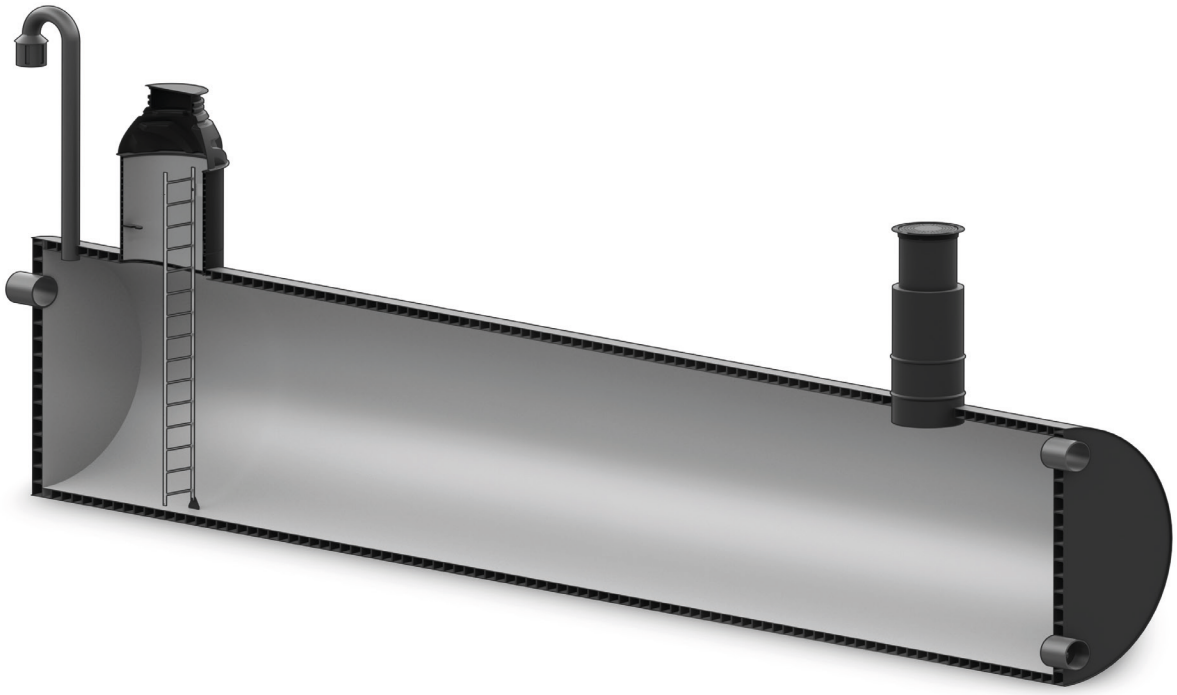
GF Industry and Infrastructure Flow Solutions

Installation and Maintenance Manual

Stormwise - Tanks



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Original installation and maintenance manual

Disclaimer

The technical data within this document is not binding. It does not constitute expressly warranted characteristics, guaranteed properties or guaranteed durability. It is subject to modification. Our General Terms of Sale apply.

Observe the installation and maintenance manual

The installation and maintenance manual is part of the product and an important element within the safety concept.

- ► Read and observe the installation and maintenance manual.
- ► Always have the installation and maintenance manual available by the product.
- ► Give this installation and maintenance manual to all subsequent users of the product.

Issue history

Version	Date	Changes
1.0	2026/03	First edition

Table of contents

1 About this document

This installation and maintenance manual describes the lifecycle of a Stormwise retention and harvesting tank from transport, installation and operation to maintenance, troubleshooting and disposal as well as safety information.

1.1 Target group

The following persons must read and observe this installation and maintenance manual:

- Persons who transport and install the tank
- Persons who operate, maintain or troubleshoot the tank
- Persons who dispose of the tank

1.2 Notes on technical documentation

The technical documentation comprises the following documents:

Documents
Installation and maintenance manual
Technical drawings
Fact sheets

These documents are available at www.gfps.com or from the local representative of GF Industry and Infrastructure Flow Solutions.

The following rules apply to technical documentation:

- ► Replace old versions with new versions.
- ► Include all additional documentation.
- ► Pass documentation on to the new owner.
- ► Regularly check for the latest version.

1.3 Customer service

- Information regarding warranty is included in the GF terms and conditions.
- Visit our webpage to get in touch with your local specialist regarding any questions about your GF solution, required trainings or any form of customer service: www.gfps.com/our-locations

1.4 Copyright

1.5 Related standards and regulations

Standard	Content	Application
DIN 16961	Classification, dimensions, tolerances & delivery conditions for thermoplastic profile-wall pipes	Sewer pipes, wastewater
DIN EN 13476	Requirements & testing for structured-wall plastic pipes (PVC U, PP, PE)	Sewer pipes, wastewater
DIN EN 13598	Specifies requirements, testing procedures, materials, sizes, performance, and labeling for inspection chambers and manholes	Gravity sewer and drainage systems located underground and outside of buildings
EN 1610	Installation and testing of wastewater pipes and sewers	Wastewater construction and testing
EN 12201	PE piping systems for water supply and pressure sewerage	Water supply and pressure sewer systems
DIN 18300	Technical rules for earthworks, soil/rock classification, excavation requirements	Earthworks, trenching, pipe bedding
DWA-A 139	National rules for installation & testing of wastewater pipelines (supplement to EN 1610)	Sewer construction, quality assurance
DVS 2207	Welding procedures for PE pipes (butt, socket, electrofusion)	PE pipe welding for water, gas, wastewater
ISO 12176	Requirements for equipment used for PE welding	Quality assurance of welding equipment
DVS 2202	Evaluation of welded joints, defect classification, acceptance criteria	Inspection & quality control of PE welds
DIN EN 1917	Requirements for concrete inspection chambers	Sewer manholes, access structures

1.6 Notes on reading this manual

Symbols

Symbol	Meaning
•	Listed in no particular order
▶	Call for action: here, something has to be done
1.	Call for action in a pre-defined order: here, something has to be done in the specified order

Abbreviations

Abbreviation	Indication
GF	Georg Fischer

2 Safety information

2.1 Purpose of safety information

Safety information warns of hazards that could lead to bodily injury and damage to property. Always observe and follow safety instructions to prevent accidents and injuries from occurring.
The safety instructions apply to the use of the product (see page 8).
The safety instructions do not cover the following:

- Incidental events occurring during installation, operation and service
- Local and site-related safety regulations

2.2 Meaning of signal words

In this installation and maintenance manual, warnings are used, which warn the user of death, injuries or material damage. Always read and observe these warnings!

⚠ DANGER!

Imminent danger!
Non-observance may result in major injuries or death.
► Measures to avoid the danger.

⚠ WARNING!

Possible danger!
Non-observance may result in serious injuries.
► Measures to avoid the danger.

⚠ CAUTION!

Dangerous situation!
Non-observance may result in minor injuries.
► Measures to avoid the danger.

NOTICE!

Avoid the situation!
Non-observance may result in property damage.

2.3 Intended use

A retention tank is used for the short-term buffering of high up-stream storm water flows, in areas with periodically high run-off flows.

A harvesting tank is used for the intermediate storage of stormwater to be used for irrigation or other technical use where drinking water is not needed. Common applications include water intake points, distribution networks, buildings, and industrial facilities where there is a need to balance flow fluctuations caused by peak consumption.

GF Industry and Infrastructure Flow Solutions accepts no liability for damage resulting from incorrect handling of the product and product components (see page 9).

Use is only considered intended if the operator observes the following:

- Use the product as described in the operating instructions
- Use within the limits specified in the technical data
- Only qualified and trained personnel carry out all activities
- Keep persons who are not working on the product at a safe distance from hazardous and operating areas

2.4 Reasonably foreseeable misuse

Any use other than that described for the intended use is not in accordance with the intended use and is therefore not permitted.

The following actions are considered misuse:

- Any use above and beyond intended use
- Alterations or modifications without the knowledge and consent of GF Industry and Infrastructure Flow Solutions
- Circumventing or removing protective equipment and safety measures
- Installing or using unsuitable products in safety-relevant applications

GF Industry and Infrastructure Flow Solutions accepts no liability for damage resulting from improper use. The risks associated with improper use are the sole responsibility of the user.

2.5 Obligations of the operator

The operator undertakes to implement measures arising from content in the technical documentation. This includes in particular:

- Ensuring compliance with laws and regulations currently applicable at the site
- Clearly marking hazardous areas
- Training and instructing personnel
- Providing personal protective equipment
- Enforcing prohibitions and mandatory requirements
- Ensuring devices to secure the shut-off elements are fitted
- Ensuring signs warning against uncontrolled reactivation are provided

2.6 Personnel requirements

Personnel who carry out installation, operation and maintenance are subject to strict requirements.

⚠ WARNING!

Injury because of insufficient personnel qualification!

Danger of injury when unqualified personnel carry out installation, operation and maintenance.

► Only qualified personnel carry out all work.

NOTICE!

Property damage because of insufficient personnel qualification!

Danger of property damage when unqualified personnel carry out installation, operation and maintenance.

► Only qualified personnel carry out all work.

This installation and maintenance manual assigns activities to the following personnel:

- Installation personnel
- Operating personnel
- Maintenance personnel
- GF personnel

Only persons who meet the following requirements are authorized as personnel:

- They are qualified within the required field (e.g. welding, piping construction, loading). The customer is responsible that the qualifications are sufficient.
- They carry out all work according to currently applicable local standards and regulations.

