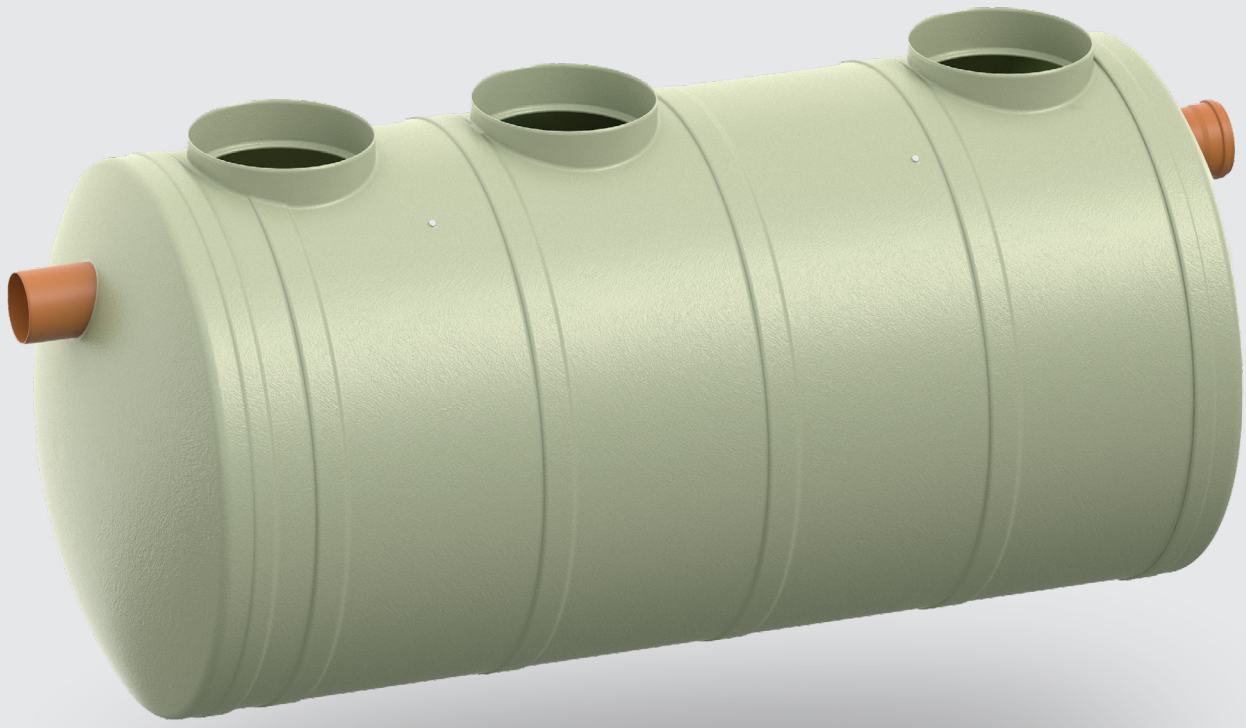
IM25

Installation Manual

ACO Lipumax G-H, Oleopator G-H, Oleopator Bypass G-H, Powerlift G-H, Sludge Trap G-H, Stormclean G-H, Stormsed G-H



Note

- This manual is for the ACO prefabricated Lipumax G-H, Oleopator G-H, Oleopator Bypass G-H, Powerlift G-H, Sludge Trap G-H, Stormclean G-H, Stormsed G-H – read this manual before installing one of the products.
- This manual should be used when installing the Lipumax G-H, Oleopator G-H, Oleopator Bypass G-H, Powerlift G-H, Sludge Trap G-H, Stormclean G-H, Stormsed G-H and should be kept available at the workplace / installation site. Installation of the products must be performed by qualified installers.
- Provisions under applicable laws should be followed in order to prevent accidents and protect the environment.
- Proper installation of each product is crucial in order to maintain warranty, to get proper function and lifetime of the product, to prevent damage or failure of the product which could cause damage to the environment and also to ensure the safety of all involved during installation.

Terms and conditions

Any change or alteration made to these products by the consumer without ACO's specific approval will void all warranty obligations.

Note

Any more questions?
askACO – your local
ACO team is proud to offer
experience and service

**www.aco.com/en/
products-and-services/askaco**

ACO. we care for water

ACO is a Water-Tech company that protects water. Building on our global drainage expertise that protects people from water, we increasingly see our mission as also protecting water from people.

With the ACO WaterCycle, ACO provides systems that collect and channel, clean, retain and ultimately reuse water. In this way, ACO contributes to the preservation of clean groundwater as a vital resource, and makes a contribution to tomorrow's world. In its Agenda 2030, the UN global community set the improvement of water quality as one of 17 sustainable development goals.

Intelligent drainage systems from ACO increasingly use smart technology to ensure that rainwater and wastewater are drained, or temporarily stored. With innovative separation and filtration technology, we prevent water contamination by pollutants such as fat and grease, fuels, heavy metals and microplastics.

Today, ACO goes one step further: we accept the challenge of reusing water, and thus establishing a resource-saving cycle. For all products and systems, ACO attaches great importance to durability, reusability and a low carbon footprint. The pursuit of sustainability is an ongoing process that we strive to meet every day.

The ACO Group is a global family business that is one of the world market leaders in the Water-Tech segment. Founded in Schleswig-Holstein in 1946, it operates as a transnational network in over 50 countries. Worldwide, ACO is characterised by a high level of decentralised ownership, and explicit regional market proximity.

www.aco.com

Holder
Iver and Hans-Julius Ahlmann

Headquarters of the ACO Group
in Rendsburg/Büdelsdorf

5.500

employees in more than 50 countries (Europe, North and South America, Asia, Australia, Africa)

1.14 Billion

Euro Sales in 2024

43

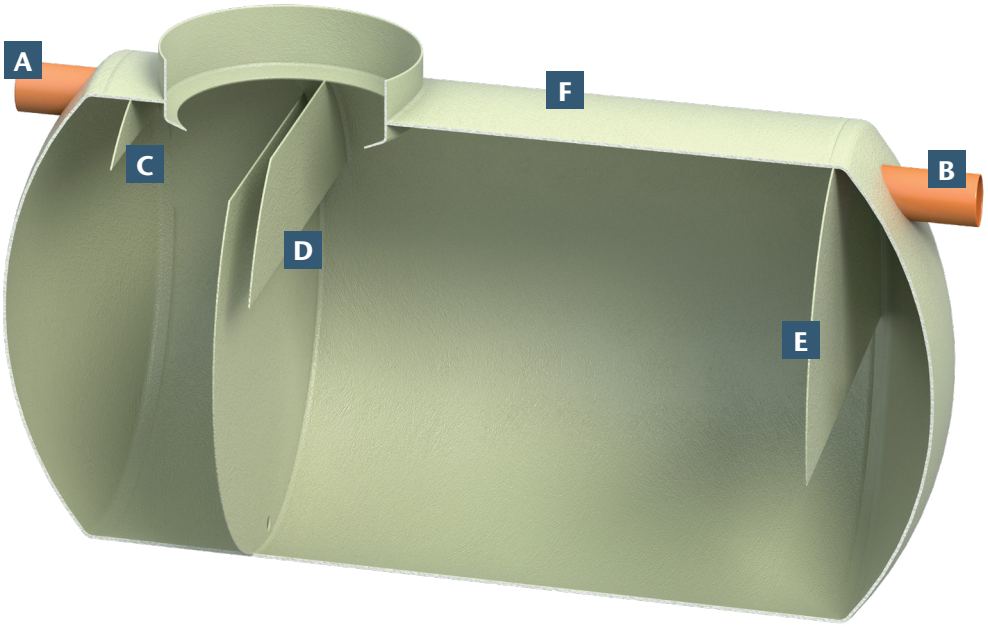
production sites in 20 countries

ACO Academy
for practical training

1 Structure and components

ACO Lipumax G-H

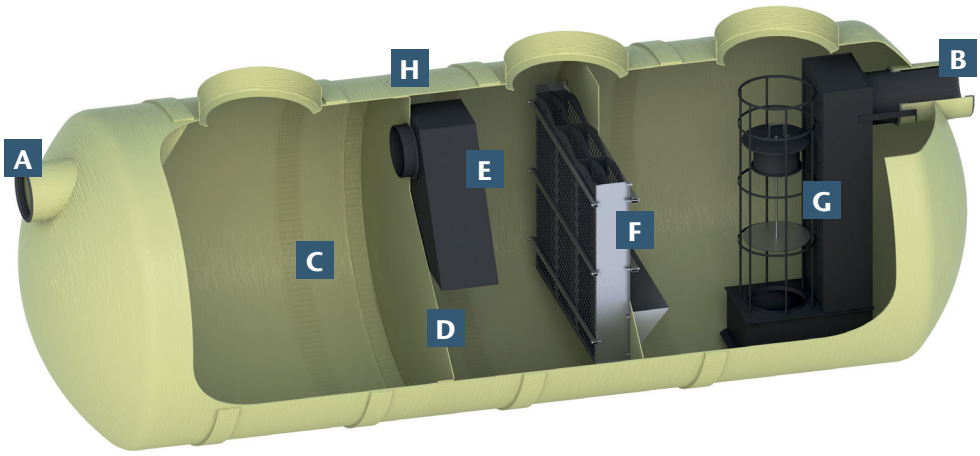
Figure 1.1



- A Inlet
- B Outlet
- C Inlet baffle
- D Dividing wall
- E Outlet baffle
- F GRP tank

ACO Oleopator G-H

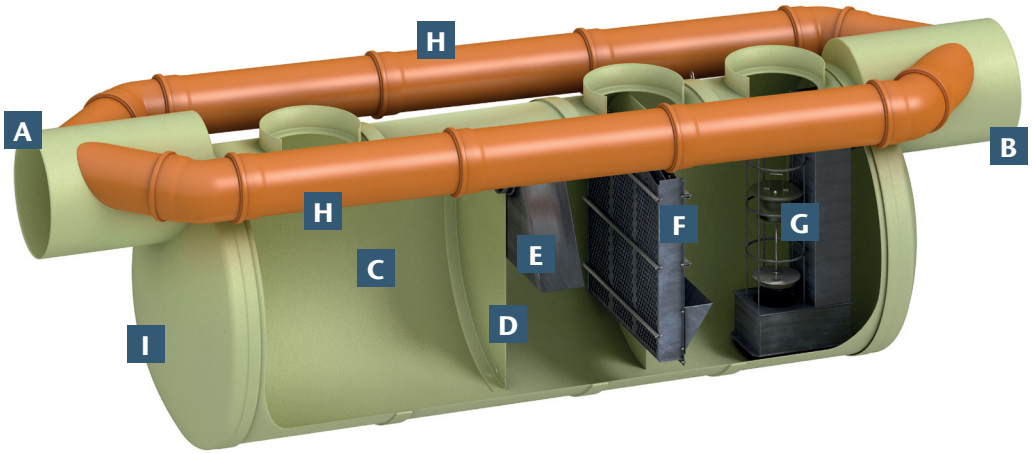
Figure 1.2



- A Inlet
- B Outlet
- C Integrated sludge trap
- D Dividing wall
- E Inlet part into oil chamber
- F Coalescence units
- G Outlet part with closing device (float)
- H GRP tank

ACO Oleopator Bypass G-H

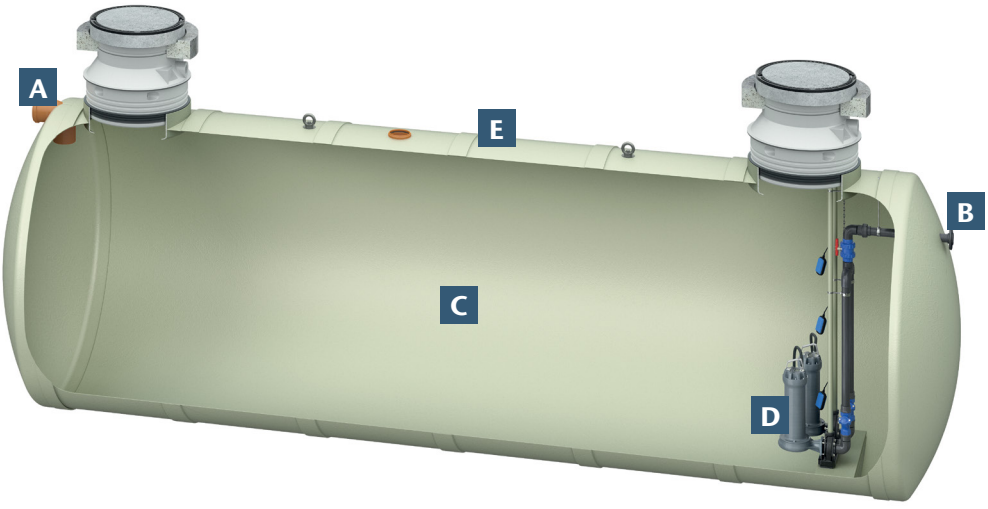
Figure 1.3



- A Inlet
- B Outlet
- C Integrated sludge trap
- D Dividing wall
- E Inlet part into oil chamber
- F Coalescence units
- G Outlet part with closing device (float)
- H External bypass system
- I GRP tank

ACO Powerlift G-H (with retention)

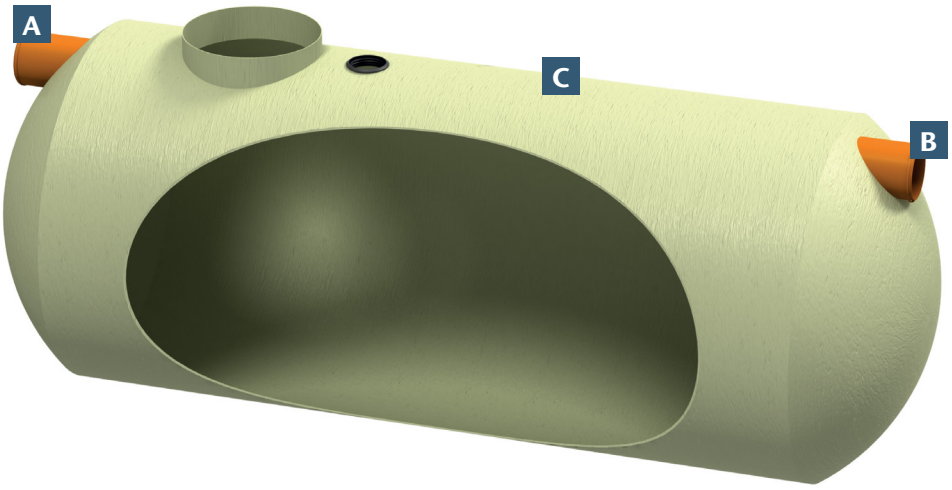
Figure 1.4



- A Inlet
- B Pressure pipe outlet
- C Retention volume
- D Pumps with fittings and accessories
- E GRP tank

ACO Sludge Trap G-H

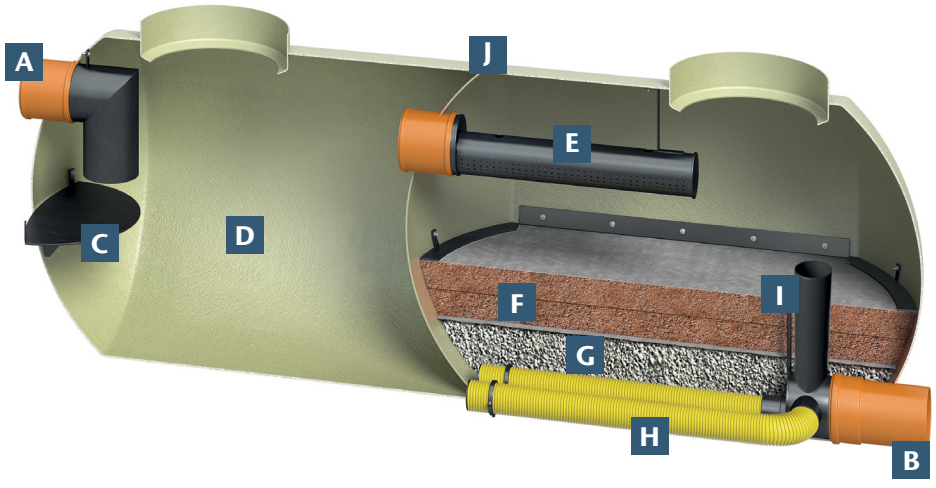
Figure 1.5



- A Inlet
- B Outlet
- C GRP tank

ACO Stormclean G-H (International)

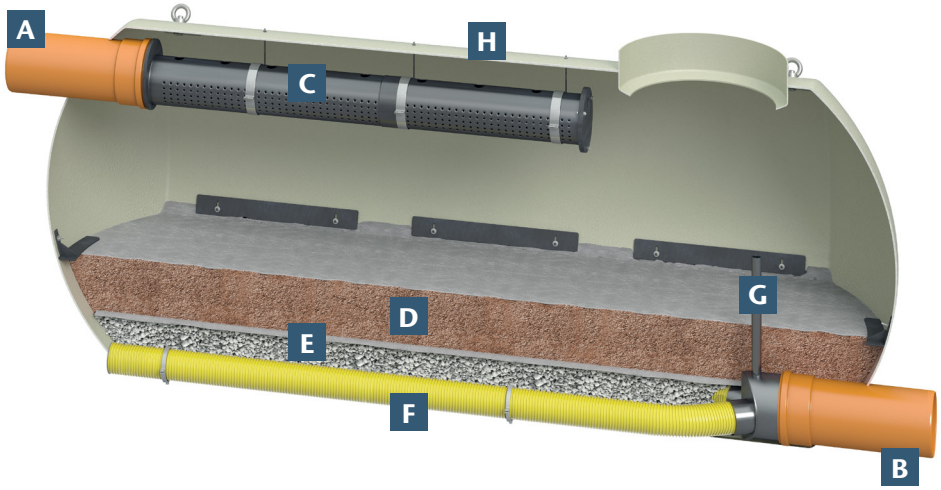
Figure 1.6



- A Inlet
- B Outlet
- C Flow distribution baffle
- D Integrated sludge trap
- E Flow distribution pipe
- F Loose filter bed
- G Gravel bed
- H Perforated pipe connected to outlet
- I Overflow pipe and sampling connection
- J GRP tank

ACO Stormclean G-H (Austrian)

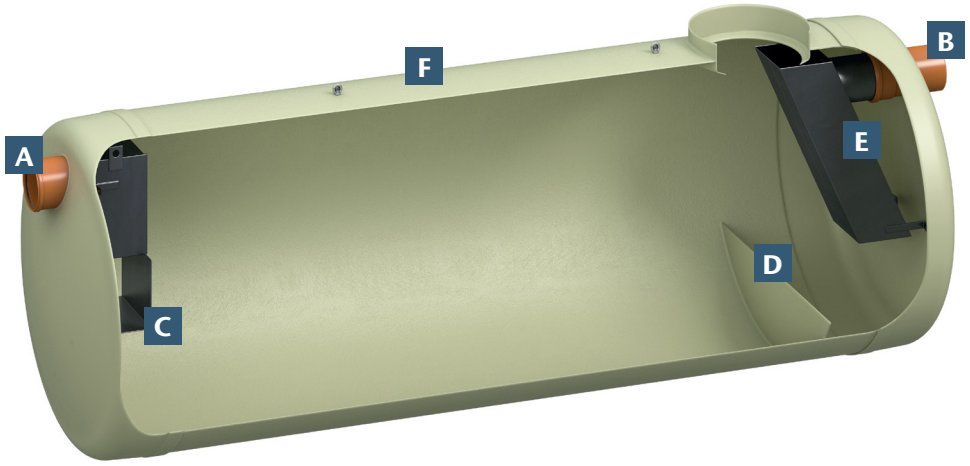
Figure 1.7



- A Inlet
- B Outlet
- C Flow distribution pipe
- D Loose filter bed
- E Gravel bed
- F Perforated pipe connected to outlet
- G Sampling connection
- H GRP tank

ACO Stormsed G-H

Figure 1.8



- A Inlet
- B Outlet
- C Flow distribution baffle
- D Outlet baffle
- E Angled outlet part
- F GRP tank

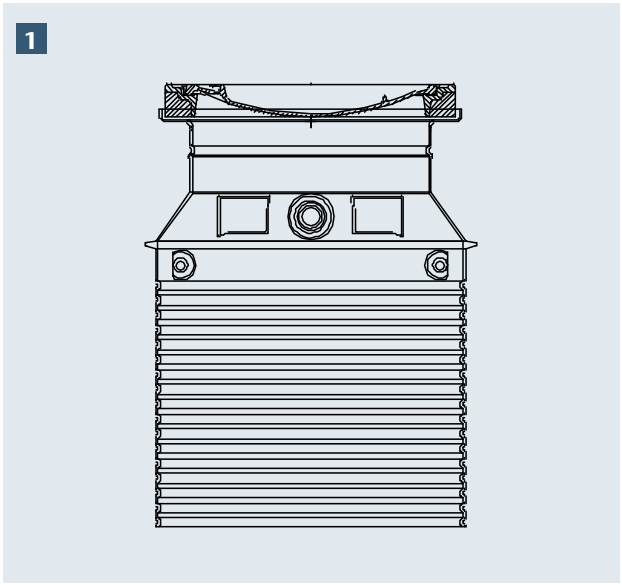
2 Top section types

Note: Top sections come in different heights and therefore the drawings might be different from the height you have ordered. Load classes A 15, B 125 and D 400 according to the standard EN 124.

