

Installation and maintenance instructions for GRAF Carat XL drinking water underground tank

Carat XL
Drinking water underground
tank nature

10.000 L Order No. 370605



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.

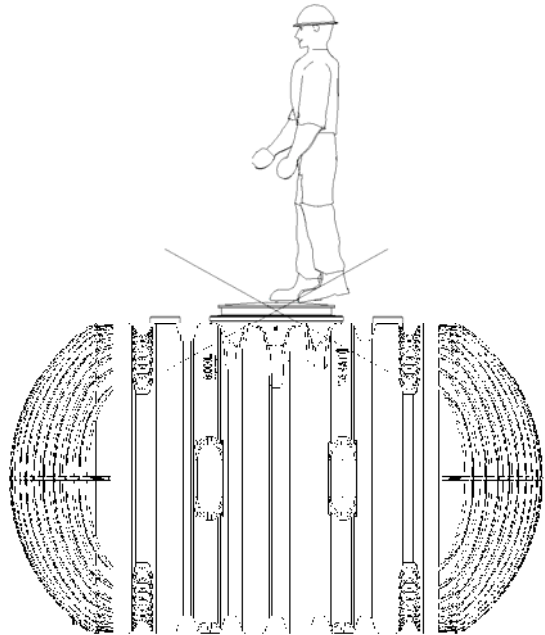
The relevant regulations and standards must additionally be taken into consideration during installation, assembly, servicing, repair, etc. Relevant notes can be found in the corresponding sections of these instructions.

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 other accessories may lead to impediments to the system's functional capability, therefore invalidating liability for resulting damage.

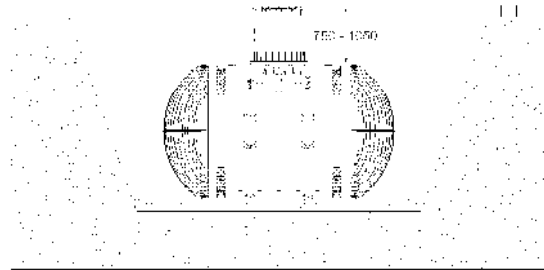


2. Installation conditions

Covering heights with drinking water telescopic dome shaft in green areas

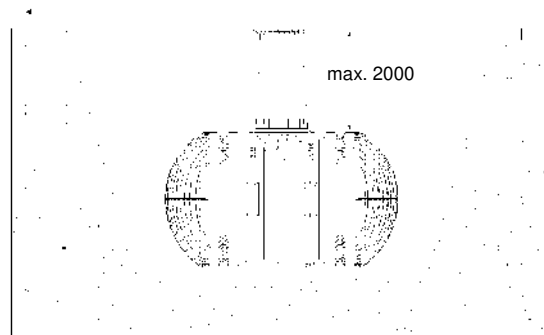
We generally recommend using the drinking water telescopic dome shaft planned for it.

Drinking water
telescopic dome shaft

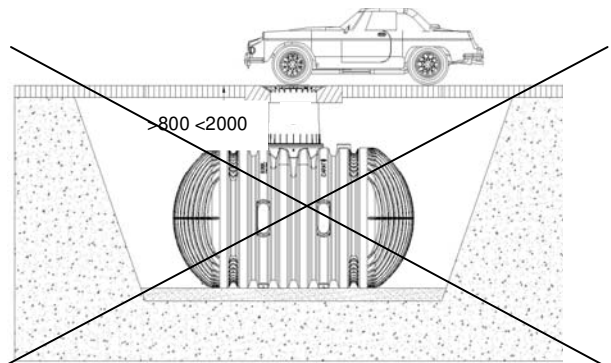


Max. covering heights with extension and drinking water telescopic dome shaft

It is generally recommended that a drain line is installed.