2.7 Protective equipment

Persons remaining or working in the vicinity of hazardous and operating areas are required to wear general or special personal protective equipment.

⚠ WARNING!

Injury due to personal protective equipment not being worn!

Unprotected body parts may be injured.

► Wear the mandatory personal protective equipment.

During installation, operation and maintenance procedures, the following personal protective equipment must be used:

Protective gloves when required by the conditions

Steel toe-cap safety shoes with non-slip soles

Workwear and high-visibility warning clothing

Protective goggles or a face shield when required by the conditions

Safety helmet at constructions sites and in the water compartment

Safety belt in the water compartment

Other personal protective equipment (e.g. respiratory protection) must always be selected according to the task being performed.

2.8 Safety equipment

Safety equipment can be installed in the product. Contact your local GF representative to customize your product accordingly.

Examples of safety equipment are:

- level sensors
- ladders for entering and leaving the product

2.9 Safety and responsibility

► Only use the product as intended (see page 8).

► Do not use a damaged or defective product or component.

► Immediately report any damages or defects to GF Industry and Infrastructure Flow Solutions.

► Make sure that the piping system has been installed or repaired professionally and that it is inspected regularly.

2.10 General safety information

Observe the installation and maintenance manual

- This installation and maintenance manual is part of the product and an important element within the safety concept.
- Only qualified personnel, who have the required training, knowledge or experience, are allowed to commission, install, operate, maintain, and disassemble the product.

► Read and observe the installation and maintenance manual.
► Provide the installation and maintenance manual to all current and subsequent users of the product.
► Regularly instruct personnel on all questions regarding the local regulations applying to occupational safety and environmental protection, especially for pressurized pipes.

⚠ WARNING!

Injury due to damaged products!

Risk of injury due to the use of defective or damaged products.

► Do not use a damaged or defective product.
► Replace any damaged or defective products immediately.

⚠ WARNING!

Injury due to hazardous media!

Risk of injury because of hazardous chemicals or solvents.

► Wear the mandatory personal protective equipment.

⚠ CAUTION!

Injury due to product modifications!

Risk of injury due to product modifications or incompatible spare parts.

► Do not modify the product or its internal and external components.
► Only use original spare parts from GF Industry and Infrastructure Flow Solutions or approved third-party components.

⚠ CAUTION!

Risk of electric shock!

Internal components may carry hazardous voltages that can cause serious injury or death if touched.

► Before working on wiring or terminals, always ensure the power supply is completely disconnected (zero potential).
► Only qualified personnel trained in electrical safety and authorized to work on industrial instrumentation perform installation, handling, and servicing.

NOTICE!

Property damage due to product modifications!

Risk of property damage due to product modifications or incompatible spare parts.

► Do not modify the product or its internal and external components.
► Only use original spare parts from GF Industry and Infrastructure Flow Solutions or approved third-party components.

NOTICE!

Property damage due to damaged products!

Risk of property damage due to the use of defective or damaged products.

► Do not modify the product or its internal and external components.
► Only use original spare parts from GF Industry and Infrastructure Flow Solutions or approved third-party components.

2.11 Residual risks

In spite of structural and control-related measures, there may be residual risks even if the product is used as intended.
The following section identifies residual risks that have been determined by GF Industry and Infrastructure Flow Solutions.
To minimize residual risks, observe the following points:

- General legal and company safety regulations
- Recognized technical rules for safe and proper practices
- All safety instructions contained in this installation and maintenance manual
- All safety instructions contained in the bought-in part documentation
- All accident prevention regulations currently in effect in the country of installation

⚠ WARNING!

Danger of drowning!

High water pressure can pose a risk of personal injury.

► Close all closing valves when working inside the product.
► Wear a safety belt when working inside the product.

⚠ WARNING!

Danger of suffocation!

Lack of oxygen inside the product can pose a risk of personal injury.

► Ensure sufficient air ventilation when working inside the product.
► Install or wear oxygen monitoring sensors.
► Do not work alone inside the product.

⚠ CAUTION!

Danger of falling over!

The inside of the product can still be slippery because of residual water, even if the product was drained or due to a biofilm or grease from equipment after maintenance.

► Wear safety shoes with non-slip soles.
► Do not step into residual puddles.

2.12 Product-specific warnings

⚠ WARNING!

Injury due to incompatible materials!

Incompatible materials can be attacked by aggressive media, which can cause injuries.

► Confirm chemical compatibility before use.

⚠ WARNING!

Injury due to high pressures!

Excessive pressure can pose a risk of injury.

► Do not exceed maximum temperature/pressure specifications.

NOTICE!

Property damage due to incompatible materials!

Incompatible materials can be attacked by aggressive media, which can cause property damage.

► Confirm chemical compatibility before use.

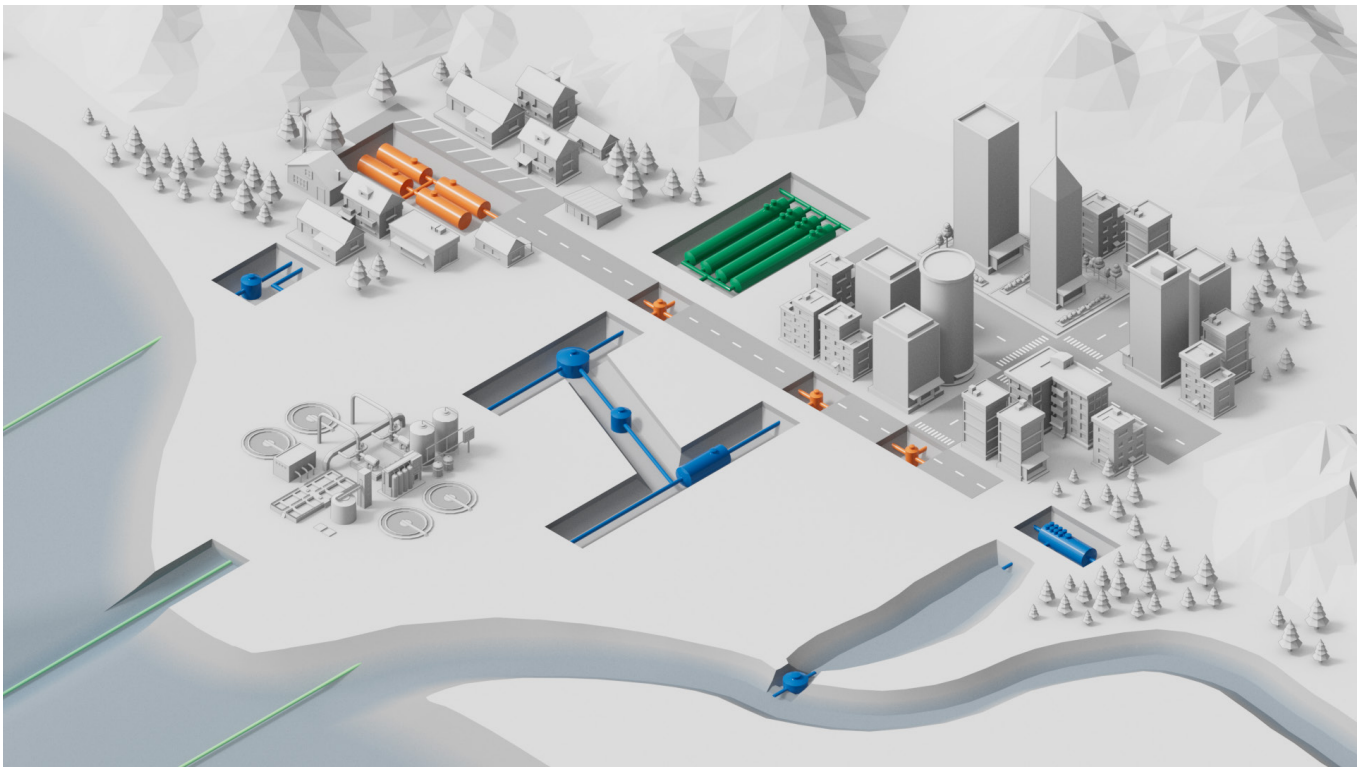
NOTICE!

Property damage due to high pressures!

Excessive pressure can pose a risk of property damage.

► Do not exceed maximum temperature/pressure specifications.

3 Product description



Color	Designation	Color	Designation
Orange	Retention	**Dark green**	Harvesting
Blue	Treatment	**Light green**	Marine outfall

3.1 Functional description

Increased rainfalls and heavier storms have created a higher risk of city floodings. Uncontrolled runoffs can inundate our neighbourhoods, create environmental and economical damages and contaminate precious water resources.

GF Stormwise is a complete stormwater management solution that helps urban planners and water network professionals designing sustainable projects to prevent flooding and pollution of water sources.

GF Stormwise provides a wide range of innovative products for stormwater handling and treatment including water reservoirs, flow regulation units, and water purification chambers.

GF Stormwise comprises the following functional entities:

Retention

Retention solutions help storing and delaying stormwater in reservoirs near the source, before forwarding the water into the municipal network, preventing capacity overload. Flow regulation managed safely keeps the size of the retention at an optimal and cost-efficient volume. Sustainability: efficient protection against floods that cause environmental and economic damage. The Stormwise retention tank is described in this installation and maintenance manual.