Top sections with standard covers

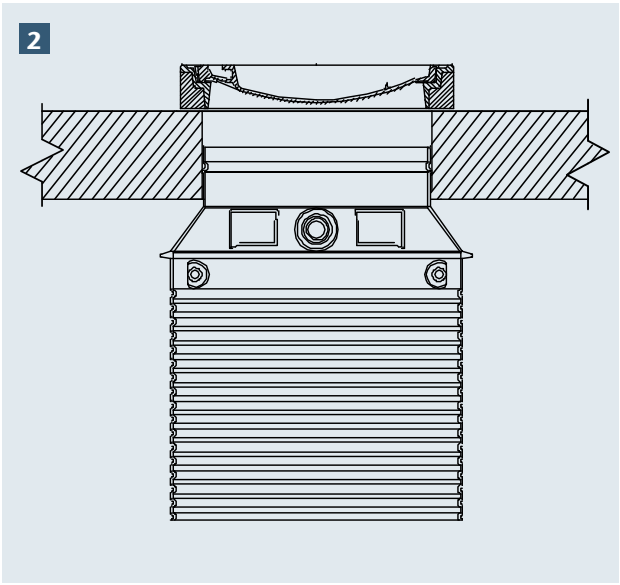
DN 600

Load Class A



1 DN 600 load class A

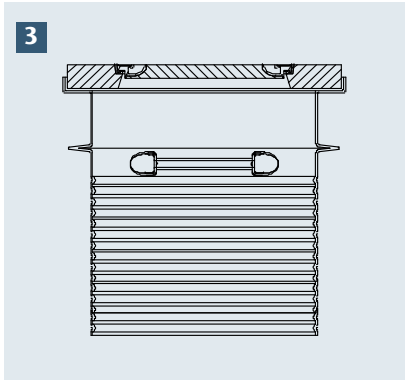
Load Class B/D



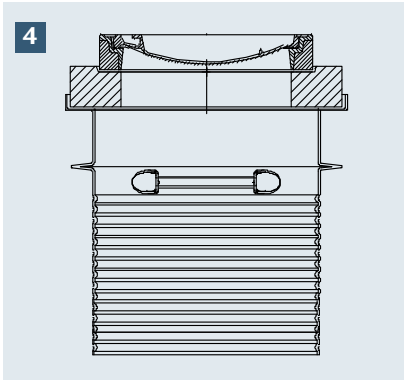
2 DN 600 load class B/D (with load distribution slab)

DN 800

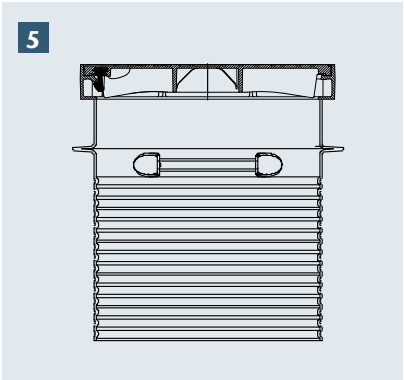
Load Class A



3 DN 800 (manhole cover DN 600) load class A

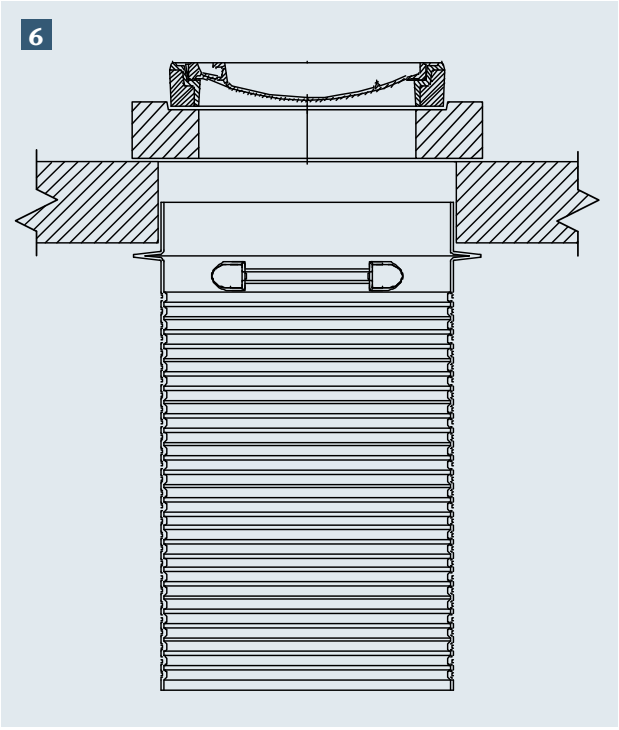


4 DN 800 (manhole cover DN 600) load class A

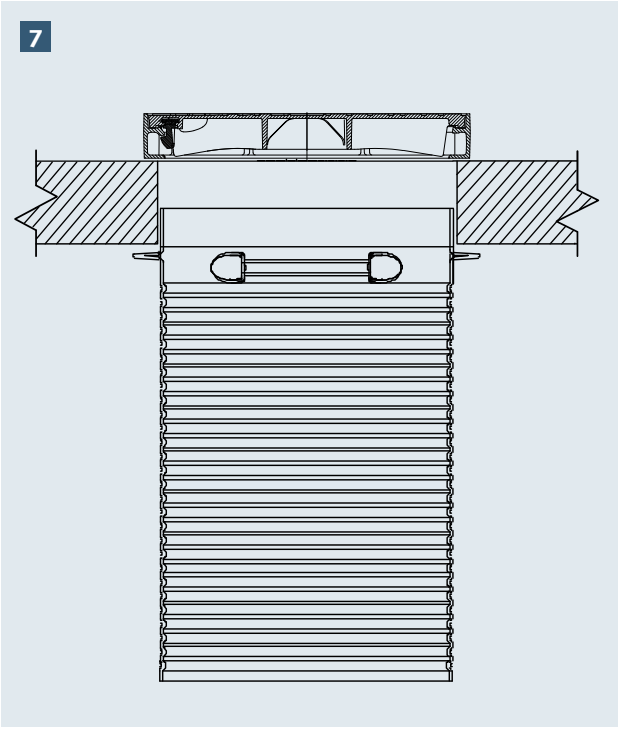


5 DN 800 (manhole cover DN 800) load class A

Load Class B/D



6 DN 800 (manhole cover DN 600) load class B/D (with load distribution slab)

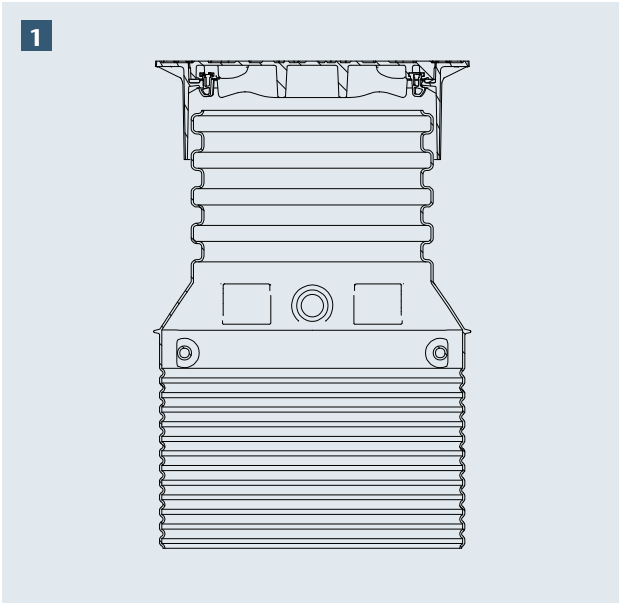


7 DN 800 (manhole cover DN 800) load class B/D (with load distribution slab)

Top sections with floating covers

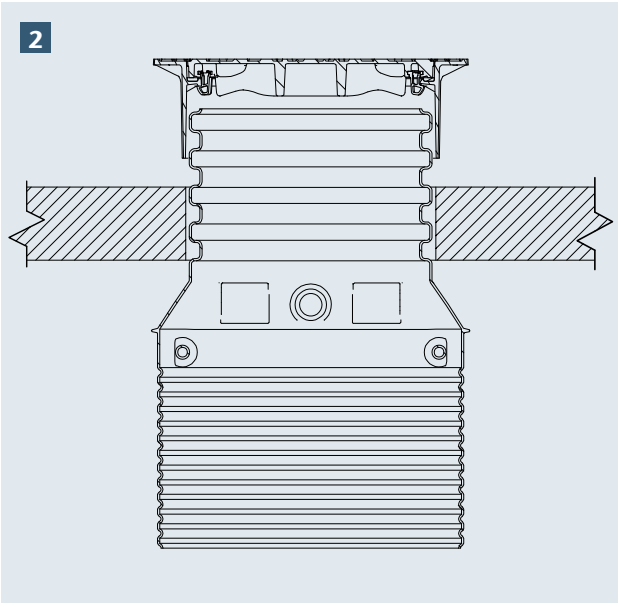
DN 600

Load Class A



1 DN 600 load class A with floating cover

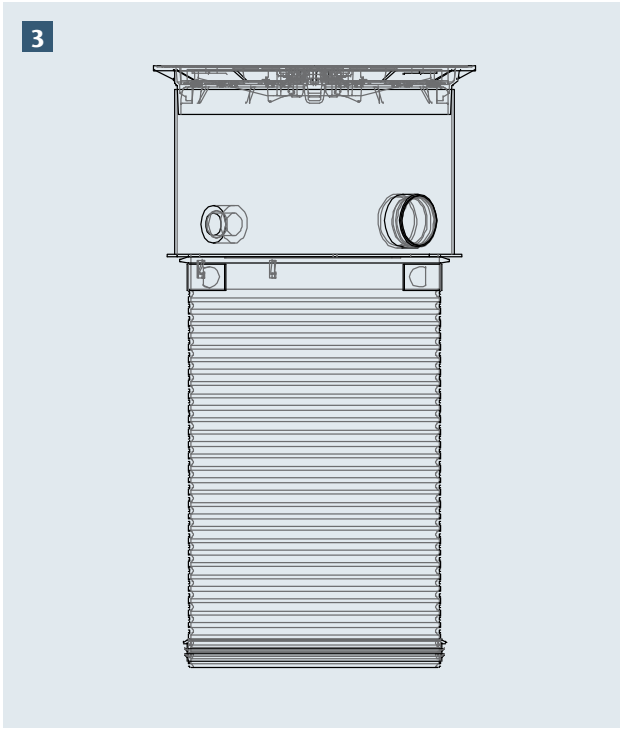
Load Class B/D



2 DN 600 load class B/D (with load distribution slab) with floating cover

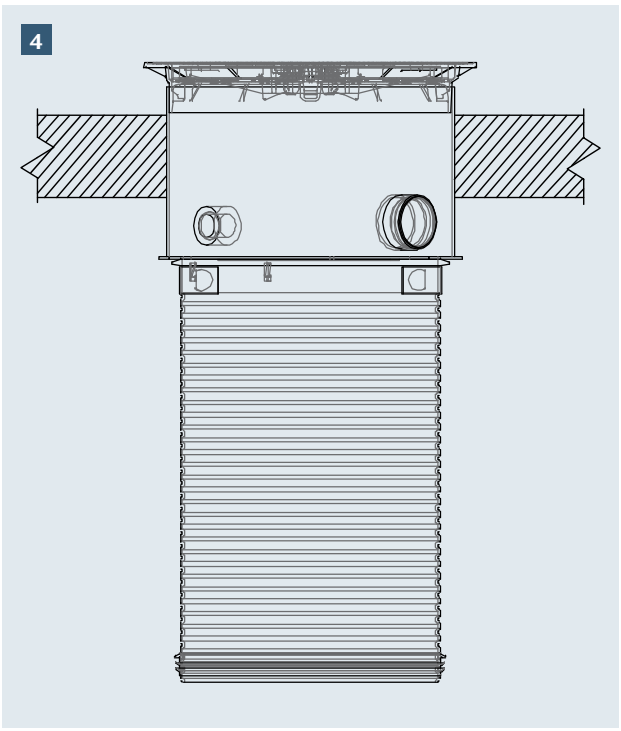
DN 800

Load Class A



3 DN 800 (manhole cover DN 800) load class A with floating cover

Load Class B/D



4 DN 800 (manhole cover DN 800) load class B/D (with load distribution slab) with floating cover

3 General information

Application

- **Oleopator G-H** and **Oleopator Bypass G-H** are designed to treat oily wastewater and stormwater where high removal efficiencies are needed.
- **Lipumax G-H** is designed to remove fats, oils and grease from wastewater created by the food instustry (caterers, restaurants, snack bars, bakeries, etc).
- **Stormclean G-H** uses filtration to remove grit, sand, and coarse and fine sediment from stormwater. In addition, it captures residual mineral oil and dissolved pollutants such as heavy metals (copper, zinc and lead) commonly found in stormwater.
- **Sludge Trap G-H** and **Stormsed G-H** remove gravel, grit, sand and coarse sediment from stormwater, and associated bound pollutants.
- **Powerlift G-H** allows to accumulate or retain water for subsequent efficient reuse or regulated release.

Use of these products for other purposes is prohibited.
The manufacturer is not liable for any damages caused by misuse. Responsibility falls entirely upon the operator.

Terms and conditions

- Compliance with national laws and regulations;
- Compliance with all inspection and service instructions;
- Adherence to the manufacturer's installation, operation and maintenance instructions.

Staff

Personnel who perform the installation, operation, maintenance and servicing of these products must possess the training needed to do these tasks and must understand the content of this manual.

Maintenance log

A record of activites performed on installed products should be kept, and include the following:

- Checks carried out by operational staff;
- Service and test reports;
- Any breakdowns and repairs.

Technical amendments

ACO reserves the right to make ongoing technical modifications which may result in differences between published text and/or images, and the products.

Product description

- All these products are designed for installation in the ground.
- These products come with integrated inlet and outlet connections and with compatible top section.
- In order to ensure proper overall function, use top sections from ACO which are compatible with ACO products.
- ACO is not responsible for possible problems caused by using non-ACO top sections. In case of using other solution for top section, contact ACO for consultation.

Function

- **Oleopator G-H** and **Oleopator Bypass G-H** light liquid separators work through gravity separation. Sludge and heavier particles sink to the bottom, while light liquids which are lighter than water rise to the surface. Treated water flows out.
- **Lipumax G-H** works on the gravity separation. Sludge and heavier particles sink to the bottom, while grease which is lighter than water rises to the surface. Treated water flows out.
- **Stormclean G-H** uses a reactive filter to capture both sediment and dissolved pollutants.
- **Sludge Trap G-H** and **Stormsed G-H** work on gravimetric principle. Sludge and heavier particles sink to the bottom. The treated water flows out through the outlet.
- **Powerlift G-H**: capacity of GRP tank allows to retain required volume of water and then reuse or release through high quality submersible pumps controlled by configurable control system.

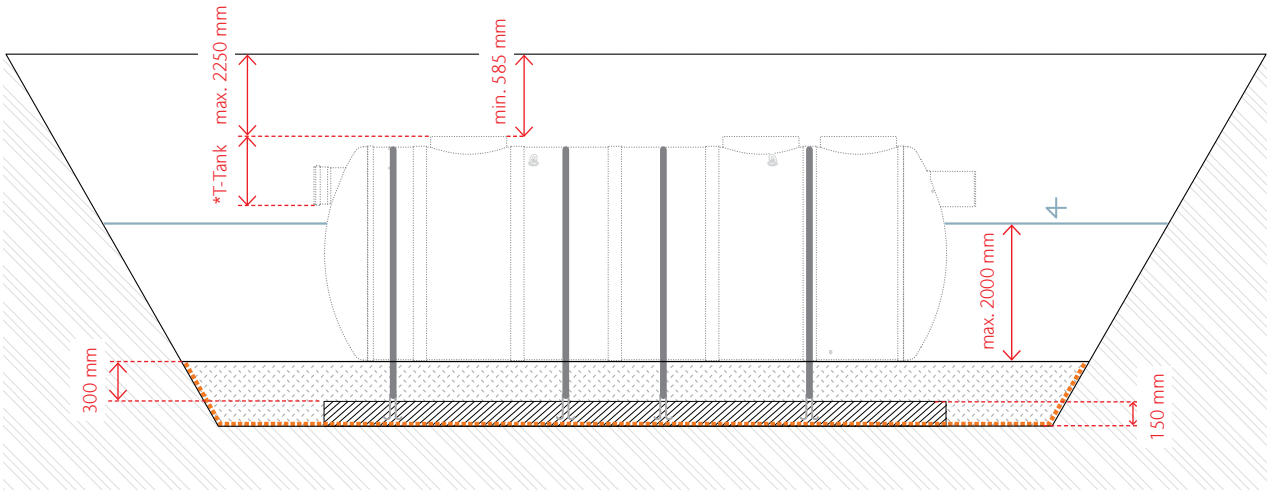
Flexible application (according to EN 124)

Load class		Description
EN 124		
A 15		Footways and areas accessible only to pedestrians and bicycles
B 125		Footways that can be mounted by light vehicles or livestock
D 400		Roads and highways and areas open to commercial vehicles

4 General installation information

- The installation procedure for load class B 125 is the same as for the load class D 400.
- The possible maximum installation depth is 2250 mm from the GRP collar as indicated in the figure 4.1. Note that also a minimum depth of 585 mm from the highest point of the products (GRP collar or bypass pipe if relevant) must be ensured for load classes greater than A 15! In the case of load class A 15, the minimum installation depth is according to the minimum possible length of your ACO top section type.
- You can calculate the inlet depth as the depth of the GRP collar from the surface + the dimension T-Tank, which is the depth of the bottom of the inlet from the GRP collar as indicated in the figure 4.1. The dimension T-Tank is different for each product (see catalogue data for your product).
- These products are designed to withstand a max. ground water level of 2000 mm from the tank bottom – this level must never be exceeded. **Be aware that both surface infiltration and rainwater contribute to ground water levels**. See figure 4.1.

Figure 4.1 General installation information



*Dimension T-Tank according to catalogue data of your product.

- Do not install tanks on slopes.
- Do not install on clayey subsoil.
- The native subsoil must be stable and permeable enough (so the infiltrated water will not cause ground water level higher than the maximum allowed - 2000 mm from the tank bottom).
- Install the tank at sufficient distance from nearby structures so their statics are not affected by the construction works.
- When handling tanks, make sure all the equipment and machinery is rated to handle the load.
- Maximum load class D 400 (with proper installation according to D 400 installation procedure).
- Do not install the tank in flood risk areas (max. ground water level up to 2000 mm from the tank bottom must be ensured).
- Ensure no traffic above the tank during installation process! When the installation process is completed, allow only appropriate traffic (loads according to your load class type of installation).
- The following Unified Soil Classification System (USCS) soil types are suitable as backfilling material: GM, GP, GW, SM, SP, SW.
- If the soil on site is not suitable for backfilling, use crushed stone (fraction 8 mm – 16 mm) as backfilling material.
- If native soil is used as a backfill material, ensure the immediate area (300 mm laterally) around the tank and top section contains no particles larger than 16 mm. Make sure there are no objects in the backfill material which could cause damage to the tank.
- Ensure non-freezing depth of the installed products to prevent the water inside the products from freezing.
- If you have any questions regarding the installation process or if something is not clear to you, contact ACO before installation!

Note: ACO also has solutions for the non-standard installations. In that case contact ACO.

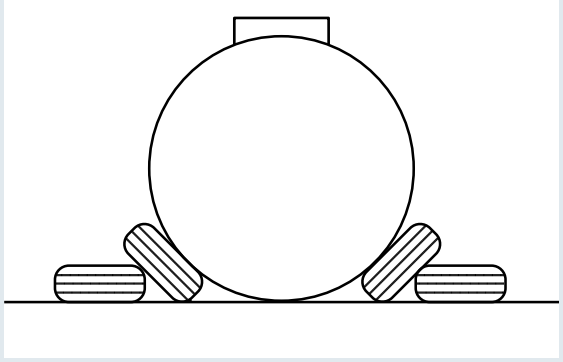
5 Storing and handling products on site

- Upon receipt of your product, check for any damage that may have occurred during transport.
- Before unloading and handling ensure the tank is empty.
- Store the tank on a suitable flat surface. Make sure there are no sharp objects which could cause damage to the tank. Choose the storage location with care to avoid accidental damage to the tank.
- If the tank is stored for more than 6 weeks, the GRP tank must be protected from direct sunlight. If adequate protection is not provided, ACO is not responsible for any changes in the material properties of the GRP tank.
- Protect from prolonged sub-zero temperatures and temperatures above 25 °C.
- Do not allow heavy materials to be stacked on or against the GRP tank. Do not roll or drop the tank!

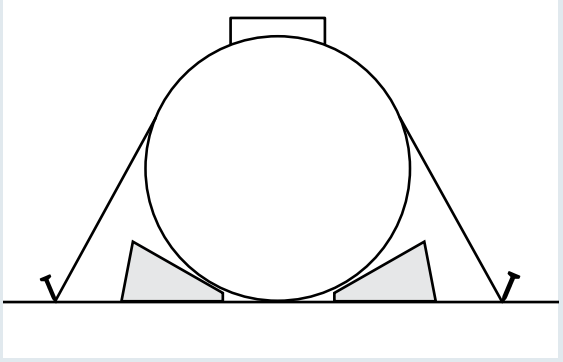
- The tank must be properly wedged to ensure the stability of the tank. When wedging the tank, use proper wedging so no damage to the tank is caused. Consider additional temporary anchoring to ensure stability in case of stronger winds (when tying down the tank, do not overtighten the anchoring element and use only appropriate tying elements (belts) so no damage is caused to the tank).

Note: If the product has integrated metal legs, note that they are not designed to provide full stability! Do not use the legs as stabilizing elements and also do not place anything under the legs! Instead properly wedge the tank while storing.

Prevent any movemement



Tie down against high winds



- The tank has integrated lifting lugs, which are designed to be used for lifting the tank. Do not change anyhow the position of the lifting lugs! The lifting lugs are secured in place by lamination to achieve the watertightness.

- While lifting and handling, ensure the angles shown in the drawings.

If the product has 2 lifting lugs

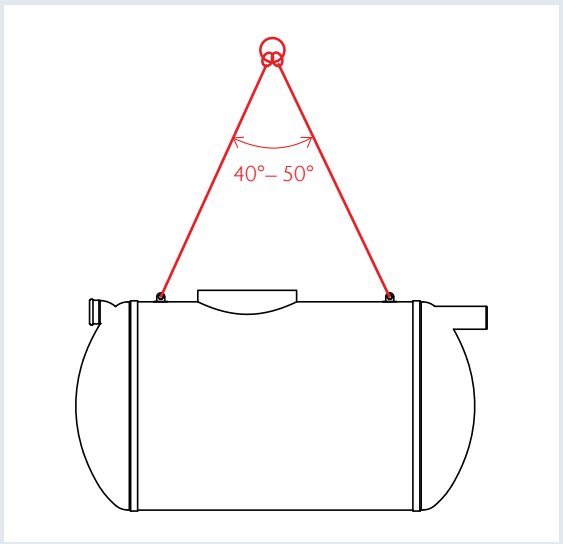


Figure 5.1 Sling chains

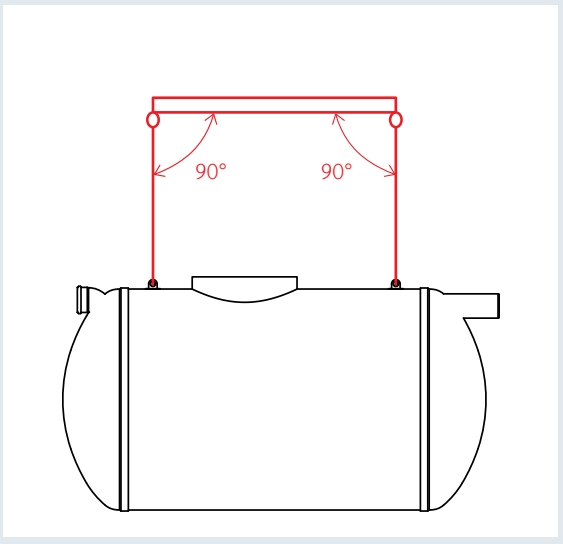
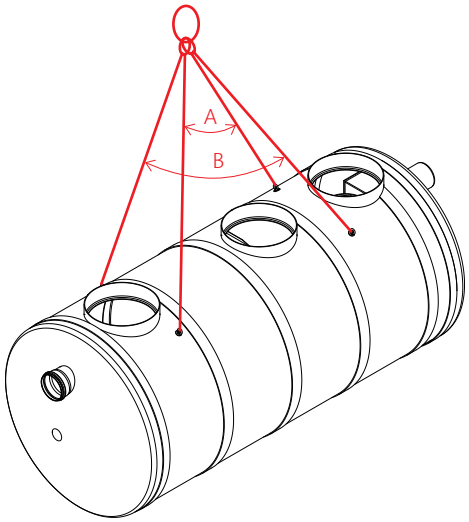


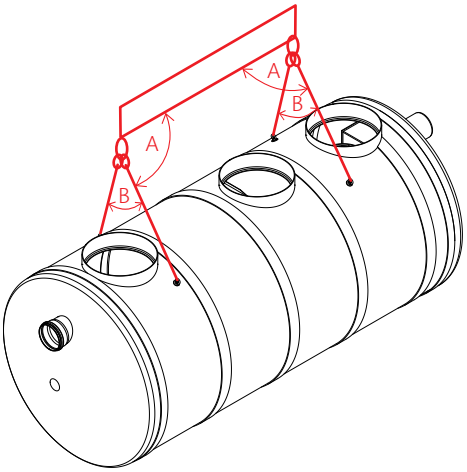
Figure 5.2 Lifting beam

If the product has 4 lifting lugs



A = B = 40°– 50°

Figure 5.3 Sling chains



A = 90° **B =** max. 30°

Figure 5.4 Lifting beam

- For every lifting lug, use one sling chain. When handling and lifting product(s), only use machinery and accessories with an appropriate load rating.
- While handling, always use all the lifting lugs.
- Avoid uneven lifting and dragging along the ground.
- Never stand under the suspended load during handling! Prevent other persons from entering the entire danger zone!

