoyancy!

* **As a rule, the soil cover of the containers is sufficient to prevent them from floating. The earth cover required for buoyancy protection is usually achieved if the container is installed with at least a PE cover 95.0050.0070 from the manufacturer.**

3.4 Excavation

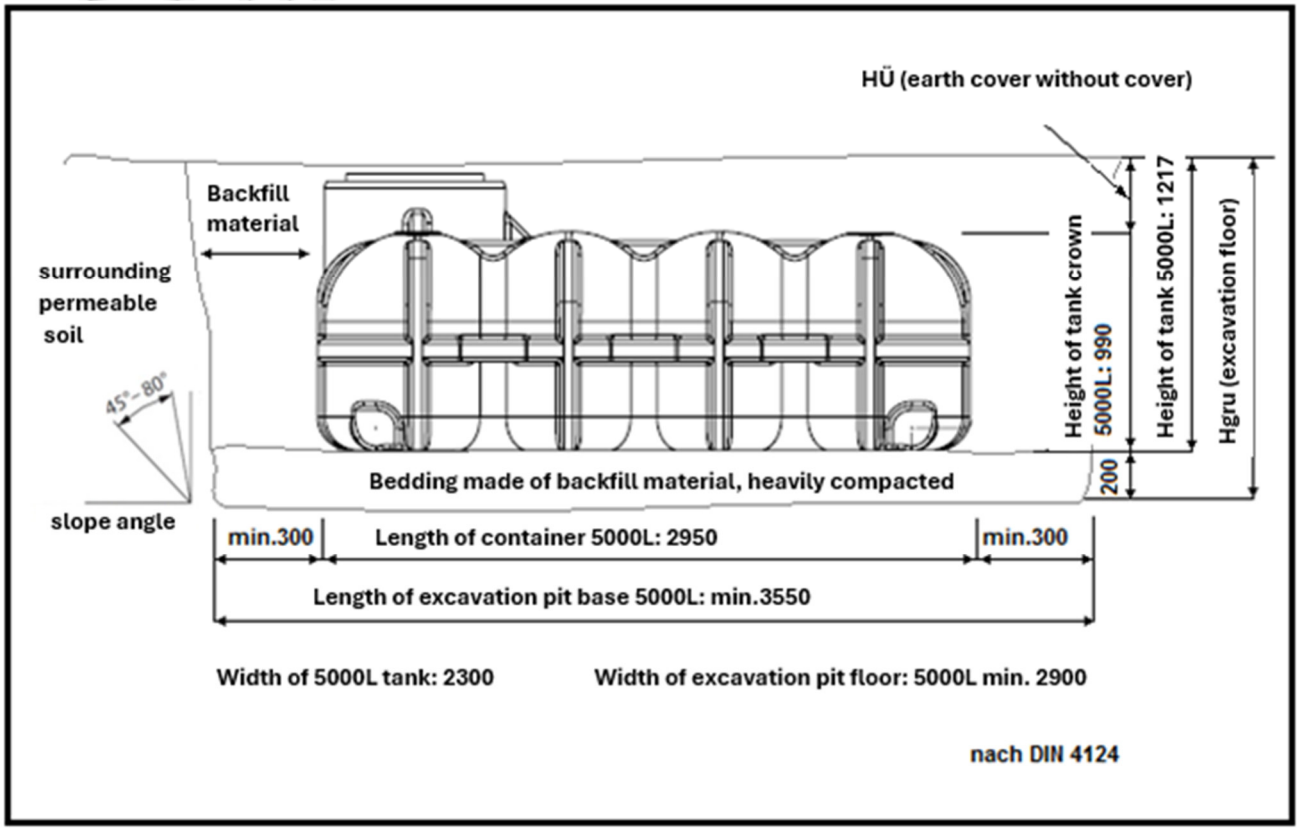
There must be sufficient space for the excavation pit so that working space widths and angles of departure can be maintained. The maximum earth cover (Hü) is specified for the different tank sizes (**==> Table 2**).

Table 2: Earth cover *related to the tank crest without dome (==> see Figure 2

Table 2.

