Installation and maintenance instructions for GARANTIA Li-Lo XL/XXL

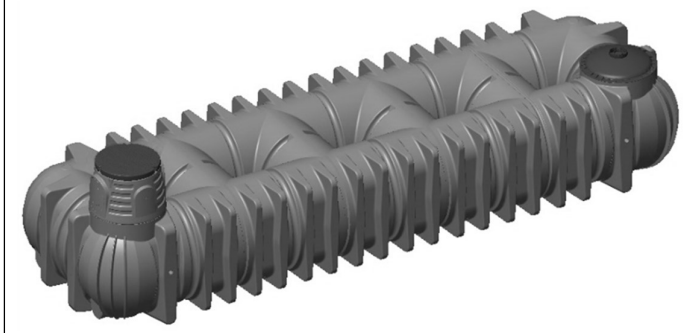
7500 L

10000 L

15000 L

20000 L

25000 L



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

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

Missing instructions can be downloaded on https://www.GARANTIA.com/en-au/ or can be requested from GARANTIA.

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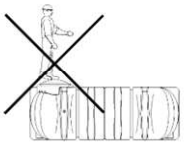
1. Safety notice

The applicable accident prevention regulations in accordance with the Work Health and Safety Act 2020 (WHS Act) and Work Health and Safety (General) Regulations 2022 (WHS Regulations) must be observed during all work, including excavation and earthwork compliance.

Furthermore, all relevant regulations and standards must be observed during assembly, installation, maintenance and repair. All installation of fittings and arrangements to be undertaken by a suitably qualified plumber. The work must be performed by a licensed plumber and a second person should be present for safety reasons.



Do not walk on the protection cover. The protection cover mounted at delivery only serves against rain and dust during transport and backfilling to the shoulder of the tank. It must be removed and replaced by an appropriate cover following installation instructions (tank plug or dome, riser, and respective lid option).

The tank access must remain covered at all times, otherwise there is an increased risk of accident. Only original GRAF covers or covers approved in writing by GRAF must be used.

The tank installation must be shock-proof and lifted by adequate equipment into the prepared pit following the lifting instructions. The tank must be lifted completely empty just with the rain/dust protection cover.

All GRAF manufactured tanks comply with AS/NZS 1546.1 and are subjected to our quality system which is QMS:ISO 9001 certified.

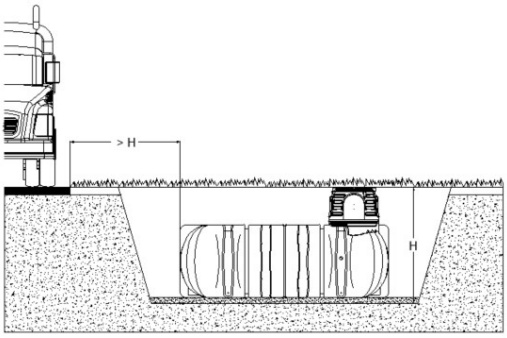
GRAF offers a wide range of accessory parts which are precisely coordinated and can be used to complete systems. The use of different accessory parts can lead to impact the functionality of the system, and to void liability for consequential damages.

Drawings and lifting instructions must be observed while planning unloading from transport provider and lifting to excavation trench. Servicing and associated works should also be planned beforehand, among other reasons, to provide accessibility for cleaning vehicles and ensure correct operation.

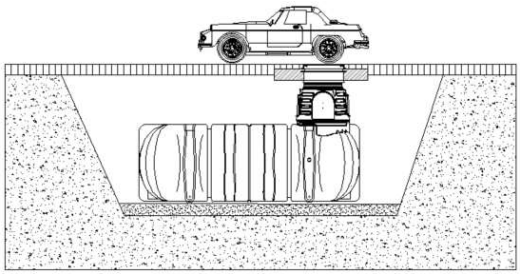
Please consult relevant authority prior to installation.

2. Installation conditions

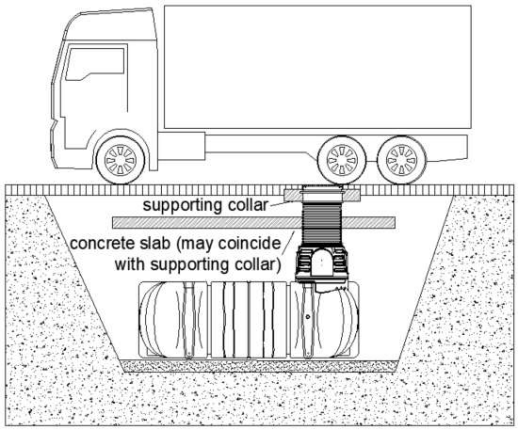
Minimum 655mm earth cover in green areas (pedestrian loads only). The clearance from areas subjected to traffic of trucks must correspond with the trench depth.



