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<http://www.agrement.co.za>

Validity

Users of any Agrément certificate should check its status: all currently valid certificates are listed on the website. In addition, check whether the certificate is [Active](#) or [Inactive](#).

The certificate holder is in possession of a confirmation certificate attesting to its status.

Quick guide

Contents	page 3
Preamble	page 4
Conditions of certification	page 5
Assessment	page 7
Technical description	page 10
Drawings	page 14

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Use

The certificate covers the use of the JoJo Septic Tanks as an on-site sanitary disposal system (digester) in conjunction with sub-soil percolation systems (soak-away or French drain) in all regions of South Africa where soils have good drainage properties.

This certificate and Agrément South Africa's assessment apply only to the JoJo Septic Tanks that are manufactured by JoJo Tanks (Pty) Ltd. They are installed in accordance with the certificate holder's installation brochure and as described and illustrated in this certificate, and where the terms and conditions of certification are complied with.

General description

The JoJo Septic Tank is a prefabricated and rotary-moulded polyethylene digester tank. It is available in liquid capacities of 1250, 1500, 1750, 2000, 2500 litres and 6000 litre Conservancy tank (see Figure 5).

It is fitted with a 110 mm inlet and 50 mm outlet pipes and a 390 mm diameter lid which is filled with concrete after installation of the septic tank. The 6000 litre conservancy tank is fitted with a 110 mm inlet and 50 mm outlet pipe and 415 mm diameter lid.

The digester facilitates the separation of solids and bio-degradation (both in the form of floating scum and settled sludge), from the liquid fraction of the waste to a level that the effluent from the digester can be discharged into a sub-soil percolation system (soak-away or French drain) in accordance with **SANS 10400: Part P (Drainage)** and specific rule PP28 (*in-situ* percolation test for soils) or transported by a sewer to a treatment facility.

SANS 10400: The application of the National Building Regulations

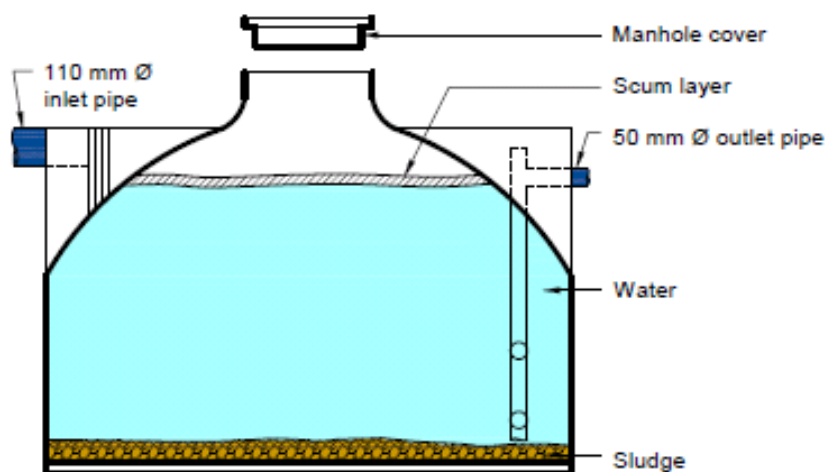


Figure 1: Typical section through the septic tank

CONTENTS

PREAMBLE

PART 1: CONDITIONS OF CERTIFICATION

PART 2: ASSESSMENT

Scope of assessment

Assessment

Table 1: Compliance with National Building Regulations

Table 2: Performance

Table 3: Quality management system

PART 3: TECHNICAL DESCRIPTION

General description

General conditions

Manufacturing requirements

Installation requirements

Manufacture

Handling and storage

Installation

Maintenance

Desludging

Technical drawings

Underground installation procedure of the 6000 litre tank

PREAMBLE

This certificate is issued by Agrément South Africa in terms of the powers granted to it by the Minister of Public Works. This certificate:

- has been granted after a technical appraisal of the performance of the JoJo Septic Tanks for the [uses](#) covered by the certificate,
- is independent of any patent rights that may or may not subsist in the subject of the certificate, and
- does not relieve the user from the obligation to obtain the prior approval of the building authority concerned for the use of the subject.