- Follow the handling instructions! Improper handling could result in serious injury!
- In case you are not sure or something is not clear to you, contact ACO.

6 Compaction specification

Table 6.1 Compaction specification

Category		Where to use	Compaction layer thickness	Machinery specification
1	**no compaction**	■ up to 100 mm above the tank and the bypass (if relevant) ■ up to 100 mm from the sides of the tank, top section and bypass (if relevant)		
2	**only hand tamper compaction**	■ between 100 – 300 mm above the tank and bypass (if relevant) ■ between 100 – 200 mm from the sides of the tank, top section and bypass (if relevant)	compact continuously	only hand tamper
3	**light compaction machinery**	■ between 300 – 700 mm above the tank and bypass (if relevant) ■ between 200 – 500 mm from the sides of the tank, top section and bypass (if relevant)	200 mm	light vibratory plate compactor (weight around 60 kg, impact force around 12 kN)
4	**medium compaction machinery**	■ between 700 – 1200 mm above the tank and bypass (if relevant) ■ between 500 – 1000 mm from the sides of the tank, top section and bypass (if relevant)	250 – 300 mm	vibratory plate compactor (weight 120 – 200 kg, impact force around 25 kN)
5	**heavier compaction machinery**	■ between 1200 – 2000 mm above the tank and bypass (if relevant) ■ between 1000 – 1300 mm from the sides of the tank, top section and bypass (if relevant)	250 – 300 mm	vibratory plate compactor (weight 200 – 350 kg, impact force around 40 kN)
6	**heavy compaction machinery**	■ from 2000 mm above the tank and bypass (if relevant) ■ from 1300 mm from the sides of the tank, top section and bypass (if relevant)	250 – 300 mm	non-vibratory roller (weight up to 1500 kg)

Note: Make sure no damage is done to the tank, top section and bypass (if relevant) during compaction works. When compacting near to the tank, top section or bypass (if relevant), be careful and do not strike the products. Follow compaction machinery specification to ensure no damage is caused to the products. Do not use heavy vibration rollers.

Avoid any traffic above the products during installation. Installation must be complete before traffic appropriate to the chosen load class may be allowed. Traffic inappropriate to the chosen load class must not be allowed.

The mechanical properties of compacted soils are defined through the soil elastic modulus (Young's modulus E).
To reach the soil elastic modulus values stated in this manual, compaction works must be carried out correctly.

7 Pit excavation and preparation

General information on pit excavation

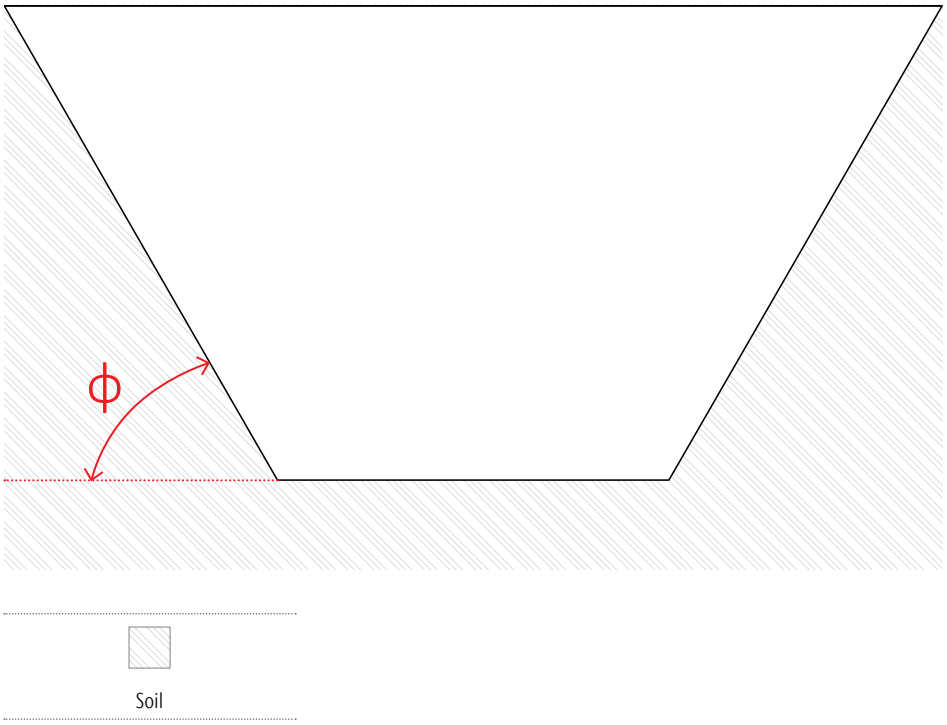
The following points should be considered during pit excavation:

- Take necessary safety precautions to ensure a safe working environment, and ensure all relevant local safety regulations are met.
- Prevent water penetration into the pit.
- Prepare the excavation pit according to all relevant local regulations, norms and standards.
- To ensure a flat base, remove all obstacles and sharp objects, such as rocks, stones, concrete etc. from the pit.
- Remove all organic items, such as plants, tree roots etc. from the pit.
- Ensure strong and stable flat base.
- Ensure any water is removed (from the pit).
- Ensure the pit is wide enough for bedding preparation, backfilling, compaction works and concrete works.
- To prevent excavated materials from falling back into the pit, they should be stored at a suitable distance from the pit edge.
- Pit depth should be defined for each installation!

Pit excavation

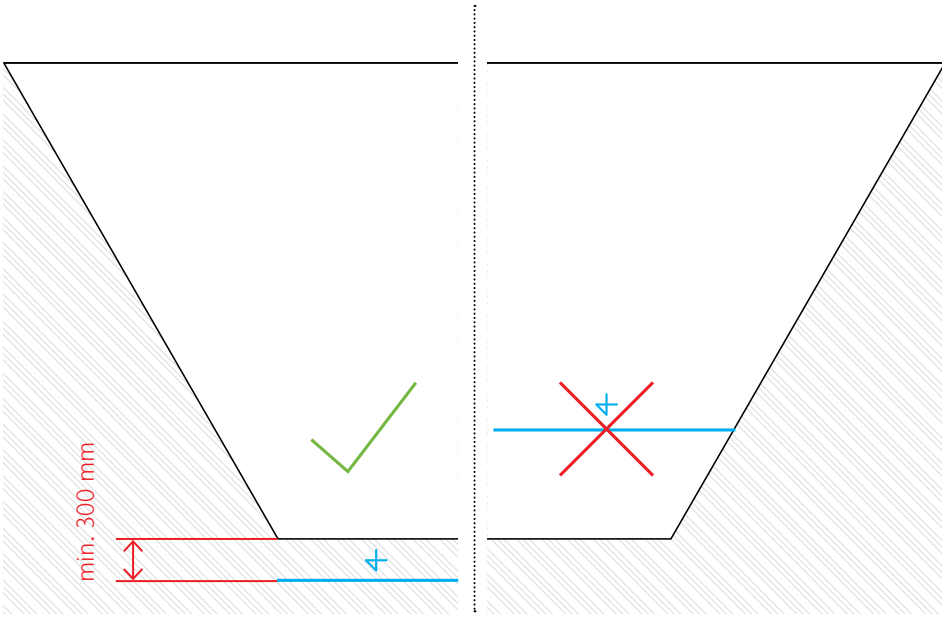
- During pit excavation follow all relevant local regulations, norms and standards (angle of the pit walls, sheeting type etc). If you are not sure about the proper pit wall angles, maintain max. angle of the pit walls on the value of Φ (soil internal friction angle) – see figure 7.1.

Figure 7.1 Angle of the pit walls



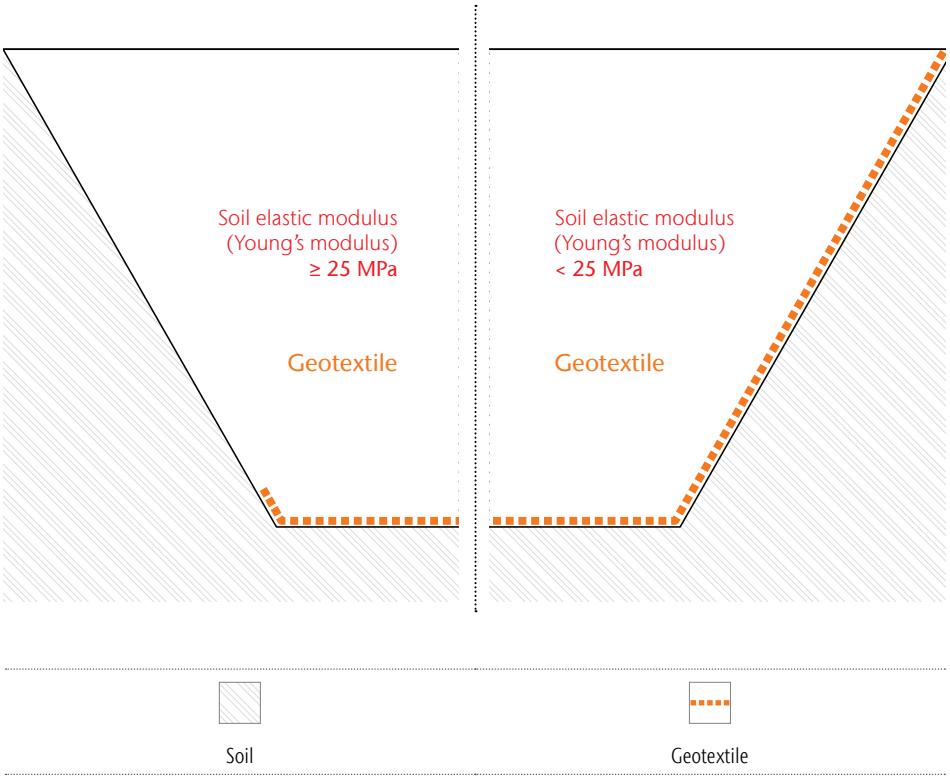
- Ensure the bottom of the pit is dry (if the groundwater level is above the pit bottom, ensure proper drainage is installed to decrease the groundwater level to at least 300 mm below the bottom of the pit).
- Maintain a dry excavation pit throughout the installation process. Beware of groundwater infiltration into the pit and also water from the surface (rainfall, etc.).

Figure 7.2 Ensure dry excavation pit



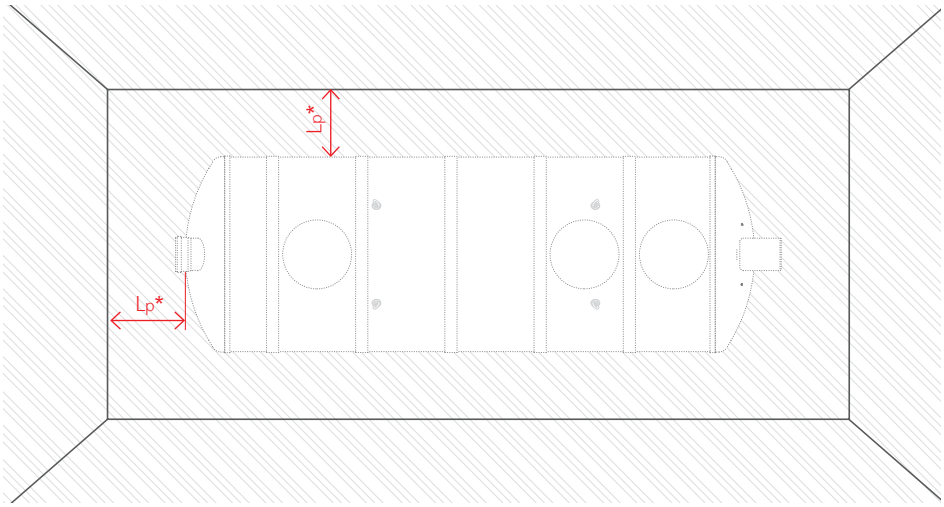
- If the subsoil (the bottom of the excavation pit) has a soil elastic modulus (Young's modulus) less than 25 MPa, place a non-woven geotextile (min. 250 g/m²) on both the bottom and sides of the excavation pit. If the bottom of the pit has a soil elastic modulus (Young's modulus) of 25 MPa or greater, only place the geotextile on the bottom of the excavation pit as indicated in the figure 7.3.

Figure 7.3 Geotextile usage according to properties of the excavation pit bottom.



- Dimension of the pit: ensure enough space around the tank (Lp = min. 1000 mm).

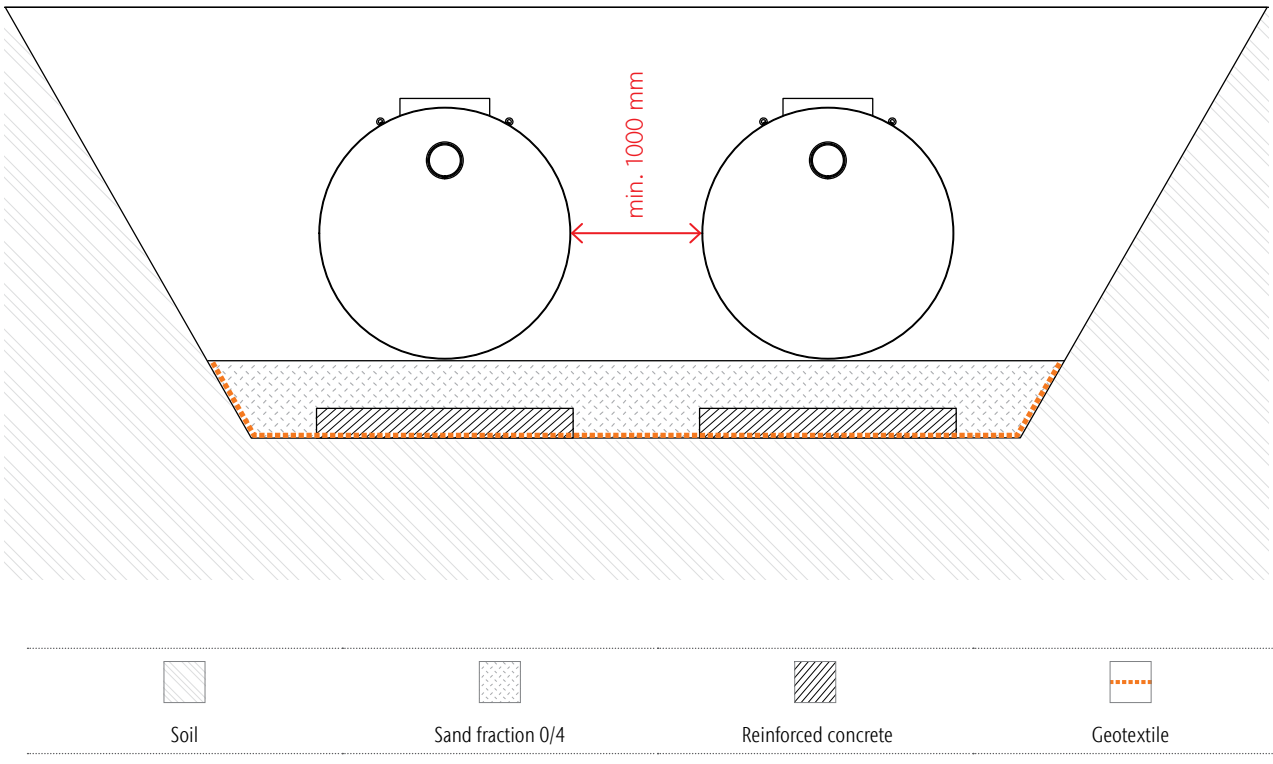
Figure 7.4 Dimension of the pit



* Ensure enough space around the tank in the excavation pit for concrete, backfilling and compaction works.
Dimension Lp = min. 1000 mm.

- If multiple tanks are being installed in a single excavation pit, the minimum distance between tanks according to the norm EN 976 is 450 mm. However in order to properly execute the compaction and backfilling works ensure minimum distance between tanks 1000 mm.

Figure 7.5 Distance between tanks



8 Construction of concrete slab / concrete feet and tank installation

- In order to ensure stable conditions for the tank, reinforced concrete slab or concrete feet must be prepared before tank installation.
- Ensure the pit width is sufficient for preparation of the reinforced concrete slab or concrete feet
- Only use accessories supplied by ACO (stabilizing belts and anchors) for the installation.
- Concrete feet instead of reinforced concrete slab can be used only under specified conditions (see text below in part “Concrete feet”)

Concrete feet – use only under specified conditions!

- Concrete feet instead of a concrete slab can be used only if there is no risk of buoyancy and the subsoil is stable (without risk of uneven settlement). If those conditions are met, you can prepare concrete feet instead of a reinforced concrete slab, which will be used to stabilize the tank during the installation works. No buoyancy means no water around the tank.
- If there is any chance of ground water, prepare a reinforced concrete slab against buoyancy instead of concrete feet.
- No buoyancy on the tank must be ensured otherwise the tank could be lifted up.
- Concrete feet are not designed to stabilize the tank against buoyancy, their purpose is to properly stabilize the tank during installation process.
- If you are not sure about the risk of buoyancy or uneven settlement of the subsoil, prepare a reinforced concrete slab instead.
- Concrete feet (4 pieces) should be prepared on the edges of the tank as shown in the figure 8.1 and 8.2.
- The position of the concrete feet must match the position of any installed stabilizing belts (ACO belts)! The anchors for the stabilizing belts will be placed into the concrete feet. Hooks are to be used to connect any stabilizing belts to their corresponding anchors. Stabilizing belts must not pass directly over the laminate joint connecting the hemispherical end caps to the tank body. The stabilizing belts must lie to the side of the joint, in the direction of the tank‘s centre. The placement of the concrete feet must take this into account. The stabilizing belts should not be placed over the reinforcing ribs. Placing stabilizing belts over reinforcing ribs is only permitted if the construction of the tank does not allow alternate placement. In this case, the stabilizing belt should be placed in the middle of the reinforcing rib (see figure 8.1).
- Dimensions of the feet: **L_f = 600 mm, H_f = 1000 mm** as shown in the drawing 8.1.
- Follow the proper technological procedures concerning the concrete works (proper time for concrete curing etc.)
- Concrete specification:
  - Concrete: C30/37
  - Exposure classes: XA2, XC2,XD2, XF2, XS1
- Place the anchor (ACO CONFIX T10/150 SS) into the middle of the concrete feet leaving the upper part of the anchor outside of the concrete feet in order to be able to join the hook of the stabilizing belt with the anchor.

Figure 8.1 Dimensions of the concrete feet

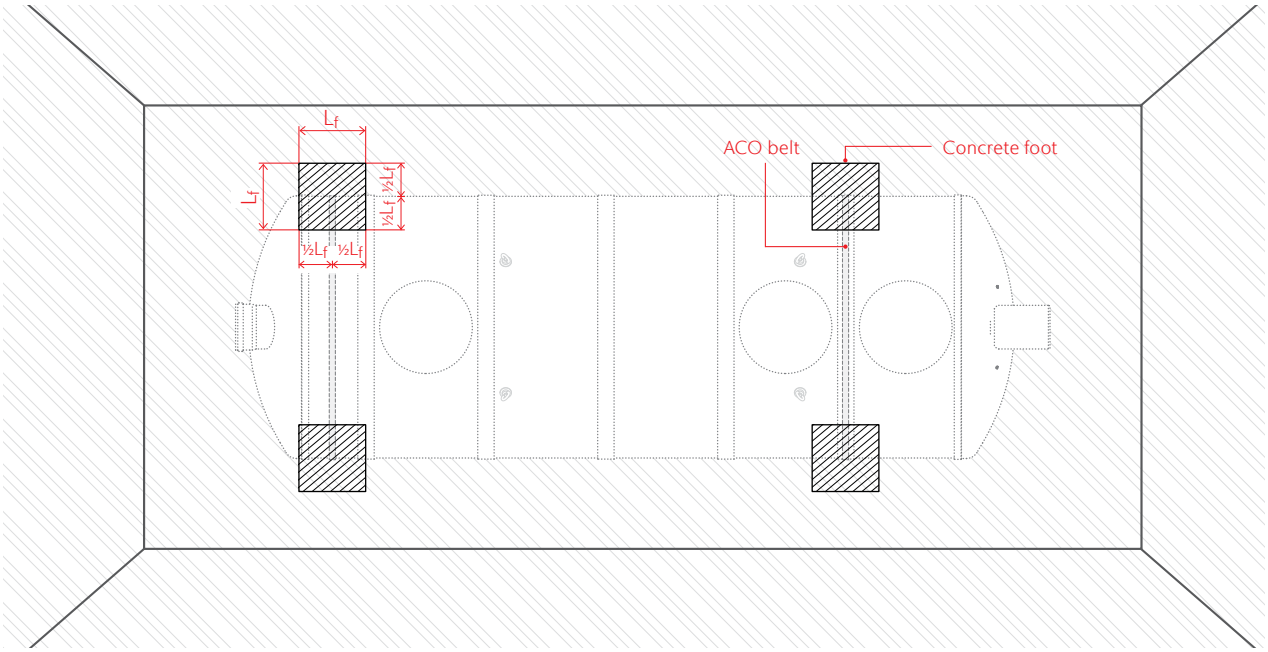
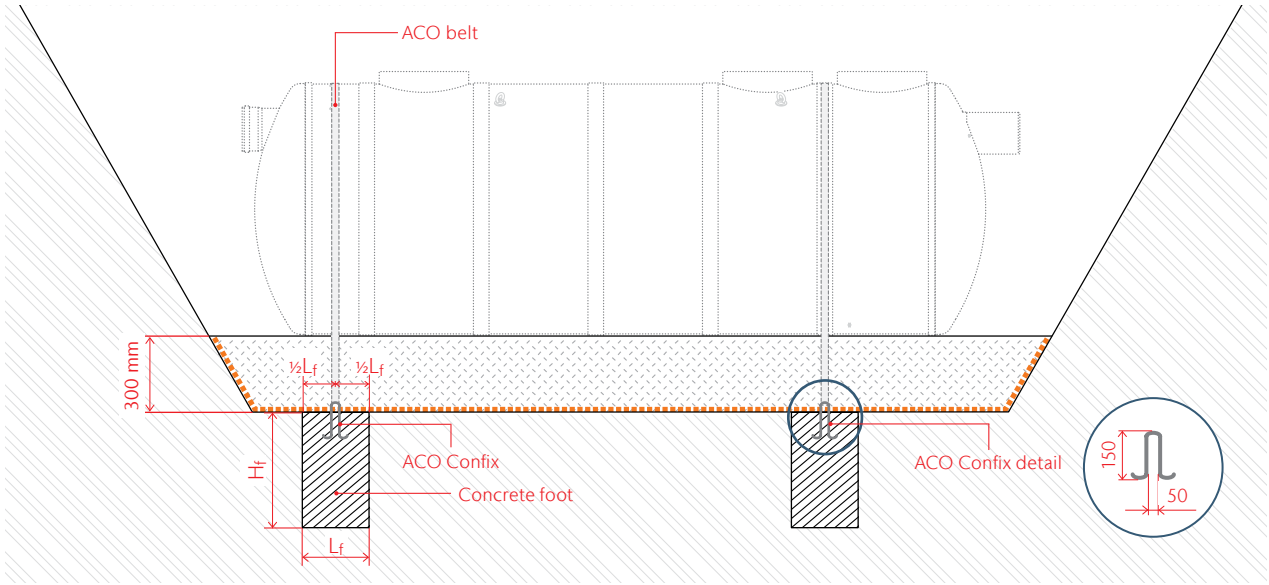


Figure 8.2 Dimensions of the concrete feet



- Place the non-woven geotextile (min. 250 g/m²) on the excavation bottom (eventually on the pit walls as well, depending on the soil elastic modulus of the subsoil – see figure 7.3) and cut the holes for the anchors placed into the concrete feet.
- It is necessary to prepare a leveled sand bed (fraction 0/4 mm) with a thickness of 300 mm underneath the future GRP tank.
- Place the tank into the sand bed to the proper spot and stabilize it with the belts in place. Do not overtighten the anchoring belts, it may cause damage to the tank! The belts should be snug but not overtightened to cause any damage.

