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**GL0039P**

**INSTALLATION GUIDELINES FOR  
SPHERICAL ALPHA TANK  
(SEPTIC & CESSPOOLS)**

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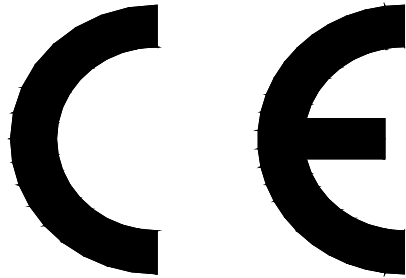
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<b>Enclosed Documents</b>
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<b>DS0552P</b>	<b>Alpha Septic 2800L, 3800L, 4600L</b>
<b>DS0877P</b>	<b>Alpha Cesspool 2800L, 3800L, 4600L</b>

Issue	Description	Date
<b>03</b>	<b>CC682</b>	<b>February 2009</b>



**Kingspan Environmental**

180 Gilford Road,  
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**07**

**EN 12566-1 : Small wastewater treatment plant:  
Prefabricated septic tanks**

**GRP Glass Reinforced Plastic septic Tank**

**Septic Tanks: 2800L, 3800L, 4600L, 6000L, 7500L, 9000L**

<b>Nominal capacity</b>	<b>2.8m<sup>3</sup>, 3.8m<sup>3</sup>, 4.6m<sup>3</sup>, 6.0m<sup>3</sup>, 7.5m<sup>3</sup>, 9.0m<sup>3</sup></b>
<b>Watertightness (water test)</b>	<b>Passed</b>
<b>Structural Testing (vacuum)</b>	<b>Passed</b>
<b>Hydraulic efficiency</b>	<b>&lt;5g of beads (4600L, 6000L, 7500L, 9000L NPD)</b>

## HEALTH AND SAFETY

**These warnings are provided in the interest of safety. You must read them carefully before installing or using the equipment.**

It is important that this document is retained with the equipment for future reference. Should the equipment be transferred to a new owner, always ensure that all relevant documents are supplied in order that the new owner can become acquainted with the functioning of the equipment and the relevant warnings.

Installation should only be carried out by a suitably experienced contractor, following the guidelines supplied with the equipment.

We recommend the use of a dust mask and gloves when cutting GRP components.

A qualified electrician should carry out electrical work.

Sewage and sewage effluent can carry micro-organisms harmful to human health. Any person carrying out maintenance on the equipment should wear suitable protective clothing, including gloves. Good hygiene practice should also be observed.

Covers must be kept locked.

Observe all hazard labels and take appropriate action to avoid exposure to the risks indicated.

The correct ongoing maintenance is essential for the proper operation of the equipment. Service contracts are available and recommended. Please contact Tekserv 0845 355 0555 for details of your local service provider.

Should you wish to inspect the operation of the equipment, please observe all necessary precautions, including those listed below, which apply to maintenance procedures.

Ensure that you are familiar with the safe working areas and accesses.

**Ensure that the working area is adequately lit.**

Take care to maintain correct posture, particularly when lifting. Use appropriate lifting equipment when necessary. Keep proper footing and balance at all times. Avoid any sharp edges.

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## ENGINEERING & PROCESS

Septic tanks receive crude sewage, which is a mixture of solids and liquids. An Alpha tank uses a 3-stage upward flow route, designed to maximise separation, minimise turbulence and provide a low flow discharge zone. All 3 stages are linked hydraulically.

The sewage enters through the inlet pipe and is directed into the base of the primary zone where most of the solids settle. The internal cone arrangement allows the settled fluid to rise at the outside of the vessel into the secondary zone where fine particles are retained and form a scum. Once a scum layer has formed, even finer particles may be collected in the floating scum layer, hence a more "mature" unit will work better than one recently installed or just emptied. The fluid continues to rise via a circuitous route into the tertiary zone from where the effluent is displaced into the outlet drain.

