



Installation Guide

Below Ground Tank
Concrete Surround

Manual Version OM00014 UTG9502 Rev 11

Created On: February 2022



**Installers: To Safeguard Warranty Please
Ensure You Are Using The Latest
Installation Manual**

Installer/Customer Checklist

Complete Installation Record



Page 4

Read Important Customer Information



Page 5

Register Your Warranty



Page 6

Familiarise Yourself With This Manual



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Installation Record

Please record details of your Rewatec tank installation here and keep this document in a safe place.

Serial Number:

Commissioning Date:

Commissioning Company

Name: -----

Address: -----

Contact: -----

Service Company

Name: -----

Address: -----

Contact: -----

If you require assistance finding a service company, please contact Premier Tech. Your warranty is invalidated if you do not keep to a regular servicing schedule.



PT Water and Environment UK

+44 (0) 191 587 8650

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PT-WaterEnvironment.co.uk





Important Information

1. These guidance notes refer only to the installation of Premier Tech Aqua underground GRP Tanks suitable for concrete surround.
2. These guidance notes do not provide specific, site-related installation instructions.
3. If in any doubt about any aspect of the installation, please contact Premier Tech Water & Environment.
4. Generally, the depth from finished ground level to the top crown of the main tank shell should be no more than 2 meters.



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Thank you for purchasing a Premier Tech product.



To activate your warranty complete the form below to receive your warranty certificate by email:

premiertechaqua.com/en-gb/warranty-activation



Alternatively, you can send us your Warranty registration by post – see instructions at the end of this document

- Your Rewatec Below Ground Storage Tank is supplied with a 25-year Parts and Workmanship guarantee.
- This warranty is dependent upon the plant being installed, operated and maintained in accordance with this Installation, Operation and Maintenance Manual.
- Proof of correct installation and plant maintenance (servicing) including purchase of serviceable parts **MUST** be retained, as these will be required in the event of any warranty claim.

Failure to comply with the above Terms and Conditions will invalidate the warranty.

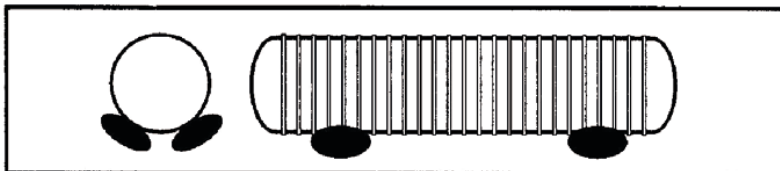
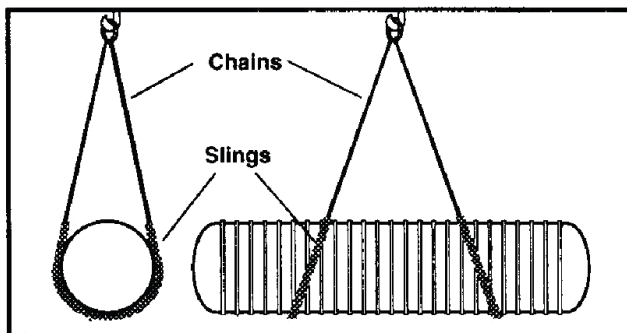
Premier Tech Water & Environment Ltd accepts no liability for any damage or loss, including consequential loss, caused by the failure of any equipment supplied.

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Transportation, Unloading & Storage of Tanks

1. Tanks must be held down during transportation using nylon straps, do not use chains, cables or wire ropes to hold tanks.
2. Do not over tighten straps, causing deformation of the tank shell.
3. Tanks are best lifted by a crane utilising webbing lifting straps. Do not use chains, cables or wire ropes in contact with the tank.
4. It is recommended that a lifting beam is used for tanks longer than 8 meters.
5. Smaller tanks may be lifted with other suitable site equipment, but greater care is needed to control the lift and to ensure the tank is not damaged.
6. Not all tanks will have their centre of gravity at the centre of the tank. Therefore, the lifting straps need to be arranged to ensure the tank is stable during lifting.
7. Move tanks only by lifting and setting, do not drag or roll.
8. Do not drop or roll tanks from the delivery vehicle.
9. Place tanks carefully onto a smooth level even surface, free from rocks, large stones or other debris that could cause point loads on the tank shell.



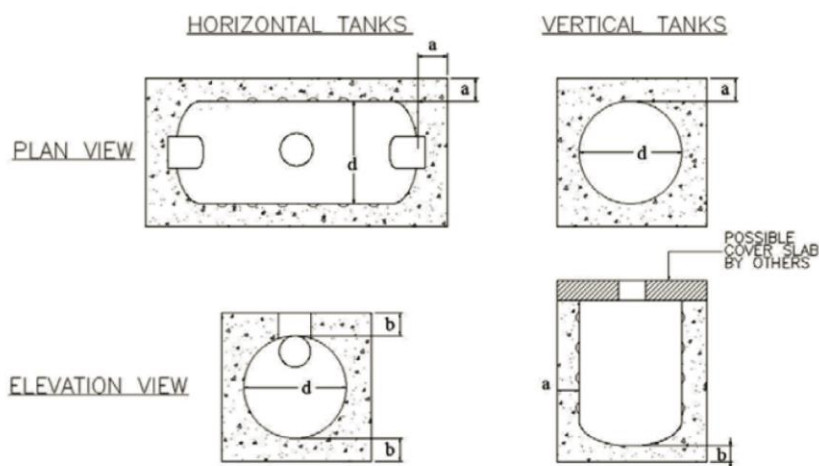
10. Chock tanks using tyres, sandbags or similar to prevent rolling.
11. In high wind conditions, consideration should be given to strapping down the tanks to prevent damage.