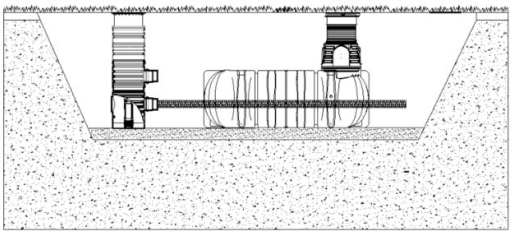
Under areas subjected to traffic of cars (load up to 3.5 t), cover heights may be from 885mm to 1300mm, and class B cover must be installed. The same clearance discussed above is to be met.



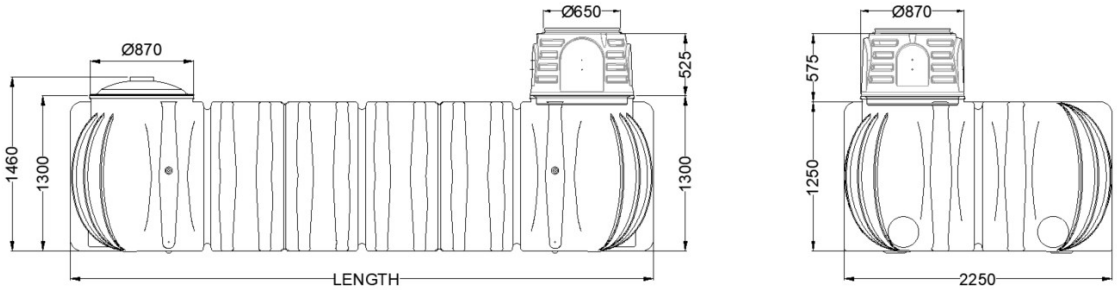
Under areas subjected to traffic of trucks (load up to 40 t), a suitable engineered slab must be installed preventing loads from being transferred to the tank, and class D cover must be installed.



Under areas subjected to groundwater, the tank should not be subjected to traffic. The groundwater must be discharged via a drain line at maximum 1250mm from the bottom of the tank.



3. Technical data



Tank	7500 L	10000 L	15000 L	20000 L	25000 L
Weight	390 kg	460 kg	710 kg	460 kg	710 kg
Length	3600 mm	4900 mm	7500 mm	9410 mm	11670 mm
Pedestrian loads (1 access)	07.2001	07.2011	07.2021	07.2031	07.2041
Car loads (1 access)	07.2002	07.2012	07.2022	07.2032	07.2042
Truck loads (1 access)	07.2003	07.2013	07.2023	07.2033	07.2043
Pedestrian loads (2 access)	-	07.2014	07.2024	07.2034	07.2044
Car loads (2 access)	-	07.2015	07.2025	07.2035	07.2045
Truck loads (2 access)	-	07.2016	07.2026	07.2036	07.2046

* Covers excluded, risers available.

The tank must be vented, unless exempted by a relevant regulation, considering:

- All plumbing and venting pipework connections need to be performed as per requirements of Water Services Licensing Regulations of relevant state and the latest versions of AS/NZS 3500.2 and AS/NZS 3500.3.
- For special requirements please consult the local relevant authority.

4. Installation and assembly

4.1. Construction site

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

- The structural suitability of the ground.
- Maximum occurring short-term groundwater levels.
- Site requirements must be considered (embankment, expected loads, etc).
- Safety against buoyancy and flotation must be ensured by an expert specifically to site.

