

Installation Guidelines for Spherical Septic Tanks and Cesspools

These guidelines represent Best Practice for the installation of GRP spherical tanks. Many years of specialist experience has led to the successful installation of thousands of units. It must be noted, however that these guidelines are necessarily of a general nature. It is the responsibility of others to verify that they are appropriate for the specific ground conditions and in-service loads of each installation. Similarly, a qualified specialist (ie: civil engineering consultant or certified installer) must verify any information or advice given by employees of Synergy Wastewater Treatment Products regarding the design of an installation.

BEFORE INSTALLING YOUR TANK

- Ensure Building Regulation approval
- Ensure ground porosity is suitable
- Inspect tank for damage before installation. Our tanks have been fully tested before despatch. Once the tank has been installed, we cannot accept claims for damage.
- Check that you have correct invert drain depth (neck height) of tank. A label indicates the maximum permissible depth.
- Ensure access for desludging tanker.
- Check orientation and heights of inlets and outlets.
- Check that the tank is suitable for its application. Septic Tanks and Cesspools should not be used for silage effluent, chemical toilet waste or any other chemical. Consult Synergy Wastewater Treatment Products if in doubt.

DO:

- Use the correct backfill material.
- Site tank at the furthest practical location from habitable dwellings. Most building regulations recommend a minimum of 15m, some require 25m.
- Fit the correct cover & frame (pedestrian duty supplied).
- Consider drainage falls, generally 1 in 60/70 between house and tanks and max 1 in 200 for irrigation system.
- Lift the tank using ropes or slings through both of the eyes fitted either side of the neck.
- Ensure the tank is adequately vented.

DO NOT:

- Subject the tank to impact or contact with sharp edges.
- Add neck extensions to the tanks or build a brick manhole above the tank neck (as this increases burial depth of the tank). We do not recommend extending the neck of the tank under any circumstances.
- Install tank deeper than the depth that the fitted neck will allow.
- Install in trafficked areas without a suitable backfill design.
- Site the tank so that it is subjected to excess ground pressure or applied loads.
- Lift using only one of the eyes.
- Fill an unsupported tank.

SYNERGY WASTEWATER TREATMENT PRODUCTS INSTALLATION OF SEPTIC TANKS IN WET GROUND AND INSTALLATION OF CESSPOOLS IN ALL CONDITIONS

Wet ground is where ground water lies above the base of the tank at any time or in slow clay soils.

1. Excavate a hole to appropriate depth allowing at least 300mm for concrete and hard-core base. Allow for tank width plus at least 400mm with additional allowance for any necessary shuttering. De-water the excavation using suitable pumping equipment. Ensure that the pump discharge does not saturate the ground in the immediate vicinity. De-watering is to continue until you are satisfied that the concrete has cured.
2. Lay at least 150mm of hard-core in the base of the excavation. Line the complete excavation with polythene sheeting.
3. Lay a bed of concrete (minimum 150mm thick) on top of the polythene at the base of the excavation.
4. Lower the tank onto the concrete bed, ensuring that the inlet and outlet (septic tank only) are in the correct position.
5. Ensure the tank is upright, then ballast it with water to a maximum of 500mm deep.
6. Haunch up the concrete bed at 450mm all round the base, ensuring that all voids in the concrete are eliminated and at least 150mm of concrete is left below the tank base.
7. Backfill to the invert depth with concrete. Ensure that the water level inside the tank is maintained no more than approx 250-300mm above concrete backfill level. Backfill evenly all around the tank, consolidating in layers. The backfilling should start before the base has hardened and be a single continuous operation so that the tank has a full concrete jacket without joints.
8. DO NOT use vibrating rammers to consolidate concrete. DO NOT discharge concrete directly on to tank.
9. Align and connect pipework. The septic tank inlet should be at least 25mm above the outlet pipe.
10. Build up a shell of concrete around the neck of tank to 150-200mm thickness before completing the backfill with a suitable material. Care must be taken to avoid distortion of the neck whilst concreting this area. Support the neck with a temporary internal brace or frame.
11. Trim the tank neck to ground level using a fine toothed saw. 450mm is the recommended minimum invert depth for frost protection of pipes. Do not cut the neck less than 350mm above the inlet invert.
12. Fit cover and frame. Apply surface finish (e.g. turf).
13. Do not empty tank until the concrete backfill has cured. Septic Tanks may be left filled with water, this will be displaced as sewage enters.

Cesspools may be emptied once the concrete has cured.

INSTALLATION OF SEPTIC TANKS – DRY GROUND

Where ground water lies below base of tank at all times and ground is free draining. Cesspools must be installed using the wet ground method.

