Installation instructions

Polyethylene rainwater underground tank

Hudson 5000 series

5000Litre

Version 07-2025

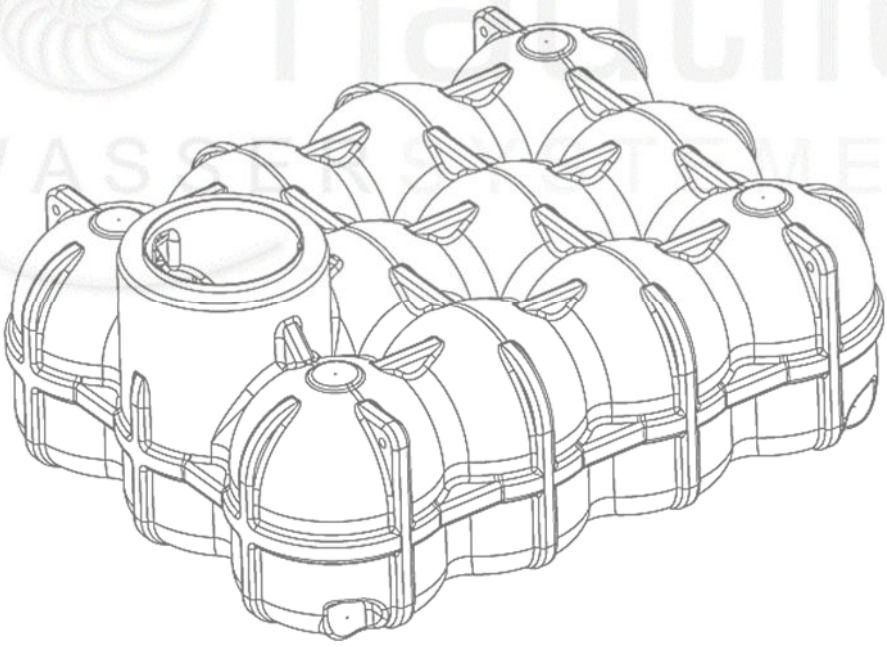

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Table of contents

1 Overview volumes, dimensions, empty weights

Hudson series

Table 1: Overview volumes, dimensions, empty weight

Volumes	Dimensions L x B x H	Empty weight
Hudson 5000 Litre	2950 x 2300 x 1217	approx. 190 kg
Hudson 5000 Litre wth pump sump	2950 x 2300 x 1257	approx. 190 kg

Weights without equipment

2 General information about underground tanks

2.1 Safety

For all work, the relevant accident prevention regulations, in accordance with among others DGUV V3, are to be observed, using appropriate safety equipment.
A 2nd person is required for safety purposes when inspecting the tanks.
The systems must always be put out of operation during works or maintenance and secured against unauthorised use.
The lid to the tank must remain closed to reduce the risk of accidents, except when working inside the tank.
Nautilus Wassersysteme GmbH & Co KG offers an extensive range of accessories, all of which match one another and can be converted into complete systems. Use of other accessories may impair the system's functionality and lead to exclusion of liability for any resulting damage.

2.2 Labelling obligation

All pipes and service water outlets are to be labelled or depicted with the words "**Not drinking water**" (DIN 1988 Part 2, Para. 3.3.2.) in order to prevent an erroneous connection with the drinking water supply, even when many years have since passed. Even if correctly labelled, there can be cause for confusion, for example, in the case of children. For this reason, all domestic water – taps with valves must be **child-proof**.

2.3 About these instructions

Please read these instructions carefully and in full before installing and commissioning the tanks. The points described must be observed. For any additional items purchased, you will find (depending on the product) separate installation instructions in the delivery packaging.
Please keep these instructions in a safe place for future reference.
The underground tanks are manufactured in a rotational sintering procedure from the plastic polyethylene as a single piece (monolithic) i.e. without welding seams or similar joints. The active component is resistant to almost all chemicals, contains no harmful biological agents and food-safe.

2.4 Legal position / regulatory requirements

The construction and operation of rainwater harvesting systems does not usually require a permit, however, you are obliged to notify the authorities. Even so, speak to the local authority (building control department, water supply company) about the details and any possible funding. In the manufacture and installation of rainwater harvesting systems, relevant regulations such as DIN 1989; DIN 1986; DIN 18196; ENV 1046; DIN 4124; ATV-DVWK A127 must be observed; and it is this content that forms the basis for the water systems by the company Nautilus Wassersysteme GmbH & Co KG and these instructions.

2.5 Liability

The manufacturer shall not be held liable for any damage caused by:

- Incorrect location selection
- Improper installation and compaction
- Groundwater, stratified water and backwater
- Misuse

The tanks are intended solely for installation underground. Filling above ground is not permitted.