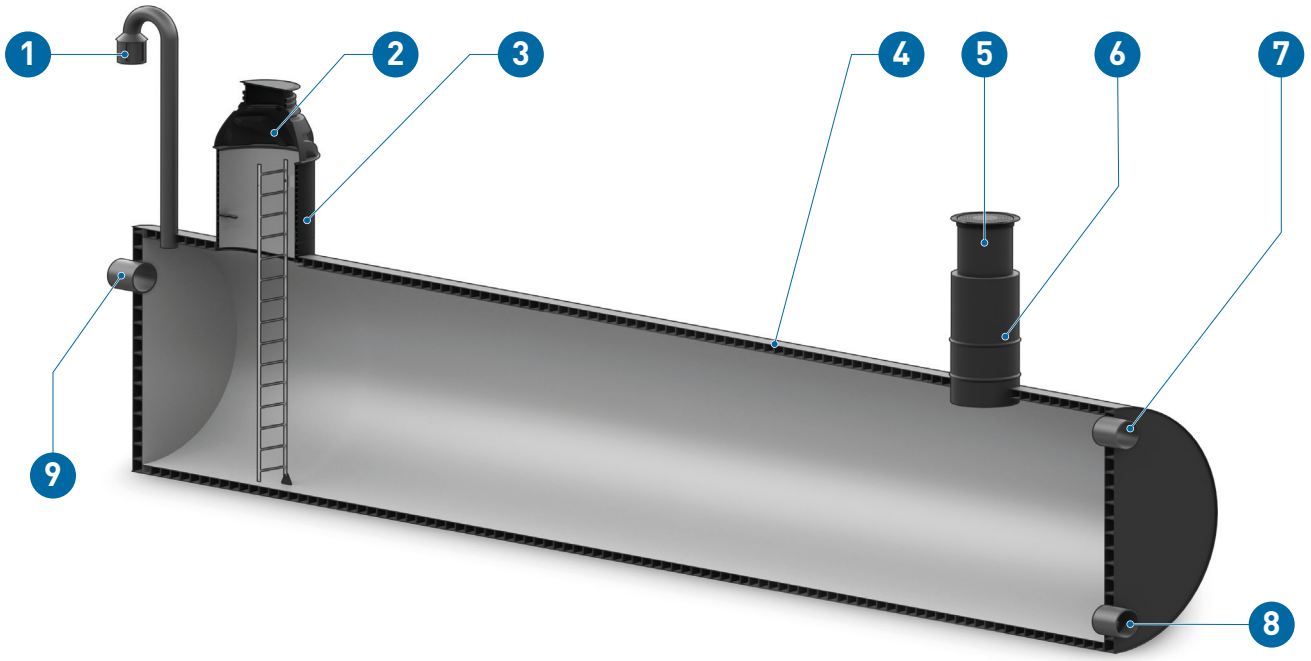
Treatment

Pollution from traffic, buildings, material and other operations are accumulated on the ground in dry periods. In a thunderstorm, pollutants are washed off the ground and follow the stormwater system into the water bodies. Treatment solutions purify stormwater by removing a wide range of contaminants: waste, particles, oil, microplastics, etc. Sustainability: reducing pollutant concentrations and improving the status of water bodies. The products for treatment are described in a separate installation and maintenance manual.

Harvesting
Harvesting is collecting and reusing stormwater for irrigation, flushing toilets or other usage where drinking water is not needed. Sustainability: using stormwater contributes positively to the reuse of resources for the local benefit. The Stormwise harvesting tank is described in this manual.

Marine outfall
Marine outfall pipes efficiently discharge collected and purified stormwater from large paved areas such as city centers and commercial areas into nearby waterbodies. Sustainability: secures safe runoff and protects the constructed environment from floodings. The products for marine outfall are described in a separate manual.

3.1.1 Weholite Stormwater Retention Tank



Pos.	Designation	Pos.	Designation
1	Ventilation	6	Riser 2
2	Riser top 1	7	Overflow
3	Riser 1	8	Outlet
4	Tank body	9	Inlet
5	Riser top 2		

There are many ways to prevent flooding caused by heavy rainfall. One effective solution is the use of a stormwater retention tank, that temporarily stores stormwater until it is either discharged by gravity after the rain subsides or pumped into the designated discharge site. This keeps water levels under control and prevents flooding. Additionally, it helps mitigate erosion caused by high water flows.
A retention tank enables the monitoring of water volume, sludge removal, and regular inspection.
Installation is efficient, requiring only trench excavation, tank installation, and backfilling at the site. The stormwater tank is completely leak-tight, making it suitable for installation in groundwater areas or below the groundwater level.

A retention tank is used in the following situations:
- The soil is too compact to absorb stormwater.
- Additional storage capacity is required alongside the existing stormwater pipe network.
- The area is classified as a groundwater zone, or the groundwater level is too high to allow stormwater absorption into the ground.

Customizable components:

- Tank diameter (800, 1000, 1200, 1400, 1500, 1600, 1800, 2000, 2200, 2400, 2500, 3000, 3400, 3500, 4000 mm, other)
- Tank length
- Inlet type and height
- Outlet type and height
- Overflow type and height
- Number and positions of the risers
- Riser height
- Riser top types

The following table shows a selection of possible tank riser tops. Customization is possible.

Riser top variants

Type A	Type B	Type C	Type D	Type E
ø860/800 With safety gate	600x600 metal 800x800 metal	ø600 GE 40tn ø630 GE 40tn	ø630 GE 40tn ø800 GE 40tn	ø600 no lid ø800 no lid ø1000 no lid
				

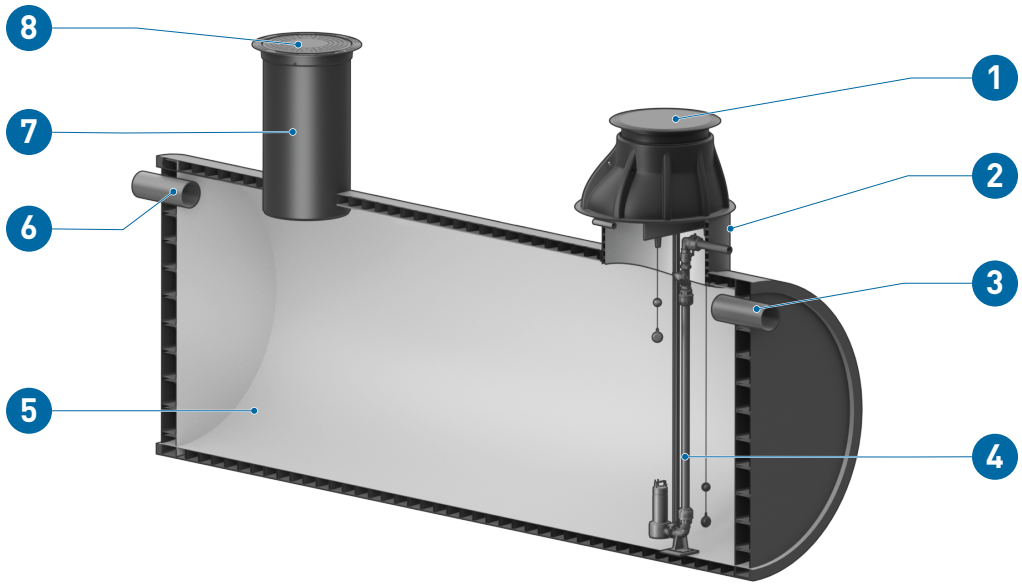
Optional components:

- Ventilation
- Anchoring

Key characteristics:

- The Weholite tank frame is made of double-walled structured polyethylene (HD-PE).
- The size and location of inlet and outlet connections are customized based on customer requirements.
- The tank is equipped with one or more manholes, with their position and size determined as needed.
- The lifespan of soil-installed Weholite exceeds 100 years.
- The tank is resistant to rot, rust, and corrosion caused by chemical or electrical reactions in the soil.
- Accumulated sludge can be removed from the tank via service risers.

3.1.2 Weholite Stormwater Harvesting Tank



Pos.	Designation	Pos.	Designation
1	Riser top 2	5	Tank body
2	Riser 2	6	Inlet
3	Overflow	7	Riser 1
4	Outlet pump	8	Riser top 1

A harvesting tank is used to store stormwater to be used for irrigation or other technical use where drinking water is not needed. This is of particular importance for communities in very dry areas, where such additional water resources offer a sustainable solution for conserving water while reducing flooding risks. A harvesting tank is usually used in combination with filters, valves and pumps that fit the specific purpose. These additional components can be attached inside or outside the tank.

A harvesting tank is used in the following situations:

- Stormwater needs to be reused for non-potable purposes, such as irrigation or industrial processes.
- Typical applications include new buildings and renovation projects in commercial, office, service, or industrial sectors.

Customizable components:

- Tank diameter (800, 1000, 1200, 1400, 1500, 1600, 1800, 2000, 2200, 2400, 2500, 3000, 3400, 3500, 4000 mm, other)
- Tank length
- Inlet type and height
- Outlet type and height
- Emptying type and height
- Number and positions of the risers
- Riser height
- Riser top types

The following table shows a selection of possible tank riser tops. Customization is possible.

