

**INSTALLATION GUIDELINES FOR SPHERICAL
SEPTIC TANKS, CESSPOOLS
& SILAGE TANKS
6000 LITRES – 9000 LITRES (Large Neck)**



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

DO NOT: 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. A Technical Data Sheet TDS0004 detailing full siting recommendations is available on request.

DO CHECK: That the tank selected is suitable for the proposed drain invert depth. A label on the tank indicates the maximum permissible invert depth.

DO NOT: Extend the neck of the tank under any circumstance.

DO CHECK: That the tank is suitable for its application. Septic tanks or cesspools should not be used for silage effluent, chemical toilet waste or any other chemicals. Consult Klargester.

DO INSPECT the tank to ensure that there is no damage before installation. All tanks are vacuum tested and fully inspected before despatch from Klargester's factory. Once the tank has been installed into the ground, no claims can be made for damage.

ENSURE: The tank is not subjected to impact or contact with sharp edges.

INSTALLATION OF SEPTIC TANKS INTO WET GROUND AND INSTALLATION OF CESSPOOLS AND SILAGE TANKS INTO ALL GROUND CONDITIONS

Wet ground is where ground water lies above the base of tank at any time or in slow draining 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. De-watering should continue until the concrete has hardened. Ensure that the pump discharge does not saturate the ground in the immediate vicinity.
- 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, using ropes attached to both lifting points. Ensure that the inlet and outlet (septic tank only) are in the correct position.
- 5.) Ensure the tank is upright, then ballast it with water, maximum 500mm deep.
DO NOT OVERFILL.
FILL SEPTIC TANKS THROUGH INLET ONLY.
- 6.) 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.
- 7.) Backfill to the invert depth with concrete, minimum 200mm thick. 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.
- 8.) DO NOT use vibrating rammers to consolidate concrete. DO NOT discharge concrete directly on to tank.
- 9.) Align and connect pipework. For septic tanks ensure that outlet pipe is at least 25mm below inlet pipe.
- 10.) Cut the neck to ground level. 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. Deep invert units are supplied with a flanged neck, to which an additional neck must be fitted on site. A mastic kit is provided. Apply the mastic kit and fix bolts alternatively, ensuring that there is good compaction of the mastic and a watertight seal.
- 11.) 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 a frame. (Covers & Frames are available for separate purchase).
- 12.) Fit access cover and frame (pedestrian duty only). Apply surface finish (e.g. turf). Leave septic tanks filled with water, this will be displaced as sewage enters. Cesspools and silage tanks should also be left filled. Do not empty any tank until the concrete backfill has cured to an adequate strength (typically 1 - 2 days minimum).

INSTALLATION OF SEPTIC TANKS INTO DRY GROUND

Where ground water lies below base of tank at all times and ground is free draining.

- 1.) Important - CESSPOOLS AND SILAGE TANKS **MUST NOT** BE INSTALLED USING THE DRY GROUND METHOD.
- 2.) Excavate a hole at least 300mm wider and 150mm deeper than the tank, with additional allowance for any necessary shuttering.
- 3.) The tank must be bedded on concrete. Lay a bed of concrete (minimum 150mm thick) at the base of the excavation.
- 4.) Lower the tank onto the concrete bed, using ropes attached to both lifting points. Ensure that the inlet and outlet are in the correct position.
- 5.) Ensure the tank is upright, then ballast it with water, maximum 500mm deep.
DO NOT OVERFILL. FILL SEPTIC TANKS THROUGH INLET ONLY.
- 6.) 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.
- 7.) 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.
- 8.) Align and connect pipework. Ensure that the outlet pipe is at least 25mm below the inlet pipe.
- 9.) Cut the neck to ground level. 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. Deep invert units are supplied with a flanged neck, to which an additional neck must be fitted on site. A mastic kit is provided. Apply the mastic kit and fix bolts alternatively ensuring that there is good compaction of the mastic and a watertight seal.
- 10.) Continue 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 & Frames are available for separate purchase). Ensure that inlet pipe is truly vertical.
- 11.) Fit access cover and frame (pedestrian duty only). Apply surface finish (e.g. turf).
- 12.) Leave septic tank filled with water, this will be displaced as sewage enters.