4.2. Earth cover requirements

4.2.1. Grass areas not subject to traffic loads

EC min: 655mm (50mm neck + 525mm dome + 80mm pedestrian cover) or
920mm (50mm neck + 525mm dome + 260mm minimum effective height of the riser with GARANTIA access + 45mm effective height of the pedestrian cover)

EC max: 1500mm

4.2.2. Areas trafficked by cars (class B installations)

EC min: 885mm (50mm neck + 525mm dome + 260mm minimum effective height of the riser with GARANTIA access + 50mm class B cover)

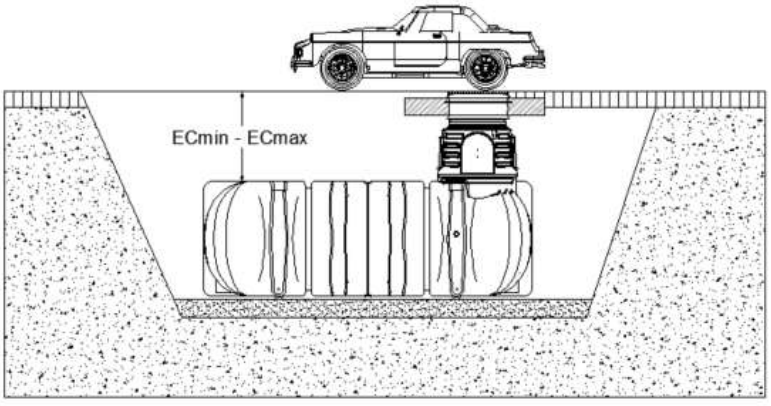
EC max: 1300mm

4.2.3. Areas trafficked by trucks (class D installations)

A suitable engineered slab must be installed to prevent loads from being transferred to the tank.

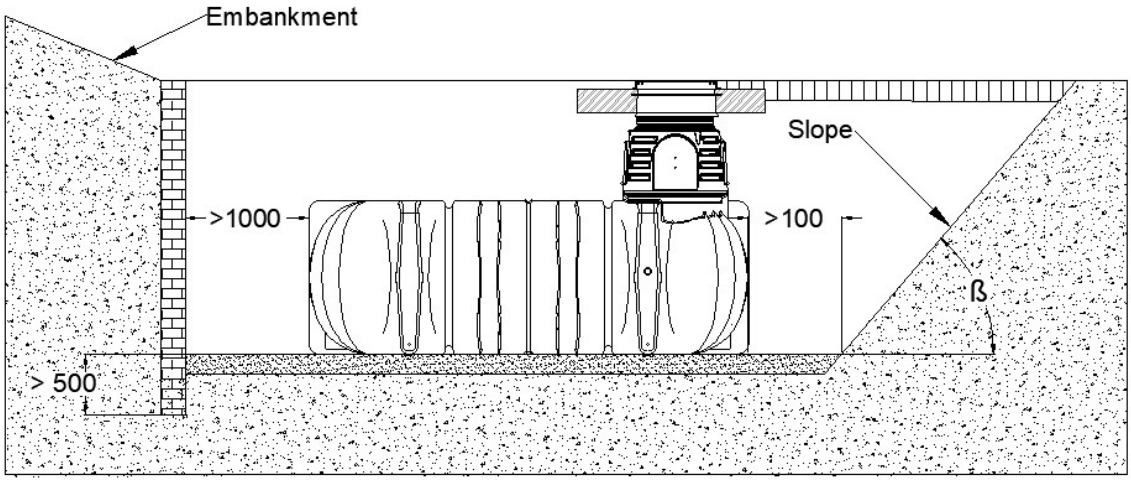
EC min: 910mm (50mm neck + 525mm dome + 260mm minimum effective height of the riser with GARANTIA access + 75mm class D cover)

EC max: 1500mm



4.3. Trench

The building site must be horizontally even and must provide adequate load-bearing capacity. To ensure that sufficient space is available for working, the base area of the trench must exceed the dimensions of the tank by 100 mm on each side.