The septic tank is always full. As raw mixed sewage is added to the first zone, so clarified effluent is displaced from the third zone. By ensuring that the optimum flow conditions exist in each section, we minimise the release of particles to the soakaway. This is very important as the fewer particles released, the longer the irrigation system will operate and these are expensive to replace once blocked. Alpha tanks release only a fraction of the number of particles when compared under identical test conditions with other equipment.

The complex internal cone design is vital to maximise the retention and coagulation of fine light particles to prevent them from being passed out into the subsurface irrigation system.

Cesspools are containment vessels within which no treatment is intended, therefore discharges are not possible. Cesspools are storage vessels with no outlet. They must be emptied when full.

These Guidelines represent Best Practice for the installation of our 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 (e.g. civil engineering consultant or certified installer) must verify any information or advice given by employees or agents regarding the design of an installation.

## BEFORE INSTALLING YOUR TANK

- Ensure Building Regulation approval.
- Ensure ground porosity is suitable (for septic tank).
- Inspect tank for damage before installation. Our tanks have been fully tested before despatch from our factory. Once the tank has been installed, we cannot accept claims for damage.
- Check that you have the 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 inlet 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 chemicals. Consult our Technical Sales Department if in doubt.

DO:-

- Use the correct backfill material.
- Site tank at furthest practical location from habitable dwellings. Most building regulations recommend a minimum of 7metres.
- Fit the correct cover & frame.
- Consider ventilation arrangements.
- Consider drainage falls, generally 1 in 60/70 between house and tank and max. 1 in 200 for irrigation system.
- Ensure the land irrigation drain, terminates a minimum of 10 metre distance from any water course.
- Lift the tank using ropes or slings through both of the shackles fitted either side of the neck.

**DO NOT:-**

- Subject the tank to impact or contact with sharp edges.
- Add neck extensions to the tank, nor, 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 (e.g. sloping sites) or applied loads such as may be generated by the proximity of vehicular traffic.
- Lift using only one of the shackles.
- Fill an unsupported tank.
- Backfill an empty tank.

**INSTALLATION OF SEPTIC TANKS AND CESSPOOLS INTO ALL GROUND CONDITIONS**

- 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.
- 2.) If required, 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.
- 3.) Lay at least 150mm of hard-core in the base of the excavation. Line the complete excavation with polythene sheeting, if wet site. (Wet site is where ground water lies above the base of tank at any time or in slow draining clay soils.
- 4.) Lay a bed of concrete (minimum 150mm thick) on top of the polythene at the base of the excavation.
- 5.) Lower the tank onto the concrete bed, ensuring that the inlet and outlet (septic tank only) are in the correct position.
- 6.) Ensure the tank is upright, and then ballast it with water to a maximum of 500mm deep.
- 7.) Haunch up the concrete bed at least 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.
- 8.) Commence filling the tank with water whilst back filling with concrete, in lifts. It is important that these two operations are carried out simultaneously to avoid the risk of floatation and minimizes the applied loads to the tank.
- 9.) 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 round 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 joins.
- 10.) DO NOT use vibrating rammers to consolidate concrete. DO NOT discharge concrete directly on to tank.
- 11.) Align and connect pipework. The septic tank inlet pipe should be least 25mm above the outlet pipe.
- 12.) Build up a shell of concrete around 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. (Covers & frames are available for separate purchase).
- 13.) 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 to less than 350mm above the inlet invert.
- 14.) Fit cover and frame. Apply surface finish e.g. turf.
- 15.) 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.

**MATERIAL SPECIFICATIONS**

Concrete –

<b>GENERAL CONCRETE SPECIFICATION IN ACCORDANCE WITH BS EN 206-1 ( BS 8500-1)</b>	
TYPE OF MIX	(DC) DESIGN
PERMITTED TYPE OF CEMENT	BS 12 (OPC): BS 12 (RHPC): BS 4027 (SRPC)
PERMITTED TYPE OF AGGREGATE (coarse & fine)	BS 882
NOMINAL MAXIMUM SIZE OF AGGREGATE	20 mm
GRADES: C25 /30 C25 /30 C16 /20	REINFORCED & ABOVE GROUND WITH HOLDING DOWN BOLTS REINFORCED (EG. FOR HIGH WATER TABLE) UNREINFORCED (NORMAL CONDITIONS)
MINIMUM CEMENT CONTENT	C30 C20
	270 - 280 Kg/M <sup>3</sup> 220 - 230 Kg/M <sup>3</sup>
SLUMP CLASS	S1 (25mm)
RATE OF SAMPLING	READY MIX CONCRETE SHOULD BE SUPPLIED COMPLETE WITH APPROPRIATE DELIVERY TICKET IN ACCORDANCE WITH BS EN 12350-1
NOTE: STANDARD MIXES SHOULD NOT BE USED WHERE SULPHATES OR OTHER AGGRESSIVE CHEMICALS EXIST IN GROUND WATER	