MATERIAL SPECIFICATIONS:

Concrete:-

All references to concrete are for 20 N/mm² - 20mm aggregate - 25mm slump mix. In accordance with BS5328 Parts 1, 2, 3 and 4. Use sulphate resisting cement where required.

Pea Shingle -

6mm-10mm rounded pea-shingle offering low point loading characteristics has been found most suitable for back filling GRP tanks.

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/silage tank 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 and silage tanks as it can seriously affect emptying frequency.

Notes for Septic Tank and Cesspool Users

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.

SELECTION AND SITING

Before specifying or installing a Klargestor Tank you should consider the following points:-

- A Septic Tank System comprises of a Septic Tank, a suitable Cover & Frame and a Sub-surface Irrigation/Distribution System (soakaway system). 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 Technical Data Sheet TDS0005 for detailed guidance on assessing ground conditions and soakaway design.
- Cesspools and Silage Tanks 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.
- 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 tank model selected is governed by the number of people using the facility, and the level at which it is to be installed. We supply 1 metre & 1.5 metre invert depths. The figures given below are for domestic households. For advice on other situations such as office developments please contact us.

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 telescoped. 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 and silage tanks 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.
- Klargesters are not designed to accept any traffic loads. A minimum traffic clearance must be provided as indicated in the table below. 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.
- Klargesters 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. A high level soil stack must be fitted at the head of the drains at a level /location which catches the prevailing winds. Durgos or air admittance valves are not recommended.
- An additional local air inlet must be fitted to the inlet tee of the tank. This may consist of a section of 110 mm PVCu underground drainage pipe which rises above the ground level at a location which allows tank ventilation. A valve should be fitted to this vent to prevent odours escaping from the tank
- It may be necessary to vent the soakaway system separately by a further independent vent.
- The direction of the prevailing wind in relation to the property(ies) should be considered when selecting the tank site.
- We recommend the installation of inspection chambers down stream of the Septic Tanks so that the effluent quality and soakaway system can be inspected.

FURTHER INFORMATION

Is available on request.

TDS0004	Points to Consider when purchasing a spherical Septic Tank.
TDS0005	Sub-surface Irrigation Systems.
TDS0006	Operation of Klargesters Septic Tank

Septic Tank volume (Litres)	Number of people assuming a flow of		Minimum protected radius Drain depth plus * m
	180L / person / day	250L / person / day	
6000*	22	16	2.8
7500*	30	22	3.0
9000*	39	28	3.2

* Septic Tanks in this range require extensive soakaway systems. Alternative equipment is available.

Description of Machine
 Model
 Serial Number (see cover label)
 Year of Manufacture
 Name of Manufacturer

Septic Tanks

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KLARGESTER ENVIRONMENTAL, COLLEGE ROAD NORTH, ASTON CLINTON,
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EUROPEAN DIRECTIVES:

Machinery Directive 89/392/EEC Low Voltage Directive 73/23/EEC
 Electromagnetic Compatible Directive 89/336/EEC