The tank and its installations must be checked to ensure that they are intact. Any damage caused in transit must be reported to the carrier in writing upon goods receipt.

Compliance with the information in these instructions forms part of the warranty conditions. Failure to comply will void any claim under the warranty.

These instructions cannot cover all the specifics and details of the installation of rainwater harvesting systems.

If covers and/or shaft extensions are used that were not purchased, listed or defined by the manufacturer, the warranty may expire under certain circumstances because conformity may not be given or heights may be exceeded, etc

We reserve the right to a tolerance of +/- 3 % for all dimension and content specifications 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% below the nominal volume. Any errors and changes to individual products are reserved within the scope of further technical development.

3 Site selection and site requirements

3.1 Soil conditions

The subsoil must have sufficient load-bearing capacity and the surrounding soil must be capable of water absorption (a soil survey should be requested from the local building control department to determine the physical conditions of the soil). Special features for groundwater and stratified water: see below.

3.2 Special installation situations

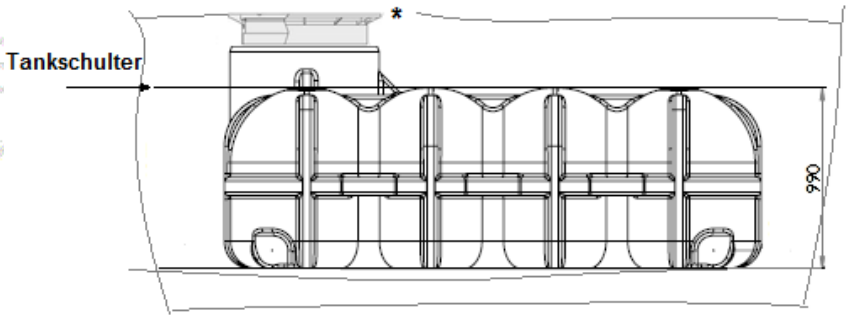
Tree populations, existing pipelines, groundwater flows etc. must be taken into account in order to rule out impairments and hazards.

The tanks cannot withstand the restrictions imposed by groundwater, stratified water, backwater or traffic areas combined!

3.3 Installation in groundwater, stratified water or cohesive soils

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

Immersion depths calculated from the tank floor:

Tank immersion depths **Hudson 5000 litre 0.99m** **Hudson 5000 litre with pump sump 1.03m** The tanks may be immersed in groundwater, stratified water and backwater up to the specified immersion depth in cohesive soils!	 Immersion depth using the example of Hudson 5000 litre without pump sump ***Immersion depth in connection with at least PE cover 95.0050.0070**

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

When installing the tanks in areas with permanent or temporary groundwater, stratified water or backwater, they must be secured separately against uplift!

* **The soil cover of the tanks is usually sufficient to prevent flotation. The soil cover required to prevent uplift is usually achieved when the tank is at least fitted with a PE cover 95.0050.0070 by the manufacturer.**