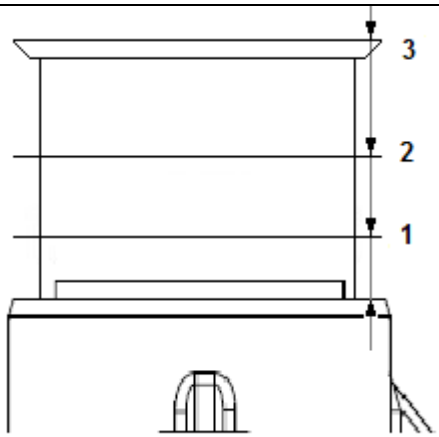
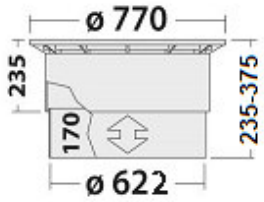
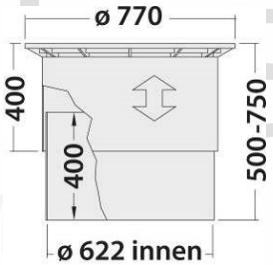
Earth cover (Hü)*				
Container	**PE-Cover**	**Telescopic segment**	**Telescopic dome**	**Max. Hü**
Ganges	**382mm**	**462 – 602mm**	**727 – 977mm**	**977mm**

Figure 2: Installation sizes



Both the underground tank and the tank covers may be subject to production-related dimensional tolerances. In the case of a possible combination of two products that are within the upper tolerance range, it may be necessary to remove material on site. This can be done by carefully chamfering the tank dome or the respective cover!

3.4.1 Table 3. Efficiency of the covers on the Ganges 5000

Table 3. Effectiveness of the covers		
1 PE cover can be walked on up to 200Kg **95.0050.0070**	**2** Telescope segment up to 1500kg walkable **95.0050.0074**	**3** Telescopic dome up to 1500Kg drivable **95.0050.0072**
Effective Height= H d  **Ganges** 5000L		
1  **H d= 155mm**	**2**  **H d max. = 375mm** **H d min. = 235mm**	**3**  **H d max. = 750mm** **H d min. = 500mm**
Description of the covers		
Accessible **Parental**	By infinitely variable height adjustment, the effective height between 235 and 375 mm. A further reduction of the effective height is possible by shortening the segment parts. **Parental** **Walkable up to 1500kg 95.0050.0074**	By infinitely variable height adjustment, the effective height between 500 and 750 mm. A further reduction of the effective height is possible by shortening the segment parts. **Parental** **Car – passable 95.0050.0072**

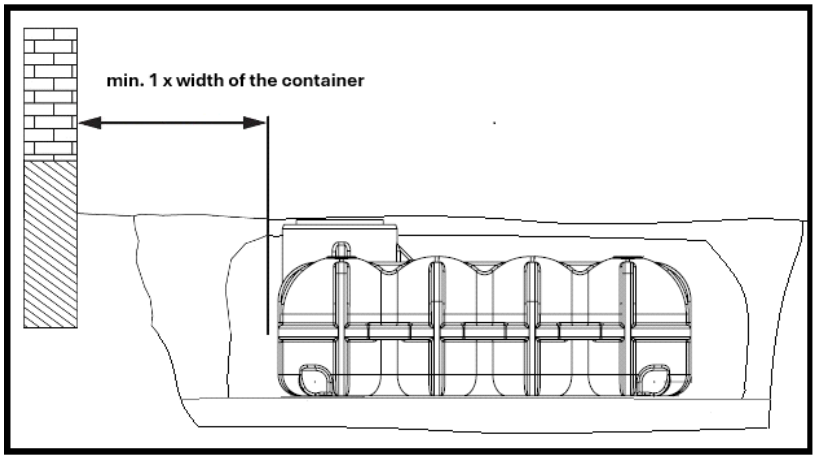
3.5 Location to the buildings

The tanks must not be built over and cannot absorb loads from buildings or foundations.

The distance to buildings should be at least the simple width of the container.

A drainless collection pit must have a distance of at least 25 m from its own and neighbouring water extraction facilities.

The distance to property boundaries may not be less than 2 m and to openings of recreation rooms 5 m.