Riser top variants				
Type A	Type B	Type C	Type D	Type E
ø860/800 With safety gate	600x600 metal 800x800 metal	ø600 GE 40tn ø630 GE 40tn	ø630 GE 40tn ø800 GE 40tn	ø600 no lid ø800 no lid ø1000 no lid
				

Optional components:

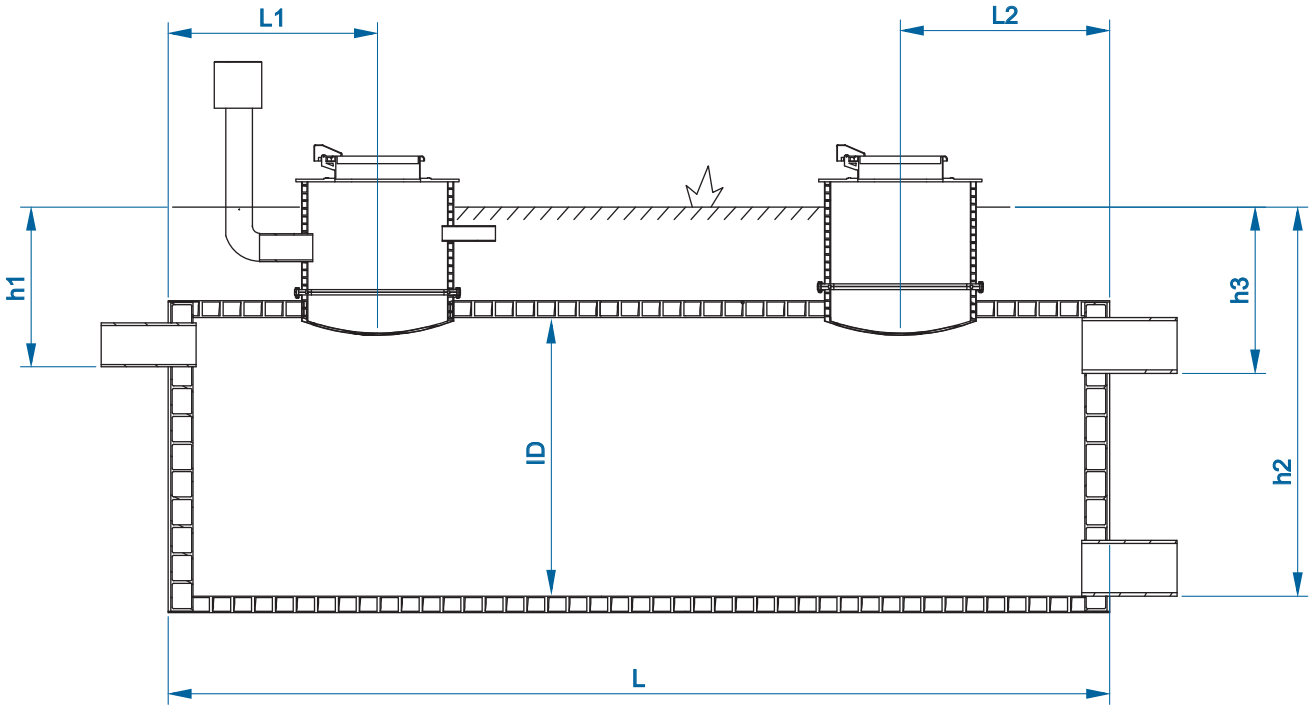
- Ventilation
- Anchoring
- Emptying (e.g. outlet pump)

Key characteristics:

- The Weholite tank frame is made of double-walled structured polyethylene (HD-PE).
- The size and location of inlet and outlet connections are customized based on customer requirements.
- The tank is equipped with one or more manholes, with their position and size determined as needed.
- The lifespan of soil-installed Weholite exceeds 100 years.
- The tank is resistant to rot, rust, and corrosion caused by chemical or electrical reactions in the soil.
- Accumulated sludge can be removed from the tank via service risers.

3.2 Technical data

3.2.1 Weholite Stormwater Retention Tank

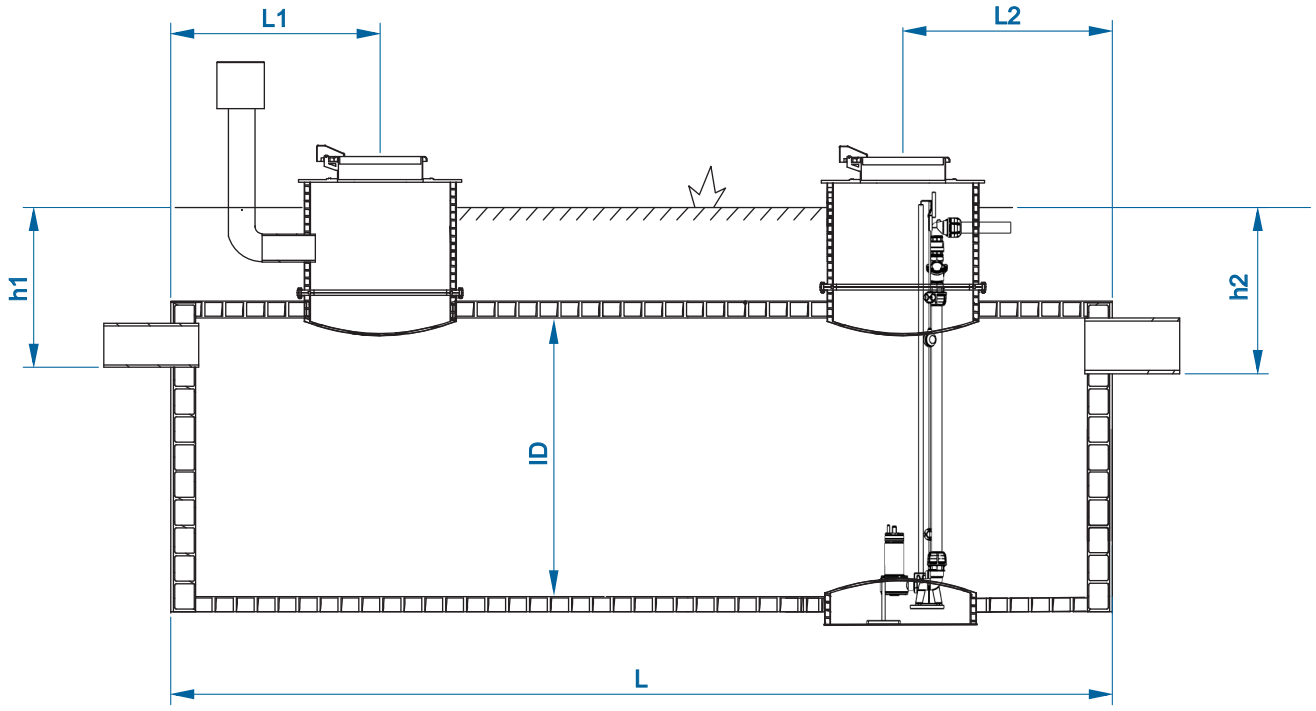


Technical data	
Application	Stormwater retention
Material	PE 100
Tank body inner diameter (ID)	800 - 4000 mm
Color	Black (outside), white (inside)
Ring stiffness	SN2, SN4, SN8 or by agreement
Riser top variants	Type A: Ø 860/800, with safety gate Type B: 600x600/800x800, metal Type C: Ø600/630, GE 40tn Type D: Ø630/800, GE 40tn Type E: Ø600/800/1000, no lid
Standards	EN 13476
Approvals	Nordic Poly Mark, Cert. nr. 4075

Custom dimensions	
L	Tank body length
ID	Tank body inner diameter
L1	Position of the first riser
L2	Position of the second riser
h1	Inlet position below ground level
h2	Outlet position below ground level
h3	Overflow position below ground level

Tank dimension															
ID [mm]	800	1000	1200	1400	1500	1600	1800	2000	2200	2400	2500	3000	3400	3500	4000
Volume [m³/m]	0.5	0.8	1.1	1.5	1.7	2.0	2.5	3.1	3.8	4.5	4.9	7.1	9.0	9.6	12.6

3.2.2 Weholite Stormwater Harvesting Tank



Technical data	
Application	Stormwater harvesting
Material	PE 100
Tank body inner diameter (ID)	800 - 4000 mm
Color	Black (outside), white (inside)
Ring stiffness	SN2, SN4, SN8 or by agreement
Riser top variants	Type A: Ø 860/800, with safety gate Type B: 600x600/800x800, metal Type C: Ø600/630, GE 40tn Type D: Ø630/800, GE 40tn Type E: Ø600/800/1000, no lid
Standards	EN 13476
Approvals	Nordic Poly Mark, Cert. nr. 4075

Custom dimensions	
L	Tank body length
ID	Tank body inner diameter
L1	Position of the first riser
L2	Position of the second riser
h1	Inlet position below ground level
h2	Overflow position below ground level

Tank dimension															
ID [mm]	800	1000	1200	1400	1500	1600	1800	2000	2200	2400	2500	3000	3400	3500	4000
Volume [m³/m]	0.5	0.8	1.1	1.5	1.7	2.0	2.5	3.1	3.8	4.5	4.9	7.1	9.0	9.6	12.6

4 Transport and storage

4.1 Safety instructions

- ► Only properly trained personnel carry out all loading and unloading work.
- ► Ensure that the personnel performing the work wear appropriate personal protective equipment.
- ► Ensure that the personnel performing the work are trained in health and safety.