3.4 Excavation pit

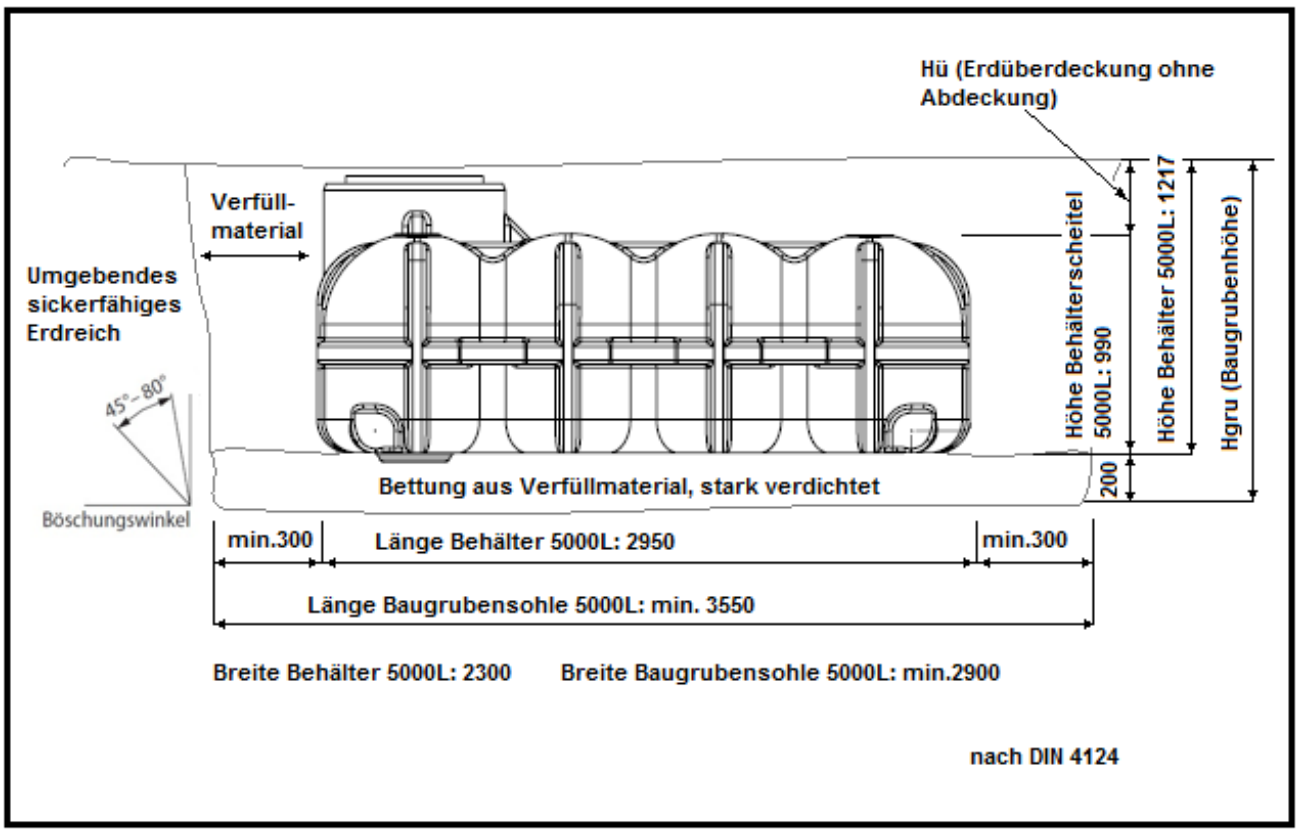
There must be sufficient space for the excavation pit in order to comply with working area widths and slope angles The maximum soil cover (Hü) is specified for the different tank sizes (**==> Table 2**).

Table 2: Soil cover *based on the tank crown without the dome (==> see Figure 2 on page 6)

Table 2

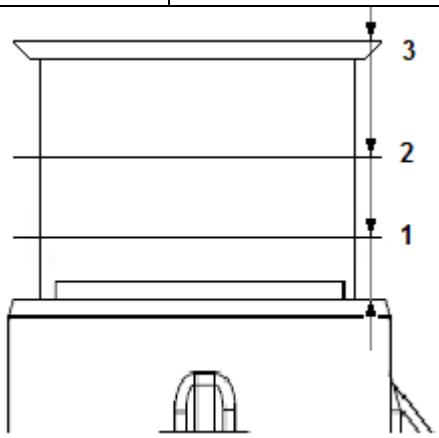
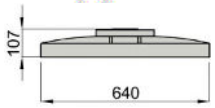
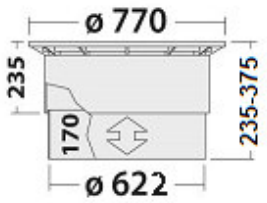
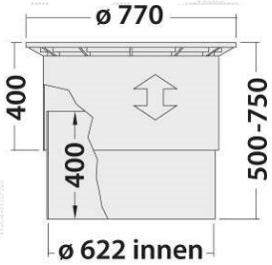
Soil cover (Hü)*					
Tank	**Basic Cover**	**PE cover**	**Telescopic segment**	**Telescopic dome**	**Max. Hü**
Hudson	**227mm**	**382mm**	**462 – 602mm**	**727 – 977mm**	**977mm**

Figure 2: Installation sizes



Dimensional tolerances due to production may occur in both the underground tank and the tank covers. In the case of a possible combining of two products that lie in the upper tolerance range, it may be necessary to remove material on site. This can be achieved by carefully chamfering the tank dome or respective cover!

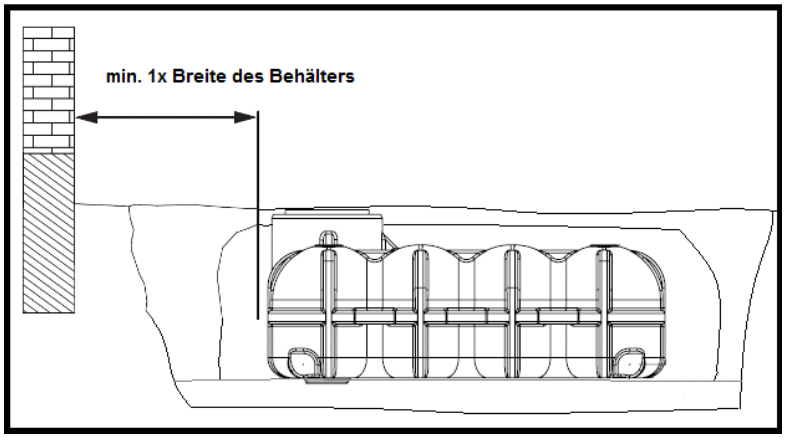
3.4.1 Table 3 Efficiency of the Hudson 5000 covers

