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Installation and maintenance instructions for GRAF Diamant drinking water underground tank

Diamant

drinking water underground tank order No.

381130	**2200 L**
381131	**3350 L**
381132	**4800 L**
381133	**6500 L**

The points described in these instructions must be observed under all circumstances. All warranty rights are invalidated in the event of non-observance. Separate installation instructions are enclosed in the transportation packaging for all additional articles purchased from GRAF.

The tank must be checked for any damage prior to insertion into the trench under all circumstances.

Missing instructions can be downloaded on www.graf.info or can be requested from GRAF.

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1. General notes

1.1 Safety

The relevant accident prevention regulations according to BGV C22 must be observed during all work. Particularly when walking on the tanks, a 2nd person is required to secure the tank.

The relevant regulations and standards must additionally be taken into consideration during installation, assembly, servicing, repair, etc. Relevant notes can be found in the corresponding sections of these instructions.

During all work on the system or parts of the system, the entire system must always be rendered inoperable and secured to prevent unauthorised reactivation.

The tank must be thoroughly cleaned prior to commissioning, because transport and storage may result in dirt or rainwater entering the container.

Except in the event of work carried out in the tank, the cover of the tank must always be kept sealed, as this otherwise constitutes a maximum risk of accident. The rain protection installed on delivery is merely transportation packaging. It cannot be walked on and is not child-proof; it must be replaced with a suitable cover immediately following delivery (drinking water telescopic dome shaft with corresponding cover)! Only original GRAF covers or covers approved in writing by GRAF must be used.

GRAF offers an extensive range of accessories, all of which are designed to match each other and which can be extended to form complete systems. The use of accessories that have not been approved by GRAF results in the exclusion of the warranty/guarantee.

2. Installation conditions

2.1 GRAF drinking water underground reservoir, Diamond series

- The tanks in the Diamond series may only be installed with the drinking water telescopic dome shaft in green areas which are not driven over by vehicles. If installing next to areas which are driven over by vehicles, see page 6 point 4.2.3
- The telescopic cover for pedestrian loading must not be subjected to short-term loading of more than 150 kg or long-term loading of more than 50 kg.
- In the case of groundwater or a position on a slope, special installation guidelines must be followed. (See page 5)
- The soil cover must? be at least 600 mm and no more than 1000 mm above the tank shoulder.

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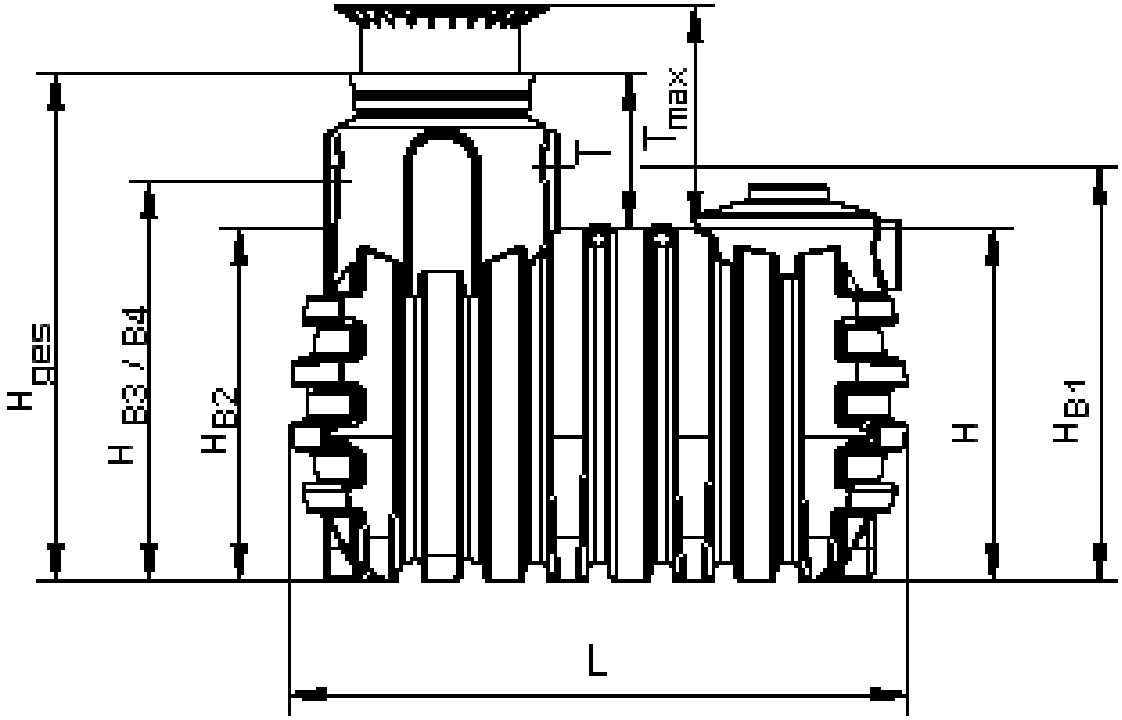
3. Technical data