NOTICE!

Risk of property damage!

Non-observance of guidelines can cause property damage.

- ► Observe the guidelines below for loading and unloading, transporting and storage.

The tank must be handled, transported and stored with care. Note the following points:

- The tank and its components must not be damaged either by mechanical or thermal influences.
- The machinery and equipment used for handling the tank must be technically flawless and adapted to the type of cargo.
- ► Transport and store the tank in its original packing.
- ► Protect the tank from harmful physical influences.
- ► Avoid contact of the tank with chemicals, gasoline, or diesel fuel.
- ► Avoid handling and transporting the tank at air temperatures below -20 °C.

4.2 Loading and unloading

⚠ DANGER!

Risk of injury due to suspended loads!

Falling suspended loads can cause serious or fatal injuries.

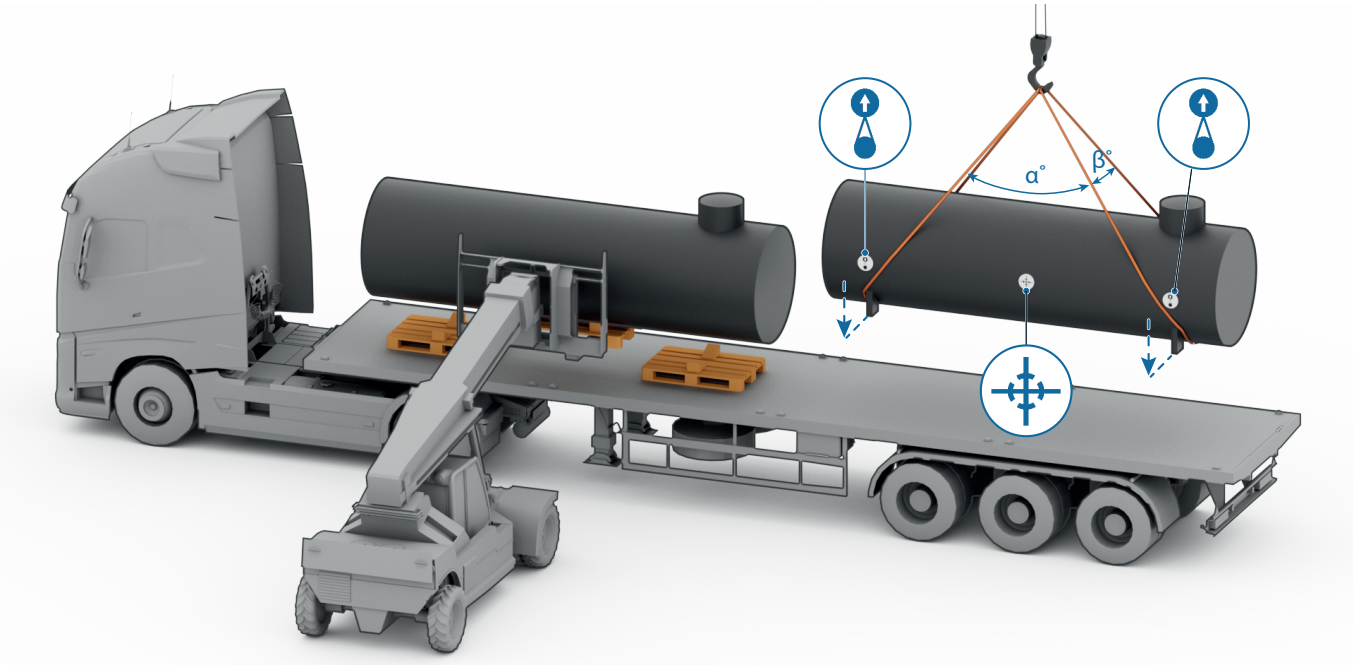
- ► Never stand or walk under suspended loads.

NOTICE!

Tank damage while lifting!

- ► Make sure that the lifting belts do not damage any protruding parts.

- ► Ensure availability of unloading equipment on the construction site.
- ► Before unloading, ensure that the tank is undamaged. Record any claims or complaints directly with the driver on the delivery documents.

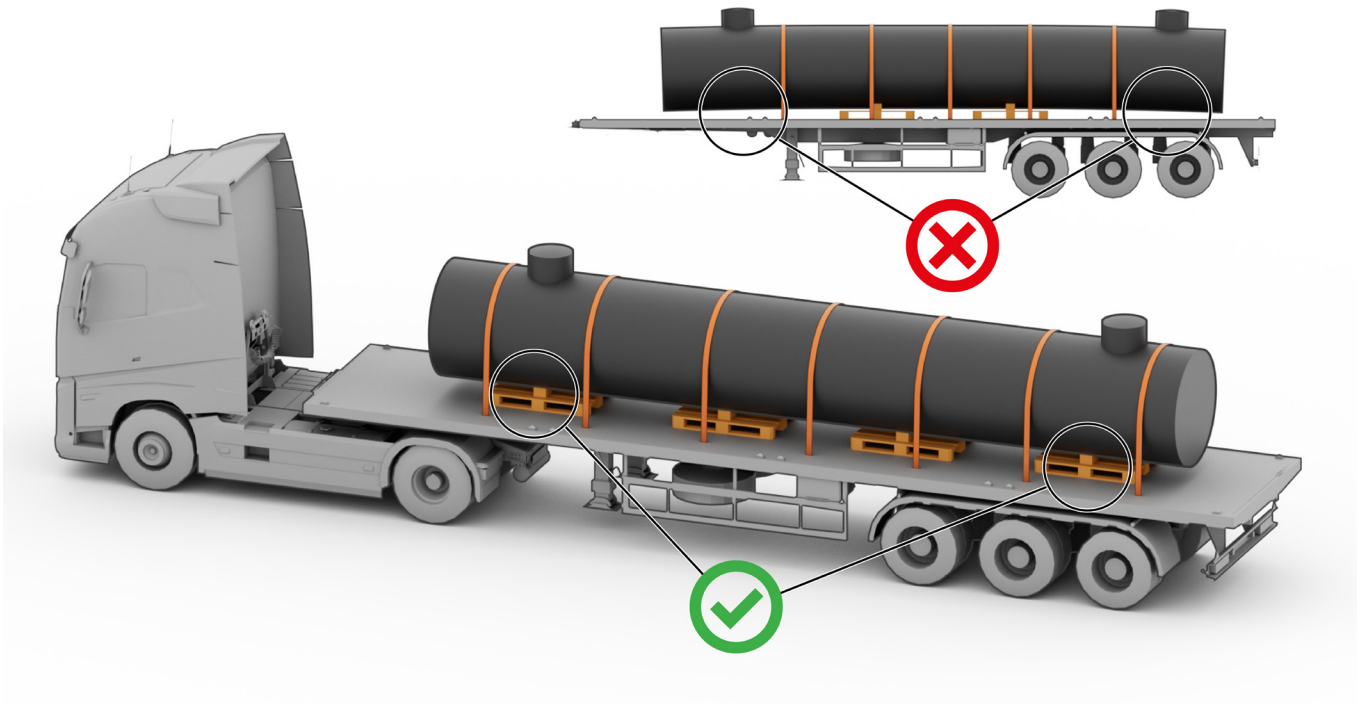


- Always lift the tank with a crane or a suitable forklift.
- For loading and unloading, only use approved, checked and intact gear and equipment.
- Only use lifting belts and hanging loops made of soft materials, e.g. nylon.
- Do not use cables, wires or chains that might scratch or harm the surface of the tank.
- Ensure that the lifting gear can handle the weight of the load.
- Ensure that the lifting belts do not damage any protruding parts.
- Do not bend or slide the tank.
- Do not unload by tipping.
- Avoid sudden stress. This applies in particular at ambient temperatures below -20 °C, as the impact strength of plastics is significantly reduced at these temperatures.
- Consider the center of gravity marking on the tank body (see image).
- Consider the lifting point markings on the tank body when placing the lifting straps around the tank (see image).
- Consider the maximum spread angles α and β specified on the lifting belts (see image).
- Protect the lifting straps with corner guards at the lug positions.

4.3 Transporting

- Ensure access to the construction site for the logistics company.
- Ensure proper preparation of the access route to accommodate trucks. Take into account the trucks' size and weight.
- Use a transportation platform, which is clean, flat and without any pointy or sharp objects.
- Transport the tank horizontally.
- Do not slide the tank.
- Place the tank on the platform so that any protruding elements are protected from damage.
- Support the tank along its entire length with wooden wedges or pallets to prevent any bending or movement.
- Use wide cargo straps to secure the load.
- Do not use cables, wires or chains to secure the load.
- Avoid contact of belt buckles and the tank, e.g. by using rubber pads.
- Cover all openings to prevent dirt from entering the tank.