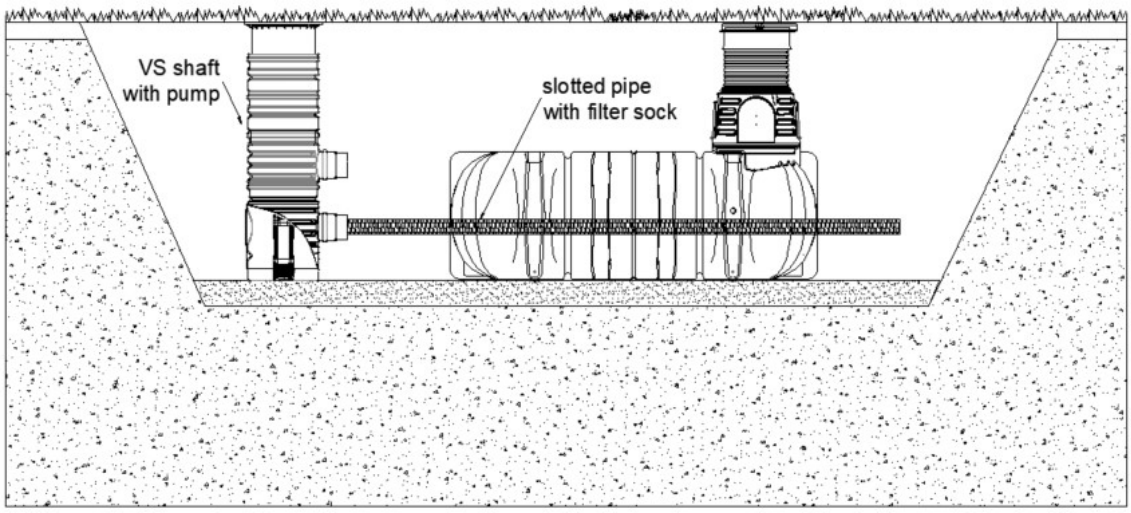
The depth of the trench must be dimensioned so that the maximum earth coverage above the tank is not exceeded. A layer of compacted, round-grain gravel (grain size 8/16, thickness approx. 150 - 200 mm) must be laid down as a minimum foundation.

If the tank is in proximity (less than 5m) to an embankment (greater than 5°) or a building with footings shallower than the depth of the trench, an engineered retaining wall must be designed to absorb the site-specific pressures and exceed the dimensions of the tank by at least 500mm. A minimum clearance of 1m must be ensured to this structure. If there is no embankment on site or if its more than 5m away from the excavation pit, a slope with the angle ß must be applied according to the following table.

Soil type	Required slope ß angle
Non-cohesive or soft cohesive soil	≤ 45°
If tank must be suitable for car traffic	≤ 50°
Stiff or semi-firm, cohesive soil	≤ 60°
Rock	≤ 80°

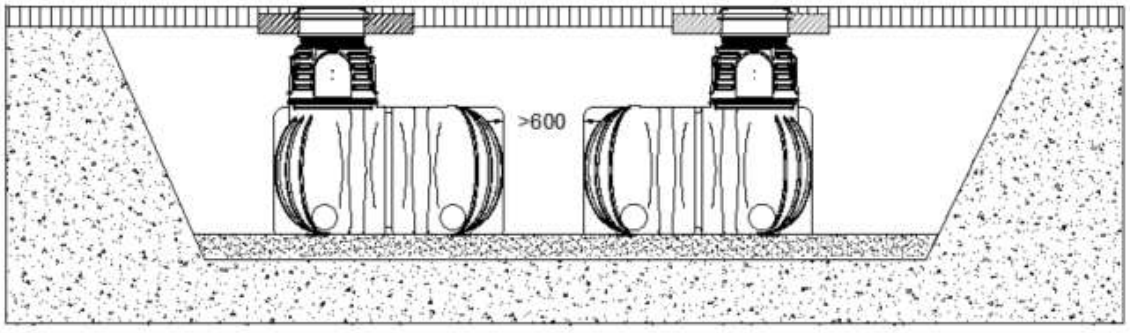
4.4. Groundwater and cohesive soils (e.g. clay soil)

If the groundwater levels exceed the shoulder of the tank (depending on application), even if only occasionally, it must be drained. GRAF offers a VS shaft DN400 / DN600 in which a slotted pipe with filter sock can be connected to drain the excessive water. We recommend the general laying of a drainage line, since a prolonged rainfall event could cause the groundwater level to rise unexpectedly. The pump must be installed by an electrician and inspected at regular intervals.



4.5. Connection of several tanks

Two or more tanks are connected using the bottom flat surfaces by means of GRAF Special Seals (DN 100 and DN 150 available) and basic pipes (no pipework is included).

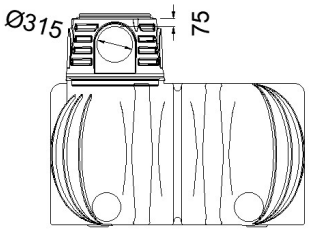


It must be ensured that the distance between the tanks is at least 600 mm. The pipes must project at least 200mm into the tanks. A balancing pipe might be used as vent in tanks depending on system layout.

The apertures must be drilled to the corresponding size using only the GRAF special crown bit.