Agrément South Africa considers that the quality and performance of the JoJo Septic Tanks will be satisfactory, provided that the requirements stipulated in this certificate are adhered to. However, Agrément South Africa does not on behalf of itself, or the State, or any of its employees or agents, guarantee such quality or performance.

Responsibility for compliance with the requirements of this certificate and the quality of the finished product resides with the certificate holder.

No action for damages, or any other claim whatsoever, lies against Agrément South Africa, its members, the State or any of its employees should the said material fail to comply with the standard set out in this certificate.

Interested parties or users who are in any doubt about any detail or variation should contact [Agrément South Africa](#).

The validity of this certificate is reviewed every three years. The certificate shall remain valid as long as Agrément South Africa is satisfied that:

- the certificate holder complies with the general and specific conditions of certification and the technical requirements stipulated in the certificate
- the performance-in-use of the subject is acceptable
- any changes in building legislation, regulations, relevant standards or Agrément performance criteria have not invalidated the technical assessment which formed the basis of certification.

Agrément South Africa reserves the right to withdraw the certificate at any time, should reasonable cause exist.

Notices affecting the validity of this certificate will be published in the *Government Gazette*.

PART 1: CONDITIONS OF CERTIFICATION

The JoJo Septic and Conservancy (digester) tanks as described in this certificate must be:

- manufactured by the certificate holder
- installed in accordance with:
 - the technical description set out in [Part 3](#)
 - the certificate holder's installation manual
 - good building practice.

Any change to the material formulation, the production process, or the installation techniques set out in the certificate holder's brochure could result in various aspects of the performance of this product no longer complying with Agrément South Africa's performance criteria. Any change not authorised by Agrément South Africa in writing prior to its implementation will invalidate this certificate and the certificate can then not be used to demonstrate compliance with the National Building Regulations.

Republic of South Africa. *National Building Regulations*, Government Notice R. 2378, Government Gazette No 12780, Pretoria, South Africa, 12 October 1990

General conditions

Marking

The JoJo Septic and Conservancy (digester) tanks must be suitably marked with a sticker of Agrément South Africa's identification logo together with the number of this certificate.

Validity

The continued validity of this certificate is subject to a satisfactory review by Agrément South Africa every three years.

Quality monitoring

The certificate holder is required to participate in Agrément South Africa's post-certification quality-management system, which requires:

- that the certificate holder shall continue to implement and manage the quality management system approved by Agrément South Africa in the assessment of the JoJo Septic/ Conservancy Tanks
- the co-operation of the certificate holder in facilitating post-certification quality monitoring by Agrément South Africa or its authorised agents.

Reappraisal

- must be requested by the certificate holder prior to implementing changes to the product
- will be required by Agrément South Africa if there are relevant changes to the National Building Regulations or to Agrément criteria.

**JoJo Septic Tanks Amended
December 2012**

Tested and approved fit for purpose for use as a sanitary disposal system when used as specified in

CERTIFICATE 2009/359

Amended December 2012



This certificate may be withdrawn if the certificate holder or a registered licensee fails to comply with these requirements.

On behalf of the Board of Agrément South Africa

A handwritten signature in black ink, appearing to be 'M. Pieterse', written in a cursive style.

Chairperson
20 February 2013

PART 2: ASSESSMENT

Scope of assessment

This assessment applies to the innovative aspects of the JoJo Septic/ Conservancy Tanks. These aspects have been assessed as an integral part of a product that comprises both innovative and conventional aspects.

The innovative aspects are:

- the materials used in the manufacture of the septic tanks and
- the design of the septic tanks and the cover lids
- the functionality of the septic tanks

Assessment

In the opinion of Agrément South Africa, the JoJo Septic/ Conservancy Tanks as described in the certificate are suitable for the use specified (see page 1).

The performance-in-use of the products will be such that the septic tanks will satisfy:

- the requirements of the National Building Regulations stated in Table 1. Any regulation not specifically referred to is considered to be outside the scope of this certificate and must be applied by the local authority in the normal manner.
- Agrément South Africa's performance criteria.

Agrément South Africa's detailed comments on the assessment are set out in Table 1, 2 and 3 below. Each aspect of performance was assessed by experts in that field.