More information: DIN 4123

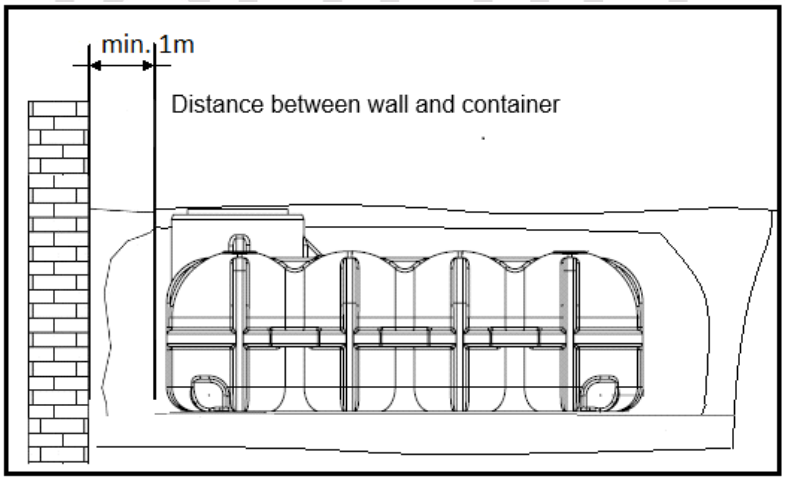
3.6 Sloping terrain

On a slope, the terrain must be checked for the risk of the soil slipping.

If the tank is installed in the immediate vicinity (< 5m) of a slope, mound or embankment, a statically calculated retaining wall must be erected to absorb the earth pressure.

The wall must exceed the container dimensions by at least 0.5m in all directions and have a minimum distance of 1m from the container.

For more information, please contact your local authority or local construction companies.



DIN 1054, DIN 4084

3.7 Traffic area	
The underground tank is intended for class A traffic areas according to EN 124 (cyclists, pedestrians), car can be driven over in compliance with special installation measures. **See point 5.2**	

4. Backfill material

4.1 For the pit area around the tank

The backfill material must be characterised as shear-resistant, easily compactable, permeable to water and air, frost-proof and must not contain any sharp components. These requirements are met, for example, by round-grain gravel mixtures **without fractions**, with a grain size of 2 mm – 16 mm. (Ask your building materials dealer.) **The use of excavated soil or materials referred to as "filling sand" do not meet the above conditions in many cases and are not permitted!**

5. Execution and timing of the installation

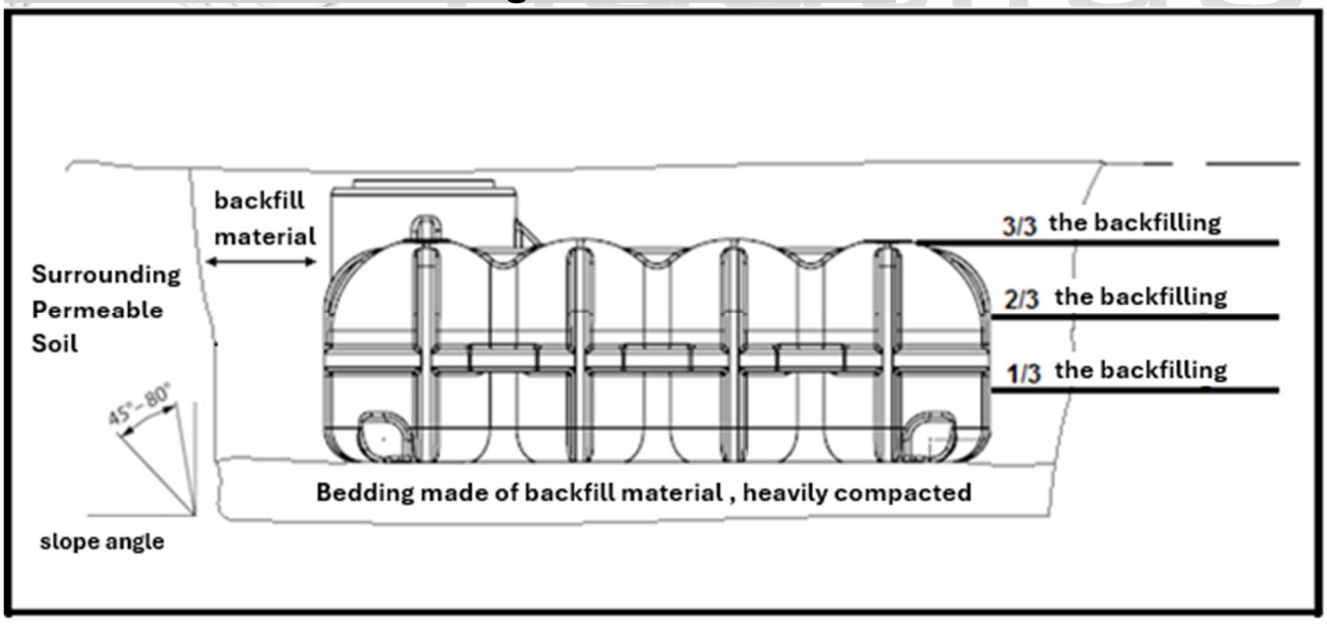


Figure 4: Execution of the installation without covers

5.1 Installation as a walk-in

In **preparation for the insertion** of the underground tank into the excavation pit, the **bedding is made of backfill material** (200 mm thick) in the pit floor: individual layers of 100 mm height are inserted and heavily compacted (hand rammer 15kg). The surface must be exactly horizontally flat.