Nennvolumen	L	H	H_{ges}	H_{B1}	H_{B2}	H_{B3}	H_{B4}	T**	T_{max}	ca kg
2200 Liter	2450	1150	1760	1375	1175	1425	1425	611	1000	125
3350 Liter	2450	1400	2010	1625	1425	1675	1675	611	1000	150
4800 Liter	2450	1700	2311	1926	1726	1976	1976	611	1000	180
6500 Liter	2450	2000	2611	2226	2026	2276	2276	611	1000	260

** Above tank shoulder only for green area/also see point 2

The soil cover above the tank shoulder [Tmax] together with the telescopic dome shaft is max. 1000 mm. An Extension piece is needed for larger covers.

4. Installation and assembly

① Substructure

② Compressed sand

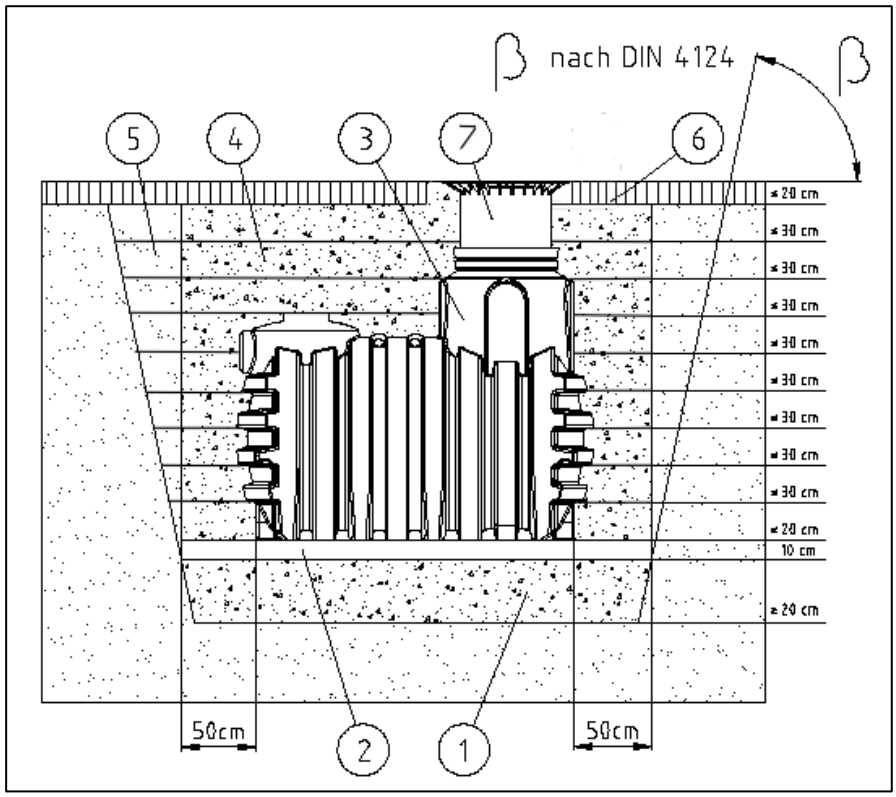
③ Tank

④ Surround (round gravel max. grain 8/16 acc. to DIN 4226-1)

⑤ Soil

⑥ Covering layer

⑦ Drinking water telescopic lid



4.1 Construction site

Under all circumstances, the following points must be clarified prior to installation:

- The structural suitability of the ground according to DIN 18196
- Maximum groundwater levels which occur and drainage capability of the subsoil
- Types of load which occur, e.g. traffic loads

An expert ground report should be requested from the local planning authority to determine the physical characteristics of the subsoil.

4.2 Trench

To ensure that sufficient space is available for working, the base area of the trench must exceed the dimensions of the tank by 500 mm on each side; the distance from solid constructions must be at least 1000 mm.

The embankment must be designed according to DIN 4124. The construction site must be horizontal and plane and must guarantee sufficient load-bearing capacity.