Soil | Sand fraction 0/4 | Reinforced concrete | Geotextile

Reinforced concrete slab

- If there is any risk of buoyancy or uneven settlement, a reinforced concrete slab must be prepared
- Dimensions of the reinforced concrete slab: **the length of the reinforced concrete slab should be the same length as the length of the tank, the width of the reinforced concrete slab should exceed the diameter of the tank by 250 mm on each side, and the thickness of the reinforced concrete slab should be 150 mm** as shown in the figures 8.4 and 8.5.
- We recommend the placement of a non-woven geotextile at the base of the excavation pit (eventually on the pit walls as well, depending on the soil elastic modulus of the subsoil – see figure 7.3) and that the reinforced concrete slab be placed on top of the geotextile.

Reinforced concrete specification:

- Concrete: C30/37
- Exposure classes: XA2, XC2,XD2, XF2, XS1
- Concrete reinforcement (see figure 8.3):
  - Lower reinforcement : 1x concrete reinforcing mesh 6 x 100 x 100 mm,
  - Upper reinforcement: 1x concrete reinforcing mesh 6 x 150 x 150 mm
- Concrete reinforcement cover: cr = 40 mm
- Reinforcement steel: B 500 (B)
- Follow the proper technological procedures on site concerning the concrete works (proper time for concrete curing etc.).

Figure 8.3 Reinforcement placement in the slab

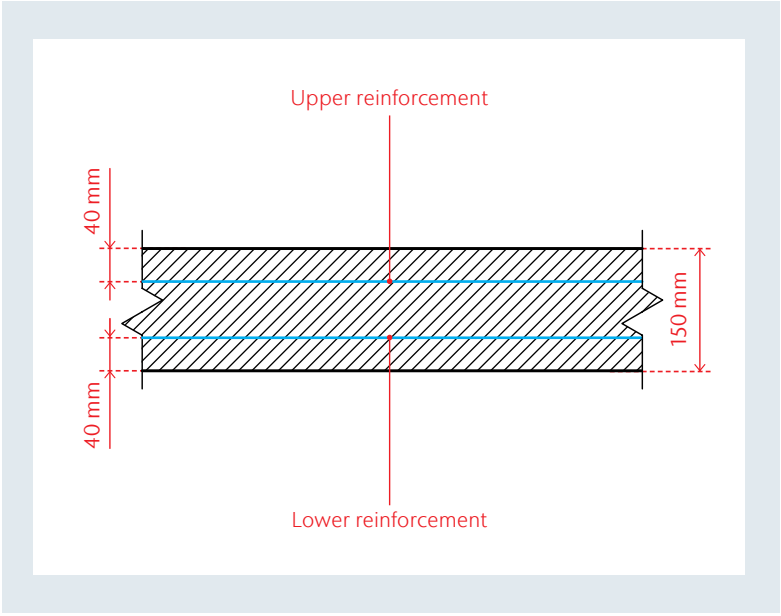


Figure 8.4 Dimensions of the reinforced concrete slab

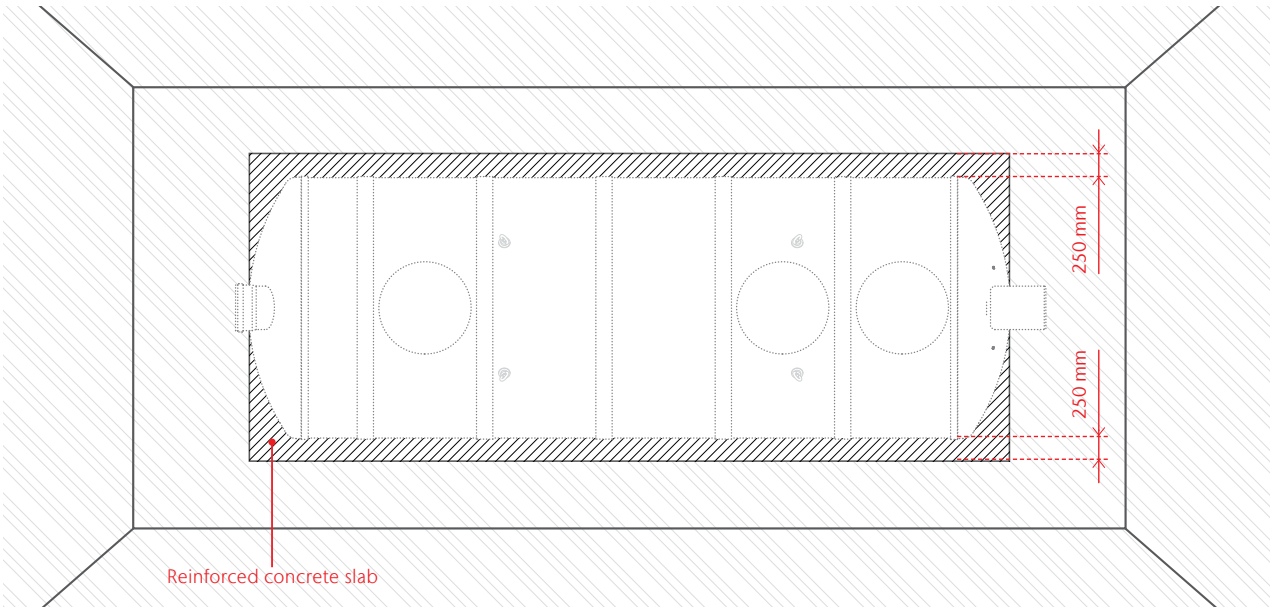
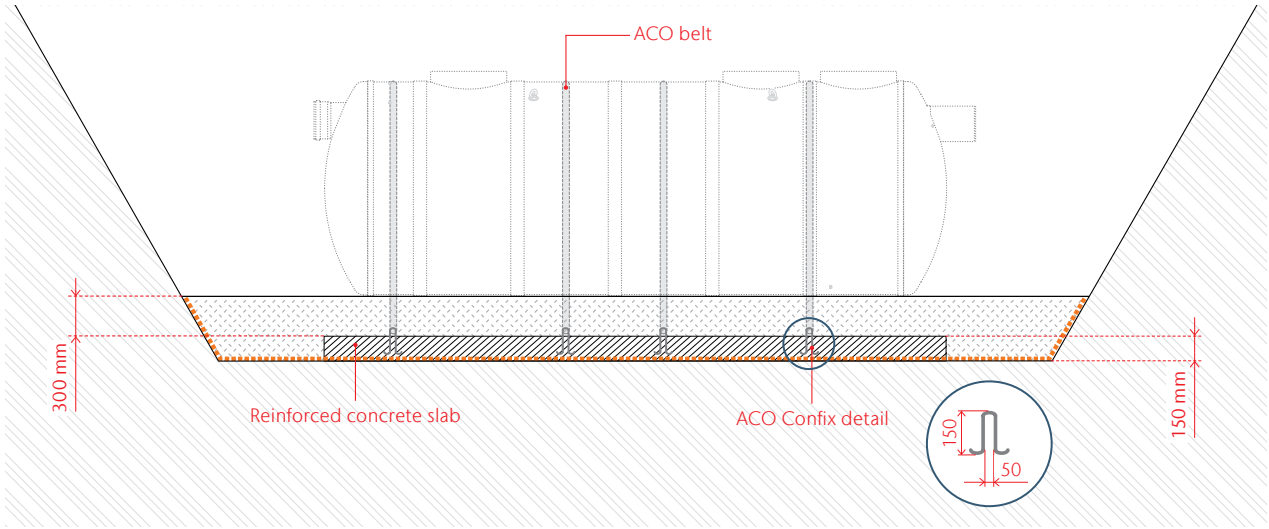


Figure 8.5 Dimensions of the reinforced concrete slab



- Place the supplied anchors (ACO Confix T10/150 SS) into the concrete slab and hook them with the lower concrete reinforcing mesh of the slab (the upper part of the anchors should stick out of the slab in order to be able to join the hook of the stabilizing belt with the anchor). The number of anchors and belts are listed in the product catalogue. If you are not sure, contact ACO.

- The position of the anchors in concrete slab must match the position of any installed stabilizing belts (ACO belts)! The distance between the opposite anchors should correspond to the diameter of the tank. Hooks are to be used to connect any stabilizing belts to their corresponding anchors. Stabilizing belts must not pass directly over the laminate joint connecting the hemispherical end caps to the tank body. The stabilizing belts must lie to the side of the joint, in the direction of the tank's centre. The placement of the anchors in the concrete slab must take this into account. The stabilizing belts should not be placed over the reinforcing ribs. Placing stabilizing belts over reinforcing ribs is only permitted if the construction of the tank does not allow alternate placement. In this case, the stabilizing belt should be placed in the middle of the reinforcing rib (see figure 8.5).
- Position the anchors as evenly along the length of the tank as the construction of the tank (reinforcing ribs and openings in the tank) allows.
- It is necessary to prepare a leveled sand bed fraction 0/4 mm (on the reinforced concrete slab) with a thickness of 300 mm underneath the future GRP tank.
- Place the tank into the sand bed to the proper spot and stabilize it with the belts in place. Do not overtighten the anchoring belts, it may cause damage to the tank! The belts should be snug but not overtightened to cause any damage.

9 Backfilling

- The proper backfilling process regarding materials and compaction works is essential to maintain structural stability of the tank, to avoid damage and to ensure long term product performance.
- Improper backfilling may result in tank failure and void the warranty.
- Before backfilling, do a visual inspection of the tank. If no damage is found, note it and continue to follow these instructions. If damage is found, contact ACO.
- Any used backfilling material and installation methods must not cause damage to the tank and top section.
- Use only approved backfilling material mentioned in this installation manual. If the native soil on site does not meet the prescribed suitable backfilling soils, use 8/16 crushed stone as backfilling material. Allowable backfilling soils include: GM, GP, GW, SM, SP, SW according to USCS (Unified Soil Classification System).
- In the case of light liquid separators (Oleopator G-H and Oleopator Bypass G-H) uncover the access holes of the GRP tank and remove the float(s) and coalescence unit (if present) from the separator before filling with water (return these parts to the separator after complete filling with water). See figure 9.1 Do not expose an unprotected (foil covering removed) coalescence unit to sunlight. It will degrade the foam and may compromise performance!
- In the case of light liquid separators (Oleopator G-H and Oleopator Bypass G-H), if the sampling directly from outlet part is desired, attach the hose of the sampling unit to the integrated part (designed for connection of the sampling unit's hose) located on the outlet part before filling up with water!
- Make sure no backfilling material enters the tank during the backfilling process! Close the openings during backfilling (open only for filling up with water).

Figure 9.1 Removing the float(s) before filling up with water

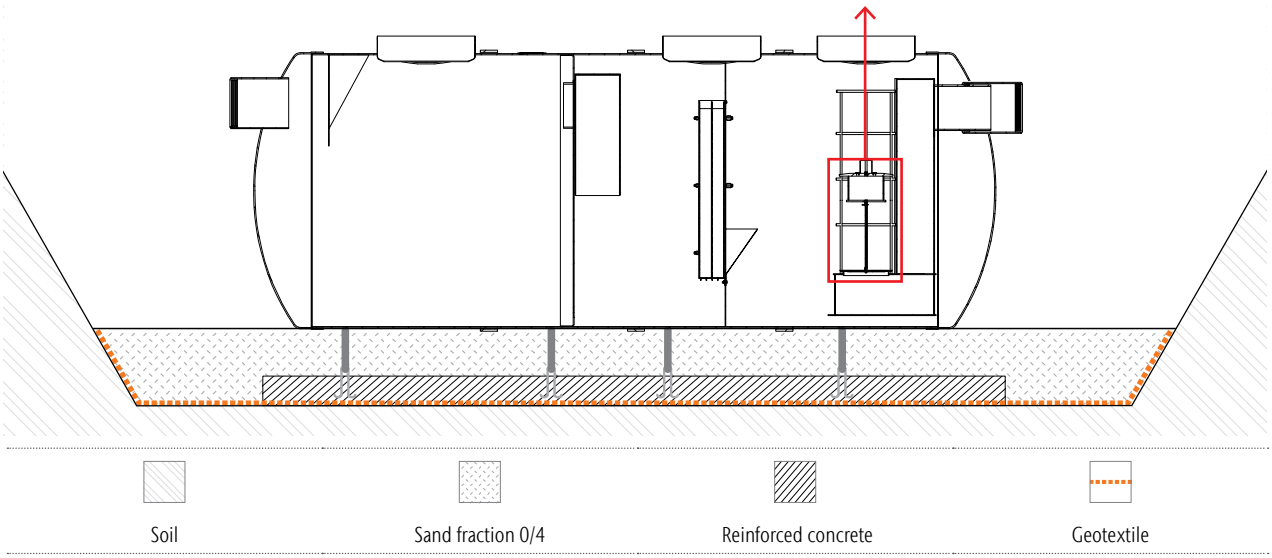
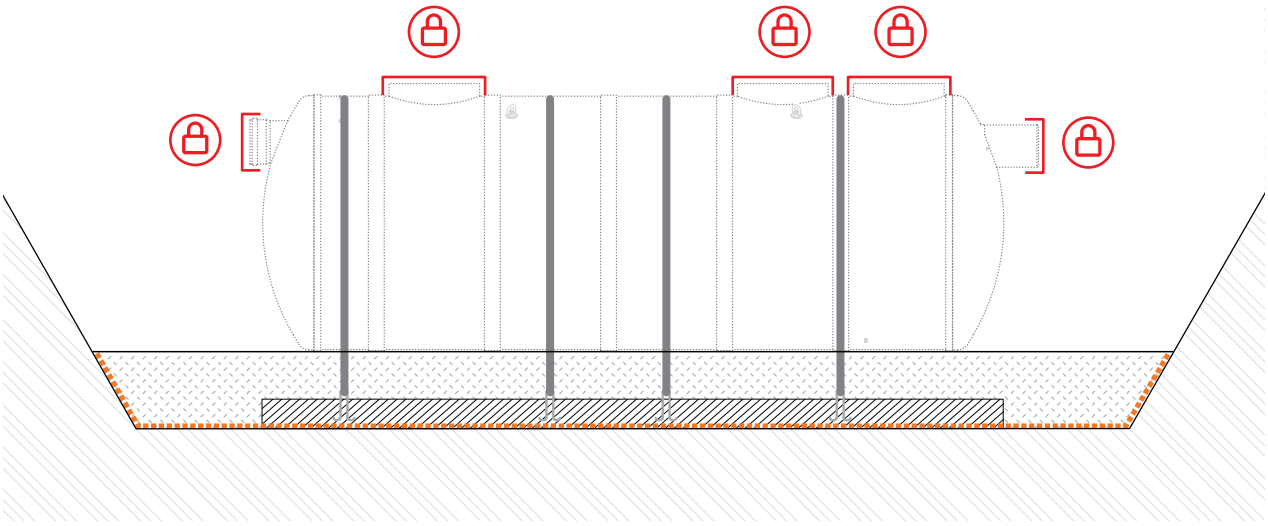


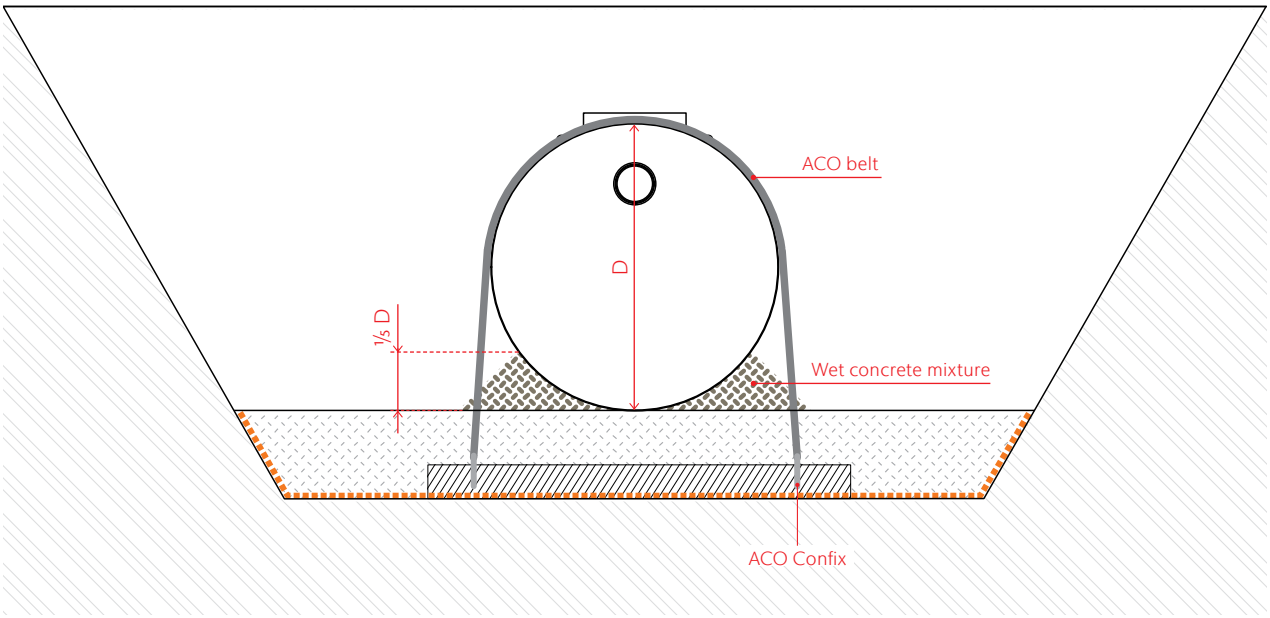
Figure 9.2 Closing the openings



Initial backfilling

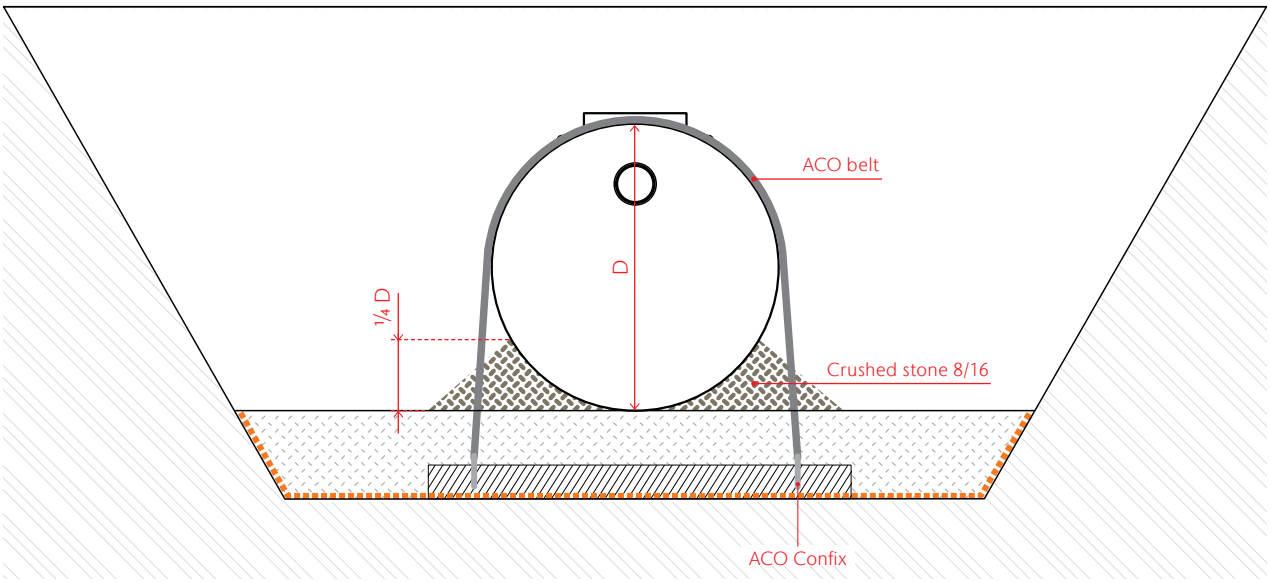
- Once the tank is anchored with the belts, it is crucial to fill the space around the tank in the lower part of the tank to provide full support for the tank. Use either a wet concrete mixture (figure 9.3) or crushed stone 8/16 (figure 9.4).
- If a wet concrete mixture is used, fill the space around the tank up to a height equivalent to 1/5 of the tank diameter (as indicated in figure 9.3). If a wet concrete mixture is used, make sure there are no particles bigger than 16 mm.
- If 8/16 crushed stone is used, fill the space around the tank up to height equivalent to 1/4 of the tank diameter (as indicated in figure 9.4).