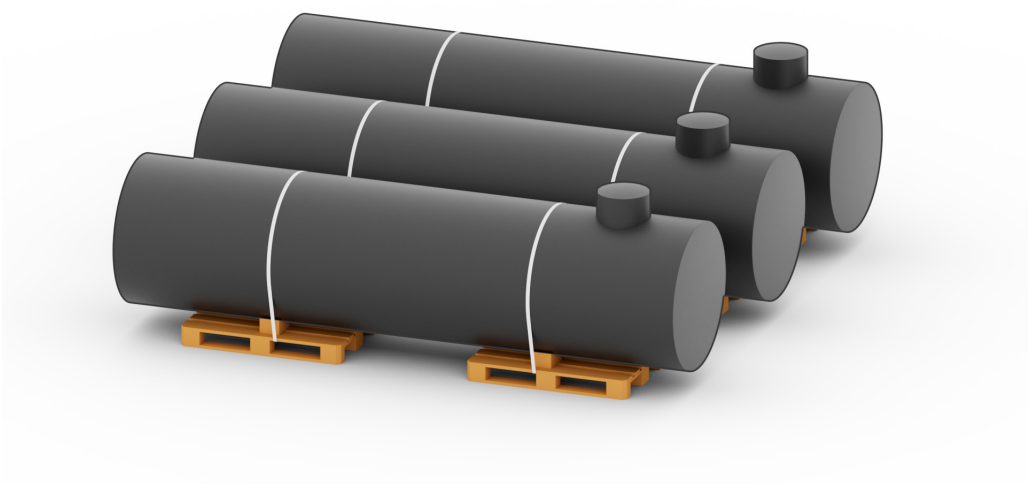
Examples of appropriate and non-appropriate tank transport:



4.4 Storing

- Choose a clean and even storage site.
- Store the tank in its original packing.
- Store the tank horizontally.
- Store the tank on wooden racks or on the installed lugs.
- Ensure that there are no sharp objects like nails or stones under the tank.
- Carefully inspect the tank at the time of delivery and notify and report any defects immediately.

Example of appropriate tank storage:



5 Installation

5.1 Safety instructions

⚠ DANGER!

Injury due to manipulations on pressurized pipes!

Improper manipulations on a pressurized pipe can lead to the medium escaping under pressure, resulting in injuries.

- ► Always consult the installation and maintenance manual before making any manipulations to pipes.
- ► Under all circumstances, make modifications to pressurized pipes only according to the instructions in this installation and maintenance manual.

⚠ DANGER!

Injury due to damaged cabling!

Touching damaged cables may lead to electrical shocks or death.

- ► Operate the tank only if the cables are undamaged and it has been installed correctly.

⚠ WARNING!

Injury because of insufficient personnel qualification!

Danger of injury when unqualified personnel carry out installation, operation and maintenance.

- ► Only qualified personnel carry out all work.

NOTICE!

Property damage due to manipulations on pressurized pipes!

Improper manipulations on a pressurized pipe can lead to the medium escaping under pressure, resulting in property damage.

- ► Always consult the installation and maintenance manual before making any manipulations to pipes.
- ► Under all circumstances, make modifications to pressurized pipes only according to the instructions in this installation and maintenance manual.

NOTICE!

Property damage due to leaking water connections!

Escaping water can lead to flooding of the room and property damage to the building and fittings.

- ► Check that there are no leaks.

NOTICE!

Property damage due to incorrect service voltage!

If connected to an incorrect service voltage, the tank can be damaged.

- ► Only connect to voltage sources as specified on the product label.

NOTICE!

Buoyancy due to ground water!

If the tank is installed in an area of high ground water, the tank could be lifted by the groundwater.

- ► Use the GF anchoring kit or geotextile fabric to counteract the lifting force.

NOTICE!

Property damage because of insufficient personnel qualification!

Danger of property damage when unqualified personnel carry out installation, operation and maintenance.

- ► Only qualified personnel carry out all work.

5.2 Before installation

The customer is responsible for handling the tank and other equipment and installing at the site.

The tank must be installed with care. Note the following points:

- ► Check the tank for general damage or flaws prior to installation.
- ► Avoid installation of the tank at air temperatures below -20 °C.
- ► Handle Weholite products as described in currently applicable standards and regulations.

5.2.1 Prerequisites

- A GF Stormwise tank is engineered according to project-specific customer requirements. The tank is intended for earth-buried applications. The tank is designed to meet static requirements, considering parameters such as installation depth, coverage, traffic loads, groundwater level, hydraulic loads, and more. Requirements from the static calculation must be strictly followed. A detailed static calculation can be provided on request.
- A tank with a volume of up to 100 m^3 is delivered as monolithic, one-piece tank, ready for on-site connection. A tank with a volume of more than 100 m^3 may be delivered to the installation site in separate pre-manufactured pieces and extrusion-welded by a qualified GF service team on-site. Separate welding service on-site requirements and contracts apply.

► Ensure that any work on-site, including excavation and backfilling, is done in compliance with the respective local regulations. The relevant installation details are defined in DIN EN 1610 and the associated standards and guidelines referenced therein.
► Arrange a suitable installation location for the reservoir tank in cooperation with local authorities.
► Arrange and prepare a suitable storage site so that the reservoir tank can be placed on an even surface over its entire length.
► Ensure easy access for transport equipment to the storage and installation site.
► Arrange suitable and adequate lifting gear on site.
► Arrange relevant electrical and other connection work (welding etc.).
► Arrange excavation and fill on-site with suitable materials and by suitable methods.
► Consider using a presedimentation chamber and a flow regulation chamber.

5.2.2 Required tools and materials

For the correct installation, the following equipment is required apart from standard tools:

- Proper lifting equipment
- Proper excavation equipment
- Proper tooling for the selected pipe joining method
- Compacting equipment according to local standards and regulations

5.3 Installation procedure

5.3.1 Digging the Tank pit

- The excavation must be wide enough to allow sufficient working space around the tank.
- In case of anchoring, take also into account the dimensions of the anchoring equipment.
- If the soil consists of poorly draining material, such as clay, it is recommended to install drainage in the excavation.
- The edges of the pit must be sloped with attention to occupational safety. The slope gradient must be 1:5 or gentler.
- The bottom and walls of the pit must be free of stones, bricks, debris, and other objects that may cause mechanical damage to the tank.
- The bottom of the pit must be completely solid and even, as gaps may form in soft areas and unevenness under the tank when the pit is filled.
- In road areas or areas immediately adjacent to road areas, the pit must be designed and constructed to avoid undermining and settlement.

► Dig the pit to the correct depth taking traffic load conditions into consideration. Minimum top fill is 30 cm in green areas. See chapter 5.3.8 for the minimum top fill in traffic areas.

5.3.2 Preparing the bottom layer

Ensure that the excavation base provides at least the same load-bearing capacity as the undisturbed native soil.

► If the base has been loosened during excavation, ensure that its original bearing capacity is restored using appropriate compaction equipment.
► Keep the pit bottom free of water during compaction.

- The tank is laid on a bottom layer that eliminates unevenness and ensures that the tank receives uniform and even support. The thickness of the bottom layer depends on the type of tank and the connection pipes. The connection pipes must be able to be dug into the bottom layer so that the tank receives linear support.

1. Prepare the bottom of the pit according to EN 1610. In addition to the minimum thickness, the standard also defines requirements for the bedding materials to be used.
2. Make sure that the floor is level.

5.3.3 Lifting and positioning the Tank

⚠ DANGER!

Risk of injury due to suspended loads!

Falling suspended loads can cause serious or fatal injuries.

► Never stand or walk under suspended loads.

NOTICE!

Property damage because of objects in the pit!

Stones, bricks, debris, and other objects can damage the bottom and walls of the tank.

► Ensure that the bottom and walls of the pit are free of stones, bricks, debris, and other objects.

► Carry out tank lifting using lifting belts attached around the tank, following the instructions for loading and unloading (see page 20).

► Prevent the stressing of (welded) connections and other structural parts.

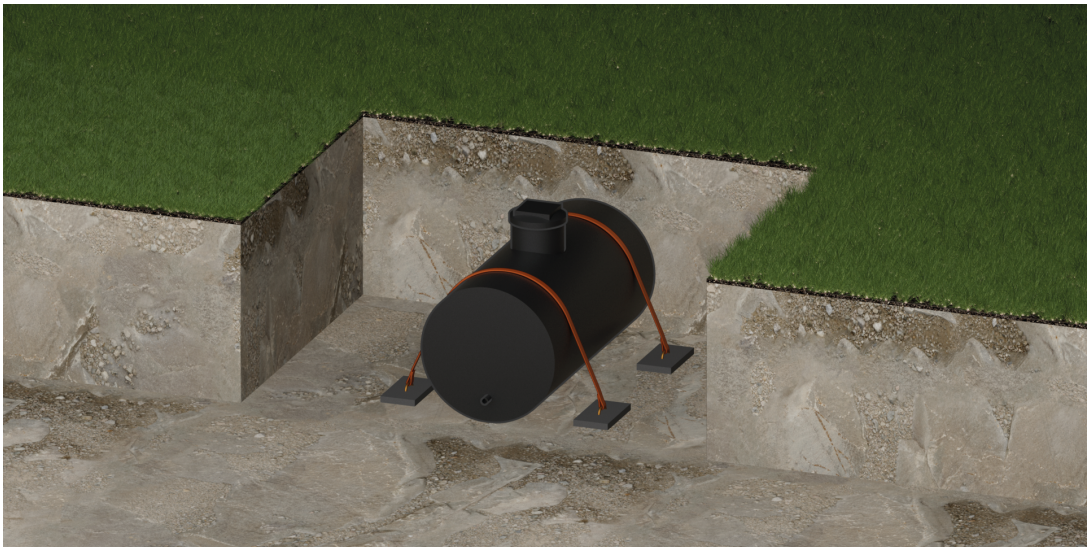
► In case multiple tanks are positioned next to each other, maintain the minimum distance specified in the product drawing to allow proper compaction of the backfill or, where applicable, the installation of geotextile anchoring.