The depth of the trench must be dimensioned so that the max. earth coverage (see point 2 – installation conditions) above the tank is not exceeded. To use the system throughout the entire year, it is necessary to install the tank and those parts of the system which conduct water in the frost-free area. The frost-free depth is usually approx. 600 mm – 800 mm; precise information in this regard can be obtained from the responsible authority.

A layer of compacted, round-grain gravel (grain size 8/16, thickness approx. 150 - 200 mm) is applied as the foundation.

4. Installation and assembly

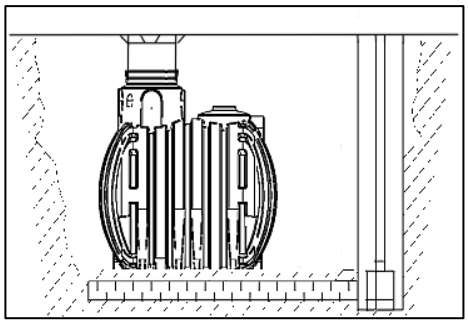
4.2.1 Slope, embankment, etc.

On installation of the tank in the immediate vicinity (< 5 m) of a slope, earthen mound or slope, a statically calculated supporting wall must be erected to absorb the soil pressure. The wall must exceed the dimensions of the tank by at least 500 mm in all directions, and must be located at least 1000 mm away from the tank.

4.2.2 Groundwater and cohesive (water-impermeable) soils (e.g. clay soil)

Sufficient drainage of the groundwater / seeping water should be ensured if groundwater only occurs occasionally and if the soils are cohesive and water-impermeable (e.g. loam) so that the tanks never stand in more groundwater than is stated in the table. If necessary, the drainage pipe must end in a vertical DN 300 pipe in which a submersible pressure pump is fitted to pump out the excess water. The pump should be checked regularly.

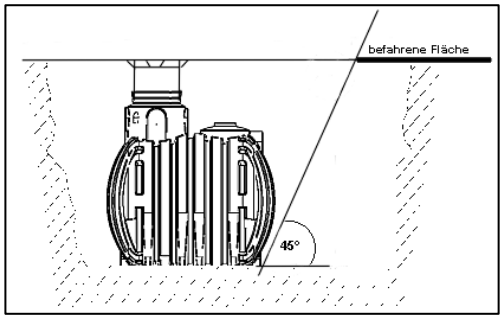
If the tanks are expected to be immersed deeper, sufficient drainage should always be ensured.



Diamant	2200 L	3350 L	4800 L	6500 L
Max. Immersion depth	80 cm	80 cm	80 cm	80 cm
At least earth coverage	80 cm	80 cm	80 cm	80 cm

4.2.3 Installation adjacent to surfaces used by vehicles

If installing tanks next to areas which are driven over by vehicles, ensure that the loads produced by heavy vehicles are not transferred to the tanks.



Mind. away from traffic areas:

volume [L]	2200	3350	4800	6500
distance [m]	**2,15**	**2,4**	**2,7**	**3,0**

4. Installation and assembly

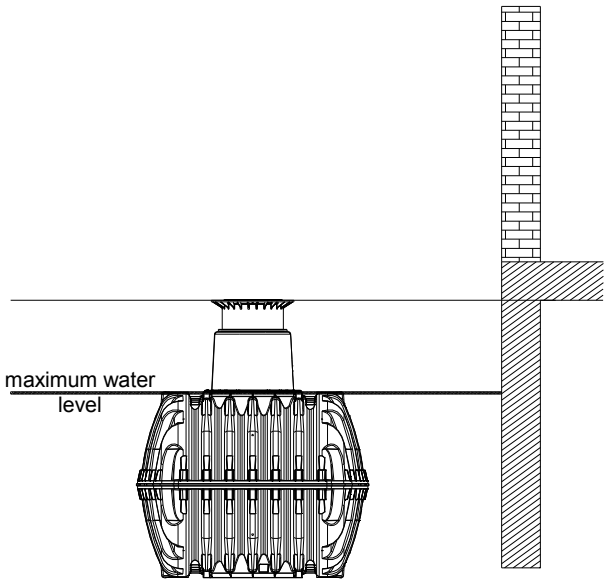
4.3 Insertion and filling

The tanks should be brought into the prepared trench with a suitable device without any jolts.