Figure 9.3 Initial backfilling – wet concrete mixture



* for lower part of the tank (wet concrete mixture or crushed stone 8/16)

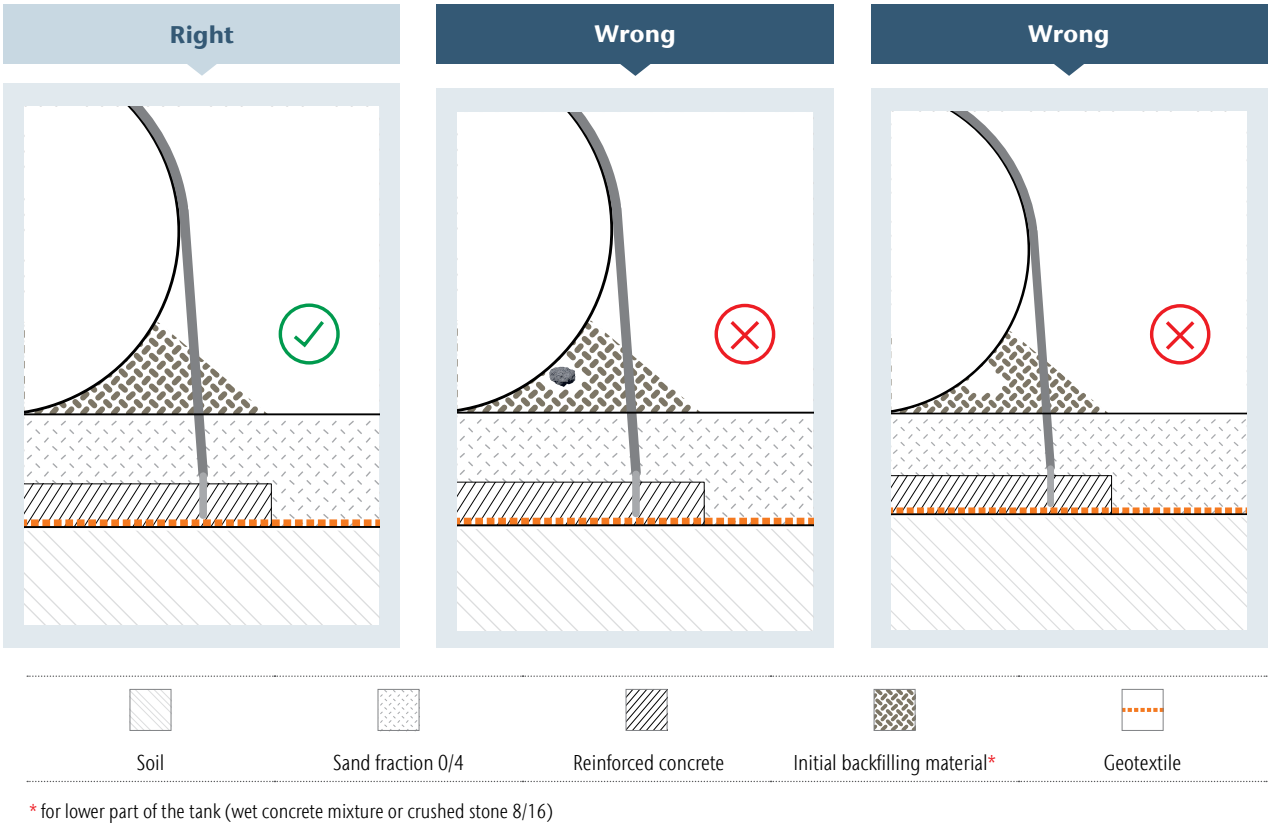
Figure 9.4 Initial backfilling – crushed stone 8/16



- It is crucial to get good compaction in the area immediately surrounding the tank to provide full support – improper compaction may cause future damage to the tank! Use hand tamper to ensure good compaction and no hollow spots (as indicated in figure 9.5)
- Do not use mechanical compaction in the area immediately surrounding the tank, and do not strike the tank during hand tamper – both may cause direct damage to the tank!
- Fill the tank with water up to a level of 300 mm after the initial backfilling works (see figure 9.6).

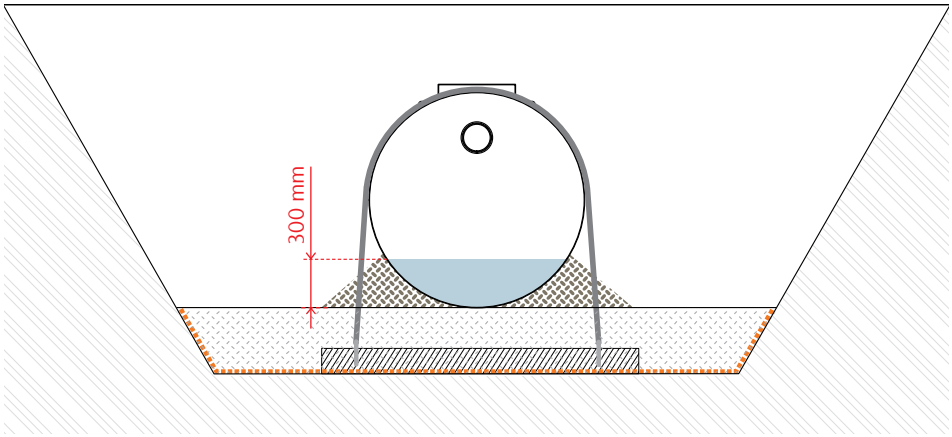
  Note: Make sure the water in the product will not freeze during the installation.

Figure 9.5 Compaction around the lower part of the tank



* for lower part of the tank (wet concrete mixture or crushed stone 8/16)

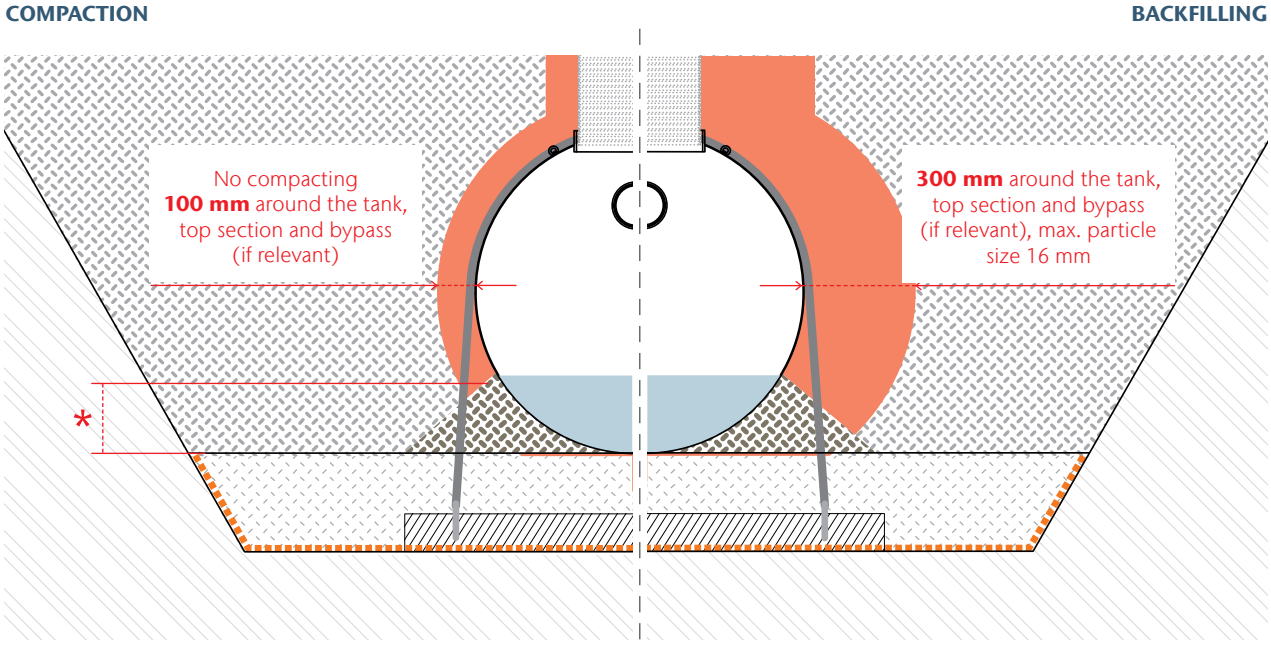
Figure 9.6 Initial filling with water



Backfilling and compaction

- Follow instructions in section 6 (compaction specification) regarding the appropriate compaction machinery and proper thickness of layers for compacting. As shown in figure 9.8, a soil elastic modulus (Young's Modulus) of 28 – 35 MPa should be maintained up to the top of the tank.
- During the backfilling process always make sure to maintain the same level of water in the tank as the level of outer backfilling material up to the outlet pipe level.

Figure 9.7 Backfilling with crushed stone or suitable soil



* Compaction layer thickness according to used compaction machinery (see section 6 - Compaction specification).

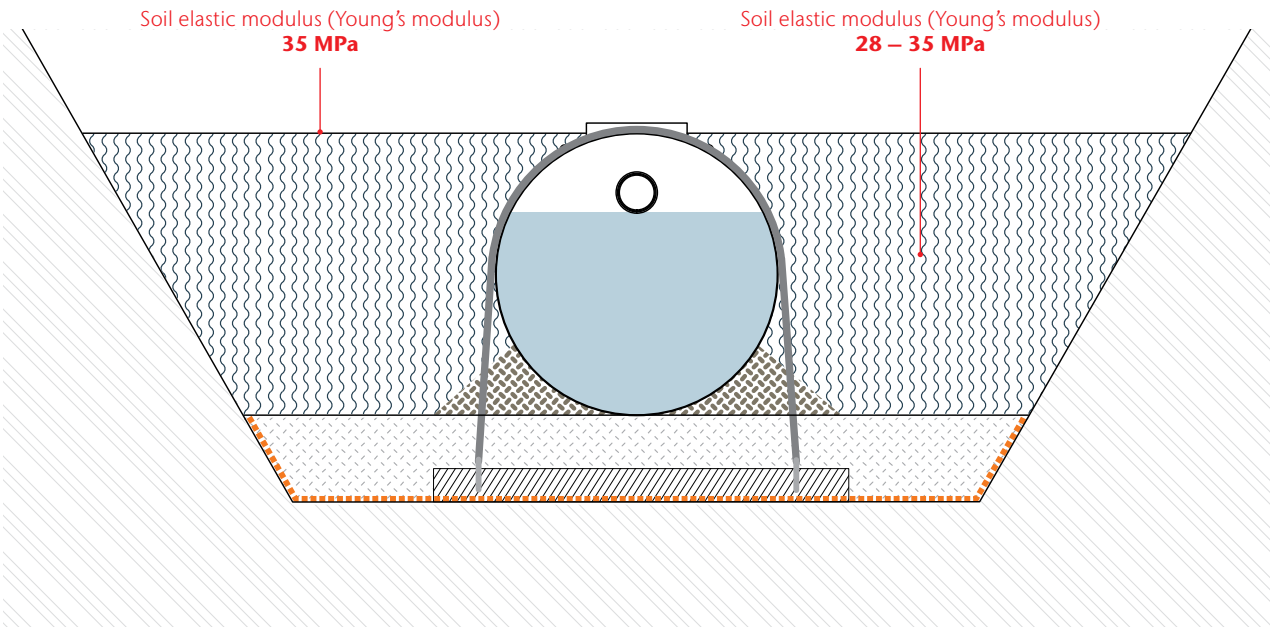
* for lower part of the tank (wet concrete mixture or crushed stone 8/16)
** crushed stone fraction 8/16 or suitable soil

- If you use suitable native soil, ensure that the 300 mm immediately surrounding the tank, the bypass and future top section does not contain particles larger than 16 mm, otherwise damage may occur. Make sure there are no objects in the native soil which could cause damage to the products.

- When you get close to the tank's inlet and outlet during backfilling, connect the inlet and outlet pipes. For inlet and outlet pipe installation, follow the instructions given by the pipe supplier for the whole installation process (including compaction works).

- Continue the backfilling process while properly compacting to get a soil elastic modulus (Young's modulus) of 28 – 35 MPa. At the top of the GRP tank the value of soil elastic modulus should be 35 MPa.

Figure 9.8 Backfill and compact properly to get soil a elastic modulus (Young's modulus) of 28 – 35 MPa

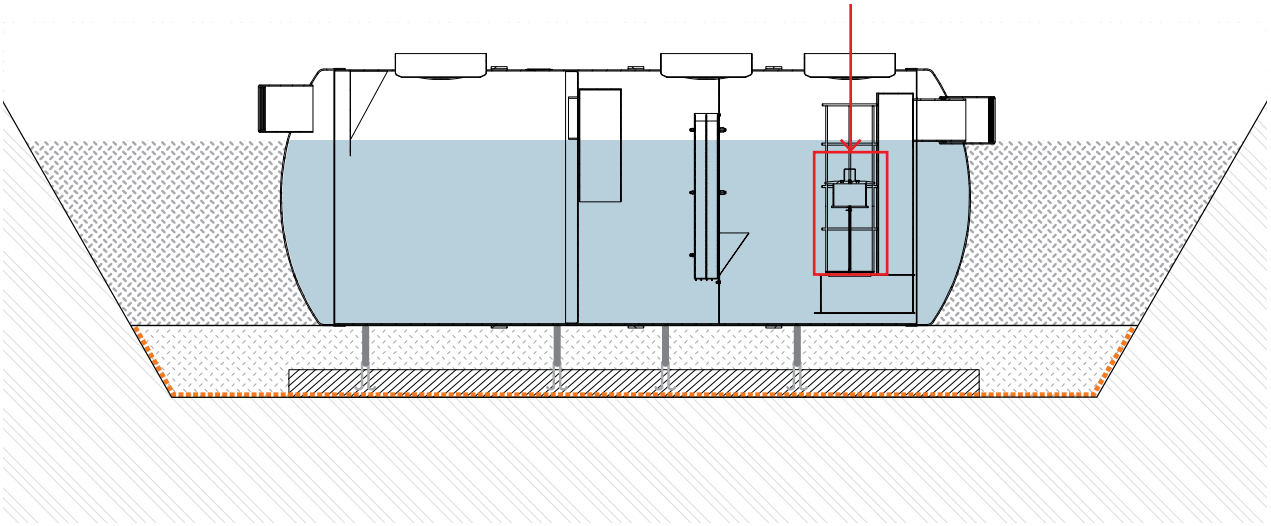


* for lower part of the tank (wet concrete mixture or crushed stone 8/16)

- In the case of light liquid separators (Oleopator and Oleopator Bypass), when the tank is filled with water up to the operating level, return the float(s) and any previously removed items (coalescence unit(s)) to separator.

- In the case of coalescence unit(s) make sure the protective foil is removed before returning it back into separator.

Figure 9.9 Return previously removed inner parts back into to separator



- When you are backfilling and compacting above the the tank and the bypass, follow the compaction specification – see section 6. Compaction specification.

10 Top section installation and backfilling

- Calculate the needed height of the top section (H) according to your type of top section in order to cut the top section properly.

Legend for dimensions

A	115 mm	The height of the top section which is inserted into the GRP neck.
B		The height of your manhole cover type (in case you have a reduction ring for DN 800 to DN 600 the length B is the height of the reduction ring and manhole cover together – include mortar bed thickness (10 mm) between reduction ring and manhole cover within height calculations). Always check the height of your manhole cover for further calculations.
C		The height of the top section's "collar" with consideration of the flat sealing 5 mm under the manhole cover (if it is relevant for your top section type), for DN 800 = 45 mm, for DN 600 = 22 mm.
D		In the case of top sections with floating covers this dimension is the height from the top of the top section up to the desired surface level.
E		The gap between the top of the top section and the bottom of the manhole cover or reduction ring.
H		The height of top section. This is the height of plastic top section part required to meet needs.
L		The height from the top of the GRP tank neck to your desired surface level.

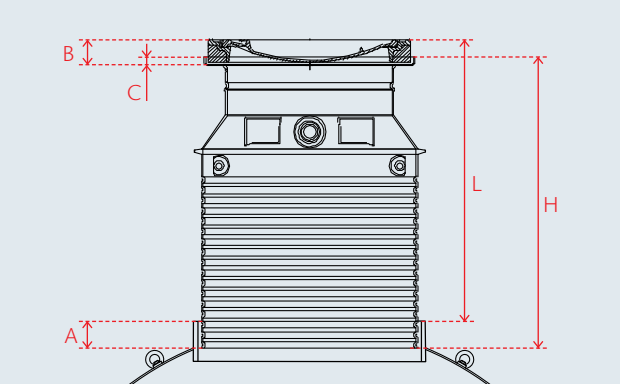
Soil | Sand fraction 0/4 | Reinforced concrete | Backfilling material** | Geotextile | Water

** crushed stone fraction 8/16 or suitable soil

Top sections with standard covers

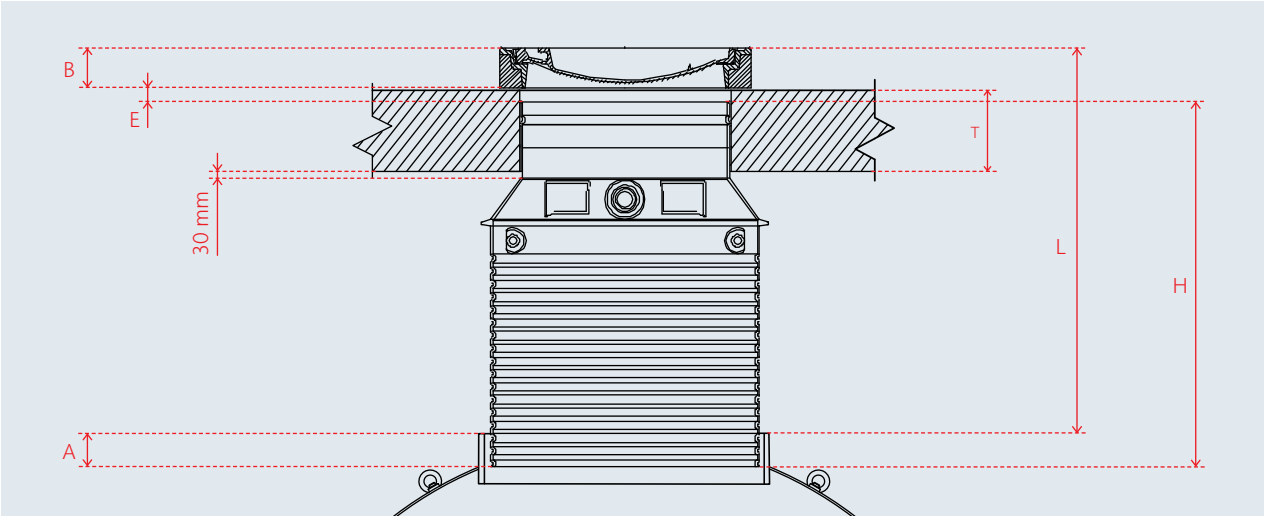
Top sections DN 600 mm

Load Class A



Dimensions		
A	B	C
115 mm	90 mm	22 mm
H = L + A + C – B	**H = L – B + 137 mm**	**H = L + 47 mm**

Load class B/D



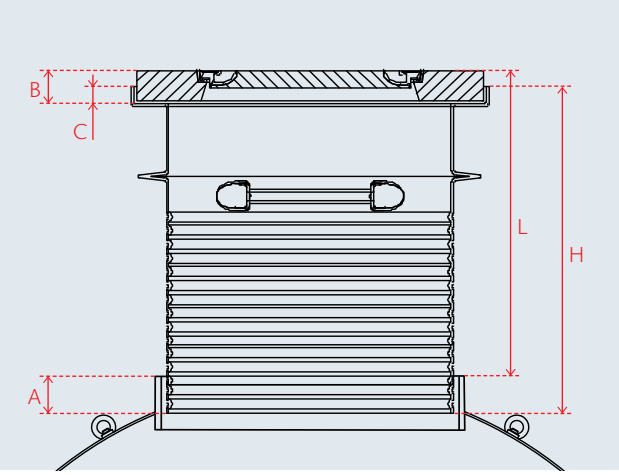
Dimensions	
A	B
115 mm	125 mm

Dimension E according to the thickness of the reinforced concrete load distribution slab (T)

E = T – 130 mm	
T	E
240 mm	110 mm
260 mm	130 mm
270 mm	140 mm
H = L + A – B – E	**H = L – E – 10 mm**

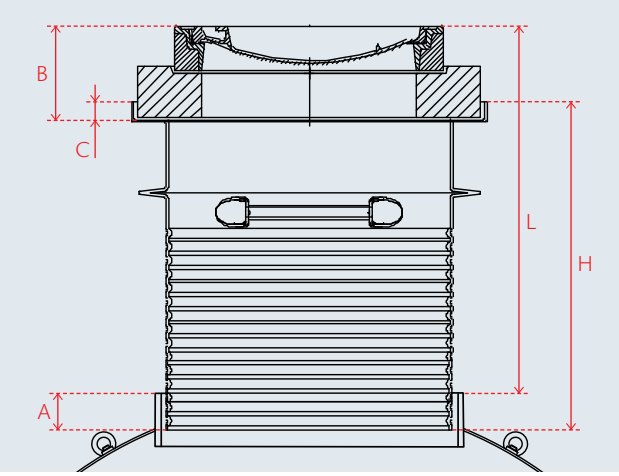
Top sections DN 800 mm

Load class A
Top section DN 800 with cover DN 600



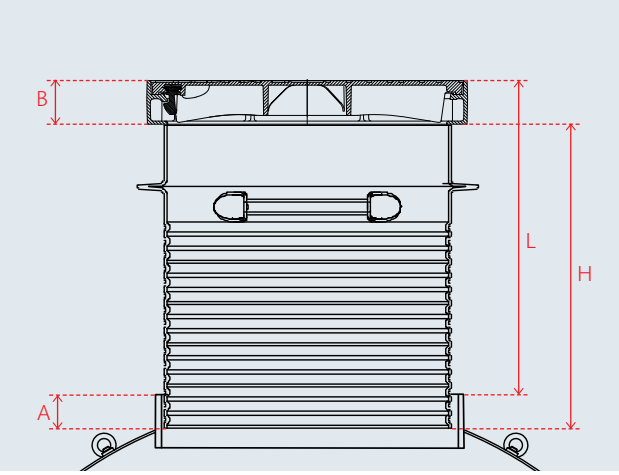
Dimensions		
A	B	C
115 mm	90 mm	45 mm
H = L + A + C – B	**H = L – B + 160 mm**	**H = L + 70 mm**