1. Place the tank on the bottom layer.
2. Level the tank. The basis for the proper functioning of the tank is its proper leveling.
3. Make sure that the connections are at the correct height.
4. Remove any temporary supports used during transport after the tank is in its required position and adequately supported.

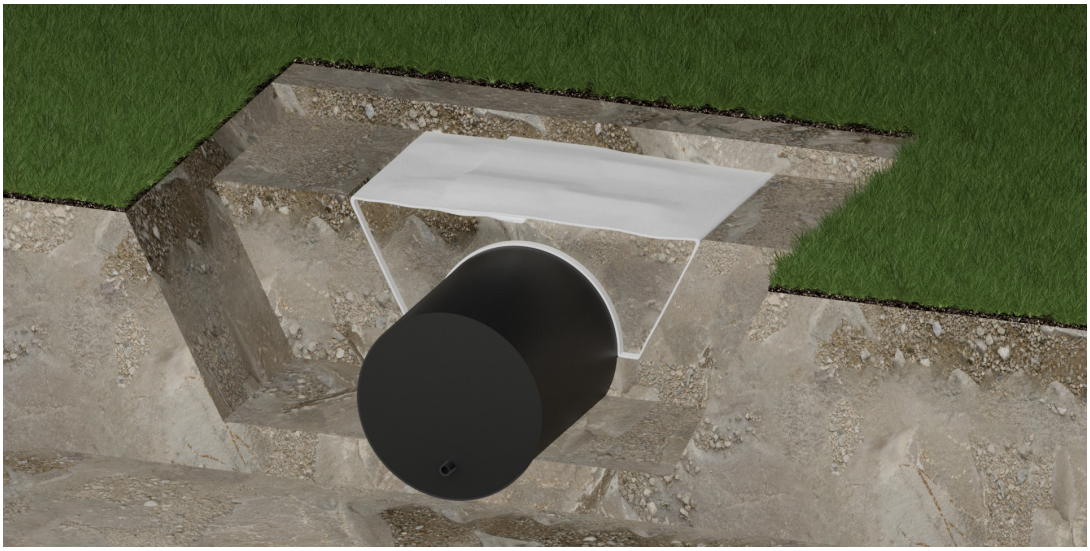
5.3.4 Anti-buoyancy in groundwater conditions

The tank can be anchored to counteract buoyancy caused by groundwater. There are different anchoring options available. GF provides calculations for anchoring and selection of the anchoring technology depending on the project parameters. Possible anchoring methods are:

- A specially designed and dimensioned anchoring kit with belts and anchor slabs



- A geotextile/geogrid anchoring system which is installed over the tank and lapped up the pit sides, then locked in place by the backfill. Further information can be found in the geotextile manufacturer's installation manuals.



- GF's patented profile filling technology

5.3.5 Connecting the inlet and outlet pipes

⚠ CAUTION!

Risk of leakage or structural damage!

Incorrect connection or misalignment of the tank may lead to leaks, mechanical stress, or system failure.

► Ensure proper alignment of all inlet and outlet connections before the final installation.
► Make connections according to the installation guidelines and use approved materials and fittings.
► Avoid applying excessive force or torque to the tank body, pipe joints, or seals.
► Improper installation may compromise system integrity and void warranty coverage.
► Always follow local regulations during installation.
► Only qualified personnel carry out all work.

- Connection of inlet and outlet can be made by welding, flange connections, or with mechanical fittings.

► Ensure that the installation follows the instructions from connector's manufacturer or complies with applicable local rules or standards such as DVS 2207.

The ground frost insulation and/or thermal insulation of pipes can be carried out if needed according to the respective plan and in compliance with currently applicable standards and regulations. The final landscaping is to be completed by the customer. The customer may consider preparing for exceptional circumstances, such as a power outage, with a spare power source and/or –connection. Components and equipment must be monitored and inspected according to the suppliers' standards and recommendations.

5.3.6 Testing and inspecting

⚠ WARNING!

Risk of injury due to uncontrollable exit of the medium!

If leaking, the medium may exit uncontrollably under high pressure.

► Assume a protected working position.
► Wear protective clothing, if required.
► In case of leaks: close the inlet shut-off valve.

NOTICE!

Danger of material damage in the pipeline system.

When commencing the initial operation via the main pipeline there is the danger that the initial pressure is too high and the pipeline system is damaged.

► Follow the defined order.

If applicable, perform a leak and tightness test before any backfilling. Follow EN 1610 for any leak and tightness tests.

5.3.7 Backfilling around the Tank

NOTICE!

Risk of material damage!

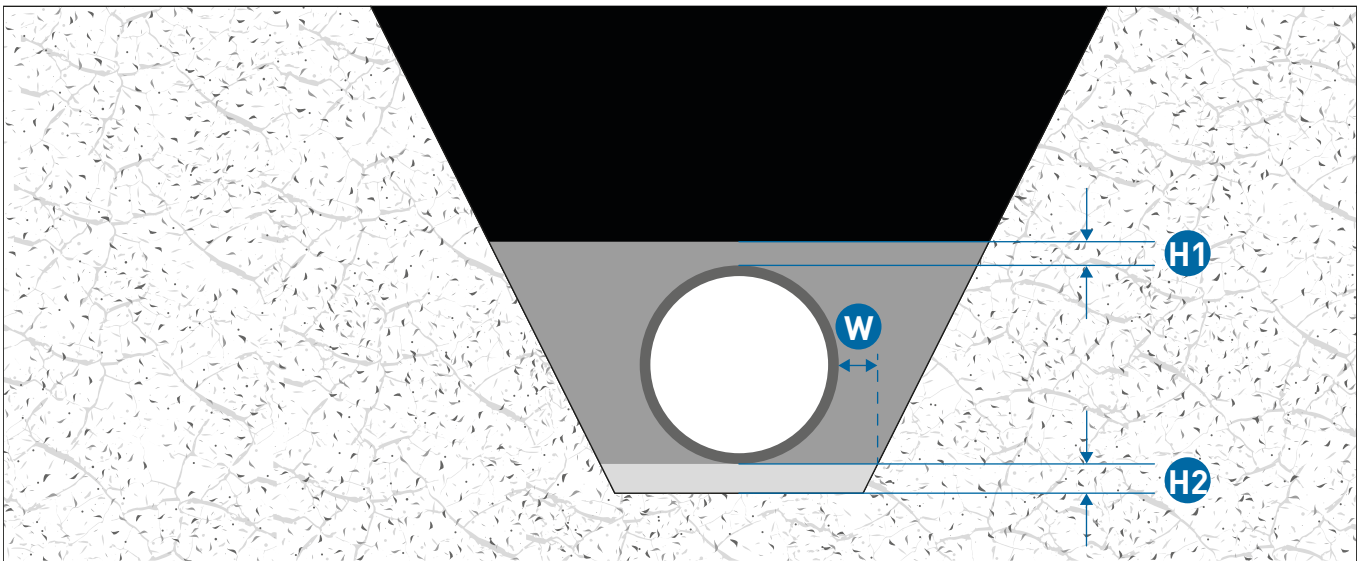
The use of heavy compaction equipment directly above the tank may damage the tank.

► Do not use mechanical compaction with vibrators directly above the tank or pipes.

► Follow the standard EN 1610 in all backfilling steps.

► Ensure that the bedding heights H1, H2 follow the requirements in EN 1610 and other currently applicable local standards and regulations.

• Ensure that the width W follows the requirements in EN 1610 as a minimum. For safety reasons, a width of 1 m is recommended.



Pipe bedding

► Ensure that the bedding soil is free from stones within the width of the pipe pit.

► Prepare the pit bottom bedding layer according to EN 1610.

► Compact the bedding layer mechanically.

► For installation in soft or wet soil, place geotextile under the bedding to keep the bedding and native materials separate.

Primary backfill

► Use backfill material according to EN 1610.

► Backfill over the whole pit width.

► Compact the backfill material according to EN 1610.

► Fill in the final layer of the primary backfill according to EN 1610.

► Spread the primary backfill material carefully from a low height.

► Take special care when compacting the haunch area.

► Ensure that the tank does not move during haunch area compaction.

► Place the primary backfill in even layers on both sides and in the lengthwise direction of the tank.

► Ensure that the soil material used is not frozen.

► Ensure the minimum backfill level according to EN 1610 before compacting directly above the tank.

Final backfill

- ► Ensure that the final backfill material is free from stones.
- ► Ensure that the final backfill material is compactable as dug materials or better.
- ► Follow the requirements for non-traffic or traffic areas described in EN 1610.
- ► Carry out compaction in several layers.

5.3.8 Installation under a traffic area

The tank can be installed in areas up to load class D400 (according to EN 124). The backfill layer above the tank is used to distribute the loads caused by pedestrian and vehicle traffic. The minimum total thickness of the backfill layer above the tank (dimension [A]) is shown in the following table. The stiffness is determined according to ISO 9969.