Table 3 Efficiency of the covers			
Slip lid **35.0000.0029**	**1** PE cover walkable up to 200kg **95.0050.0070**	**2** PE telescopic segment Trafficable up to 1500kg **95.0050.0074**	3 PE telescopic dome trafficable up to 1500kg **95.0050.0072**
 **Effective height= H d**			Hudson 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 covers			
Not child-proof **Not walkable**	**Walkable** **Child-proof**	Due to infinitely variable height adjustment, the effective height can be varied between 235 and 375 mm. A further reduction of the effective height can be achieved by shortening the segment parts. **Child-proof** **Cars – trafficable 95.0050.0074**	Due to infinitely variable height adjustment, the effective height can be varied between 500 and 750 mm. A further reduction of the effective height is possible by shortening the segment parts. **Child-proof** **Cars – trafficable 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 be a single width of the tank.



Further reading: DIN 4123

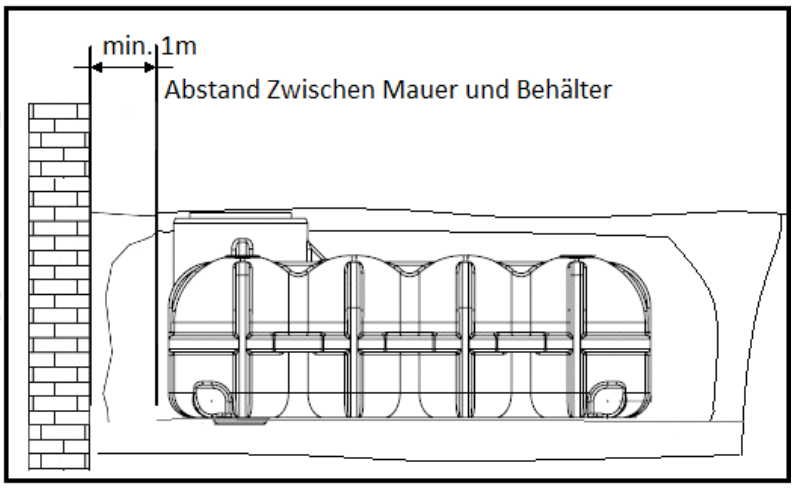
3.6 Slope

On a slope, the terrain must be checked to prevent soil slippage.

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

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

More information on this can be obtained from your local authority or construction company.



DIN 1054, DIN 4084

3.7 Traffic areas

The underground tank is intended for traffic areas of class A according to EN 124 (cyclists, pedestrians), car-trafficable and parkable if special installation measures are complied with. **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 compacted, permeable to water and air as well as frost resistant; and must not contain any sharp components. These requirements are fulfilled by e.g. rounded gravel grain or gravel mixtures with **no broken parts**, with a grain size of 2mm – 16mm. (Ask your building supplies dealer.) **The use of excavated soil or materials referred to as "filling sand" do not fulfil the above conditions in many cases and are not permitted!**