4.6. Customised connections

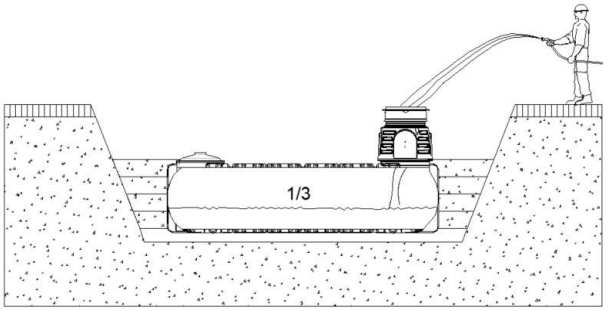
Customised connections (including welding spigots) are available
Please contact GARANTIA for form.



4.7. Insertion and filling

The tanks must be inserted, impact-free, into the prepared trench using suitable equipment. The tank is filled approximately 1/3 with water before filling the tank surround. Afterwards the surrounding (round grain gravel, max. grain size 8/16) is then filled in layers of compaction of max. 300 mm.

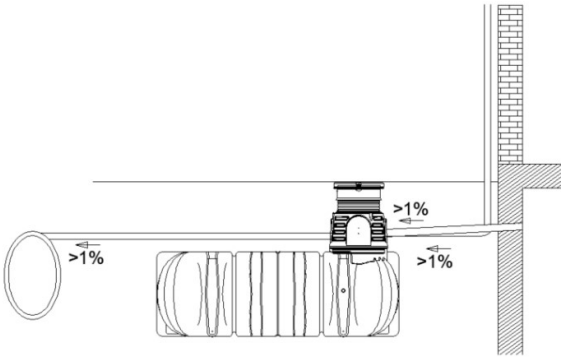
The individual layers must be well-compacted (manual tamper). Damage to the tank must be avoided during compaction. Mechanical compaction machines must not be used under any circumstances. The surrounding must be at least 100 mm wide.



4.8. Routing connections

All connections, vent, and overflow pipes must be routed with a decline in the direction of flow (subsequent settling must be taken into consideration in this case).

All control lines must be routed in a conduit, which must be routed as straight as possible, to the tank, without bending, with a decline. Necessary bends must be formed using 30° elbows. To place the conduit please observe the maximum water level.



5. Assembling the tank dome, riser and access

5.1. Assembling the tank dome and tank plug

Prior to assembly, the tank seal ③ is inserted onto the tank openings. The tank dome ② is placed on top of the seal. If one of the openings does not require access, a tank plug ④ is placed on top of the seal. The dust covers are to be discarded, preferably, for recycling.

If it is expected to have connections through the dome, the dome should be placed as to align with the piping connections on site. Any dome opening that is not used for pipe connection (inlets, outlets, filter connections, overflow, or vent), must be closed using a seal and a seal plug.

In the case of an installation for pedestrian loads, the pedestrian cover can sit straight on top of the dome. In case a riser is required, the next section must be observed.

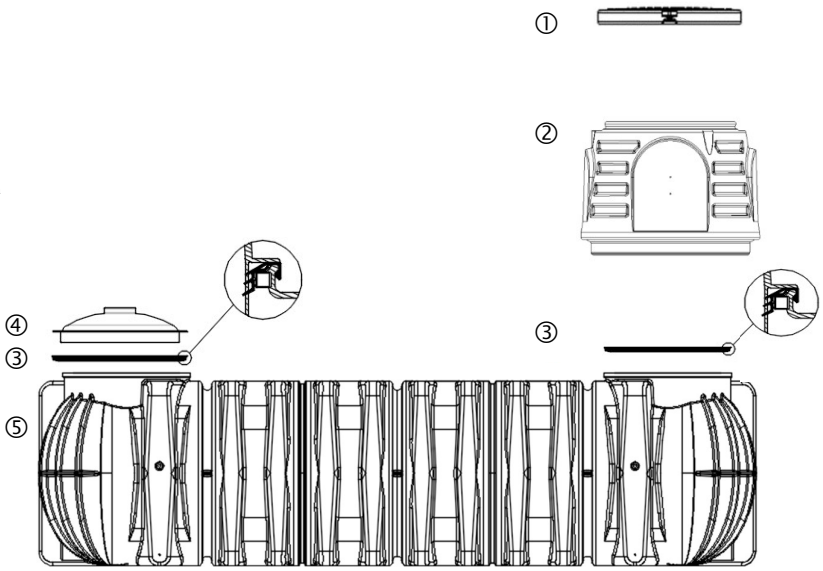
① GARANTIA Pedestrian Cover

② GARANTIA dome (any dome opening that is not used for pipe connection, must be closed using a seal and a seal plug)

