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# **INSTALLATION AND MAINTENANCE INSTRUCTIONS**

**FOR**

**10000, 12000 & 15000 LITRE**  
**(Total Capacity)**  
**SILAGE TANKS**

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## INTRODUCTION

Klargester Silage Tanks are manufactured in Glass Fibre Reinforced Polyester (GRP), the finished products are light in weight, easy to transport and install. The lightweight GRP is extremely robust, but can be susceptible to damage by sharp objects and point loads, therefore, care should be taken to avoid point loads and contact with sharp objects and units should be uniformly supported during transportation and installation.

**Units are designed to be installed in mass concrete backfill for up to 1 metre drain invert and thereafter in concrete suitably reinforced, such as to relieve the GRP tank of all loads (static or dynamic) likely to be otherwise imposed at the installed depth specific to that site.**

Access shafts for up to 1 metre standard maximum invert will normally be supplied fixed to the unit. Extension shafts for units with inverts greater than 1 metre invert will normally be supplied in kit form, in 500mm increments, to add to a standard invert unit. Extension shafts are supplied as a 'dry' push fit joint. If a watertight joint is required, this can be achieved by applying a suitable waterproof sealant at the joint between adjoining shafts. The instructions for adding these shafts are supplied with the kit.

**Note: Concrete specification SK296 is a typical specification for installations up to 1 metre in different ground conditions, but it is not a site specific installation design.**

Attachments: SK296 - General Concrete Specification  
General Arrangement Drawing.

## TRANSPORTATION, OFF-LOADING AND SITE HANDLING

The table below outlines the respective weights of Klargester Silage Tanks.

Weights are approximate. It is possible that rain water may collect in the base of the unit during storage, adding extra weight and making the unit unstable when lifted. Check before lifting.

Cranes should be selected by taking into account unit weight, length and the distance of lift required on site.

**Klargester Environmental Engineering Limited, or it's agents, accept no responsibility for crane selection.**

<b>IMPORTANT</b>	
<b>DO NOT</b>	<b>Subject tank to impact, contact with sharp edges or use metal chains when lifting the unit.</b>
<b>USE</b>	<b>Webbing slings for lifting - use a spreader bar where necessary.</b>

Unit Size (litres)	Approximate Weight (kg)
10000	680
12000	775
15000	935

## SITE PLANNING

Ensure that suitable plant can be made available for lifting, excavating and dewatering, if necessary. Ensure that permanent access to the site is available for maintenance purposes.

<b>IMPORTANT</b>	
<b>CHECK</b>	<b>Drain invert depth and orientations of inlet and outlet drains are as requested. Relevant standard drawing and concrete specification SK296 are supplied with tank.</b>
<b>INSPECT</b>	<b>Tank for damage before installation.</b>
<b>DO NOT</b>	<b>Subject tank to impact, contact with sharp edges or use metal chains when lifting the unit.</b>
<b>USE</b>	<b>Webbing slings for lifting - use a spreader bar where necessary.</b>

## INSTALLATION

1. Excavate hole at least 450mm wider than tank diameter and to a depth suitable for the invert depth of the tank plus concrete base slab. Line the excavation with trench sheeting, if required, and de-water the excavation as necessary.

**Note: The correct operation of the Silage Tank is dependent on the unit being installed accurately to level.**

2. Construct concrete base to suit site conditions. It is essential that the base is flat and level. Refer to General Arrangement drawings.

After the base has cured enough to support the installed load, lower the unit onto the slab with suitable strength webbing slings.

3. During installation care must be taken to avoid point loads, so it is essential that the body of the unit is uniformly supported:-

- i) Pour no more than 400mm depth of water into the unit avoiding shock loads. Ideally, add water to each chamber simultaneously.
- ii) Pour a wet concrete mix to approximately 200-250mm depth ensuring it fills all voids under the belly of the tank. Allow to cure for approximately 24 hours, so that tank is supported uniformly and, therefore, point loads are avoided.

4. Add further concrete backfill, keeping internal water level approximately 300mm above backfill level at all times, until backfill is below drain level giving sufficient room to mate connections for inlet and outlet drains. Again, add water to each chamber simultaneously, preventing level differences greater than 300mm between chambers.

**Note: Avoid the use of poker vibrators as these could lead to damage to the tank walls.**

5. Connect pipework and vents (customer supply) when safe access to the backfill can be gained.
6. Continue backfill to the underside of top slab level for 1 metre (or less) invert units having first charged the unit to its working level with water. For deeper units with reinforced concrete backfill the access shafts should be surrounded in same strength concrete. Temporarily strut necks with timbers.
7. The top slab should bear on a suitable foundation and be separated from the tank neck by a suitable compressible material. Superimposed loads e.g. traffic loads must not be transmitted to the unit.
8. Covers and frames should bear on the top slab not the tank neck.
9. If units are installed shallower than the invert supplied, excess GRP access shaft can be removed with a fine toothed saw. Do Not install Klargester Silage Tanks at invert depths less than the minimum standard specified.

### SAFETY WARNING

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

10. Once the backfill has fully cured, remove ballast water from inside the tank. The unit is now ready for use.

## MAINTENANCE

11. The unit should be examined and cleaned at intervals depending on the degree of loading with which the Silage Tank has been subjected.

Tanks should be periodically desludged by vacuum tanker to remove settled solids.

**Klargester Silage Tanks Do Not require man - entry for maintenance.**

**Accumulated material should be removed at ground level by vacuum tanker, operated by properly trained and approved personnel.**

Care must be taken during maintenance not to damage the access shaft.

- 11.1. Remove manhole cover.
- 11.2. Carefully lower the vacuum tanker hose into the base of the unit and remove all material, ensuring that the hosepipe is moved around the bottom of the tank
- 11.3. On completion of cleaning/desludging replace the access shaft manhole covers.

12. In the event of any queries please contact:

<b>CONCRETE SPECIFICATION SK296 IN ACCORDANCE WITH BS 5328 PARTS 1,2,3 AND 4</b>	
TYPE OF MIX	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: C30 (30 N/mm <sup>2</sup> ) C30 (30 N/mm <sup>2</sup> ) C20 (20 N/mm <sup>2</sup> )	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 (NOT IN ACCORDANCE WITH BS 5328)	25mm
RATE OF SAMPLING	READY MIX CONCRETE SHOULD BE SUPPLIED COMPLETE WITH APPROPRIATE DELIVERY TICKET IN ACCORDANCE WITH BS 5328 PART 3
<b>NOTE: STANDARD MIXES SHOULD NOT BE USED WHERE SULPHATES OR OTHER AGGRESSIVE CHEMICALS EXIST IN GROUND WATER</b>	