5 Execution and timing of installation

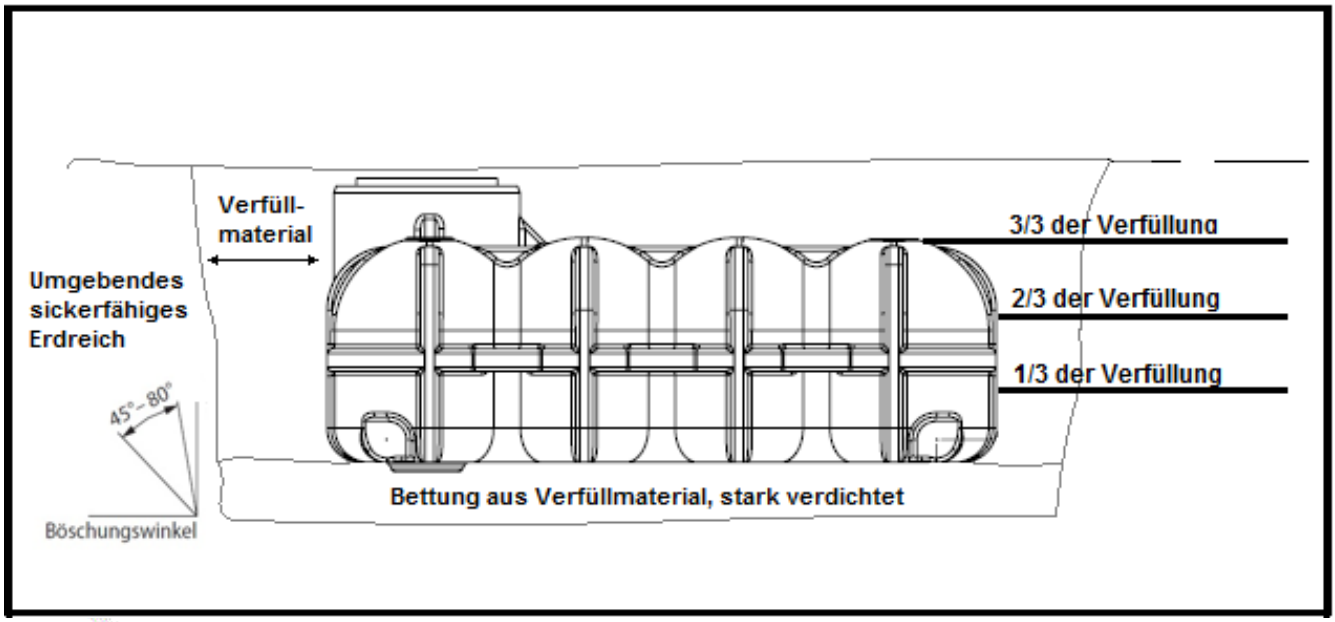


Figure 4: Execution of the installation without covers

5.1 Installation as a walkable and not walkable version

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

- The tank and its installations must be checked to ensure that they are **intact**.
- **The insertion of the underground tank** is to be carried out in such a way that it is introduced into the pit shock-free (e.g. with the aid of straps or ropes) and carefully placed onto the bottom bedding. It must be ensured that, if necessary, only the crane eyes provided for this purpose are used for fastening or lifting. Slinging on protruding tank parts (e.g. nozzles) or other attachments is not permitted!
- The **tank or shaft cover is attached** and aligned. Only shaft covers from the tank manufacturer may be used.

- To **secure the underground tank**, it must be filled with water up to a height of approx. 30 cm. The tank or container is aligned exactly flat and level.
- The **backfilling/compaction in the lower part of the pit** takes place in 3 equal steps, whereby the tank is filled to 1/3 with water and from the outside the backfill material is introduced at the same height. The backfill material is compacted using a 15 kg hand tamper. **Mechanical compaction and sludging of the backfill material is not permitted!** During backfilling and compaction, keep checking for deformations or other signs of uneven compaction on the **underground tank**.
- After backfilling/compaction of the lower part of the pit, the **inlet pipe and empty pipe** are laid with a gradient (min. 1 %) to the tank and the **outlet pipe** is laid with a gradient (min. 1 %, the same or greater than for the inlet) away from the tank. The outlet pipe of the tank can be connected to an existing sewer or to a downstream infiltration system. If the outlet pipe is connected to an infiltration system, this must be at least 3 m away from the tank.
- **Outlet pipe Hudson Retention Cistern:** the outlet pipe connection for this equipment variant is already made during backfilling/compaction in the lower pit section (see above).
- The tank is then **filled with water** up to the lower edge of the connections.
- For **backfilling/compaction up to approx. 200 mm below the top edge of the ground**, proceed in the same way that was described for the lower part of the pit. Please note: before backfilling/compaction around the connections, these must be checked for absence of stress and a solid fit!
- The **remaining backfilling** can be done with topsoil, excavated soil or similar.

5.2 Installation as car-trafficable version, with telescopic segment 95.0050.0074 Installation as version car-trafficable / parkable, 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) on the pit floor: Individual layers of 100 mm in height are introduced and heavily compacted (hand tamper 15 kg). The surface must be exactly level.

It must be ensured on site that the tanks are not subjected to higher loads!

The tanks may only be used in areas that can be driven over / parking is permitted and with low-speed zones for cars!

- The tank and its installations must be checked to ensure that they are **intact**.
- The **insertion of the underground tank** is to be carried out in such a way that it is introduced into the pit shock-free (e.g. with the aid of straps or ropes) and carefully placed onto the

bottom bedding. It must be ensured that, if necessary, only the crane eyes provided for this purpose are used for fastening or lifting. Slinging on protruding tank parts (e.g. nozzles) or other attachments is not permitted!