Table 1: Compliance with National Building Regulations

Aspects of performance	Opinion of Agrément South Africa	National Building Regulations satisfied
Materials	Satisfactory.	The materials used in the JoJo Septic Tanks are deemed to satisfy the requirements of Regulation A13 (1) (a) : Materials.
Drainage	Satisfactory. Provided soil percolation conforms to rule PP28 of SANS 10400: Part P.	The design of drainage installations in the JoJo Septic Tanks are deemed to satisfy the requirements of Regulation P2 (2) (a) and Rules PP10.1(b), PP10.2(a), PP10.4(c)(i) and (ii) : Drainage.
Non-waterborne means of sanitary disposal	Satisfactory	The means of sewage disposal used and the construction, siting and access of the JoJo Septic Tanks are deemed to satisfy the requirements of Regulation Q3 (1) and Rule QQ2.3 : Non-waterborne means of sanitary disposal.

Table 2: Performance

Aspects of performance	Opinion of Agrément South Africa	Explanatory notes
Tank loading test	Satisfactory	Tests were conducted on an empty intermediate tank (1750 litre capacity). The tank was placed in a hole with a minimum cover of 500 mm thick dry river sand or similar suitable compacting material. The sand was then saturated with water on the one side for 30 minutes. There was no noticeable inward bending of the walls on the wetted side and there was also no water penetration into the tank. In practice, the tank should be filled with water and this will result in the walls bending outwards and will be subjected to passive earth pressure from the outside resulting in a state of equilibrium.
Effluent analysis	Satisfactory.	Effluent samples were analysed and the suspended solids content was found to be within the limits specified in Agrément booklet ACTMAP 2 and acceptable for discharge into a sub-soil pit or small-bore sewer.
		ACTMAP 2: General requirements, test methods and performance criteria for the assessment of on-site digester systems
Chemical resistance	Satisfactory. Provided it is directly connected to the toilet.	Polyethylene is resistant to chemicals found in uncontaminated soils and domestic waste. NB: The JoJo Septic Tanks should not be used in landfill sites contaminated with organic solvents or compounds containing chlorine. Neither should organic solvents and products containing chlorine be used as cleaning detergents.
Seal rings	Satisfactory.	Seal rings to the tanks are made from natural rubber with permanent set characteristics, formulated for ultra-violet, chemical and abrasion resistance.
Durability	Satisfactory for the purposes envisaged.	Agrément South Africa is of the opinion that no significant deterioration of the product will take place when the JoJo Septic tanks are used as set out in this certificate and the lifespan will be satisfactory.

Table 3: Quality management system

Aspects of performance	Opinion of Agrément South Africa	Explanatory notes
<p>Quality management system</p>	<p>Satisfactory. The certificate holder's quality management system complies with Agrément South Africa's requirements. Properly applied, the quality management system will ensure that acceptable standards are maintained in the manufacture and installation of the JoJo Septic Tanks.</p>	<p>Agrément South Africa's requirements, based on SANS 9001.</p> <div data-bbox="879 479 1268 607" style="border: 1px solid green; padding: 5px; margin: 10px auto; width: fit-content;"> <p>SANS 9001 <i>Quality management systems-Requirements</i></p> </div>

PART 3: TECHNICAL DESCRIPTION

General description

The JoJo Septic Tank is a rotary-moulded polyethylene prefabricated digester tank. It is available in liquid capacities of 1250, 1500, 1750, 2000 and 2500 litres. It is fitted with a 110 mm inlet and 50 mm outlet pipes and a 390 mm diameter lid which is filled with concrete after installation of the septic tank.

The 6000 litre conservancy tank is fitted with a 110 mm inlet and 50 mm outlet pipe and 415 mm diameter lid.

The digester facilitates the separation of solids and bio-degradation (both in the form of floating scum and settled sludge), from the liquid fraction of the waste to a level that the effluent from the digester can be discharged into a sub-soil percolation system (soak-away or French drain) in accordance with **SANS 10400: Part P (Drainage)** and specific rule PP28 (in-situ percolation test for soils) or transported by a sewer to a treatment facility.

The septic tank receives the sewage, separates solids from liquids, stores scum and solids, provides for limited digestion of organic matter and allows the liquid to be discharged for further treatment by the disposal system.