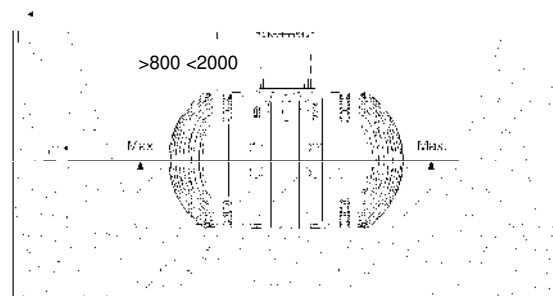


The tank must not be installed under traffic area
(drinking water telescopic dome shaft is not trafficable)

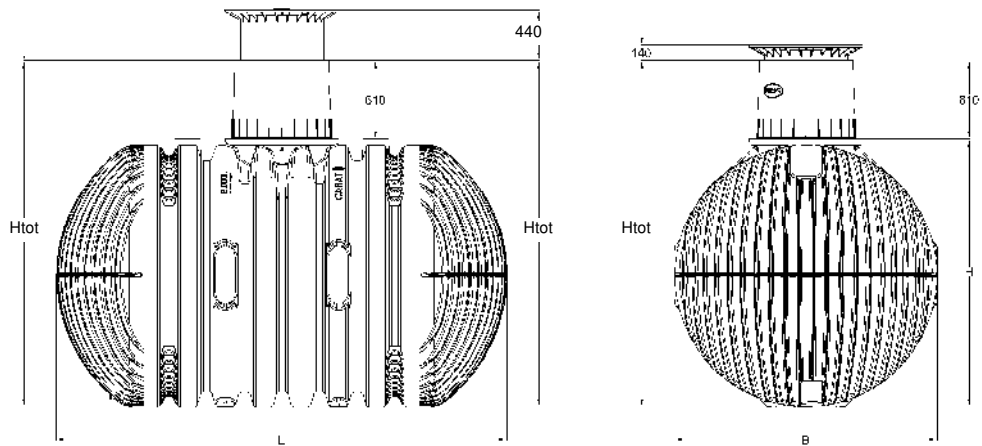


The tanks must not be installed in the ground water. If it is to be expected that the ground water could rise higher, even occasionally, as shown in the figure opposite, the ground water must be discharged via a drain line.

It is generally recommended that a drain line is installed.



3. Technical data

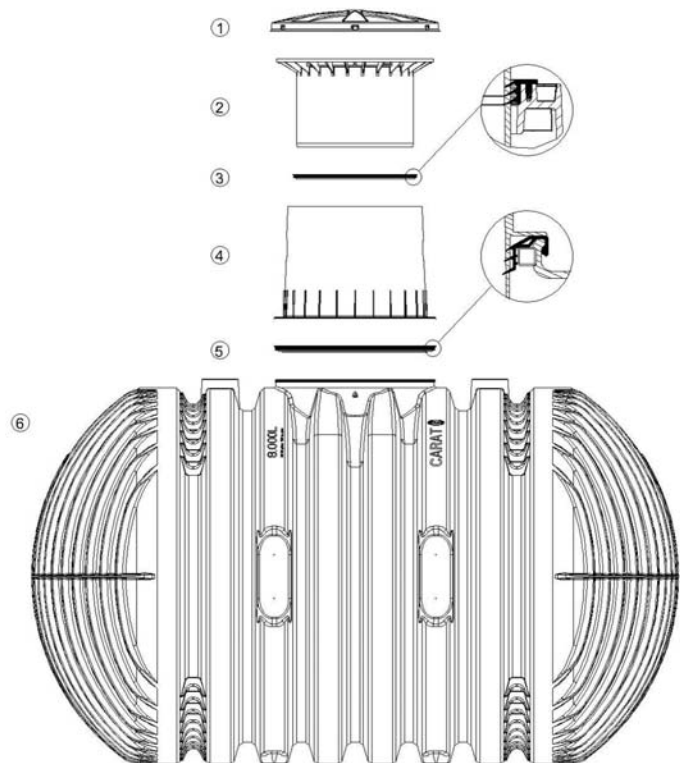


Tank	Art.-No.	Weight	L	B	H	Htot*
8.500 L	370604	355 kg	3500 mm	2040 mm	2085 mm	2695 mm
10.000 L	370605	410 kg	3520 mm	2240 mm	2285 mm	2895 mm