- The **cover is put in place** and aligned. Only telescopic covers by the manufacturer with the marking, **loadable up to 15kN - car (see embossing in the cover) may be used.**
- To **secure the underground tank**, it must be filled with water up to a height of approx. 30 cm.
- The **backfilling/compaction in the lower part of the pit** takes place in 3 equal steps, whereby the tank is filled to 1/3 with water and from the outside the backfill material is introduced at the same height. The backfill material is compacted with a 15 kg hand tamper. **Mechanical compaction and sludging of the backfill material is not permitted!** During backfilling and compaction, keep checking for deformations or other signs of uneven compaction on the **underground tank**.
- After backfilling/compaction of the lower part of the pit, the **inlet pipe and empty pipe** are laid with a gradient (min. 1 %) to the tank and the **outlet pipe** is laid with a gradient (min. 1 %, the same or greater than for the inlet) away from the tank. The outlet pipe of the tank can be connected to an existing sewer or to a downstream infiltration system. If the outlet pipe is connected to an infiltration system, this must be at least 3 m away from the tank.
- **Outlet pipe Hudson Retention Cistern:** the outlet pipe connection for this equipment variant is already made during backfilling/compaction in the lower pit section.
- The **cover** is pushed to the desired height and **secured provisionally from the inside with the transport screws.**
- The 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 in the same way as for the lower part of the pit. Ensure that connections are tension-free and secure!
- **Laterally around the cover,** a gravel base layer of at least 300 mm in height (must be made of sand-lime bricks 2/45 or equivalent material) is introduced and compacted in layers of 100 mm with a 15 kg hand tamper (**no machine use!**) in three operations per layer. The area of the gravel base layer is to be provided so that it corresponds to the size of the excavation pit floor. The **provisional fixation is to be removed** when the telescopic dome is fixed by the compacted backfill!
- In addition to the gravel base layer, an approx. 150 mm high underlay of dry mortar (ready-mix from the DIY store) is applied **underneath the frame of the cover**. This layer must be at least 200 mm wide and must be carried out directly on the telescopic dome. **Decoupling *1 Figure 5**
- An approximately 100 mm high layer of backfill material is applied **above the gravel base layer**.
- The **remaining backfilling** can be carried out with paving, topsoil or excavated soil (non-cohesive, clay or clayey). It is recommended that lawn grids be installed in areas subject to traffic.

- The tank **must be filled with water up to the beginning of the dome shaft when laying paving stones!** The inlet, outlet and the supply pipe / empty pipe must be closed for this purpose until completion of the construction work.

For the application of paving stones, only commercially available surface vibrators up to a maximum of 60kg may be used for compaction!
Larger devices, or those known as hops, are not permitted!

When installing a trafficable version, always ensure that the shaft top *1 is decoupled from the tank! Vehicle loads must not be transferred directly to the tank under any circumstances! The elements of the shaft extension must not be screwed together!

Installation under parkable areas is possible in conjunction with the telescopic dome 95.0050.0072. If it is built over with a carport or similar, the post foundations must be placed outside the water tank excavation pit.