Solids and partially decomposed matter settle at the floor of the septic tank and accumulate as sludge, while lightweight matter such as fats and grease rise to the surface and accumulate as scum. This results in the formation of three layers in the tank:

- a layer of sludge at the bottom
- a floating layer of scum and
- a layer of reasonably clear liquid in between

Colloidal substances initially remain in suspension, but later coagulate to form larger particles which rise or fall depending on their density.

General conditions

The following aspects need to be taken into considerations in relation to the installation and use of the JoJo Septic tanks:

- the local municipality needs to be contacted for rules, regulations and approval before purchase of the tank
- septic tanks must not be installed in soils with high clay content or in areas with a high water table.
- to enhance the bio-degradation process, *Pitking* (a catalyst that accelerates bacteria action) or similar, is recommended
- it is recommended to make provision for a vent-pipe outside the toilet to prevent the build-up of gases in the septic tank

- effluent from the septic tanks is not suitable for human/ domestic use or discharge directly any water course that may be used for consumption
- 'grey' water from the kitchen, shower and bathroom should not enter the septic tank
- it is advisable to seek expert opinion before desludging (removing layer of sludge at the bottom of the septic tank)
- regular annual checks are recommended in accordance with the manufacturer's specifications when the septic tank has been in use for a period of four to five years.

Manufacturing requirements

The requirements below highlight details of the JoJo Septic Tanks that require special attention during the manufacturing process:

- the quality of all incoming materials must be adequately controlled and all records kept and maintained to demonstrate achievement of the required quality and effective operation of the certificate holder's quality management system
- adequate records must be kept of routine inspections and tests carried out to ascertain that the quality of all manufactured components are as specified

Installation requirements

The requirements below highlight details of the JoJo Septic Tanks that require special attention during the installation process:

- septic tanks must be filled with water before backfilling
- backfilling must be in accordance with the installation instructions contained in the certificate holder's installation manual or as explained in this certificate
- backfill material must not contain large stones or rocks (30 mm maximum), rubble, peat or clay
- during the construction and installation of site services, the septic tanks must be protected from construction vehicles passing nearby, by clearly marking the position of the tank with four posts and barrier tapes
- the positioning of the septic tank on site should be such that it allows easy connection of incoming effluent drain to the inlet of the septic tank and the linking up of the outlet to the sub-soil percolation system or sewer. It must also not be closer than 2mm from roads or driveways.
- the recommended underground installation procedure for the 6000 liter conservancy tank with a soil classification table is attached on pages 22 to 25.

- The soil classification and instructions may be consulted as guidelines on the smaller septic tanks as well.

Manufacturing process

SANS 52566-1: *Small wastewater treatment systems for up to 50 PT.*
Part 1: Prefabricated septic tanks.

The JoJo Septic Tank is manufactured from a linear, low density polyethylene, utilising a rotary process producing an integral unit which is a completely watertight receptacle for all sewage and waste water in accordance with **SANS 52566-1**. Only virgin material and the polymer characteristics for black compounding with the following characteristics are used:

- Melt Flow Index (MFI) - 3.62
- Material Fatigue Rate (MFR) - 24.00
- Density - 0.9424

The raw material is weigh-batched and placed in the mould. The mould is baked in an oven for a designated period while being rotated. It is then taken out of the oven for a short pre-cooling curing period. The mould is then further cooled in a cooler and then de-moulded. Once de-moulded, the product's wall thickness is checked as well as the smoothness of the inside of the septic tank.

Handling and storage

The JoJo Septic/ Conservancy Tanks are manufactured to withstand normal handling during transportation and installation. To avoid unnecessary damage, care should be exercised in handling and the septic tanks should not be dropped or dragged along the ground. It must also be protected against sharp objects when in transit.

The storage area must be kept clean and free from objects that could damage the septic tanks.

The septic tanks must be stored in an upright position and away from direct heat or alternatively covered if prolonged exposure to sunlight is anticipated.

Installation process

Septic Tanks- 1 250 to 2 500 litres

The tank must be installed a minimum distance of 3m from any buildings. In normal ground conditions, a hole of at least 400 mm wider than the required septic tank is excavated to the required depth. The base must be level and then filled with a layer of 100 mm thick compacted river sand. Narrow trenches are then excavated to accommodate inlet and outlet chutes.