* Htot – total height

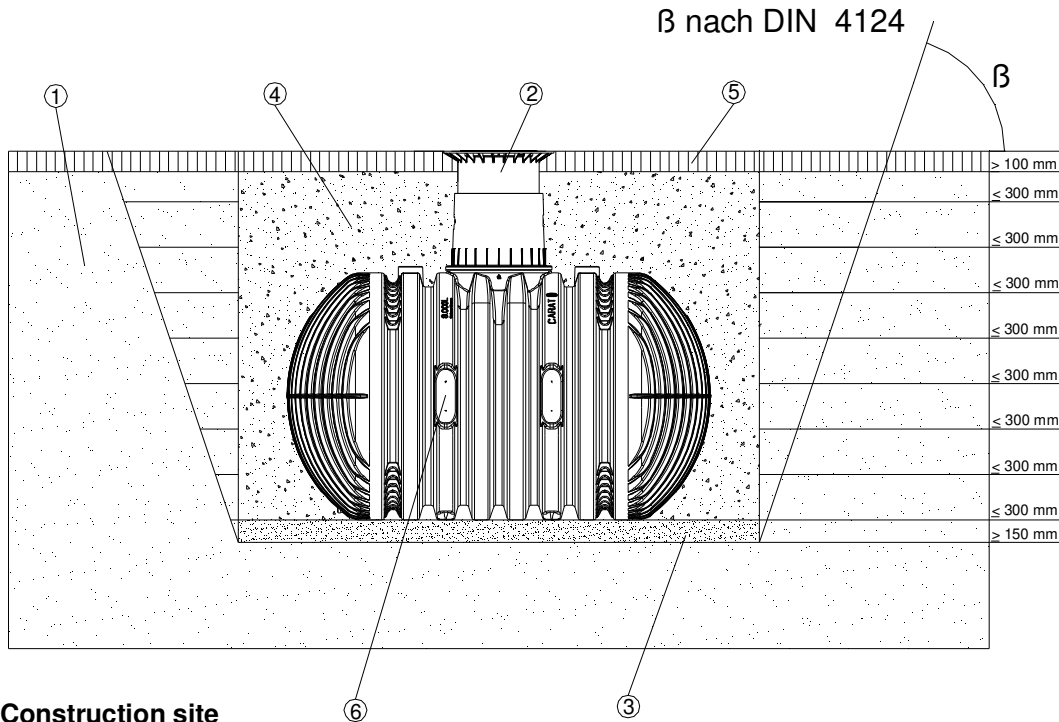
4. Tank structure

- ① Drinking water lid
- ② Drinking water telescopic dome shaft
(can be inclined by 5°)
- ③ Profile seal
- ④ Tank dome (rotating through 360°)
- ⑤ Tank – tank dome seal
- ⑥ Carat XL drinking water underground tank



5. Installation and assembly

- ① Subsoil
- ② Drinking water telescopic dome shaft
- ③ Compacted foundation
- ④ Surrounding (round-grained gravel, max. grain size 8/16)
- ⑤ Covering layer
- ⑥ Carat XL drinking water underground tank



5.1 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.

5.2 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.

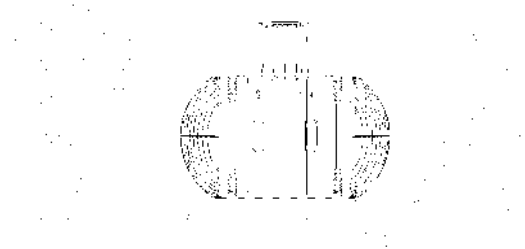
The depth of the trench must be dimensioned so that the max. earth coverage (see point 2 – installation conditions) above the tank is not exceeded. To use the system throughout the entire year, it is necessary to install the tank and those parts of the system which conduct water in the frost-free area. 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.

5. Installation and assembly

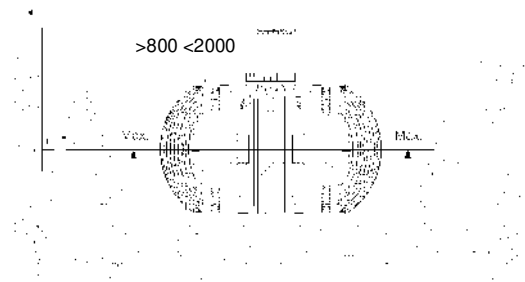
5.2.1 Slope, embankment, etc.

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.



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

With only occasional ground water and cohesive, water-impermeable soils (e.g. loam), adequate drainage of the ground water or leakage water must be ensured so that the tanks never stand deeper in the ground water than indicated in the table. If necessary, the drainage line must end in a vertical DN 300 pipe in which an immersion pressure pump is installed to pump off the excessive water. The pump must be checked at regular intervals.