- The tank and its internals must be checked for **integrity**.
- **The insertion of the underground tank** must be carried out in such a way that it is inserted into the pit without impact (e.g. with the help of belts or ropes) and carefully placed on the bed bed. Care must be taken to ensure that only the crane eyes provided for this purpose are used for fastening or lifting. Attaching to protruding container parts (e.g. nozzles) or other attachments is not permitted!
- The **tank or manhole cover is put on** and aligned. Only manhole covers from the tank manufacturer may be used.
- To **fix the underground tank**, it is filled with water up to a height of approx. 30 cm. The tank or container is aligned exactly flat in the balance.
- The **backfilling/compaction in the lower part of the pit** is carried out in 3 equal steps, whereby the tank is filled to 1/3 with water and the backfill material is introduced from the outside at the same height. The backfill material is compacted with a 15 kg hand rammer. **Mechanical compaction and the slurry of the backfill material is not permitted**! During backfilling and compaction, it must be constantly observed whether **deformations or other signs of uneven compaction are visible** on the underground tank.
- After backfilling/compaction of the lower part of the pit, the **inlet pipe is** laid to the tank with a gradient (min. 2%).
- The **tank** is then filled with water to the bottom edge of the connection.
- The outer walls and soles of the tank as well as pipe connections must be tight. For testing, the container must be completely filled with water after installation.

  Water loss is not permitted.

Only approved companies are qualified to test the watertightness.

- For **backfilling/compaction up to about 200 mm below the top of the ground,** the procedure is as described for the lower part of the pit. Please note: Before backfilling/compaction around the connections, they must be checked for freedom from voltage and a solid fit!
- The **residual backfilling** can be carried out by topsoil or excavation or similar.

5.2 Installation as a car-accessible version, with telescopic dome 95.0050.0072

In **preparation for the insertion** of the underground tank into the excavation pit, the **bedding is made of backfill material** (200 mm thick) in the pit floor: Individual layers of 100 mm height are inserted and heavily compacted (hand rammer 15 kg). The surface must be exactly horizontally flat.

It must be ensured on site that the containers are not exposed to higher loads!

The use of the containers is only permitted in areas that can be driven over / parked and where car traffic takes place at low speed!

When the drive-over capability of multi-container systems is established, the distance between the containers increases to 1.50m
Figure 6 Distance between containers

- The tank and its internals must be checked for **integrity**.
- The **insertion of the underground tank** must be carried out in such a way that it is inserted into the pit without impact (e.g. with the help of belts or ropes) and carefully placed on the bed bed. Care must be taken to ensure that only the crane eyes provided for this purpose are used for fastening or lifting. Attaching to protruding container parts (e.g. nozzles) or other attachments is not permitted!
- The **cover is put on** and aligned. Only telescopic covers from the manufacturer with the marking, **loadable up to 15kN - cars (see embossing in the lid) may be used.**
- To **fix the underground tank**, it is filled with water up to a height of approx. 30 cm.
- The **backfilling/compaction in the lower part of the pit** is carried out in 3 equal steps, whereby the tank is filled to 1/3 with water and the backfill material is introduced from the outside at the same height. The backfill material is compacted with a 15 kg hand rammer. **Mechanical compaction and the slurry of the backfill material is not permitted**! During backfilling and compaction, it must be constantly observed whether **deformations or other signs of uneven compaction are visible** on the underground tank.
- After backfilling/compaction of the lower part of the pit, the **inlet pipe is** laid to the tank with a gradient (min. 2%).

  The ventilation pipes can already be installed, see Figure 6
- The **cover** is pushed to the desired height and **provisionally fixed from the inside with the transport screws**.
- The underground tank is then filled with water up to the lower edge of the connections.
- Further **backfilling/compaction around and above the tank** as well as up to the lower ring of the telescopic dome is carried out, as in the lower part of the pit. It should be noted that the connections are voltage-free and tight!