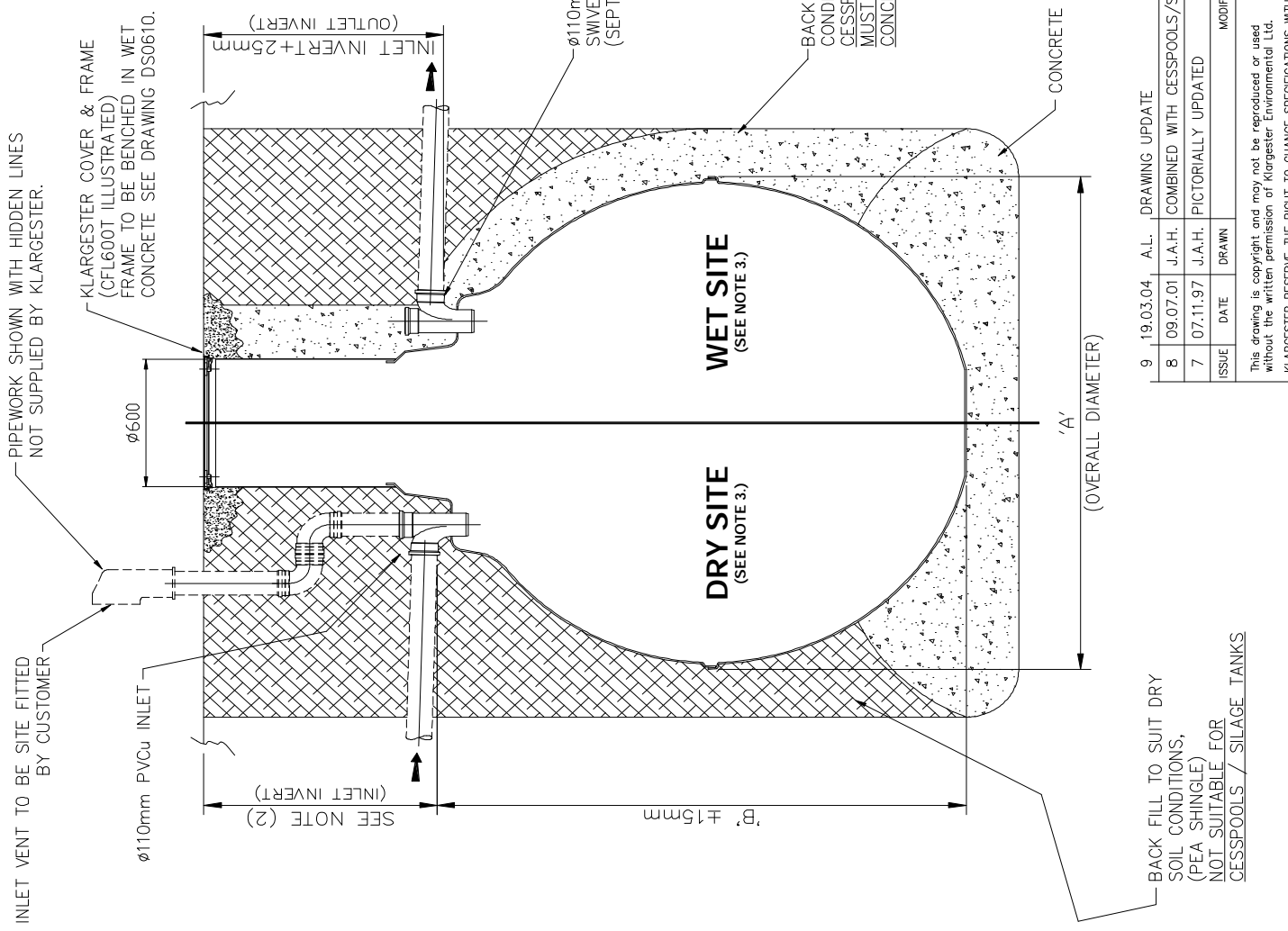


NOTES:-

- 1.) STANDARD INLET/OUTLET PIPES ARE PVCu UNDERGROUND DRAINAGE TO BS4660.
- 2.) STANDARD TANKS HAVE AN INLET INVERT DEPTH OF 1.0m. DEEP INVERT TANKS HAVE AN INLET INVERT DEPTH OF 1.5m. AND A FLANGED NECK WHICH MUST BE SITE FITTED. DO NOT EXTEND TANK NECK.
- 3.) THIS DRAWING SHOULD BE USED FOR DIMENSIONAL INFORMATION ONLY. REFER TO INSTALLATION GUIDELINES PD0325.

CAPACITY		DIMENSIONS		WEIGHTS* (DEEP INV.)
LITRES	GALLONS	'A'	'B'	Kg
6000	1320	2300	2400	260
7500	1650	2385	2585	310
9000	2000	2660	2660	365

* STANDARD TANK WEIGHTS ARE APPROX. 25Kg LESS.



ALL DIMENSIONS ARE IN MILLIMETRES - DO NOT SCALE

Klargester
Treatment Systems

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TITLE
6000-9000 LITRE
SPHERICAL TANKS
SEPTIC / SILAGE
& CESSPOOLS

SCALE 1:15 SHEET SIZE A2 ISSUE

DRAWING No. **DS0008** 9

ISSUE	DATE	DRAWN	MODIFICATION
9	19.03.04	A.L.	DRAWING UPDATE
8	09.07.01	J.A.H.	COMBINED WITH CESSPOOLS/SILAGE TANKS, COVER CHANGED.
7	07.11.97	J.A.H.	PICTORIALLY UPDATED

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THIRD ANGLE PROJECTION