Load class	Test load	Traffic group description	Tank SN2 [A]	Tank SN4 [A]	Tank SN8 [A]
D	400 kN	Areas where cars and lorries have access, including carriageways, hard shoulders, and pedestrian areas.	-	1.0 m	0.8 m
B	125 kN	Car parks and pedestrian areas where only occasional vehicular access is likely.	-	0.8 m	0.6 m
A	15 kN	Only pedestrians have access.	0.3 m	0.3 m	0.3 m

Shallower installations can be carried out by using a concrete load-bearing construction.

- ► Follow local standards and regulations for the minimum cover depth.

NOTE!

If the site conditions do not allow the minimum installation depth, and dimension [A] will be less than in the table, it is possible to construct a steel-reinforced concrete slab above the tank. Landscaping designers must take all aspects of the site into account and define the structure and dimensions of load-distribution slab.

5.3.9 Risers and accessories

Risers/manholes can be included in the design for operation and maintenance. The riser top solution and riser cover are selected based on the riser pipe diameter. All traffic loads are transferred through the riser cover and riser top structure into the surrounding soil. This transfer ensures that no load is imposed on the tank itself.

6 Operation

6.1 Safety instructions

⚠ WARNING!

Injury because of insufficient personnel qualification!

Danger of injury when unqualified personnel carry out installation, operation and maintenance.

► Only qualified personnel carry out all work.

⚠ WARNING!

Danger of suffocation!

Lack of oxygen inside the tank can pose a risk of personal injury.

► Ensure sufficient air ventilation when working inside the tank.
► Install or wear oxygen monitoring sensors.
► Do not work alone inside the tank.

⚠ WARNING!

Injury due to personal protective equipment not being worn!

Unprotected body parts may be injured.

► Wear the mandatory personal protective equipment.

⚠ WARNING!

Risk of injury due to uncontrollable exit of the medium!

If leaking, the medium may exit uncontrollably under high pressure.

► Assume a protected working position.
► Wear protective clothing, if required.
► In case of leaks: close the inlet shut-off valve.

⚠ CAUTION!

Danger of falling over!

The inside of the tank can still be slippery because of residual water, even if the tank was drained or due to a biofilm or grease from equipment after maintenance.

► Wear safety shoes with non-slip soles.
► Do not step into residual puddles.

NOTICE!

Property damage because of insufficient personnel qualification!

Danger of property damage when unqualified personnel carry out installation, operation and maintenance.

► Only qualified personnel carry out all work.

- All operational work must be carried out in accordance with the health and safety regulations that apply for works on sewage networks.
- Any damage to the structure of the tank must immediately be reported to the manufacturer.

6.2 Operation

► Follow the component instructions for valves, pumps and measuring equipment.
► Regularly inspect the tank and the attached components, especially after heavy rainfall.
► Immediately remove any foreign objects and check if there is oil on the surface of the water.
► Ensure that the lids on the tank are closed and locked.

6.3 Cleaning

► For cleaning the tank, only use cleaning agents that are approved for Weholite products.
► Follow the component instructions on cleaning valves, pumps and measuring equipment.

7 Maintenance

A highly efficient operation of the tank is only possible when regular maintenance is performed. This means the need for periodic inspection and cleaning of the tank. This frequency will depend mainly on the specifics of the tank load. Supplementary recommendations and regulations may result from the building permit and operating permit.

7.1 Safety instructions

⚠ WARNING!

Injury because of insufficient personnel qualification!

Danger of injury when unqualified personnel carry out installation, operation and maintenance.

► Only qualified personnel carry out all work.

⚠ WARNING!

Danger of explosion!

Smoking or using open flames inside the tank may lead to the explosion of inflammable substances.

► Do not smoke or use open flames inside the tank.

⚠ CAUTION!

Risk of injury due to leaking gaskets!

Danger of injury by leaking medium due to damaged or aged gaskets.

► If possible, store gaskets in a cool, dry and dark place.

► Before installing them, the gaskets must be checked on possible aging damages, such as fissures and hardenings.

► Regularly check the gaskets and replace them, where necessary.

NOTICE!

Property damage due to wrong cleaning agents!

The use of aggressive cleaning chemicals can cause damage to components.

► Do not use aggressive chemicals or cleaning agents when cleaning.

► If the tank comes into contact with harsh chemicals, clean it thoroughly with a neutral detergent.

NOTICE!

Property damage because of insufficient personnel qualification!

Danger of property damage when unqualified personnel carry out installation, operation and maintenance.

► Only qualified personnel carry out all work.

To ensure the safety of personnel entering and maintaining a retention or a harvesting tank, the following rules must be strictly followed:

- If applicable, employers are responsible for ensuring that all maintenance personnel are properly trained in the risks of electric shock and hazardous gases (e.g. toxic vapors) and are equipped with the necessary personal protective equipment (PPE).
- Failure to comply with safety requirements voids any liability or damage claims.

► Ensure thorough ventilationbefore entry to eliminate harmful gases and ensure a safe working atmosphere.

► Ensure that only one person at a time stands on the tank's internal service ladder.

► Do not carry carry heavy or unwieldy items while climbing.

► Do not work alone inside the tank.

Compliance with standards and regulations

The tank is designed to be entered for inspection and servicing. Therefore, all safety features, including ladders and handrails, must comply with the currently applicable standards and regulations. These requirements must be strictly observed during both installation and maintenance.

7.2 Maintenance guidelines

Regular maintenance ensures the long-term functionality and safety of the tank. The tank body itself is largely maintenance-free, but cleanliness and periodic inspections are essential.

- Follow currently applicable standards and regulations or customer-specific needs for maintenance intervals.
- If needed, the ground frost insulation and/or thermal insulation of pipes can be done according to a respective plan and related standards and regulations.
- The customer might consider preparing for exceptional circumstances, such as power outage, with spare power source and/or –connection.
- Monitor and inspect components according to the component manuals.

7.2.1 General tank maintenance

- Keep the tank clean and free of clutter; wash walls with pressurized water and remove sediment from the bottom if necessary.
- Visually inspect the tank body and installed components for signs of wear, damage, or leaks.
- In winter, ensure access lids and surrounding areas are kept free of ice and snow. Apply frost protection or insulation as required by local regulations and site conditions.
- Maintain all installed equipment (e.g. valves, pumps or measuring equipment) according to the component manuals.
- Repair or replace faulty parts immediately to prevent system failure.
- Follow safety regulations applicable to wastewater and pressurized systems during all maintenance activities.
- Document all maintenance activities in a service log.
- Prepare for emergency scenarios (e.g. power outages) with backup power supply if applicable.
- Ensure waste management for any removed materials is handled by licensed companies and according to environmental regulations.

7.2.2 Weholite Stormwater Retention Tank maintenance

- Check the tank after each larger rain event to make sure that no debris is blocking the outlet.

7.2.3 Weholite Stormwater Harvesting Tank maintenance

- Depending on the installed equipment like filters, pumps or valves, follow their specific maintenance instructions.

7.3 Service log

Date	Operator	Action

8 Troubleshooting

8.1 Safety instructions

⚠ CAUTION!

Risk of electric shock!

Internal components may carry hazardous voltages that can cause serious injury or death if touched.

► Before working on wiring or terminals, always ensure the power supply is completely disconnected (zero potential).

► Only qualified personnel trained in electrical safety and authorized to work on industrial instrumentation perform installation, handling, and servicing.

8.2 Detecting a fault

- The tank does not work properly.
- If the tank contains a control panel with a display, an error code or fault message is displayed.

8.3 Correcting a fault

► Always work systematically and purposefully, even when under time pressure. Random, thoughtless disassembly and changing of settings might result in an inability to determine the original cause of the error.

► Get a general idea of the function of the tank in conjunction with the overall system.

► Try to find out whether the tank or a functional part of it has properly in conjunction with the overall system before the error occurred.

► Try to clarify the cause of the error.

► Check whether any changes were made immediately before the error occurred.

- Were there any changes to the conditions or the area of application of the tank?
- Were any changes (e.g. refitting) or repairs carried out on the overall system or on the tank?
- Was the tank used as intended?
- Have the environmental conditions changed?
- How did the fault become apparent?

Fault	Recommended action
There is no water in the pipes going into the tank.	► Check that all relevant shut-off valves are open. ► Check that all settings are correct. ► Check that all relevant filters are clean.
There is an issue with a component attached to the tank.	► Consult the component manual.

► For support regarding any fault, visit the website www.gfps.com/our-locations to contact your local GF specialist.

9 Disposal

- Before disposal, separate the individual materials into recyclable materials, normal waste and hazardous waste.
- For questions concerning the disposal of the tank, contact your national representative of GF Industry and Infrastructure Flow Solutions.
- Observe local regulations, standards and guidelines.
- Consult the safety data sheet of the product.
- Products with electrical components must be disposed of separately.
- A component marked with this symbol must be taken to separate collection of electrical and electronic equipment:

The full plastic tank body can be recycled as such by companies specialized in recycling plastic complexes into products, that don't require drinking water approval and allow using recycled raw materials. Up-to-date list of such companies can be viewed from local plastic manufacturers associations web pages.

10 Spare parts and accessories

10.1 Spare parts

Contact your GF representative for information on spare parts for your GF product.

10.2 Accessories

Contact your GF representative for information on accessories for your GF product.

Excellence in Flow

Visit our webpage to get in touch with your local specialist:
www.georgfischer.com/locations

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