Load class A
Top section DN 800 with cover DN 600



Dimensions		
A	B*	C
115 mm	265 mm	45 mm
H = L + A + C – B	**H = L – B + 160 mm**	**H = L – 105 mm**

Load class A
Top section DN 800 with cover DN 800

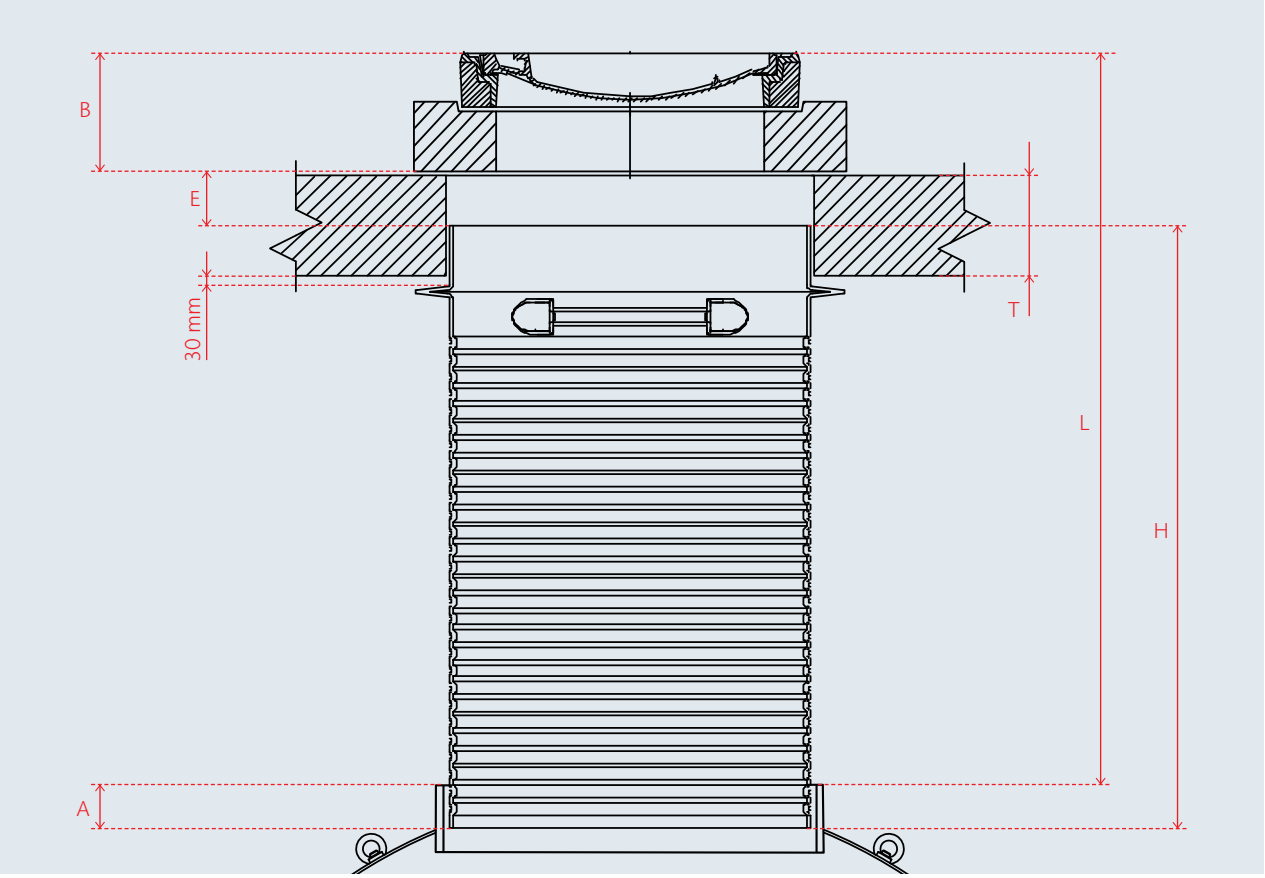


Dimensions		
A	B	
115 mm	125 mm	
H = L + A – B	**H = L – B + 115 mm**	**H = L – 10 mm**

* **Dimension B** = 150 mm reduction ring – 20 mm groove in reduction ring + 10 mm mortar bed + 125 mm manhole cover **B = 150 – 20 + 10 + 125 = 265 mm**

Load class B/D

Top section DN 800 with load distribution slab, reduction ring and cover DN 600



Dimensions

A	B*
115 mm	265 mm

Dimension E according to the thickness of the reinforced concrete load distribution slab (T)

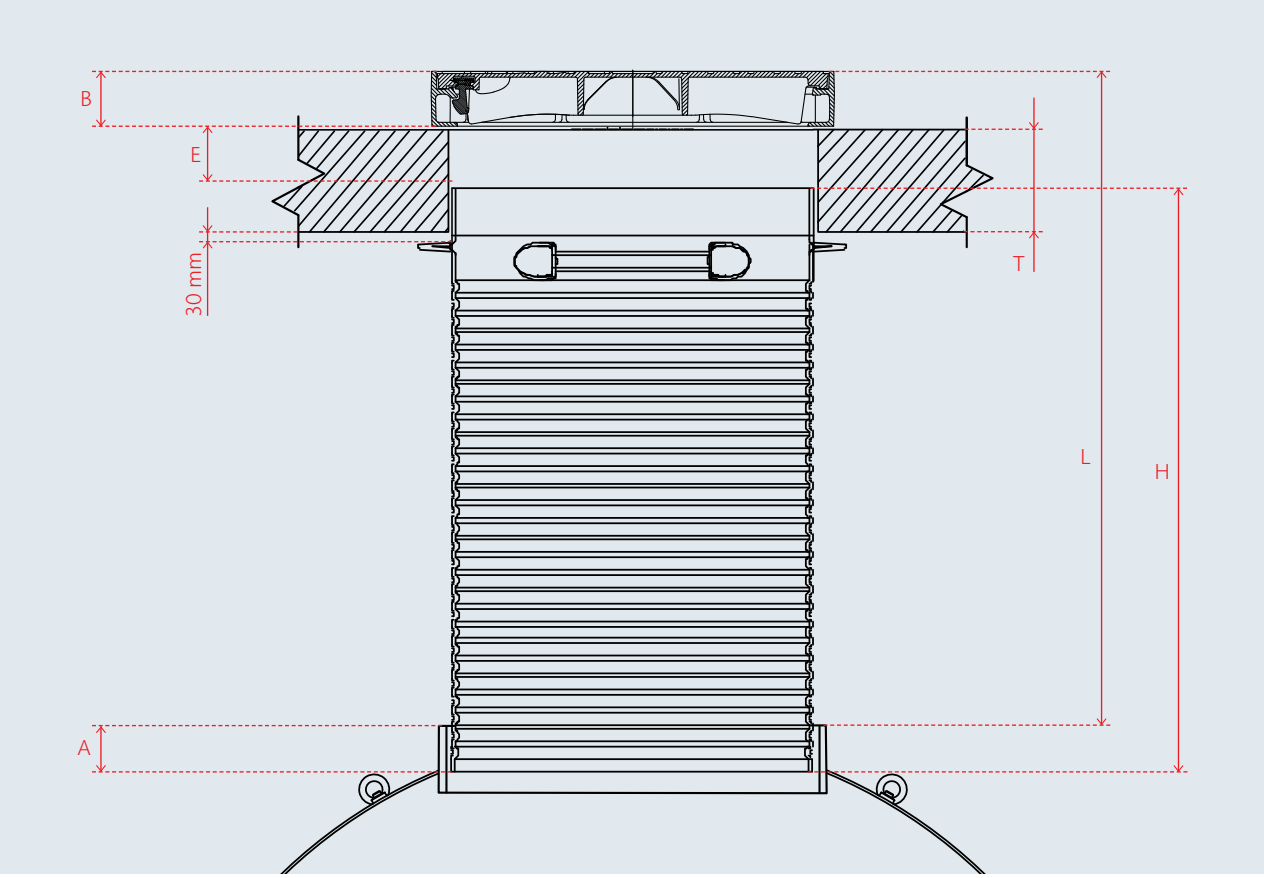
E = T – 95 mm

T	E
240 mm	145 mm
260 mm	165 mm
270 mm	175 mm

H = L + A – B – E **H = L – E – 150 mm**

* **Dimension B =** 150 mm reduction ring – 20 mm groove in reduction ring + 10 mm mortar bed + 125 mm manhole cover **B = 150 – 20 + 10 + 125 = 265 mm**

Load class B/D
Top section DN 800 with load distribution slab and cover DN 800



Dimensions

A	B
115 mm	125 mm

Dimension E according to the thickness of the reinforced concrete load distribution slab (T)

E = T – 95 mm

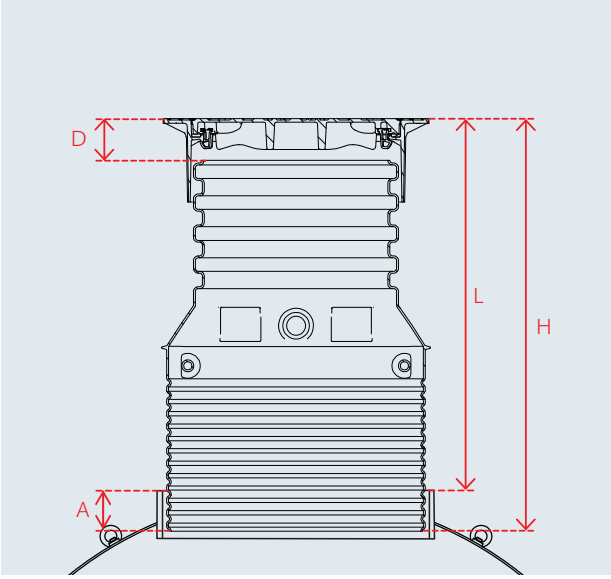
T	E
240 mm	145 mm
260 mm	165 mm
270 mm	175 mm

H = L + A – B – E **H = L – E – 10 mm**

Top sections with floating covers

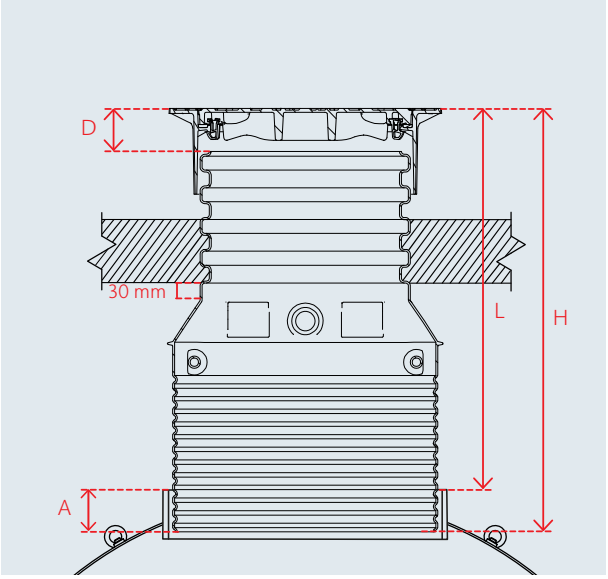
Top sections DN 600 mm

Load class A



Dimensions	
A	D
115 mm	135 mm
H = L + A – D	**H = L – 20 mm**

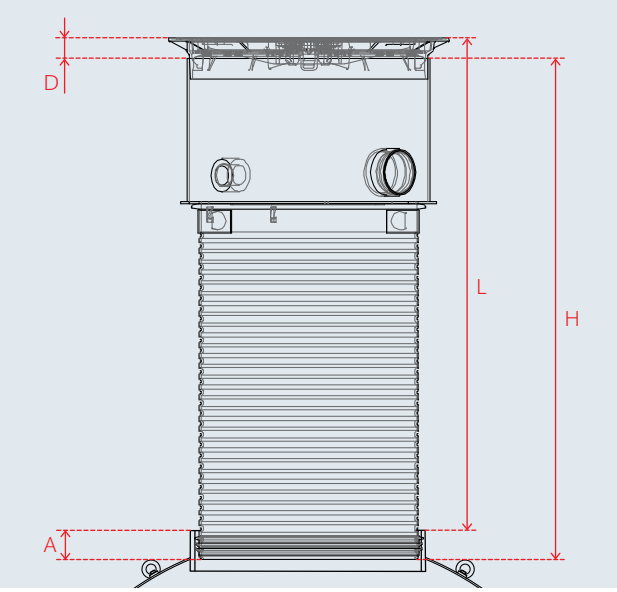
Load class B/D



Dimensions	
A	D
115 mm	135 mm
H = L + A – D	**H = L – 20 mm**

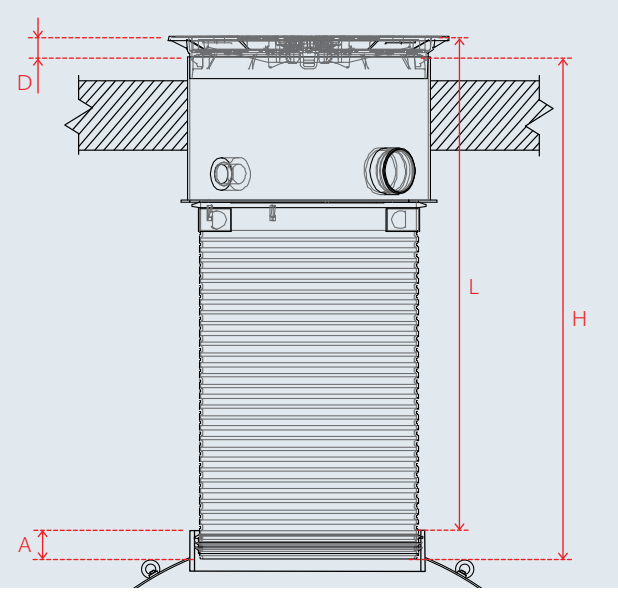
Top sections DN 800 mm

Load class A



Dimensions	
A	D
115 mm	80 mm
H = L + A – D	**H = L + 35 mm**

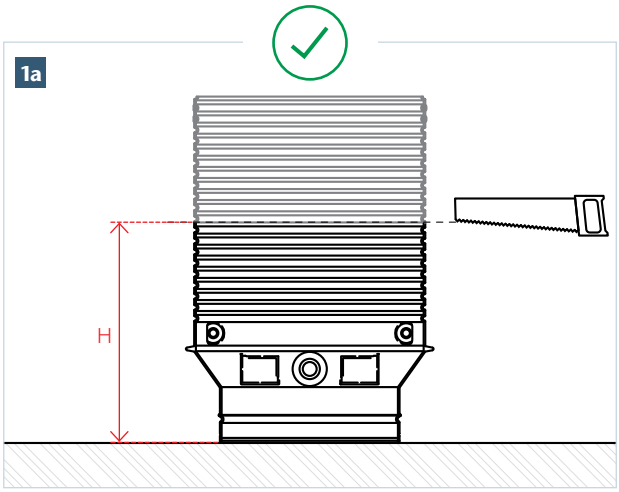
Load class B/D



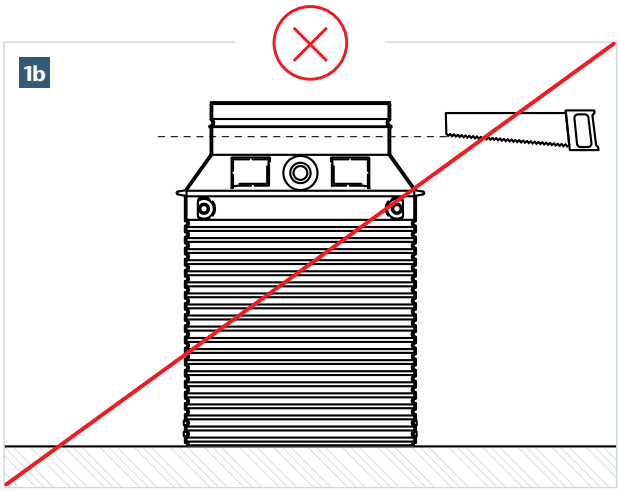
Dimensions	
A	D
115 mm	80 mm
H = L + A – D	**H = L + 35 mm**

- Properly cut the top section to the needed height as shown in figure 10.1 (cut off the excess from the bottom of the top section and not from the top).

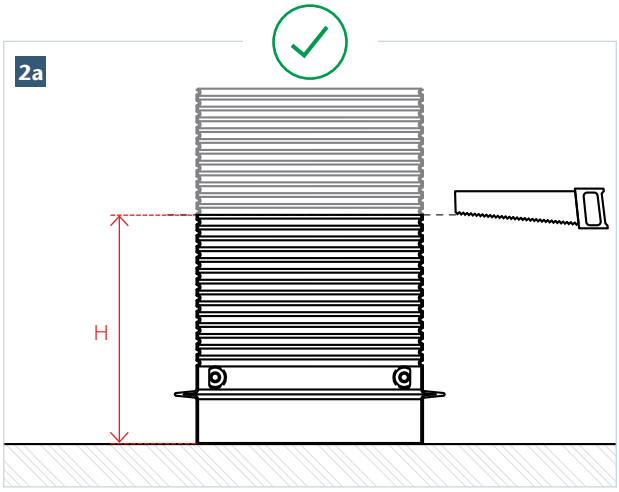
Figure 10.1 Cut the top section to the needed height



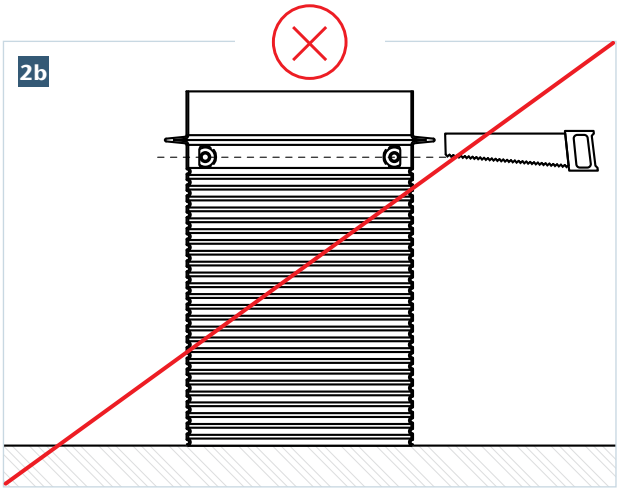
1a DN 600



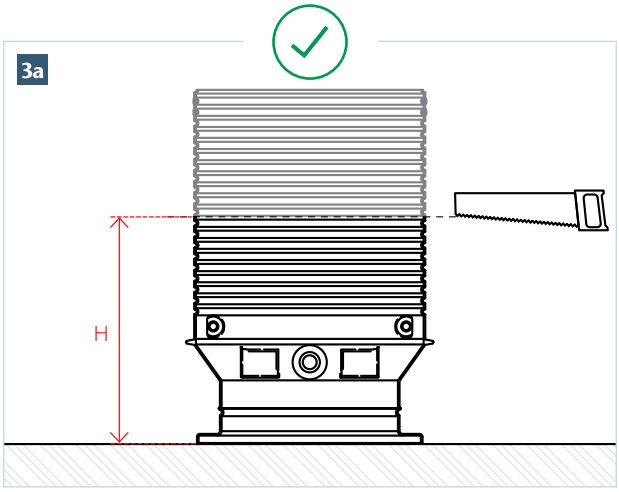
1b DN 600



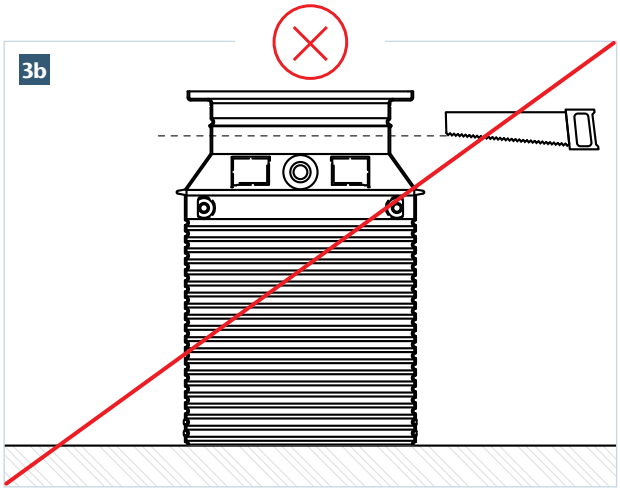
2a DN 800



2b DN 800



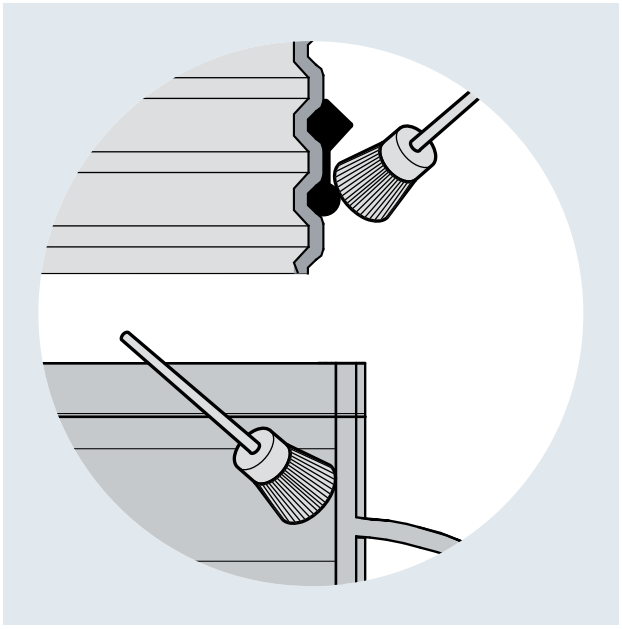
3a DN 600



3b DN 600

- Apply lubricant (suitable for use on rubber and GRP) on the rubber sealing and GRP part as well.

Figure 10.2 Lubricant application



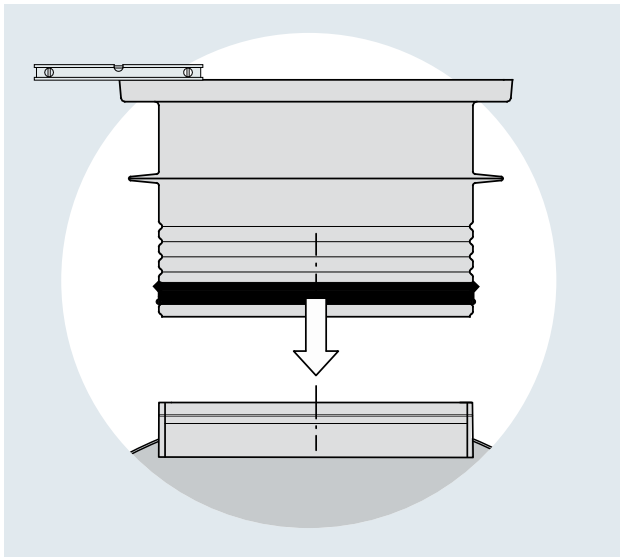
- Place the rubber sealing into the grooves of the part of the top section which will be placed in the GRP part, and connect it to the GRP socket (collar) as shown in the figure 10.3, level it horizontally.