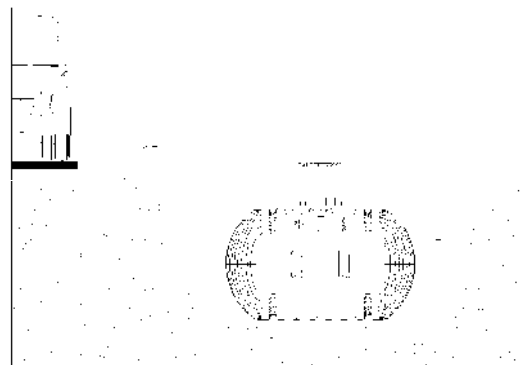
If it is to be expected that the tanks could sink lower, adequate drainage must be ensured in all cases.

Tank size	8.500 L	10.000 L
Immersion depth	1042,50 mm	1142,50 mm

We recommend the general laying of a drainage line, since in the event of prolonged rainfall the ground water level can rise unexpectedly.

5.2.3 Installation adjacent to surfaces used by vehicles

If the underground tanks are installed adjacent to surfaces which are used by heavy vehicles weighing over 12 t, the minimum distance away from these surfaces is at least the depth of the trench.

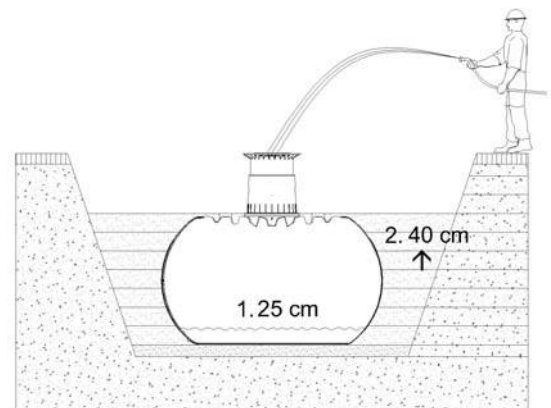


5.3 Insertion and filling

The tanks must be inserted, impact-free, into the prepared trench using suitable equipment. The tank is filled with 1/3 water before filling the tank surround.

Afterwards the surrounding (roundgrain gravel, max. grain size 8/16) is then filled in layers of max. 40 cm steps and is compacted.

The individual layers must be well-compacted (manuel tamper). Damage to the tank must be avoided during compaction. Mechanical compaction machines must not be used under any circumstances. The surrounding must be at least 500 mm wide.

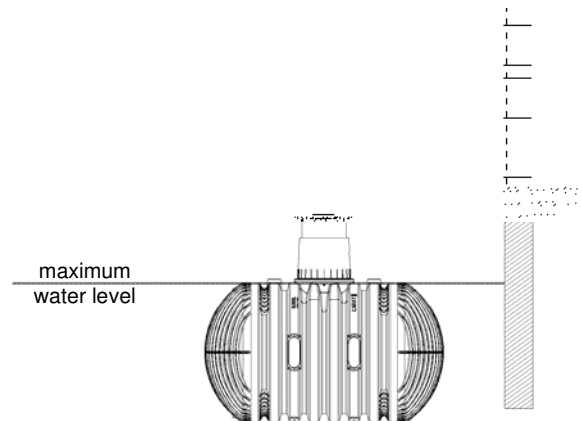


5. Installation and assembly

5.4 Routing connections

All connections are to be attached beneath the tank dome in order to ensure that the maximum water level in the tank lies beneath the tank/tank dome connection.

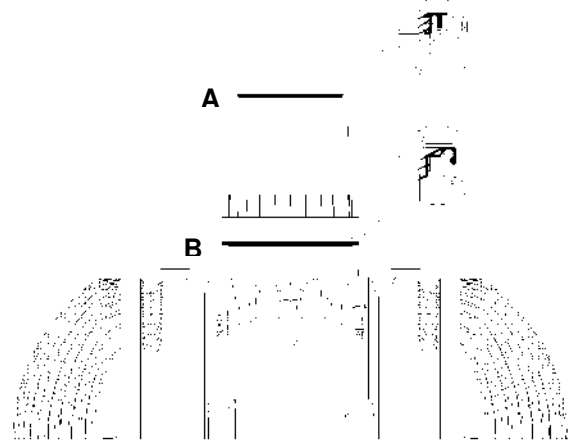
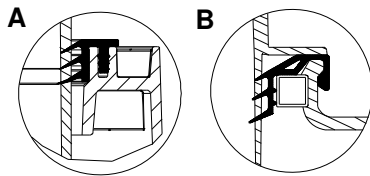
Attention: Please only use food safe materials (e.g. PE threaded connections) for the assembly of the connections).