- **A** gravel base course at least 300 mm high (must consist of sand-lime brick 2/45 or equivalent material) is placed around the side of the cover and also in layers of 100 mm with a hand rammer 15 kg (**no machine use!**) by three operations per layer. The area of the gravel base course must be provided in such a way that it corresponds to the size of the excavation pit floor. The **temporary fixation must be removed** when the telescopic dome is fixed by the compacted backfill!
- In addition to the gravel base course, **an approx. 150 mm high underlining of dry mortar (ready-made mix from the hardware store) is applied below the frame of the cover**. This layer must be at least 200 mm wide all around and must be carried out directly on the telescope dome. **Decoupling *1 Figure5**
- **An approx. 100 mm high layer of backfill material is applied** over the gravel base course.
- The **remaining backfilling** can be done by paving, topsoil or excavation (not cohesive, clayey or clayey). It is recommended to attach lawn grids to trafficked areas.
- When **applying paving stones, the container must be filled with water up to the beginning of the dome shaft!** For this purpose, the inlet must be closed until the completion of the construction work.

For the application of paving stones, only commercially available surface vibrators up to max. 60kg may be used for compaction!
Larger devices or those designated as hopsers are not permitted!

When installing a drivable variant, always pay attention to the decoupling *1 of the shaft attachment from the tank! Vehicle loads must not be transferred directly to the container under any circumstances! The elements of the shaft extension must not be screwed together!