On completion of the excavations, the required septic tank is positioned centrally in the hole, ensuring that it is vertical and correctly aligned. The tank must be empty and filled with

water before backfilling with wet river sand in compacted layers of 150 mm thick.

After installation of the septic tank, the cover lid is then placed in position and filled with concrete. Subsequently the hole is covered with a 50 mm thick concrete apron which:

- prevents water from penetrating down the sides of the septic tank
- indicates the position of the septic tank
- together with the soil on top of the domed roof and water in the tank ensure that the septic tank does not float in case the water table rises.

In the case of a 'wet site' installation (i.e. where seasonal water table is high and the bottom of the tank is wet, a 150 mm thick, 15 MPa concrete base is cast and the septic tank placed on the wet concrete and haunched at the bottom of the septic tank. After initial curing of the concrete has occurred, the septic tank is filled with water while backfilling in 250 mm layers with un-vibrated 15 MPa concrete with suitable workability to ensure adequate compaction, until the concrete encasement reaches the underside of the outlet pipe invert. It is essential that these two operations are carried out simultaneously to avoid the risk of the digester lifting off the base.

When the level of the backfill reaches the underside of the inlet and outlet pipes invert, the pipe connections to both are made and the concrete filled manhole cover lid placed in position. Backfilling is completed when it is level with the top of the septic tank or natural ground level.

When excavations exceed 1,5m in depth, safety precautions need to be taken to ensure no collapse occurs and to meet safety and healthy requirements.

B. Conservancy / Digester 6 000 litre tank

The installation instructions and soil classification instructions for the 6000 litre conservancy as digester tank is recommended for any submersible installation. (See the recommended underground installation procedure, pages 22 to 25).

Maintenance

On-site sanitation tanks need very little maintenance and should last for many years. In accordance with durability tests conducted on the JoJo Septic Tanks, they should last much longer than the 5 year guarantee period offered by JoJo Tanks (Pty) Ltd.

Desludging

The JoJo Septic/ Conservancy Tanks should be inspected once a year to establish whether desludging is necessary and

when desludging, it is important that the vacuum tanker does not park too close to the septic tank or approximately 3m distance.

The septic tanks must be refilled with water immediately after desludging to prevent deflection and damage to the septic tank.