Polythene Sheet -  
Building Quality 500 gauge.

**CONNECTING PIPEWORK / TRENCHING / INSPECTION CHAMBERS / VENTILATION ARRANGEMENTS**

Building regulations provide guidance as to the specification of materials used and 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 also be excluded from cesspools as it can seriously affect emptying frequency.

The septic tank is part of a foul water system and toxic wastes should not be permitted to enter. All household chemicals may be used in moderation but the user should be aware that excess use may affect the performance and lead to odour problems and increased desludging requirements. Do not use septic tanks or cesspools to dispose of Motor Oils, Grease, Paint, Thinners, Chemical Toilet Waste, Photographic Developers or similar chemicals.

Desludge septic tanks at least annually. Empty cesspools as required. Owners have a responsibility to use licensed waste contractors.

**SELECTION AND SITING**

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

A Septic Tank System comprises a Septic Tank, a suitable Cover & Frame and a Sub-surface Irrigation/Distribution System (soakaway system).

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.

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

- If there is insufficient area or the ground is not suitable for the construction of an effective sub-surface irrigation system, a septic tank will not function and some other means of sewage disposal must be used. Please consult Tekserv for detailed guidance on assessing ground conditions and soakaway design.

### GL0039P Installation Guidelines for Alpha Septic & Cesspools

- A septic tank discharge requires permission from the Environment Agency (England and 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 minimum of 15 metres from any dwelling and 25 metres is suggested in the regulations.
- If your sewage results from a commercial source, i.e. from a pub or restaurant, then you may require a grease trap, installed on a separate drain, prior to the septic tank. Please contact us for guidance.
- Roof and surface water drains must not be connected to any tank system, but should be connected to a separate soakaway.

#### SEPTIC TANK SELECTION - Size and invert depth.

The number of people using the facility, and the level at which it is to be installed governs the tank model selected. We supply 1.0 metre invert depth - 1.5 metre invert depth available to order. The figures given below are for domestic households. For advice on other situations such as office developments please contact us.

<b>Septic Tank Volume in litres</b>	<b>Max. number of full-time residents (assuming a flow of 180l/person/day)</b>	<b>Minimum protected radius Drain depth plus * m</b>
2800	4	*2.1
3800	10	*2.4
4600	14	*2.6

#### 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 above the inlet invert. For frost protection a minimum invert depth of 450mm is recommended.

Septic tanks require desludging at least annually, possibly more frequently for tanks serving multiple properties. Cesspools must be emptied when full. Tanks should be sited within 30 metres of a hard standing area to 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.

Alpha tanks are not designed to accept any traffic loads. A minimum traffic clearance must be provided as indicated in the table above. If this is not possible the tank must be protected from superimposed loads, e.g. by a reinforced concrete surround and provided with an appropriate cover, which must not bear on the structure of the tank. Please contact a consultant civil engineer.

Pumping systems are available, (details on request) to raise the discharge from a septic tank to a soakaway system at a higher level.

Building Regulations require the system to be adequately ventilated. Covers and frames allow ventilation via the soil stack at the head of the drains. An additional local air inlet can be fitted to the tank where circumstances require it. If there is no open soil stack (e.g. drainage systems with air admittance valves only), then the septic tank must be independently vented. The direction of the prevailing wind in relation to the property(ies) should be considered when selecting the tank site.

For dimensions of the tanks and safety cover & frames refer to sales drawings.