Mapping of the individual soil layers

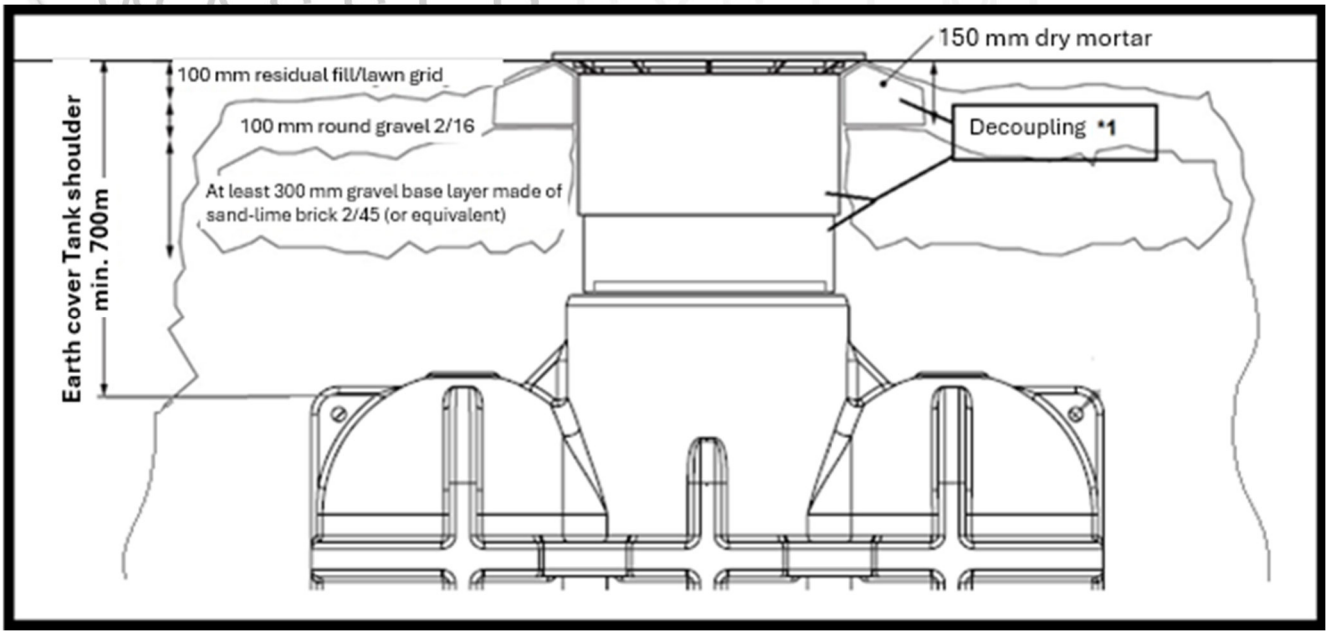


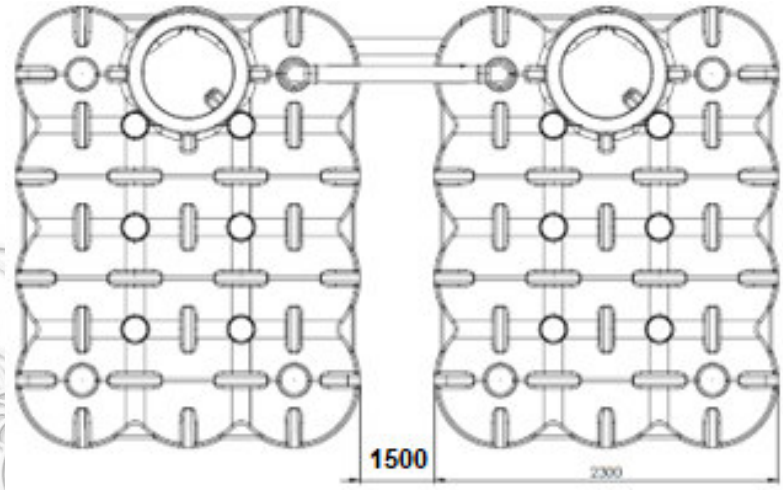
Figure 5: On-site construction of a drivable superstructure with telescopic dome or telescopic segment

The earth cover (related to the tank shoulder) must be at least 600 mm! The lateral bedding is made with round grain gravel 2 -16mm.
Layers of 100 mm are inserted and compacted with a hand tamper (15 kg) in three steps per layer! Mechanical compaction is not permitted!

Decoupling *1 – the temporary fixation must be loosened and care must be taken to ensure that the lower part of the dome is separated from the upper part.