Illustration of the individual soil layers

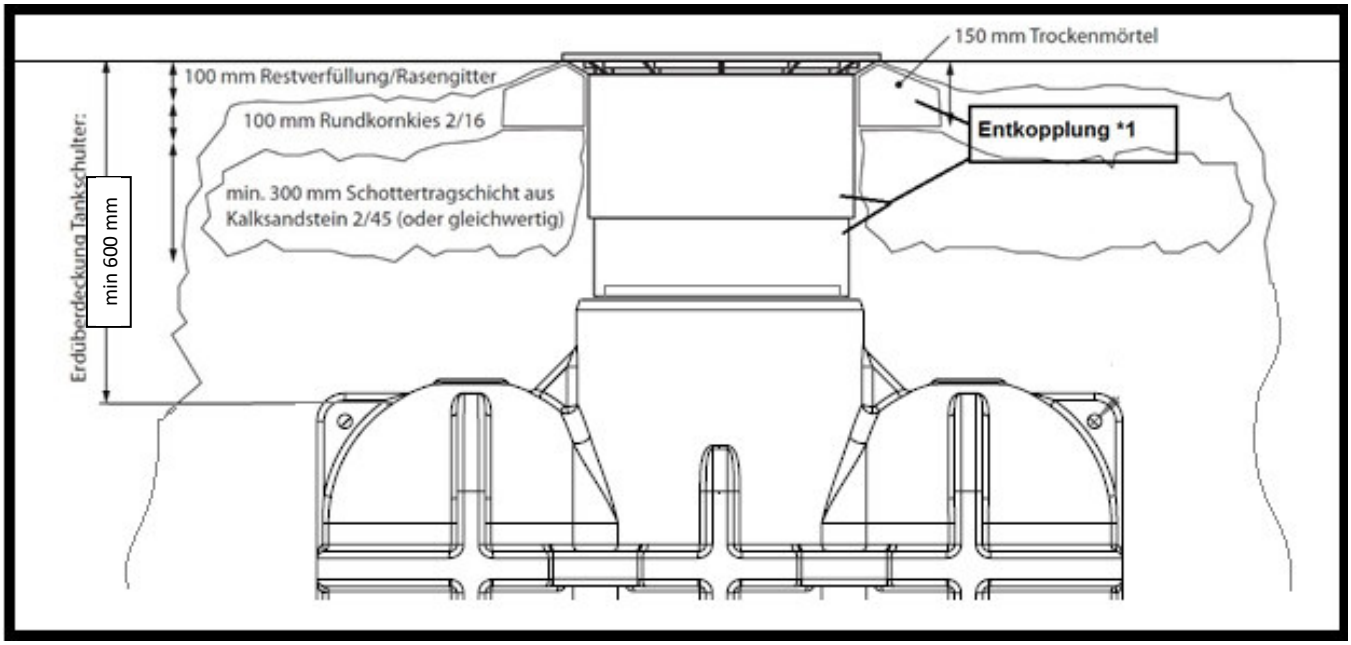


Figure 5: On site construction of a trafficable superstructure with telescopic dome or telescopic segment

The soil cover (based on the tank shoulder) must be at least 600 mm! The lateral bedding is carried out with rounded gravel grain 2-16mm.
Layers of 100 mm are placed and compacted with a hand tamper (15 kg) in three operations 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.

6 Maintenance and cleaning

Regular inspection and maintenance ensures increased functional reliability and service life of your rainwater underground tank. Cleaning of the underground tank and also the filter inserts should be carried out at regular intervals. The frequency of the maintenance intervals depends on the local conditions and is at the discretion of the operator.

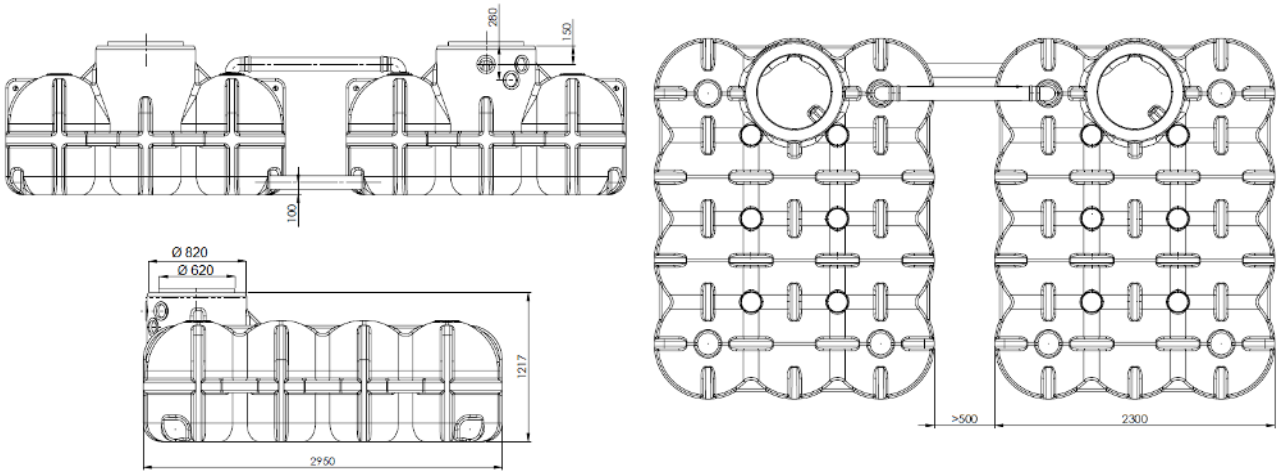
The following applies to plastic covers: Clean the sand trap channel and screw bushings as and when required; lubricate screws and bushings. Check covers regularly for a secure / child-proof fit.

7 Connection of several tanks as a multi-tank cistern

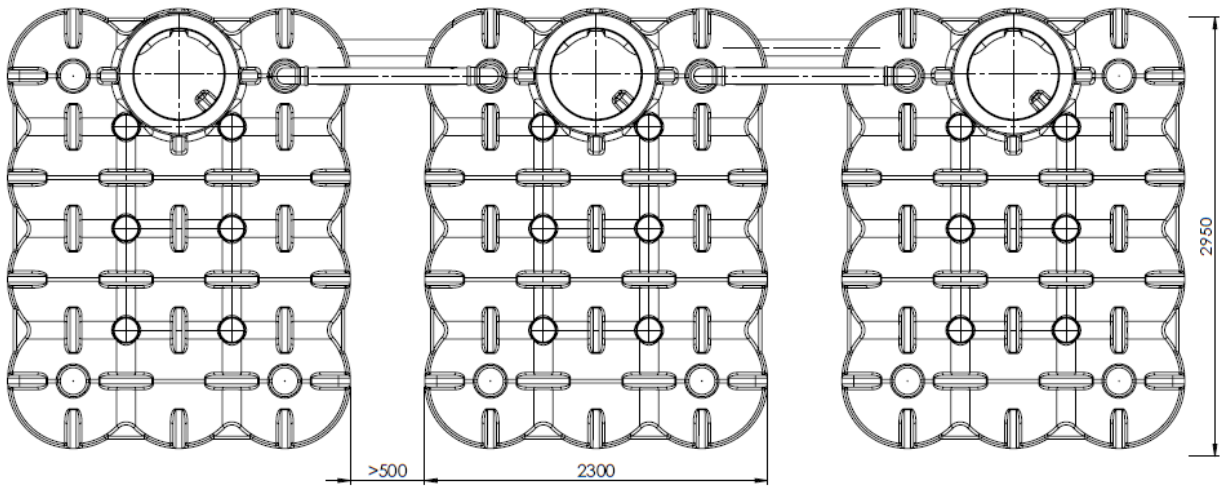
7.1 Hudson 10000 L DUO / Hudson 15000 L TRIO