We recommend the installation of inspection chambers down stream of the Septic Tank so that the effluent quality and soakaway system can be checked.

## **SAFETY FRAME AND COVER**

Purpose designed safety venting manhole covers and frames are now available.

- The safety venting manhole system uses a frame, which ensures proper ventilation of the tank.
- This unique frame has an integral safety grid, which has been designed to prevent a child entering the tank.
- The galvanized pedestrian duty cover requires standard keys to open.
- Two lifting keys are supplied, to BS497, Grade C.

## **Installation**

- Ensure the inlet pipe and the access shaft is set at the correct height.
- Cap off the outlet pipe.
- Trial fit moulded frame on to shaft ensuring that there is no interference with the surrounding earth.
- Lift off the frame and place concrete around the vent and access shaft.
- Set the moulded frame into position allowing the concrete to fill the underside of the moulding.
- Fix the moulding to the shaft.
- Fix access cover into the frame.

## **WARRANTY**

### **Taken from 'Kingspan's Terms & Conditions of Sale'**

**The company will replace or, at its option, properly repair without charge any goods which are found to be defective and which cause failure in normal circumstances of use within a period of twelve months from the date of delivery.**

**This warranty is conditional upon:**

- (a) the Buyer notifying the Company of any claim within Seven days of the failure becoming discernible.**
- (b) the Company being allowed a reasonable opportunity to inspect the goods so as to confirm that they are defective.**
- (c) the goods not having been modified, mishandled or misused and being used strictly in accordance with any relevant instructions issued by the Company.**

**The Company's liability under this Clause is limited to the repair or replacement of the defective goods, and does not cover costs of transport, installation or associated site costs, if applicable.**

**The Company's liability to replace or repair the goods is in lieu of and excludes all other warranties and conditions, and in particular (but without limitation) the Company shall have no liability of any kind for consequential loss or damage.**

**For any further advice, please contact the Warranty department on 0844 880 1633.**

**A Warranty Form is included in this package, to register your unit for Warranty. Please complete ALL sections of the Form, and return it at your earliest convenience.**

**Also within this package are Notices, describing the necessary maintenance of the plant in use. This should be fixed within the building.**

Our service provider: Kingspan Environmental Services: 0845 355 0555



**NOTICES:**



**KINGSPAN SEPTIC TANK**

The foul drainage from this property discharges to a Septic Tank and an irrigation system / soak-away.

The tank requires monthly inspections of the outlet chamber or sample chamber to observe that the effluent is free-flowing and clear. The soak-away should also be inspected regularly.

The septic tank requires emptying at least once every 12 months by a licensed contractor.

**THE OWNER OF THE PROPERTY IS LEGALLY RESPONSIBLE FOR ENSURING THAT THE SYSTEM DOES NOT CAUSE POLLUTION, A HEALTH HAZARD OR A NUISANCE.**

We recommend that a separate log is kept of all service visits, the log should detail the date and any action taken, e.g. Regular maintenance service, breakdown visit, de-sludge volume removed.

This notice should be fixed by the owner within the building alerting current and future owners to the maintenance requirement. (Building regulation H2 (1.57))

Please contact Kingspan Environmental Services on +44 (0) 845 355 0555, or +44 (0) 28 302 54077 to arrange a maintenance service or to request replacement operating instructions.



## **KINGSPAN CESSPOOL**

The foul drainage from this property is served by a cesspool.

The system should be emptied when full by a licensed contractor and inspected fortnightly for overflow.

**THE OWNER OF THE PROPERTY IS LEGALLY RESPONSIBLE FOR ENSURING THAT THE SYSTEM DOES NOT CAUSE POLLUTION, A HEALTH HAZARD OR A NUISANCE.**

We recommend that a separate log is kept of all service visits, the log should detail the date and any action taken, e.g. Emptying volume and frequency.

This notice should be fixed by the owner within the building alerting current and future owners to the maintenance requirement.

**(Building regulation H2 (1.57))**

Please contact Kingspan Environmental Services on +44 (0) 845 355 0555, or +44 (0) 28 302 54077 to arrange a maintenance service or to request replacement operating instructions.