To avoid distortion, **before** the surround is filled the tank should be filled 1/3 full with water. The surround (round gravel, max. grain 8/16 acc. to DIN 4226-1) is then added in layers of max. 30 cm up to 1/3 of the tank and compressed. You should then fill the tank until it is 2/3 full and fill the trench with layers of max. 30 cm until it is 2/3 full, etc. The individual layers must be well compressed with a hand tamper. Be careful to avoid damaging the tank when compressing the gravel. Mechanical compression machines must never be used. The surround must be at least 50 cm wide. **Filling with round gravel must be undertaken quickly and completed in one day.** Otherwise filling water may cause excess loads in the event of heavy rain.

4.4 Laying connections

All connections should be fitted to the flat surfaces below the tank dome to ensure that the maximum water level in the tank is below the tank/tank dome connection.



The required holes can be produced with a circular cutter or hole saw. When doing this, please note that the maximum hole size is DN 110 (bottom of end face) or 160 DN (top of end face and at tank dome).

All inlet and overflow pipes must be laid with an incline of at least 1% in the direction of flow (remember that subsequent settling may occur). All intake, pressure and control lines must be routed in an empty pipe, which must be laid at an angle to the tank, as straight as possible without any sagging. Any bends that are needed should be produced using 30° adapters.

Important: The empty pipe must be connected to an opening above the max. water level.

Please note: In order to fit the connections, please always use materials which are suitable for drinking water (PE screw connections, special seals, connection pipes and connection fittings).

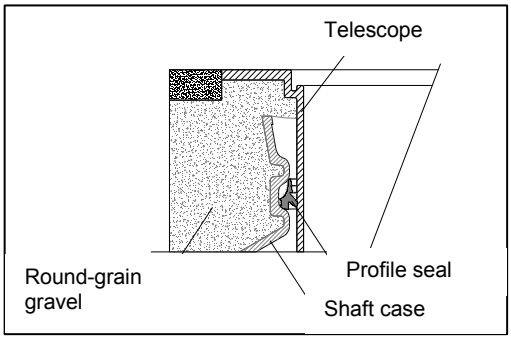
5. Assembling - telescopic dome shaft

The telescopic dome shaft allows the tank to be adapted in a continuously variable manner to terrain surfaces with between 700 mm and 1000 mm of soil cover (the telescope can be shortened by 250 mm from below if necessary).

To assemble, the profile seal (closed circuit) (material EPDM) provided is inserted in the tank's sealing groove and rubbed in with plenty of soft soap (do not used lubricants with a mineral oil base because they will corrode the seal). The telescope is then greased, slid in and aligned to the terrain surface.

5.1 Drinking water telescopic dome shaft

Important: To prevent loads from being transferred onto the tank, round-grain gravel ② (max. grain size 8/16) is filled in layers around the telescope ① and is evenly compacted. Damage to the tank dome ③ and telescope must be avoided during this step. **The cover is then positioned and is sealed to prevent entry by children. Tighten the threaded connection on the cover so tightly that it cannot be opened by a child!** For a professional installation of a drinking water cover, the telescopic dome shaft must reach about 20 cm above the ground level.

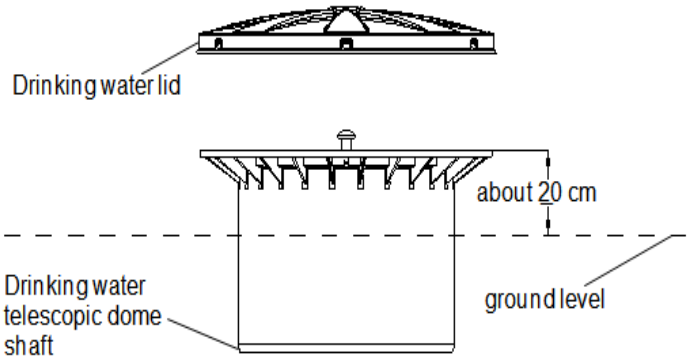


5.2 Drinking water lid

The drinking water telescope is provided with a second lid that rests on top. This is also always placed on the rim of the telescope to prevent any dirt entering the tank, except when working in the tank.

The seal must be in place in the groove around the entire circumference before the lower telescope lid is positioned.

ATTENTION: The upper drinking water lid serves only as a protective cover and is **not safe to walk on**!



6. Inspection and servicing

The entire system must be checked for leaks, cleanliness and stability at least every three months.

The entire system should be serviced at intervals of approx. 5 years. In this case, all parts of the system must be cleaned and their function checked. Servicing should be carried out as follows:

- Drain the tank completely
- Remove solid residue with a soft brush
- Clean surfaces and internal parts with water
- Remove all dirt from the tank
- Check that all internal parts are firmly seated.