6. Assembling the tank dome and drinking water telescopic dome shaft

6.1 Assembling the tank dome

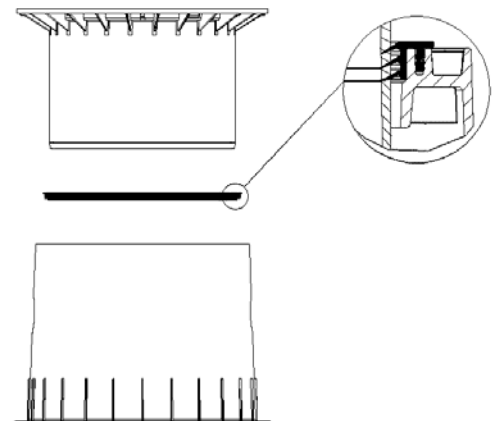
Prior to assembly, the enclosed seal is locked onto the tank neck's profile „B“. The tank dome is then locked to the tank neck. It is essential to make sure that the upper seal "A" (pre-assembled) is correctly installed.



6.2 Assembling the drinking water telescopic dome shaft

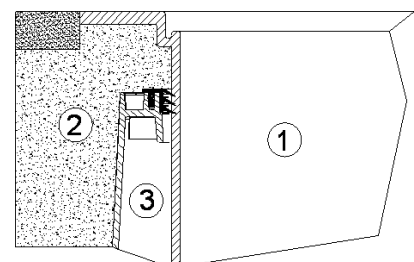
The telescopic dome shaft enables infinite adaptation of the tank to given site surfaces with earth coverage of between 750 mm and 1050 mm.

For assembly purposes, the enclosed profile seal (material EPDM) is inserted into the tank dome's sealing groove and is coated generously with soft soap (do not use mineral oil-based lubricants, as these attack the seal). The telescope is then greased, inserted and aligned with the surface of the site.



6.3 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.



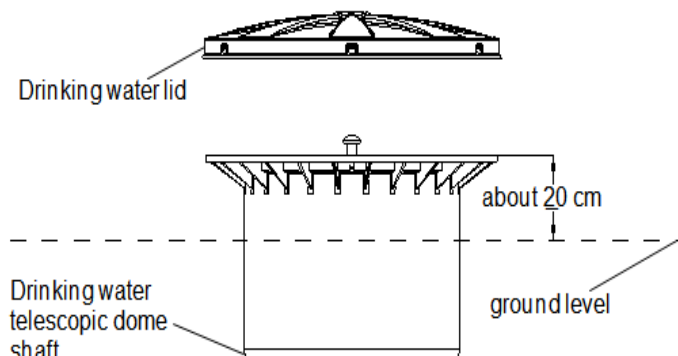
6. Assembling the tank dome and drinking water telescopic dome shaft

6.4 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, 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!**

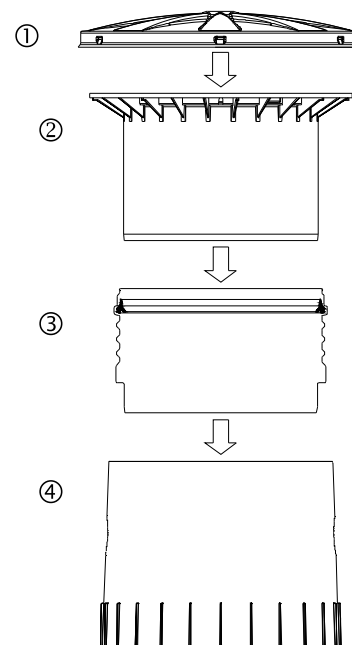


6.5 Assembling the adapter

For larger coverage heights an adapter is needed. To insert the adapter into the tank dome, soft soap is needed. Into the highest groove of the adapter the profile seal is inserted and greased generously. Afterwards push the drinking water telescopic dome shaft into the adapter and adapt it to the planned area surface.

max. earth-cover 2000 mm

- ① Drinking water lid
- ② Telescopic dome shaft (can be inclined by 5°)
- ③ Adapter
- ④ Tank dome (can be rotated by 360°)



7. 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
- Clean surfaces and internal parts with water
- Remove all dirt from the tank
- Check that all internal parts are firmly seated.