③ Tank seal

④ Tank plug (dust covers must not be used)

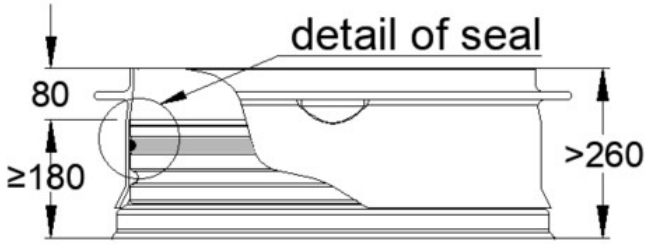
⑤ Li-Lo XL tank



5.2. Assembling the riser and access

For deeper installations subjected to pedestrian loads and for all trafficable installations, a riser and access is required. The riser height might be reduced by removing, at maximum, the top 440mm, then installing the bottom 180mm. Always, the bottom of the riser (the wider end) must remain, as the it overlaps the top of the dome for correct installation.

The profile seal is inserted into the highest groove of the riser and greased generously. Then, the GARANTIA access is placed on top. The effective height is 80mm higher than the riser.



5. Assembling the tank dome, riser and access

① GARANTIA Cover (illustration shows pedestrian lid)

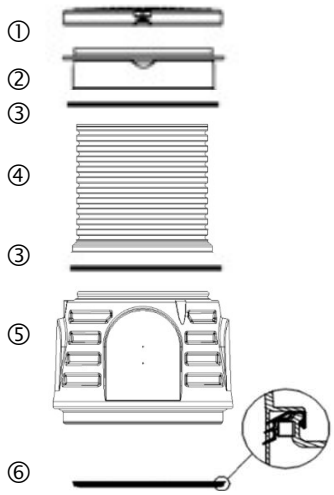
② GARANTIA Access

③ Profile seal

④ GARANTIA Riser (it may be cut)

⑤ GARANTIA dome (can be rotated by 360°)

⑥ Tank seal

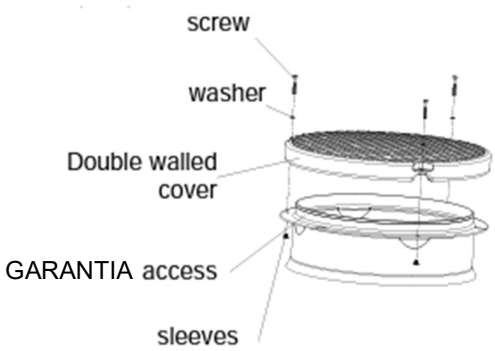


Before proceeding with cover installation, please observe all requirements (earth cover, alignment with connections, venting, etc), and then refer to the relevant section from the following:

5.2.1. Covers for pedestrian loads

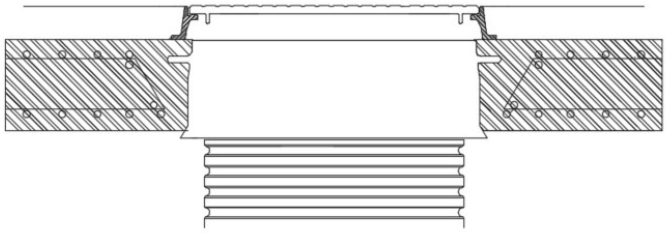
The pedestrian cover may be installed straight to the dome or inserted to the GARANTIA access when the riser is installed. To prevent transferring loads onto the tank, the tank is backfilled with layers of grounded gravels (maximum grain size 8/16) and compacted evenly.

Lastly, the pedestrian cover lid is bolted. This lid should not be submitted to more than 150kg.



5.2.2. Covers for traffic of cars

If the tank is installed underneath an area with car loading (class B), concrete underlay (property class N25) must be placed in the steel reinforced concrete support collar around the GARANTIA access.



The circumference of the concrete layer to be filled in must be at least 300 mm wide and approximately 200 mm high.

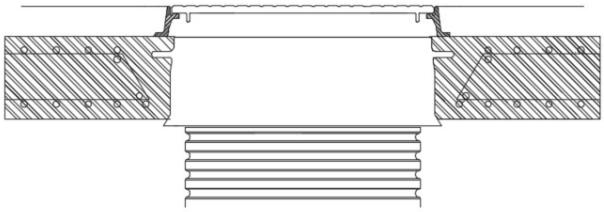
Optionally, a tubular seal (934609) is inserted for gas tightness. Lastly, the class B cover lid (75.0016) is placed. A suitably designed finished floor is to be constructed to support the required vehicle load.