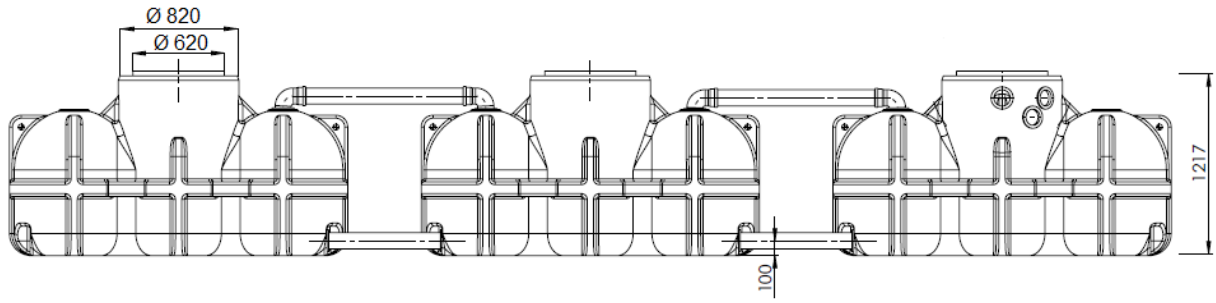
The connection of two or more Hudson 5000 L tanks to form a multi-tank cistern is carried out via flat surfaces in the lower area and on the top of the tanks using the coupling set and KG pipes (to be provided on site). The coupling set includes 4 (8 for 15000 L) special DN 100 seals and a circular hole saw for drilling the openings (to be provided on site). The recommended locations of the connecting bore and ventilation holes are marked with borehole positions on the flat tank. The KG pipes must extend at least 200 mm into the tanks. The use of pipe bends is recommended so that any subsequent placement of the underground tanks does not strain the connecting pipes. Ensure that the distance between the tanks is at least 0.5 m. **When installing a version that can be driven over by cars, the distance between the two containers must be at least 3 m.**

► Hudson 10000 L DUO (design example)



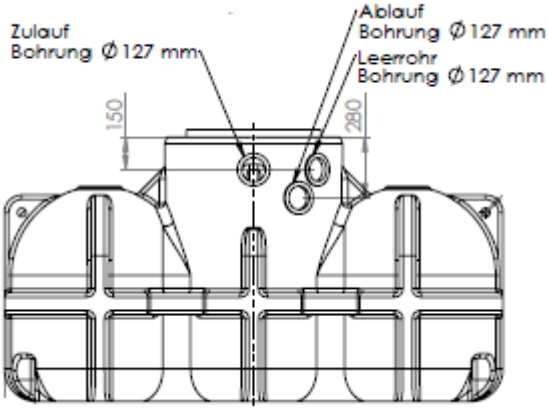
► Hudson 15000 L TRIO (design example)





8 Positions for inlet, drain and supply pipe bore

8.1 Hudson 5000L LD



8.2 Positions for inlet, drain and supply pipe bore for pre-assembly Filter versions

Table 5	Dimensions		
Versions	Height Inlet from centre of pipe to upper edge of the tank without cover	Height empty pipe from centre of pipe to upper edge of the tank without cover	Height outlet from centre of pipe to upper edge of the tank without cover
Hudson 5000 L with and without pump sump			
35.5200.0020/ 35.5200.1020	**150 mm**	**150 mm**	**280 mm**
35.5200.0022/ 35.5200.1022	**150 mm**	**150 mm**	**280 mm**
35.5200.0031/ 35.5200.1031	**150 mm**	**150 mm**	**200 mm**
35.5200.0070/ 35.5200.1070	**150 mm**	**150 mm**	**889 mm**

- **For the positions of the inlet, outlet and empty pipes, please refer to the respective drawing**
- **All connections are designed for dimension DN 100/110**