Figure 6

Distance between the containers in the drive-over variant



5.3 Installation of ventilation

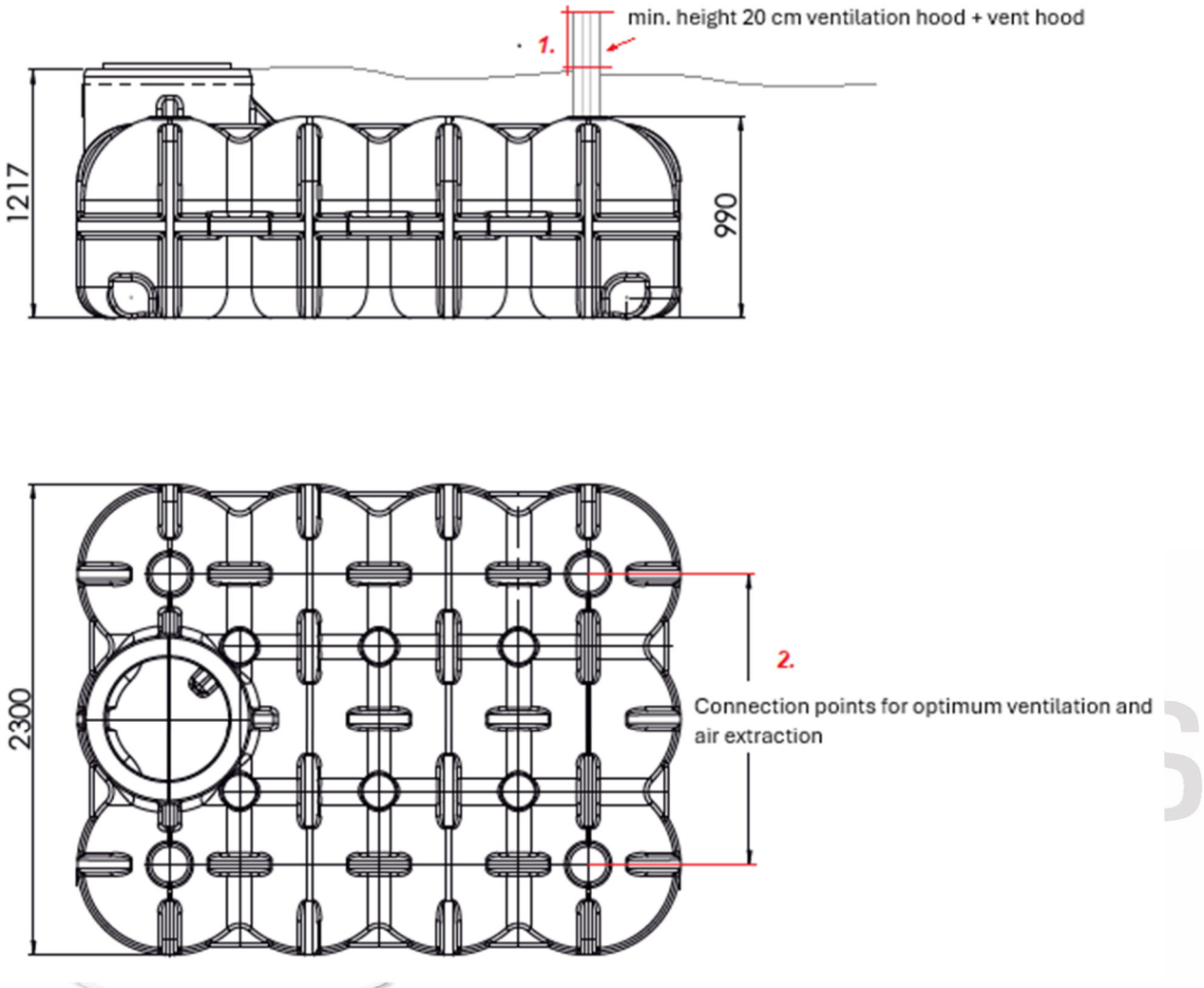


Figure 7 Location of the ventilation

Optional ventilation holes and vent holes

1. The ventilation should be at least 20cm above the ground and can be carried out by means of a KG pipe DN100/110
   The length of the pipes depends on the ground cover of the container + min. 20cm overhang.
   Sufficient ventilation in accordance with DIN 1986-100 of the drainless pit via the connected underground pipe with ventilation pipe over the roof must be ensured.
   The use of ventilation valves is not permitted.

2. The position can be freely selected on one of the designated connection points. Fig. 6

3. The combination with ventilation systems of other structures is not permitted.

In most cases, simple roof ventilation is not sufficient, so additional installation of ventilation and extraction is required.
The materials for this are to be provided on site.

6. Maintenance and cleaning

Regular inspection and maintenance, every three months, ensures increased functional reliability and service life of your collection pit. The container should be cleaned and emptied at regular intervals. This depends on the frequency of filling and the operator's necessity.

Maintenance of the entire system should be carried out at intervals of approx. 5 years (emptying, cleaning and visual final inspection).

• Empty the container completely

• Clean surfaces and built-in parts with water

• Remove dirt from the container completely

• Check all built-in parts for tightness.

It is pointed out that harmful gases may be present in the container (danger to life)!

The following applies to the plastic covers: If necessary, clean the grit trap and screw bushings, grease the screws and bushings. Check covers regularly for a secure/childproof fit.

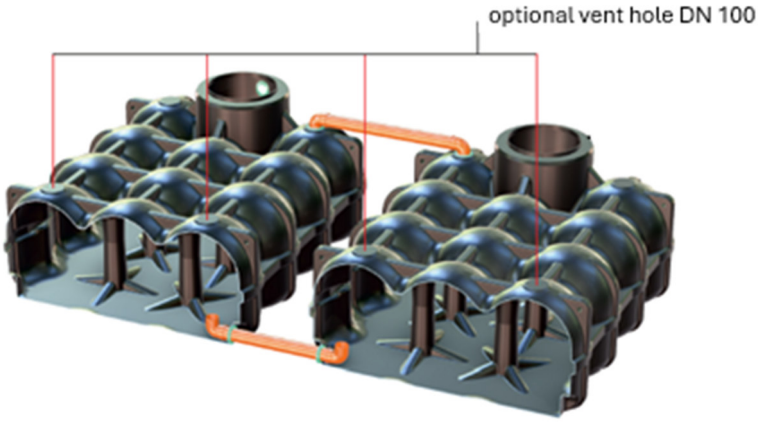
The ventilation pipes should also be checked at regular intervals to ensure that they are free. This can be done with a water flush.

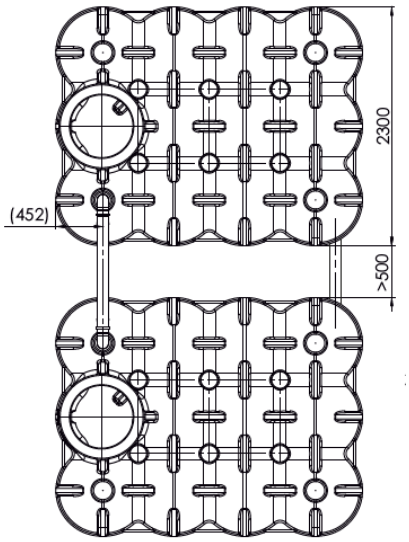
In the case of multi-tank systems, care must be taken to ensure that all containers are cleaned, checked and emptied during emptying and maintenance.