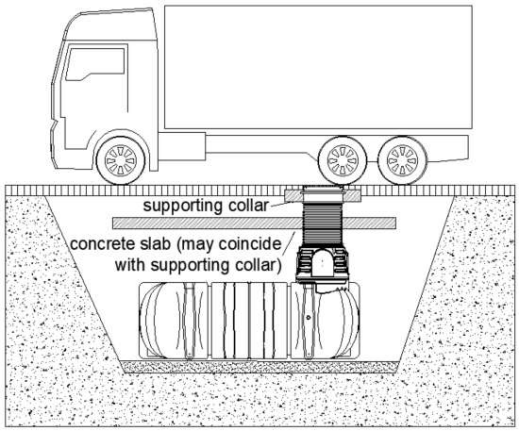
5.2.3. Covers for traffic of trucks

If the tank is installed underneath an area with truck loading (class D), concrete underlay (property class N25) must be placed in the steel reinforced concrete support collar around the GARANTIA access. The circumference of the concrete layer to be filled in must be at least 300 mm wide and approximately 200 mm high.

A suitable engineered slab must be installed preventing loads from being transferred to the tank. The reinforced concrete support collar may form one structure with the slab.

Optionally, a tubular seal (934609) is inserted for gas tightness. Lastly, the class D cover lid (75.0017) is placed. A suitably designed finished floor is to be constructed to support the required vehicle load.





6. Infiltration Tank

6.1. Infiltration considerations

LiLo XXL tank is available to be used for the infiltration of rainwater at sites with sufficient infiltration capabilities. A suitably sized filter must be part of the system for seamless operation of the LiLo XXL Infiltration tank. Internal or external filters can be used. The filters must be sized correctly for the collection of dirt and coarse materials, and the overflow of the filters must by-pass LiLo XXL infiltration tank.

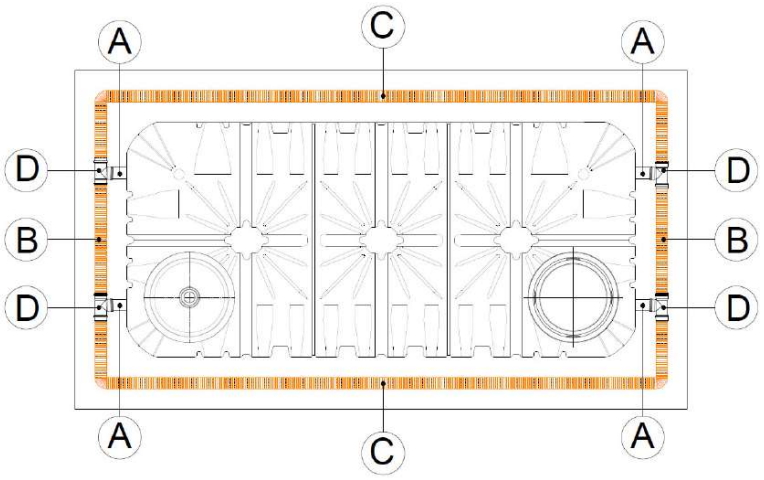
Note: The base area of the trench should exceed the dimensions of the tank on each side by > 500 mm.

6.2. Preparing and assembling pipes

The outlet pipes Ⓐ are inserted to 100 mm into the tank's DN150 seals. Then the T junctions Ⓓ are pushed onto the outer ends of the outlet pipes Ⓐ. The T junctions Ⓓ are connected to each other along the width of the tank by the perforated short pipes Ⓑ, and the system is completed by connecting the T junctions Ⓓ along the length of the tank by the perforated long pipes Ⓒ.

The following sections are required for assembly:

Ⓐ 4x 0.5 m outlet pipes to be inserted to a maximum of 100 mm into the tank DN150 seals
Ⓑ 2x perforated short pipes
Ⓒ 2x perforated long pipes
Ⓓ 4x T junctions connecting tank outlets to the perforated pipes