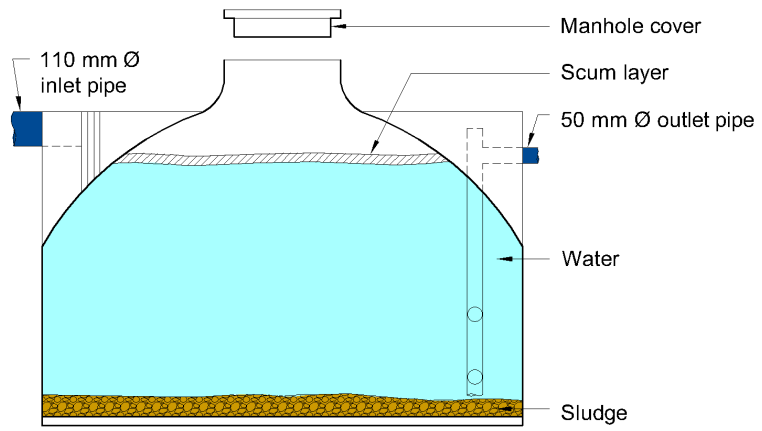


Figure 1: Typical section through the septic tank

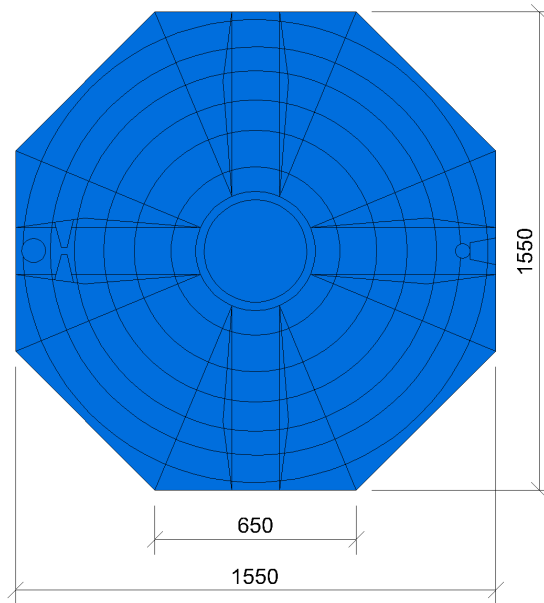
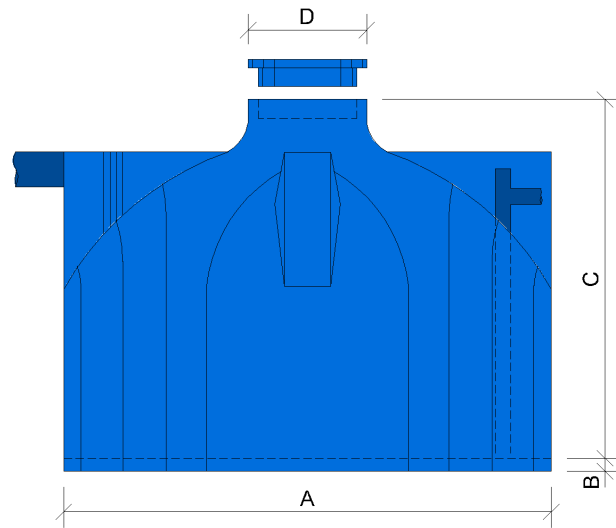


Figure 2: Top view of the septic tank



Tank capacity	Diameter (A)	Height (C)	Lid (D)	Base thickness (B)	Number of users
1250	1550	1120	290	30	2 - 4
1500	1550	1220	290	116	2 - 6
1750	1550	1320	290	230	4 - 6
2000	1550	1460	290	350	4 - 9
2500	1550	1650	290	560	4 - 9