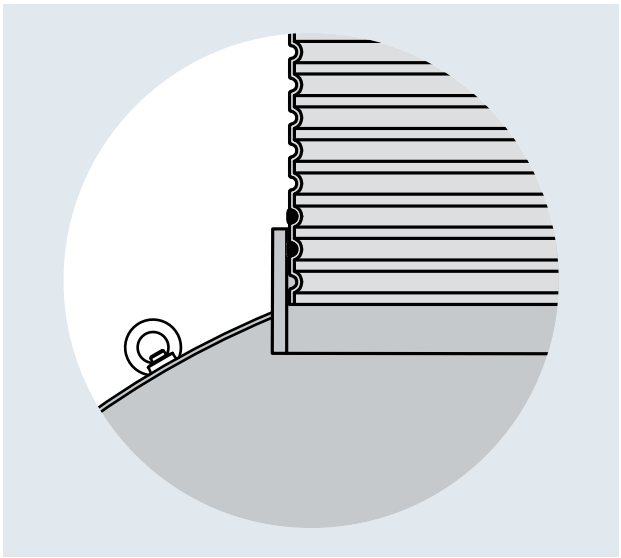
- Insert the top section into the GRP part, stop inserting when the top part of the rubber sealing sits on the GRP part.

- The connection between the plastic extension shaft and the tank neck is intentionally designed to be very tight in order to ensure long-term watertightness. In some cases, assembling the extension onto the tank may be more challenging and require greater force. It is important to thoroughly lubricate both the gasket and the contact surfaces, apply force evenly around the circumference when pushing the parts together and carefully check alignment before applying pressure to avoid damaging the sealing ring or deforming the joint. If the assembly is still difficult, gently warming up the extension (e.g., using warm air) can make the plastic more flexible and ease the process.

- Note that the shape of the sealing may differ slightly from the drawings.

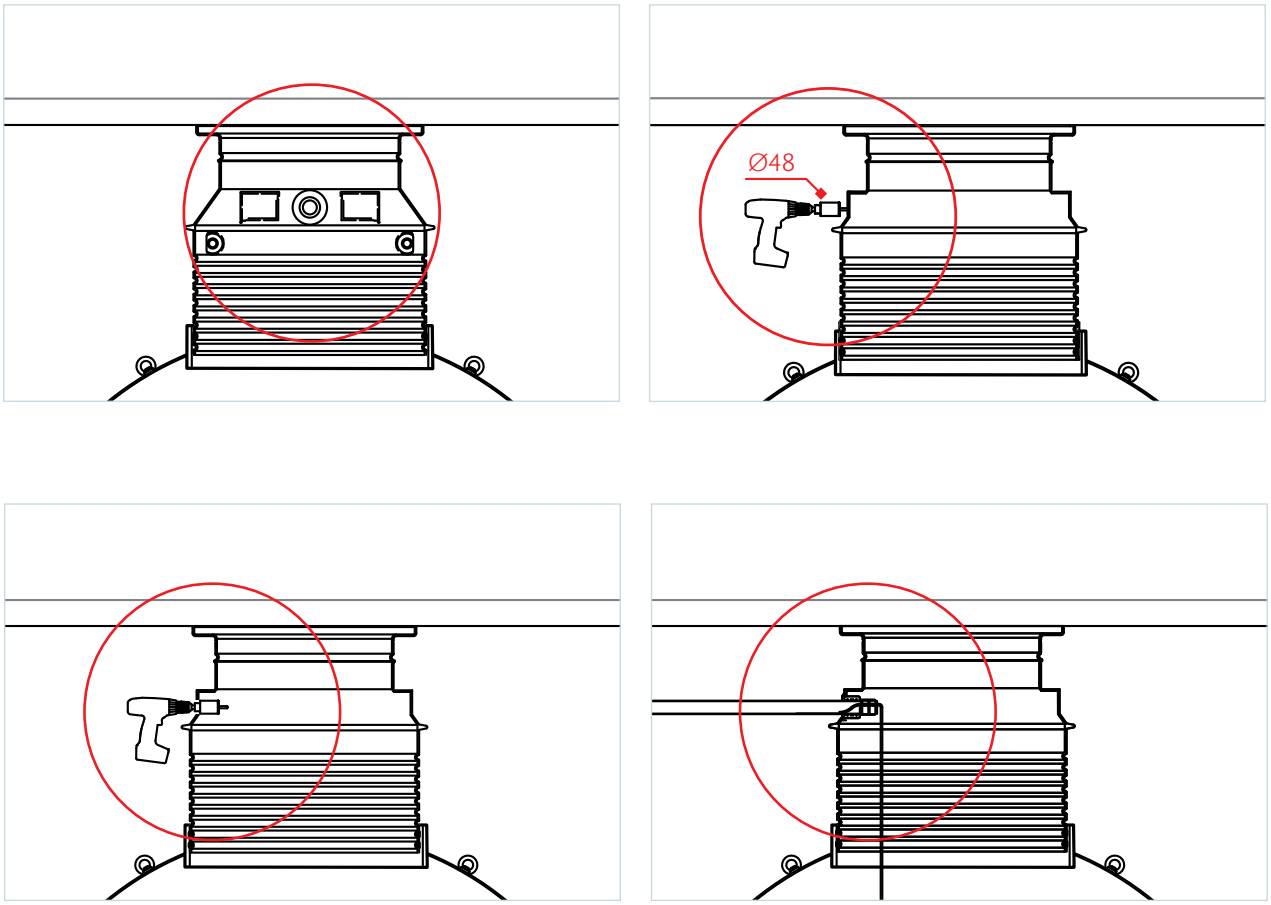
Figure 10.3 Inserting the top section into the GRP part





- In the case of a tank fitted with an alarm system, prepare the openings for the cables in the top section as shown in the figure 10.4. Use proper cable protection and compact carefully around so the alarm cables will not get damaged.
- For installation instructions on the alarm system, please refer to the alarm installation manual or contact ACO.

Figure 10.4 Alarm connection



- Follow compaction specifications regarding compaction works around the the top section and bypass – see section 6. Compaction specification.
- Compact the 500 mm layer immediately under the final surface to a soil elastic modulus appropriate to the final surface layer needs (note that you have to respect the compaction machinery specifications – see section 6. Compaction specification).
- If the product has a bypass system, compact carefully around and above the bypass (see section 6. Compaction specification). Compact above the bypass pipes to an elastic modulus of 28 – 35 MPa as shown in the figure 10.5.

Figure 10.5 Compaction – soil elastic modulus (Young's modulus) specification

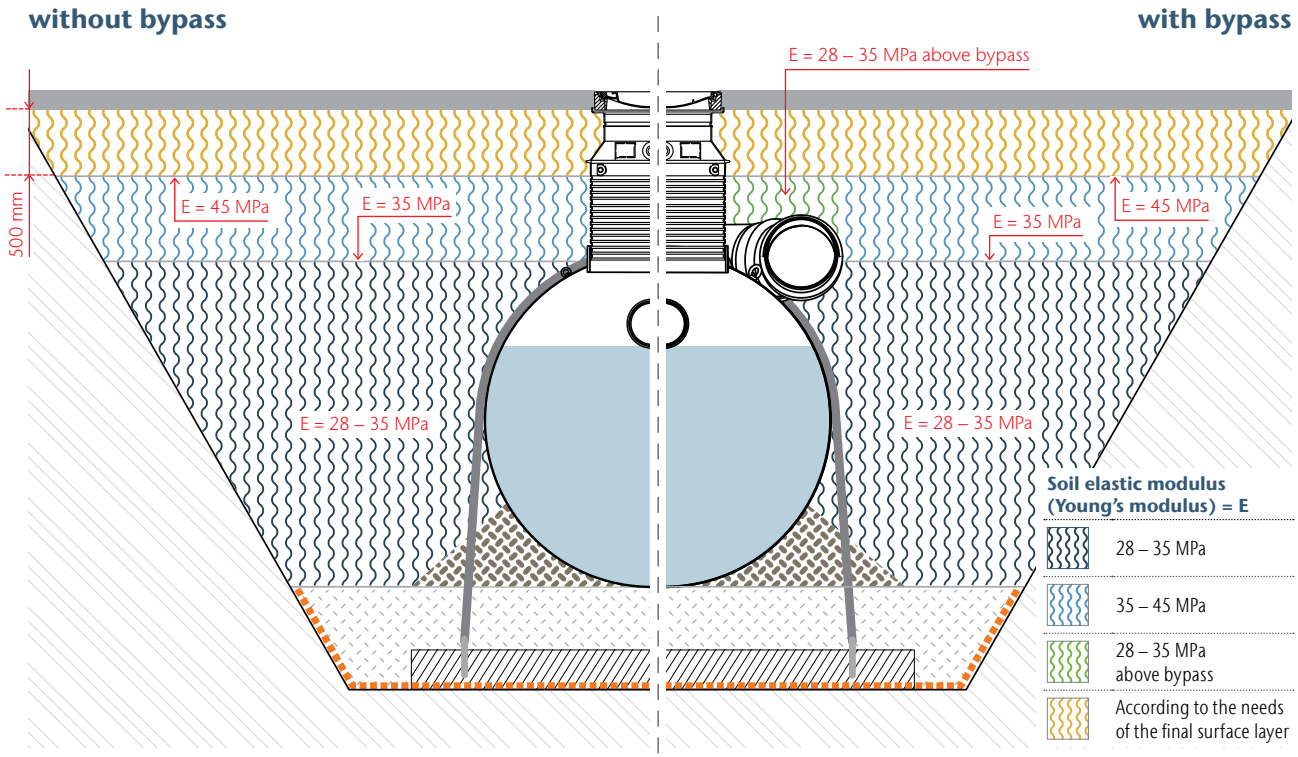
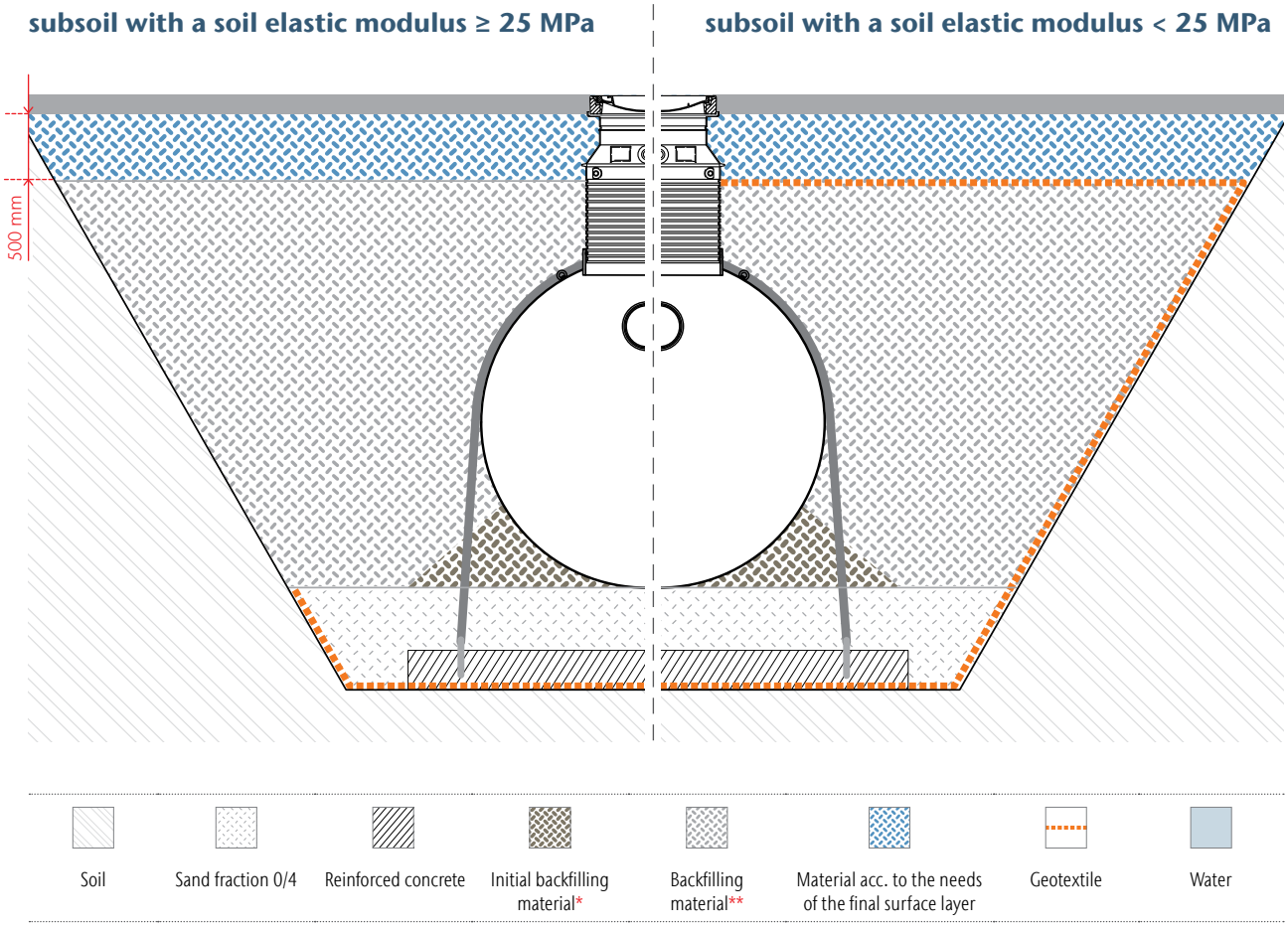


Figure 10.6 Backfilling and geotextile



* for lower part of the tank (wet concrete mixture or crushed stone 8/16)
** crushed stone fraction 8/16 or suitable soil

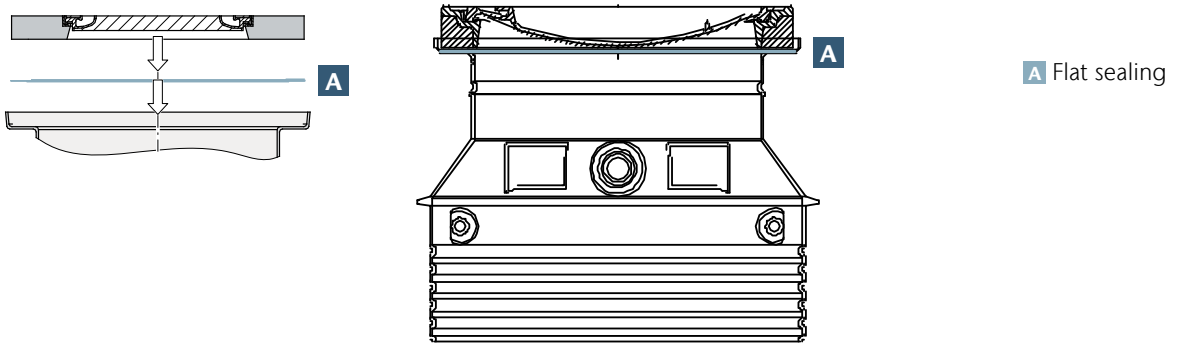
- If the subsoil properties necessitate the use of a geotextile lining in the excavation pit, fold the geotextile from the sides to the centre of the top section as indicated on the right side of the figure 10.6.
- Ensure materials appropriate for the surface layer are used in the 500 mm layer immediately under the surface layer. Note that the 300 mm immediately surrounding the tank, the top section and the bypass must not contain particles larger than 16 mm or sharp objects, otherwise damage to the products is possible.

Manhole covers and load distribution elements

Load class A15

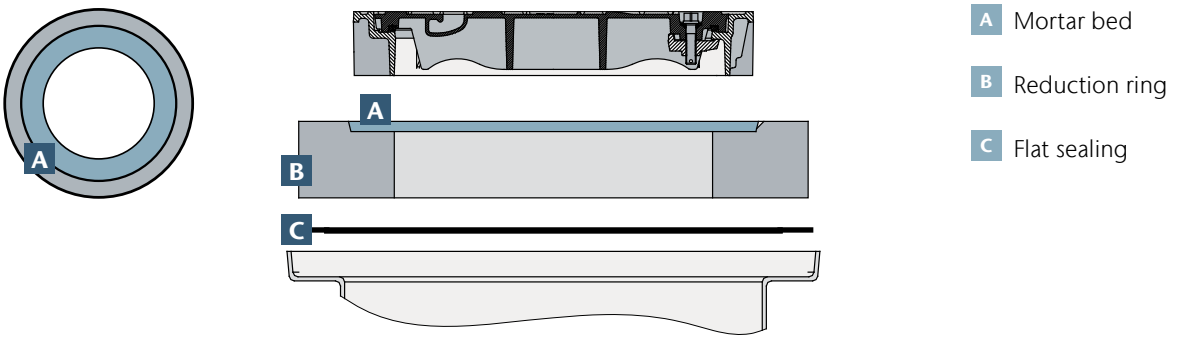
- In the case of load class A15 install the prefabricated top parts suitable for the used top section.
- If no reduction ring is required and the top section has a plastic "collar", install the flat sealing into the plastic top section underneath the future prefabricated manhole cover as shown in the figure 10.7.

Figure 10.7 Installation of the manhole cover with flat sealing



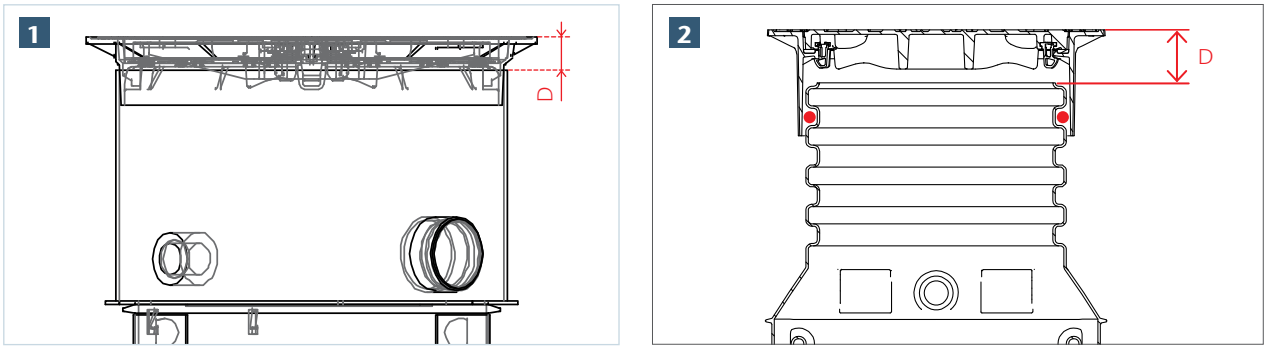
- If using a reduction ring, install the flat sealing into the top section underneath the reduction ring. Apply a mortar bed 10 mm onto the reduction ring and then place the prefabricated manhole cover into the mortar bed as shown in the figure 10.8.

Figure 10.8 Installation of the manhole cover – case with reduction ring



- In the case of top section DN 600 with floating cover, install the supplied sealing into the groove of the upper part of the top section and install the floating cover on the top section. Ensure the dimension D as shown in the figure 10.9.

Figure 10.9 Floating manhole covers dimensions



1 Top section DN 800 with floating cover
Dimension D = 80 mm

2 Top section DN 600 with floating cover
Dimension D = 135 mm

Load class B 125 and D 400

Reinforced concrete load distribution slab

- In the case of load class B 125 and D 400 it is necessary to prepare a reinforced concrete load distribution slab.

- **Reinforced concrete load distribution slab specification**:

  - Concrete: C30/37
  - Exposure classes: XA2, XC2,XD2, XF2, XS1
  - Concrete reinforcement:
    - Lower reinforcement : 2x concrete reinforcing mesh 8 x 100 x 100 mm,
    - Upper reinforcement: 1x concrete reinforcing mesh 8 x 100 x 100 mm
    - Reinforcement around top section(s) 8 mm profiles
  - Concrete reinforcement cover: c = 50 mm
  - Reinforcement steel: B 500 (B)

Follow the proper technological procedures on site concerning the concrete works (proper time for concrete curing etc.)

- Dimensions of the reinforced concrete slab: **the slab should exceed the outer dimensions of the tank by min. 500 mm** and the thickness of the reinforced concrete load distribution slab is according to the total length of the tank. (Note that if the tank has an external bypass system, the reinforced concrete load distribution slab should also exceed the bypass system by minimum 500 mm.) (See figure 10.10 and 10.11.)

- If the top section does not have a centered upper part (the upper DN 600 part of the top section is not centred with the lower DN 800 part) - center the openings in the reinforced concrete load distribution slab with the lower DN 800 part. This is relevant for DN 600 top sections with floating covers.