1. Excavate a hole at least 300mm wider and 150mm deeper than the tank, with additional allowance for any necessary shuttering.
2. The tank must be bedded on concrete. Lay a bed of concrete (min 150mm thick) at the base of excavation.
3. Lower the tank onto the concrete bed, ensuring that the inlet and outlet are in the correct position.
4. Ensure the tank is upright, then ballast it with water, to a maximum of 500mm deep.
5. Haunch up the concrete bed at least 450mm all round base, ensuring that all voids in the concrete are eliminated and at least 150mm of concrete is left below the tank base.
6. Backfill to invert depth with pea shingle or similar non-cohesive and non compressible, rounded, free flowing material. Ensure that the water level inside the tank is maintained approx 250-500mm above the backfill level. Backfill evenly all round the tank. **DO NOT USE SAND OR SITE SPOIL AS A BACKFILL MATERIAL.**
7. Align and connect pipework. The septic tank inlet pipe should be at least 25mm above the outlet pipe.
8. Continue the backfilling to ground level. Care must be taken to avoid distortion of the neck when backfilling this area. Use either a temporary brace to support neck from inside or use a suitable frame. (Covers and frames are available for a separate purchase).
9. Trim the tank neck to ground level using a fine toothed saw. Do not cut the neck to less than 350mm above the inlet invert. 450mm is the recommended minimum invert depth for frost protection of pipes.
10. Fit cover and frame. Apply surface finish (e.g. turf)
11. Leave septic tank filled with water, this will be displaced as sewage enters.

MATERIALS SPECIFICATIONS

Concrete – All references to concrete are for 20 N/mm² – 20mm aggregate – 25mm slump mix. BS5328 Parts 1-4.

Pea Shingle – 6mm-10mm rounded pea shingle offering low point loading characteristics is the most suitable material for backfilling tanks.

Polythene Sheet – Building quality 500 gauge.

CONNECTING PIPEWORK/TRENCHING/ INSPECTION CHAMBERS/VENTILATION

Building regulations provide guidance as to the specification of materials used & fitted. It is important that these are consulted and complied with as the operation of the septic tank/cesspool can be adversely affected. No surface water should be allowed to enter a septic tank system as this impairs its performance and affects the size of unit selected. Surface water should only be excluded from cesspools as it can seriously affect emptying amount.

Notes for Septic Tank and Cesspool Users

Do not use septic tanks or cesspools to dispose of Motor Oils, Grease, Paint, Chemical Toilet Waste or similar chemicals. Desludge septic tanks at least annually. Empty cesspools as required.

SELECTION AND SITING

Before specifying or installing a septic tank you should consider the following points:

- A septic tank system comprises a septic tank, a suitable cover and frame and a subsurface irrigation/distribution system (soakaway system).
- If there is insufficient area or the ground is not suitable for the construction of an effective subsurface irrigation system a septic tank will not function and some other means of sewage disposal must be used.
- Cesspools are storage vessels with no outlet. They must be emptied when full. Septic tanks and cesspools are not suitable for chemical toilet waste or silage effluent.
- A septic tank discharge requires permission from the Environment Agency (England & Wales), the Scottish Environmental Protection Agency or Local Authority Public Health Department (Ireland).
- Planning permission and Building Regulation approval may be required. Building regulations require the tank/system to be sited to avoid contamination of water supplies. We suggest that septic tanks and cesspools should be sited at the maximum practical distance from the property(ies). Where possible they should be sited a min of 15m from any dwelling and 25m is suggested in the regulations.
- Roof & surface water drains must not be connected to any tank system, it should be connected to a separate soakaway.

SEPTIC TANK SELECTION

The possible number of people using the facility, and the level at which it is to be installed governs the tank model selected. We supply 1.0m invert – 1.5m invert depth available to order.

SITING CONSIDERATIONS

Where possible, take advantage of site gradients to minimise the invert depth at the tank inlet, as this will reduce excavation. The tank neck can be trimmed to suit, subject to retaining a minimum of 350mm provide suction tanker access. The vertical distance from the base of the tank to the ground level of the hard standing area should be less than 5 metres.

Avoid siting tanks in sloping ground as this can cause excessive ground pressure on the tank.

GRP tanks are not designed to accept any traffic loads.

Synergy Wastewater Treatment Products pumping systems are available (details on request) to raise the discharge from a septic tank to a soakaway system to a higher level.

We recommend the installation of sample chamber down stream of the septic tank so that the effluent quality and soakaway systems can be checked.