Figure 3: Typical elevation of the septic tank

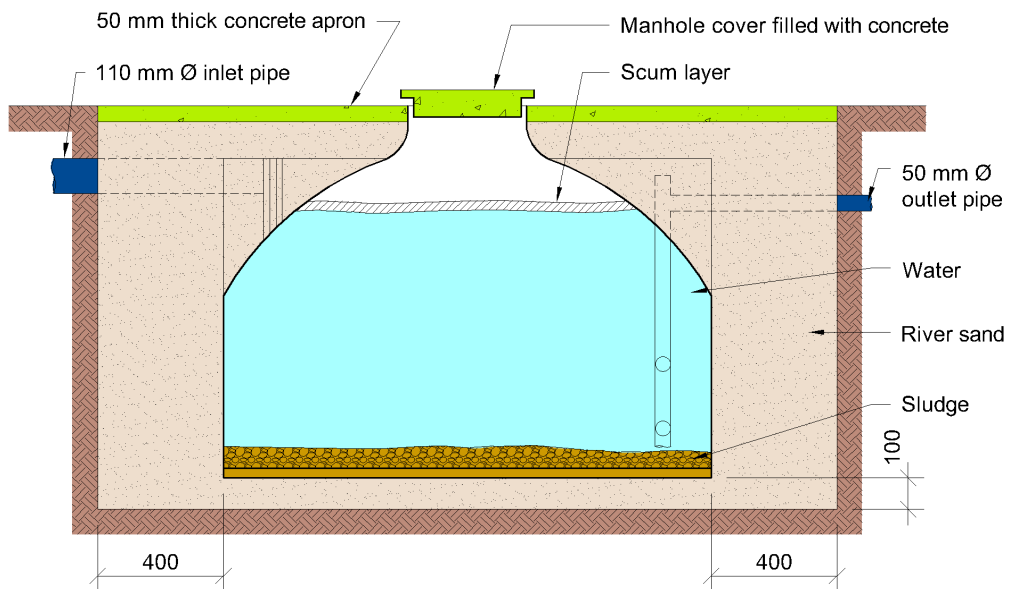


Figure 4: Septic tank in position

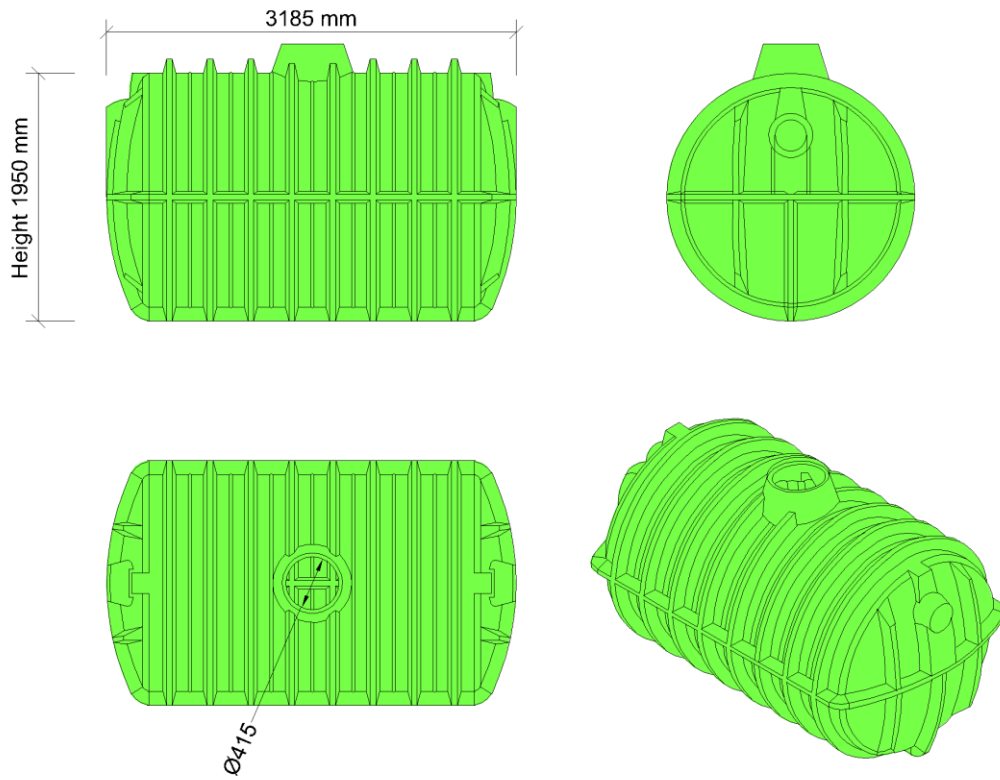


Figure 5: Top, sides and isometric views of 6 000 litre conservancy/digester tank

Recommended Underground Installation Procedure For 6 000 litre Conservancy Tank

1. CHOOSING THE SITE

The location of the tank shall be considered carefully.

If possible, try not to install the tank;

- In water saturated clay or in a high water table (or an area that is frequently flooded)
- Where the depth to bedrock is less than 2,5 m
- In the path of vehicles or heavy equipment
- Where underground services are expected (such as telecommunication or electrical cables, water and sewer pipes, gas lines etc.)

The tanks will need to be placed on soil with a bearing capacity greater than 120 kPa.

In the field where the bearing capacity cannot easily be determined a simple method of soil classification can be used. The method will also assist in determining suitable backfill material.

Table 1: Soil classification table

Category	Visual appearance	Squeezed in hand and pressure released	Bearing capacity
Rock	Rock, slate, shale, etc.		Sufficient
COARSE-GRAINED SOILS			
Gravel	Coarse to very coarse. Small stones and particles. Free-flowing		Sufficient
Sand	Granular appearance. Individual grain sizes can be detected. Free-flowing when dry. Lighter to brownish colours.	Will not form a cast when dry and falls apart. Wet cast will crumble when lightly touched.	Coarse and medium sand is sufficient. Fine sand is insufficient.
FINE-GRAINED SOILS			
Silt	Very little fine sand.	Cast can be handled	Insufficient

	Cloddy when dry. Readily pulverizes to powder when dry and soft flourlike feel. Darker colours (green, blue, black)	without breaking. Readily puddles when wet	
Clay	Fine textured. Breaks into very hard lumps when dry. Difficult to pulverize into soft flourlike powder. Cohesive when moist. Shrink when drying. Darker colours (green, blue, black, orange)	Cast can be freely handled without breaking	Hard homogenous clay may be sufficient. Clay mostly insufficient
HIGHLY ORGANIC SOIL	High organic content (often decomposed) Plant remains or woody structure can easily be recognized. Mineral soil finely divided with some fibrous remains. Occur in lowlands, in swamps or swales. Dark or black colours		Insufficient

2. EXCAVATION

Note: Take care not to damage any underground services (such as telecommunication or electrical cables, water and sewer pipes, gas lines etc.)