7. Connection of tanks as a multi-tank system

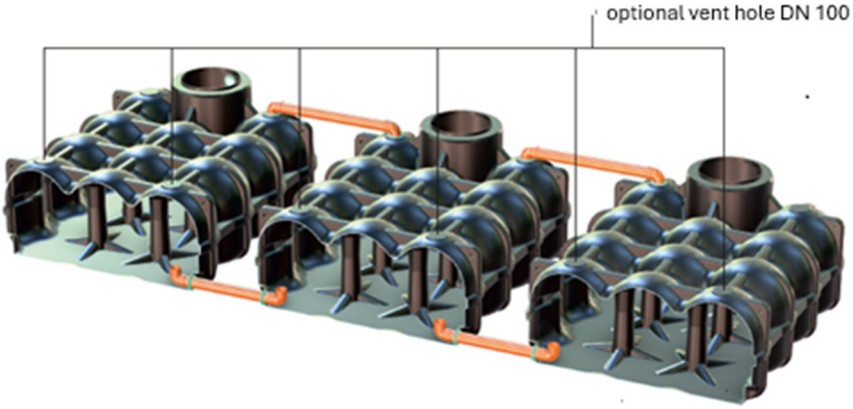
The connection of two or more **Ganges** 5000 L tanks to a multi-tank cistern is made via flat surfaces in the lower area and on the upper side of the tanks with the help of the coupling set and KG pipes (to be provided on site). The coupling set includes 4 (8 at 15,000 L) special gaskets DN 100 and a perforated circular saw for drilling the openings (to be created on site). The recommended placements of the connecting hole and vent hole well are marked with drilling points on the shallow tank. The KG pipes must protrude at least 200 mm into the containers. The use of pipe bends is recommended so that any subsequent placement of the underground tanks does not strain the connecting pipes. Care must be taken to ensure that the distance between the containers is at least 0.5 m.

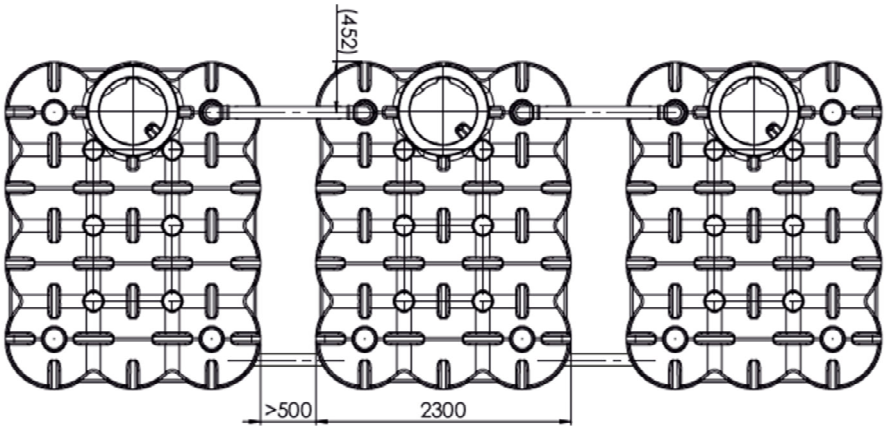
7.1 Ganges 10.000L DUO





7.2 Ganges 15.000L TRIO





8. Positions for inlet hole

8.1 Ganges 5000L LD

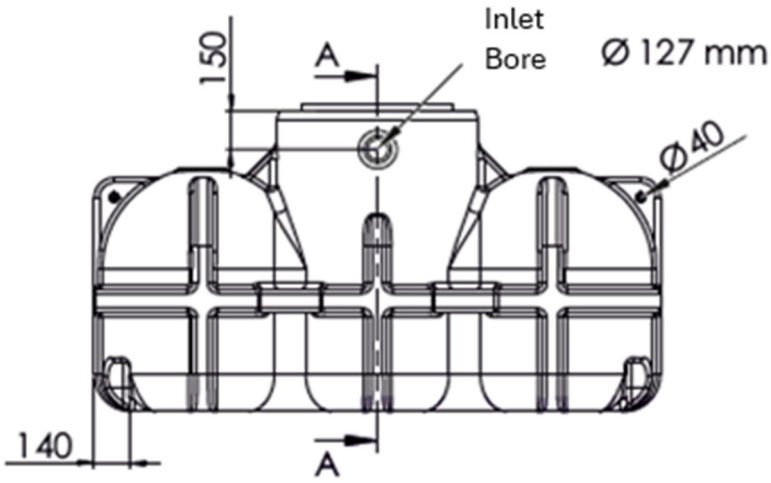


Table 5.	Metrics
Variants	Height of inlet from the centre of the pipe to the upper edge of the container without cover
Ganges 5000 L	
35.5200.0011	**150 mm**

- **The positions of the inlet pipe can be found in the respective drawing (see 7.1)**
- **All connections are designed to the DN 100/110 dimension**