Figure 10.10 Reinforced concrete load distribution slab

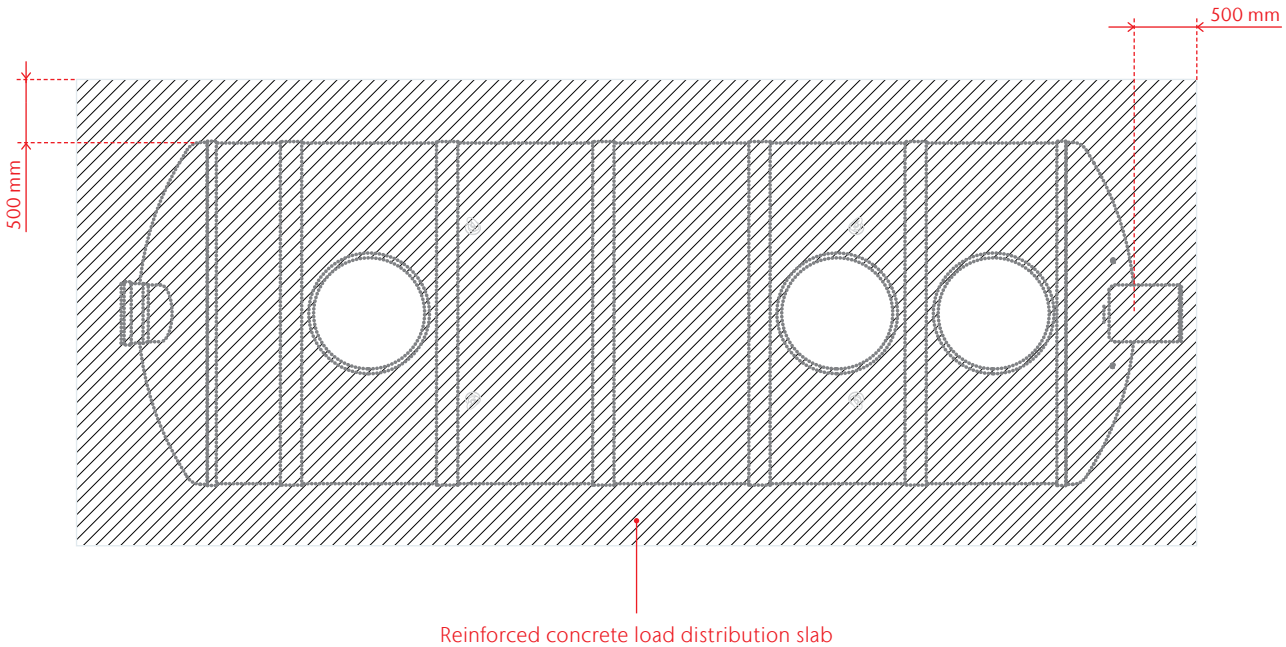
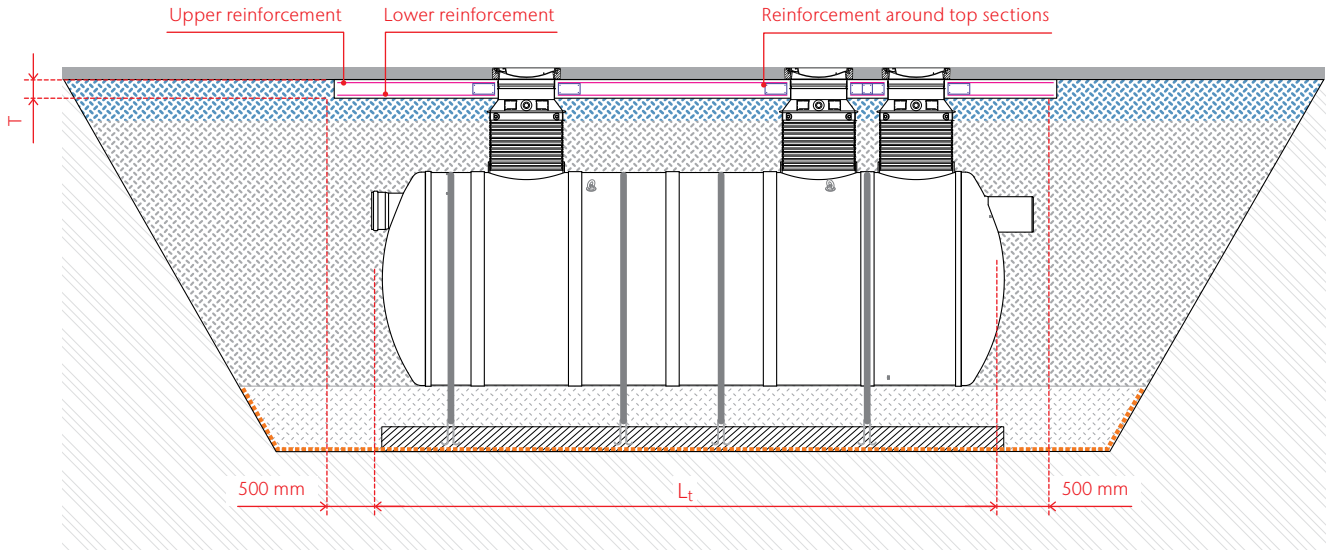
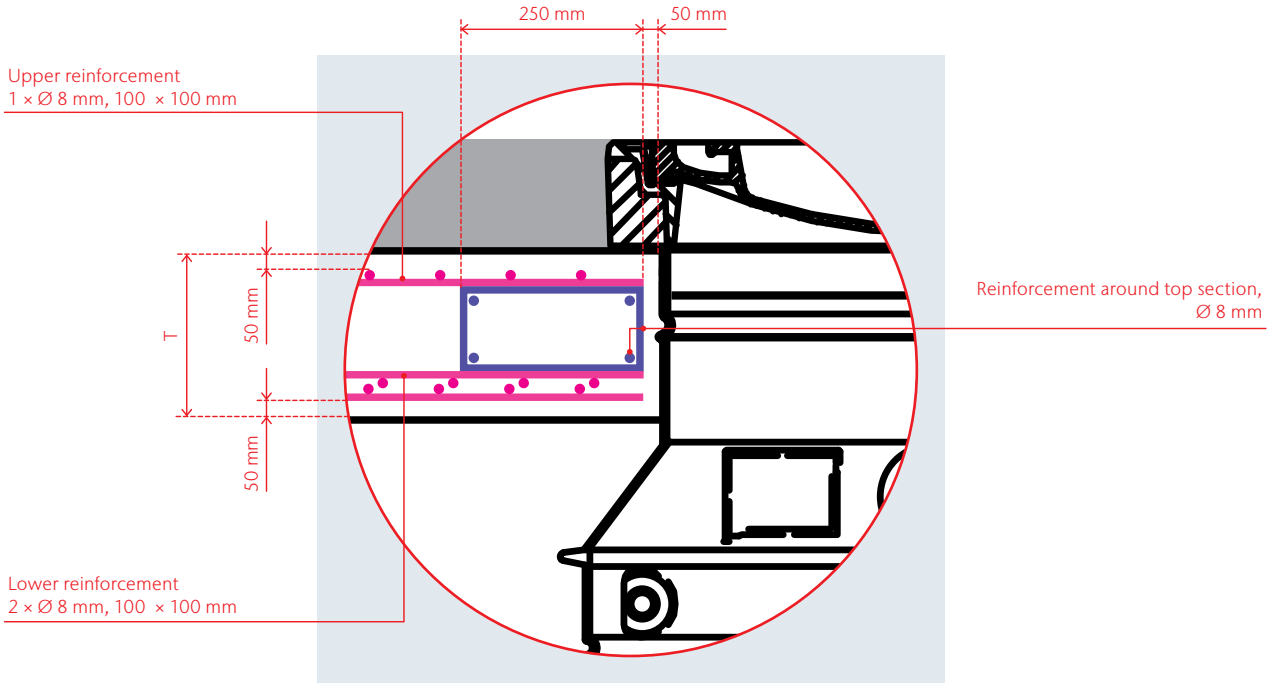


Figure 10.11 Reinforced concrete load distribution slab



L_t	T
0–5 m	240 mm
5 –10 m	260 mm
10 + m	270 mm

Figure 10.12 Reinforcement in the concrete slab

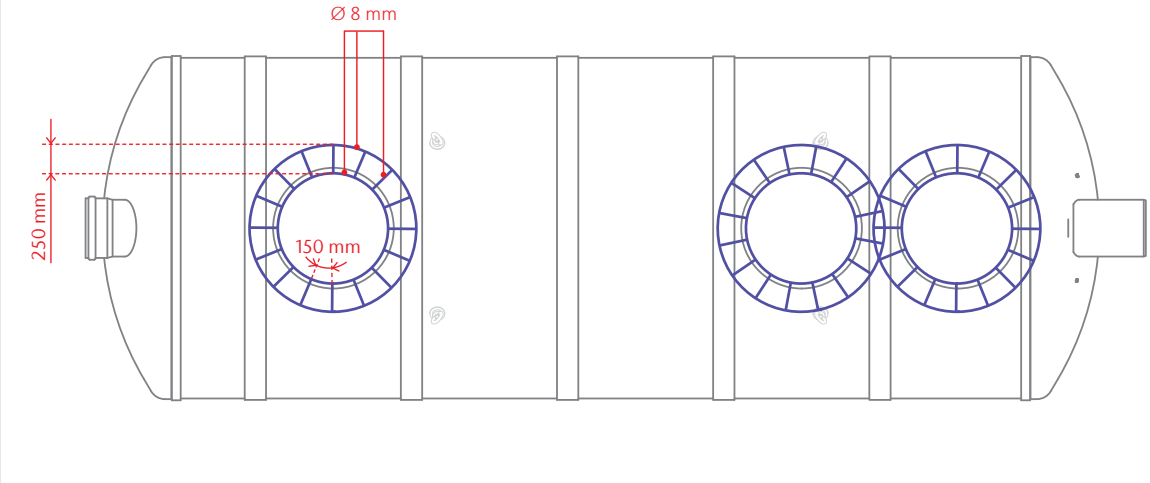


Soil | Sand fraction 0/4 | Reinforced concrete | Backfilling material** | Material acc. to the needs of the final surface layer | Geotextile

** crushed stone fraction 8/16 or suitable soil

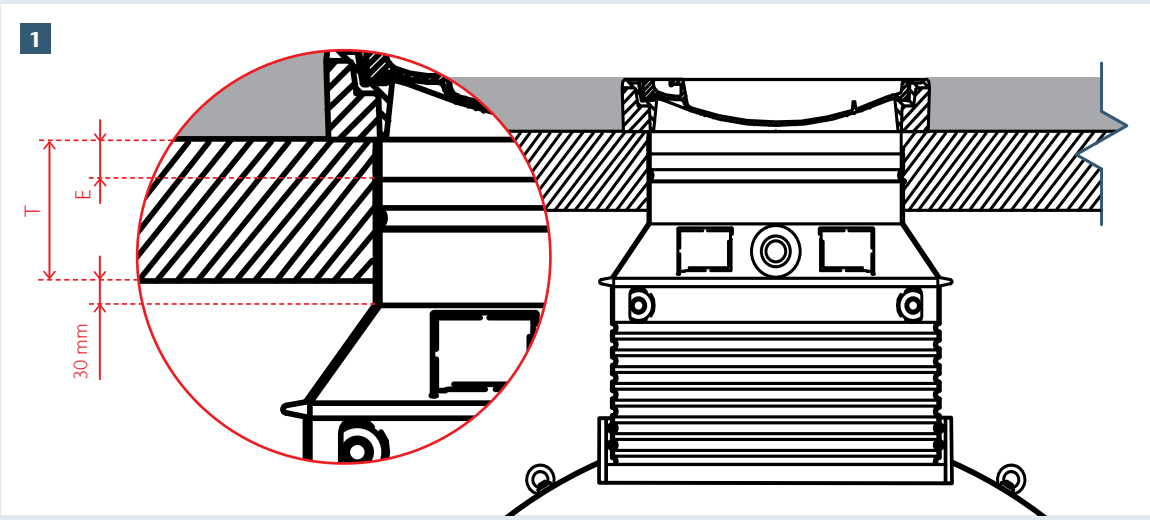
- Prepare extra reinforcement around the openings in the reinforced concrete load distribution slab (around the top section(s)) as indicated in the figure 10.11, 10.12 and 10.13.

Figure 10.13 Additional reinforcement around top section(s)



- Ensure the space between the reinforced concrete load distribution slab and the top section is as indicated in the figure 10.14 (ensure the 30 mm space and also the gaps indicated as E). The space E is according to your top section type and thickness of the reinforced concrete load distribution slab – see figure 10.14.

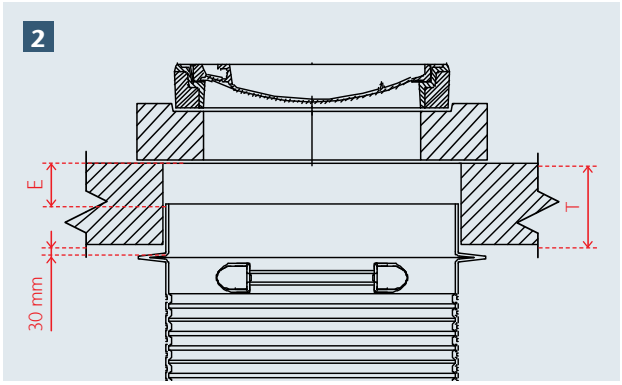
Figure 10.14 Reinforced concrete slab and manhole covers



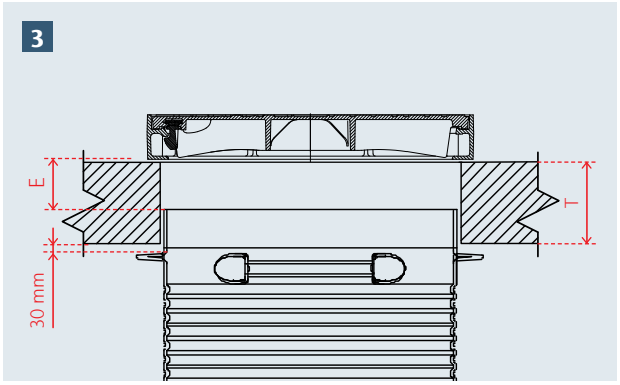
1 Top section DN 600

Dimension E according to the thickness of the reinforced concrete slab (T)

T	E
240 mm	110 mm
260 mm	130 mm
270 mm	140 mm



2 Top section DN 800 with reduction ring and manhole cover DN 600



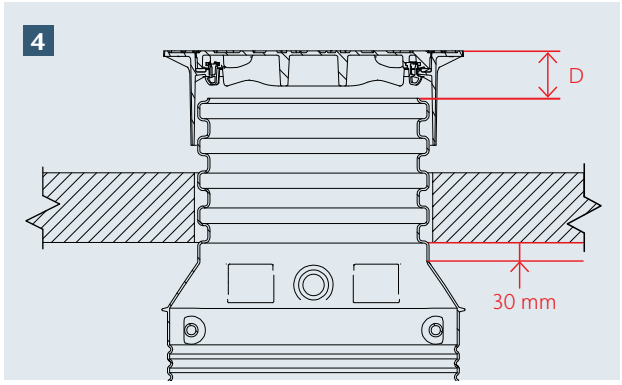
3 Top section DN 800 with manhole cover DN 800

Dimension E according to the thickness of the reinforced concrete slab (T)

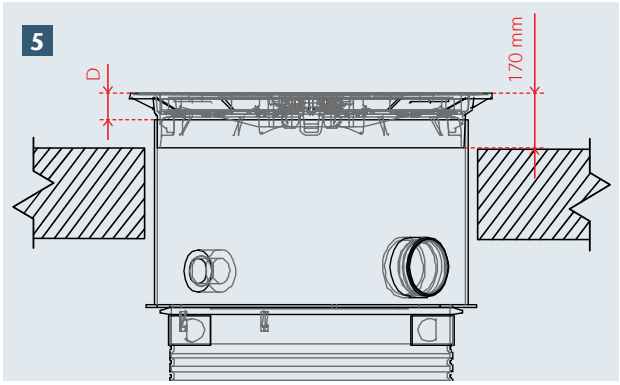
T	E
240 mm	145 mm
260 mm	165 mm
270 mm	175 mm

Dimension E according to the thickness of the reinforced concrete slab (T)

T	E
240 mm	145 mm
260 mm	165 mm
270 mm	175 mm



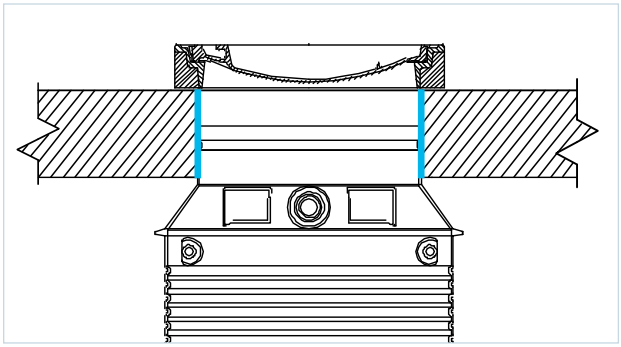
4 Top section DN 600 with floating cover. D = 135 mm

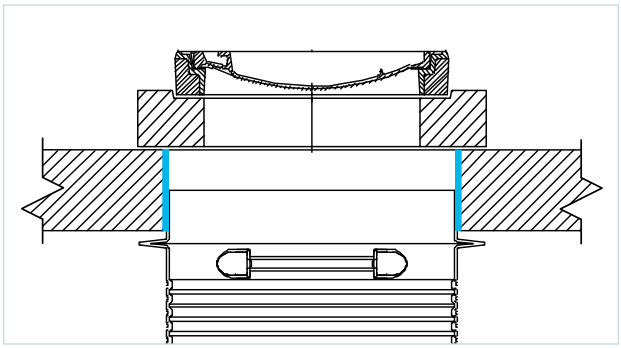


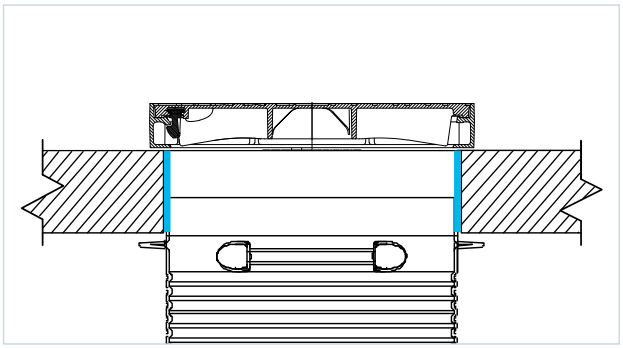
5 Top section DN 800 with floating cover. D = 80 mm

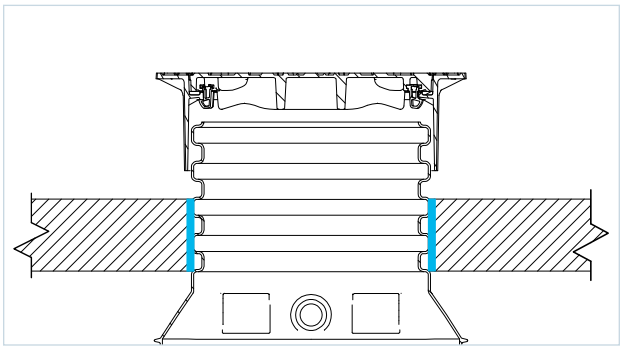
- Place the expansion strip around the top section (between the top section and the future reinforced concrete load distribution slab) as indicated in the figure 10.15.

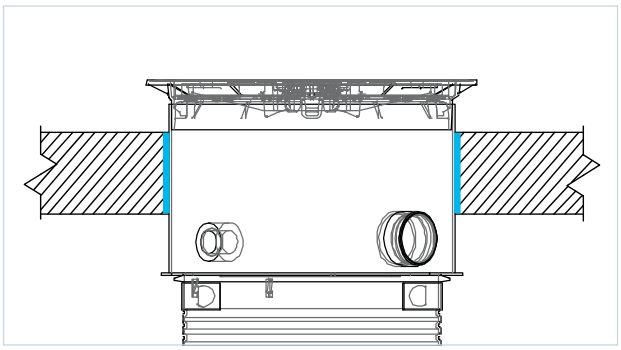
Figure 10.15 Expansion strip placement







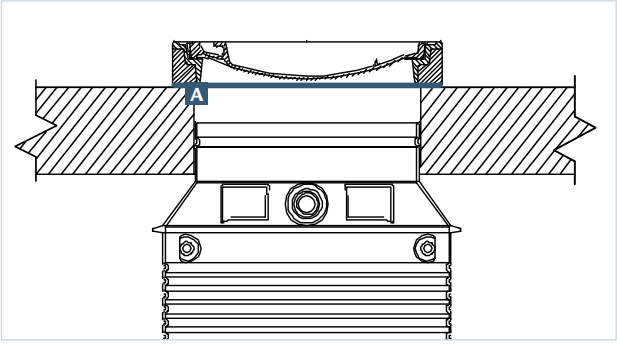




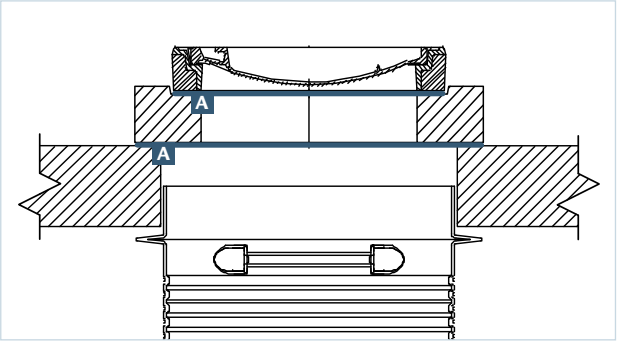
- Install a suitable manhole cover on the reinforced concrete load distribution slab in the 10 mm mortar bed. In the case of top sections with floating covers, install the floating cover on/in the top section.

- If you use a concrete reduction ring, apply a mortar bed on the reinforced concrete load distribution slab before installing the reduction ring, and also apply a mortar bed on the concrete reduction ring before installing in the manhole cover as shown in the figure 10.16.

Figure 10.16 Application of mortar bed



A Mortar bed

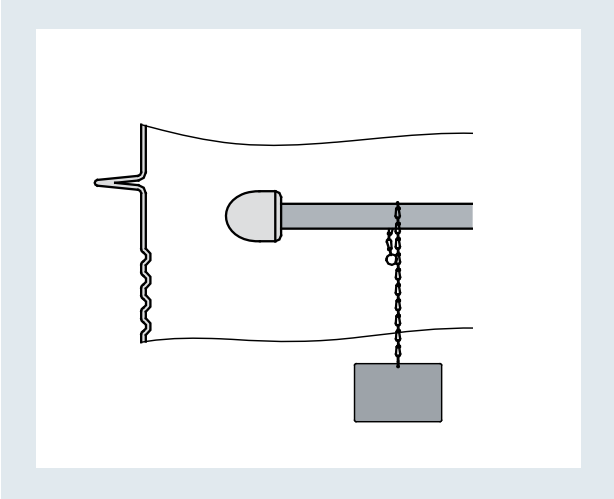


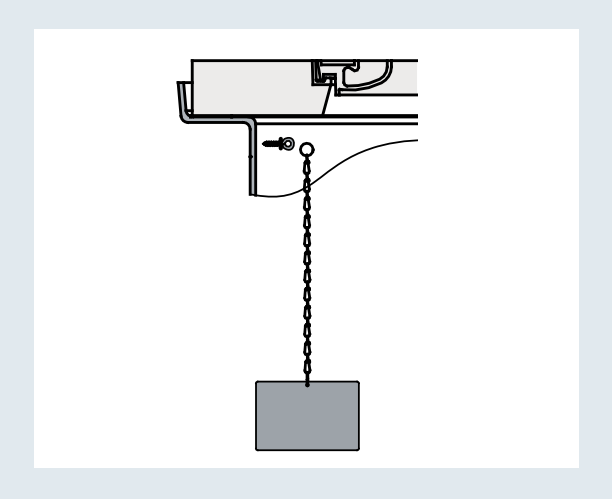
A Mortar bed

Designation label

- In the case of Oleopator G-H, Oleopator Bypass G-H and Lipumax G-H the designation label must be placed inside of the top section. Attach the enclosed designation label (which is supplied with the product) onto the bar inside of the top section, as indicated in the figure 10.17.
- If the top section has no bar inside to attach the designation label, use a self-tapping eye screw (stainless steel) with rubber sealing ring and screw it into the top section. Afterwards attach the supplied designation label to the eye of the screw.

Figure 10.17 Designation label





11 List of figures

10 Top section installation and backfilling

12 List of tables

6 Compaction specification

ACO. we care for water

Every ACO product supports the ACO WaterCycle

- ACO Oil separators
- ACO Grease separators
- ACO Hydrodynamic separators
- ACO Technical filters
- ACO Sedimentation tanks

Edition 07/2025 – Subject to alterations

ACO Industries Tábor s.r.o.

Průmyslová 1158
391 01 Sezimovo Usti
Czech Republic

www.aco.com