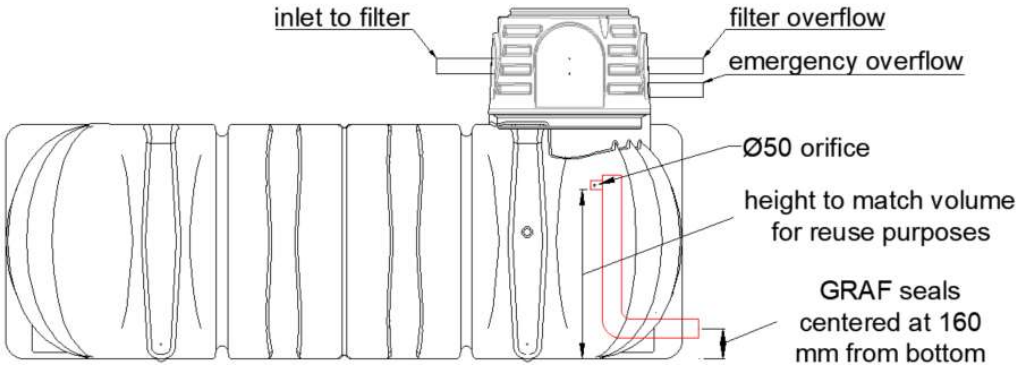


7. Detention and retention tanks

In detention tanks, the tank accumulates the water for slow release to the stormwater system. The detention volume is specified by the councils typically. An emergency overflow pipe should be installed. A submersible pump may be installed if the water can't reach the council pit by gravity.

In retention tanks, the tank accumulates the water for reuse. The retention volume is specified to match the volume required for reuse at each site. An emergency overflow pipe should be installed. A suitably sized filter must be part of the system, and the overflow of the filters must by-pass the tank. A submersible pump may be installed for rainwater reuse at the property through a rain-to-main system.

In most cases, a combined system is required. The tank is sized to meet the detention volume and the retention volume. The height of the internal pipework is adjusted on site to match the retention volume (demand for reuse purposes). The detention volume (volume above the orifice) is released by the pipework connected to the tank through GRAF seals centred at 160mm from the bottom of the tank.



Please consult the volumetric table in the next section to select the height of the orifice.

8. Volumetric table

In combined systems, the tank is sized to meet the detention volume and the retention volume. Once the tank is selected, in its respective table's column, select the volume required for reuse. Once the volume is selected, in its respective table's row, the height column shows the height in which the orifice should be positioned.

Height (mm)	7500 L	10000 L	15000 L	20000 L	25000 L
0	0 L	0 L	0 L	0 L	0 L
50	368 L	199 L	310 L	389 L	500 L
100		503 L	786 L	986 L	1,269 L
150		865 L	1,350 L	1,697 L	2,182 L
200	976 L	1,264 L	1,975 L	2,481 L	3,192 L
250		1,692 L	2,641 L	3,319 L	4,268 L
300	1,621 L	2,141 L	3,338 L	4,197 L	5,394 L
350		2,607 L	4,061 L	5,104 L	6,558 L
400	2,339 L	3,087 L	4,805 L	6,033 L	7,751 L
450		3,577 L	5,556 L	6,979 L	8,958 L
500	3,153 L	4,074 L	6,321 L	7,937 L	10,184 L
550		4,577 L	7,093 L	8,904 L	11,420 L
600	3,796 L	5,082 L	7,870 L	9,876 L	12,664 L
650		5,589 L	8,648 L	10,850 L	13,909 L
700	4,609 L	6,093 L	9,423 L	11,820 L	15,150 L
750		6,593 L	10,192 L	12,783 L	16,382 L
800	5,341 L	7,087 L	10,953 L	13,736 L	17,602 L
850		7,539 L	11,703 L	14,642 L	18,806 L
900	6,057 L	8,049 L	12,437 L	15,598 L	19,986 L
950		8,510 L	13,151 L	16,495 L	21,136 L
1000	6,731 L	8,953 L	13,839 L	17,360 L	22,246 L
1050		9,371 L	14,490 L	18,179 L	23,298 L
1100	7,301 L	9,755 L	15,092 L	18,934 L	24,271 L
1150		10,094 L	15,627 L	19,602 L	25,135 L
1200	7,515 L	10,372 L	16,061 L	20,140 L	25,829 L
1250		10,487 L	16,252 L	20,347 L	26,112 L

9. Inspection and servicing

The entire system should be serviced at intervals of approx. 5 years. Servicing should be carried out as follows:

- Drain the tank completely
- Clean surfaces and internal parts with water
- Remove all dirt from the tank
- Inspect internal parts that might be present

Servicing intervals may change due to the tank use and application, please liaise with the relevant local authority. In rainwater applications, the installed filters might require service every 6 months or less, depending on system design.