Pre-Installation Inspection

1. Tanks should be subject to a visual inspection prior to installation. Special consideration should be given to strap positions. Check for:
 - Fractures to the shell or ribs
 - Delaminations
 - Scratches or abrasions deeper than 1.5mm
 - Stress cracks or star crazing.
2. Any damage should be notified to the delivery driver and to Premier Tech Water & Environment.
3. Do not undertake any unauthorised repairs, as this will invalidate the tank warranty.
4. Check that the invert depth is correct, the tank is correct grade for concrete surround and that the inlet and outlet pipe orientations are correct.
5. Where present, all fixings (nuts, bolts, screw fixings etc.) should be checked and retightened to correct any movement during transport. Premier Tech Water & Environment do not accept responsibility for fixings that have not been checked prior to the tank entering service.

Excavation

1. Excavations should be planned with due regard to Health and Safety requirements and should be either shored or battered back to a “safe” angle.
2. The excavation should allow for the minimum concrete surround thickness (tank sides /ends and base) as shown in the table below, while taking into account any shoring used.
3. Ground instability at formation level e.g. running sand, may necessitate over-excavation and stabilisation with hard core or blinding concrete.



Minimum Concrete Surround Thickness

Tank Diameter (mm): D	'a' Minimum (mm)	'b' Minimum (mm)
1000	150	150
1200	150	150
1500	200	200
1800	250	250
2500	300	300
3000	300	300
4000	350	300

Buoyancy and Anchoring

The dimensions, in the above table, may need to be increased if there is a risk of high ground water level at the tank location. To avoid floatation, we recommend a factor of safety of 1.5 against floatation. Mass concrete has a minimum density of 2,300 kg/m₃.

Concrete Specification

1. The specification for the concrete mix to surround the tank should be selected by the tank installer taking into account the site conditions and application requirements.
2. For a typical non-structural application in good ground conditions, with non-aggressive soils, a concrete with a 28 day compressive strength of 20 to 30N/mm₂ with a 25 to 50mm slump, complying with the relevant BS EN, is generally suitable. For non-typical applications, aggressive soils or structural applications, specialist advice should be obtained.

Lift Height (Rate of Rise)

Determine the lift height (m), or rate of rise (m/h) for the specific concrete type used, to ensure that a design pressure (P max) of 15kN/m₂ on the tank is not exceeded.

Vibration

The design of the tank assumes minimal compaction of the surrounding concrete. Where necessary, this may be extended to include light internal vibration. Do not use deep revibration which will substantially increase the pressure on the tank, possibly causing failure.

Impact of Concrete on Discharge

The effects of concrete discharge impact are considerable. These effects must be considered to ensure the maximum pressure of 15kN/m₂ on the tank is not exceeded. Under no circumstances should concrete be discharged directly onto the tank.

Live Load

If the tank is installed in an area where traffic, or other superimposed loadings can be applied, a structural engineer should be consulted, to design a reinforced concrete slab spanning over the tank. This is to prevent the load being transmitted to the tank (or its concrete surround). If this slab is constructed immediately above the tank, it should be separated from the concrete surrounding the tank by compressible material.

Control of Groundwater

Tanks must not be subjected to buoyant forces during installation, taking account of ground water levels and surface water run-off, and their accumulation in the tank excavation. This applies even if the tanks are mechanically anchored.

Installation Procedure

1. Maintain a completely dry excavation until the final pour of concrete has set. Failure to do this may result in voids beneath the tank and subsequent tank failure.
2. Place the concrete in the base of the excavation to form a level and smooth base onto which the tank can be placed. The base concrete thickness should be in accordance with the information provided above.
3. Place the tank onto the concrete base, while the concrete is still wet, and determine the correct orientation for the tank pipework. Connect the pipework to the tank, ensuring correct alignment.
4. Fill each chamber of the tank with clean water to a depth of 300mm and recheck the pipework levels and connections. Commence backfilling evenly around the tank with concrete ensuring there are no voids, particularly at the bottom of the tank shell. Continue filling the tank chamber(s) with water whilst evenly backfilling with concrete around the tank ensuring that the progressive water level is no more than 300mm above the concrete level.
5. Connect and seal turret extensions prior to completing the concrete encasement of the main tank (the height shown in the above table). Allow the concrete to cure.
6. Using appropriate formwork continue pouring concrete around the tank superstructure, i.e. access turrets, in lift heights not exceeding 500mm, allowing the concrete to set between each lift. The lift height, rate of concrete rise, or concrete compaction must not be to an extent which causes any part of the tank superstructure to distort, as this will damage the tank.
7. Complete the backfill to ground level using free flowing granular material. Trim all access turrets and prepare suitable footings for each manhole frame ensuring any loads on the covers are not transmitted to the tank access turrets or access extensions, if fitted.

Access Shaft Extensions

1. Access extensions should be surrounded with concrete poured in 500mm lifts, allowing an initial set between each lift. The pressure from concrete placed in higher lifts may cause access extensions to distort or collapse.
2. Loose shafts should be sealed using silicon sealant, sikaflex –291, or similar prior to installation to prevent ingress of groundwater under high water table conditions. It is the installation contractor's responsibility to ensure a watertight seal.
3. Use of other than specified backfill/bedding materials will void the tank warranty.
4. All backfill material shall be free of ice and snow at time of installation. Backfill material shall not, during placement, be frozen or contain lumps of frozen material.
5. The turrets should be braced internally to prevent from bowing at each point with extendable braces and plywood or a temporary shuttering internally. Braces should be placed at all four sides of the shaft as well as in the connection between shafts if more than one extension issued. Alternatively, casting a concrete sleeve or 'chimney' could be constructed in the presence of braces. The design of the surround should be able to support the vertical loading that the tank will be subjected to during its lifespan once the installation is completed.