The tank is approximately 3,2 m long by 1,9 m wide. Allow between 300 mm and 600 mm on all sides of the tank.

The depth of the excavation will depend on the following conditions:

Soft in-situ soil (fine sand, silt or clay)

- Excavate to a depth of no less than 2,4 m and no more than 2,7 m.

No ground water will affect the tank. No traffic will pass over the site (Non-load bearing)

- Excavate to a depth of no less than 2,1 m and no more than 2,7 m.

Note: If ground water present in the excavation hole, continuously pump the water out during the installation process.

3. BEDDING

The type and thickness of bedding will depend on the following conditions:

Rocks or rocky soils

- Remove all large rocks or loose rocks and objects that could interfere.
- Bedding to be a minimum of 150 mm crusher or a coarse sand / gravel mixture.

(Bedding to be thicker where hollows or uneven areas are levelled out)

Gravel or coarse sand. No ground water will affect the tank (Dry installation)

- Bedding to be 150 mm crusher dust or a coarse sand / gravel mixture.
- Stabilise bedding layer with 3% cement (1½ bag of 50 kg ordinary Portland cement)
- Spread cement evenly and compact, using a mechanical compactor

(Do not wet cement, as the natural moisture from the ground will do this over time – if the soil is too dry to form a lump when pressed in your hand, you must add a little bit of water, but make sure the lump still crumbles in your hand when lightly touched.)

Ground water will affect the tank (Wet installation)

- Drainage bedding layer of 150 mm crushed rock (19 mm), use crusher dust or coarse sand to bind followed by
- Bedding to be 150 mm crusher dust or a coarse sand / gravel mixture
- Stabilise each bedding layer with 3% cement (1½ bag of 50 kg ordinary Portland cement)
- Spread cement evenly and compact, using a mechanical compactor

(Do not wet cement, as the natural moisture from the ground will do this over time – if the soil is too dry to form a lump when pressed in your hand, you must add

little bit of water, but make sure the lump will crumble in your hand when lightly touched)

Place tank carefully.

4. WATER TANK CONNECTION

Connect water tank as per manufacturer's specifications

5. BACKFILL

Note: Fill the tank with water before commencing the backfill procedure. This will stabilise the tank and reduce movement. It is essential to do this if there is any ground water present.

One of the most critical aspects of the installation is proper backfill material. Suitable material shall be coarse river sand or sand / gravel mixture. The sand / gravel mixture shall have no particles larger than 20 mm and at least 50% of the particles shall be smaller than 5 mm.

Fill around perimeter of tank with suitable backfill material, maximum 150 mm layers. Compact each layer properly before laying the next layer.

Proper compaction means 97% Mod. AASHTO. For field installation, use a hardwood pick handle (or similar) and drop it from about 300 mm onto the compacted soil. Properly compacted soil should make a 'ping' sound when the pick handle is dropped from about 300 mm. If the pick handle makes a dull sound the soil is not yet properly compacted.

6. DRESSING

The dressing over the tank will depend on the following conditions:

No ground water will affect the tank. No traffic will pass over the site (Non-load bearing)

- Ensure that the backfill over the tank is no less than 200 mm and no more than 750 mm.
- Shape the soil over the top of the tank to ensure positive drainage.

Ground water will affect the tank.

- A compression ballast will be required to prevent the tank from floating when empty, due to hydrostatic lift.
- Pour 2,8 m³ grade 20 MPa concrete on top of the tank (slump around 80). This will give the ballast of approximately 450 mm thick over the entire area of the tank.

Traffic will pass over the site (Load bearing)

- Where vehicles will drive over the tank, a concrete slab must be poured over the tank. This slab shall be 4,2 m x 2,9 m. The slab shall be a minimum of 150 mm thick grade 25 MPa concrete, with two layers of Ref. 156 reinforcing mesh.

7. USAGE AND MAINTENANCE

Ensure usage and maintenance of the tank in accordance with the manufacturer's specifications.