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**GL0051P**  
8000 litre - 79000 litre (1.8m & 2.6m Diameter)  
Rainwater Tanks  
Installation, Operating & Maintenance Guidelines

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<b>Enclosed Documents</b>
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DS0999P	8,000 to 15,000 Litre Tanks (1.8m Dia.)
DS1026P	8,000 to 15,000 Litre Tanks (1.8m Dia.) With Integral Filter
DS0622P	18,000 to 79,000 Litre Tanks (2.6m Dia.)
DS1025P	18,000 to 79,000 Litre Tanks (2.6m Dia.) With Integral Filter
DS0980P	RWH Schematic – Direct System
DS0982P	RWH Schematic – Direct System – External Filter
DS0989P	RWH Schematic – Gravity System
DS0990P	RWH Schematic – Gravity System – External Filter

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## **HEALTH & 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 be acquainted with the functioning of the equipment and the relevant warnings.

A suitably experienced contractor, following these guidelines should only carry out installation.

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

A qualified electrician should carry out electrical work.

Contaminated surface water can contain substances 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.

Access covers should be selected with reference to the location of the unit and traffic loads to be accommodated. These are not (normally) part of the units' supply.

When covers are removed precautions must be taken against personnel falling into the unit.

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.

## **MAINTENANCE**

The correct ongoing maintenance is essential for the proper operation of the equipment.

A contractor should carry out the removal of solids, which accumulate in the unit. The contractor should refer to the guidelines in this document.

This tank is designed to collect and store rainwater. It should not be used for any other purpose without the agreement of Kingspan.

**PLEASE SEE SEPARATE INSTRUCTIONS PROVIDED FOR THE CONNECTION AND INSTALLATION OF THE PUMP AND ELECTRONIC EQUIPMENT**

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**1.0 Introduction**

These guidelines represent Best Practice for the installation of the above Kingspan Units. 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 the in-service loads of each installation. Similarly, a qualified specialist (e.g. Civil engineering consultant) must verify any information or advice given by employees or agents of Kingspan regarding the design of an installation.

**2.0 Handling & Storage**

- 2.1. Care must be taken to ensure that units are not damaged during delivery and handling on site.
- 2.2. The design requirements of Kingspan products will frequently mean that the centre of gravity of the unit is "offset". Care must therefore be taken to ensure that the unit is stable when lifting. Rainwater may also collect inside units, particularly if they have been stored on site prior to installation, adding weight and increasing instability. Check units before lifting and pump out any excess water.
- 2.3. When lifting units, use webbing slings of a suitable specification. **DO NOT USE CHAINS.**
- 2.4. A suitable spreader bar should be used to ensure that units are stable and that loads are evenly distributed during lifting. When lifting units, a spreader bar should be used where the slings would otherwise be at an angle > 30 degrees to the vertical.
- 2.5. Lifting equipment should be selected by taking into account the unit weight, length and the distance of lift required on site.
- 2.6. Kingspan accept no responsibility for the selection of lifting equipment.
- 2.7. Whenever Kingspan units are stored or moved on site, ensure that the storage location is free of rock, debris and any sharp objects, which may damage the unit. The units must be placed on ground, which is flat and level to evenly support the base of the unit. Do not roll units.

### 3.0 Site Planning

The following points should be considered before installation of the equipment:

- 3.1. Position the unit at a minimum distance of 5 metres from the face of the building, so as not to affect either the structural integrity of the building or the tank.
- 3.2. See BS EN 752-4 Drain & sewer systems outside Buildings.
- 3.3. Consider placing inspection points in the drain line before and after Units.
- 3.4. Ground conditions and water table level should be assessed. If the water table will be above the base of the unit at any time of the year, adequate concrete backfill must be provided to avoid flotation. In poorly draining ground, consideration should also be given to the likelihood of flotation due to surface water collecting in the backfill, and an appropriate installation method devised to avoid this.
- 3.5. If the overflow discharge is to a soak away, a porosity test should be carried out as part of the assessment of suitability for sub-soil drainage. The soak away must not drain back into the tank environs.
- 3.6. The unit must be installed at a level that will allow connection to the incoming drain and a free discharge at the system overflows.
- 3.7. Do not install the unit deeper than necessary; ensure that you purchase any necessary neck extension shafts at the same time as the unit purchased. The minimum invert depth of the unit is shown on the relevant equipment drawing. Units installed with an invert greater than 1.0m will require a civil design specific to the installation.
- 3.8. Adequate access to the unit must be provided for routine removal of solid build-up and maintenance. Vehicles should not be permitted within a distance equal to the depth of the unit, unless suitable structural protection is provided to the installation. Usually the unit should be sited within 30 metres of a hard standing area suitable for a vacuum tanker.
- 3.9. There must be at least 1 metre of clear, level ground all around the access covers to allow for routine maintenance.
- 3.10. Provide electrical supply for pumping equipment.
- 3.11. Suitably qualified and experienced contractors, in accordance with current Health and Safety Regulations should only carry out installation. A qualified electrician, working to the latest edition of IEE should carry out electrical work.

### 4.0 Installation – General

- 4.1. When units are installed in unstable ground conditions where movement of the surrounding material and/or unit may occur, the connecting pipe work should be designed to minimise the risk of damage from differential movement of the unit(s) and/or surrounding material.
- 4.2. For units with burial depths greater than 1000mm from cover level to the top of the unit, specific site conditions should be taken into consideration and the backfill designed to bear any loads which may be applied during and after installation to prevent the tank being subjected to these loads.
- 4.3. The excavation must be deep enough to provide bedding and cover depth as determined by the type of surface pavement and loading. Asphalt and concrete pads should extend a minimum of 300mm horizontally beyond the unit in all directions.
- 4.4. In situations where the excavation will not maintain a vertical wall, it will be necessary to shore up the side walls of the excavation with suitable trench sheets and bracing systems to maintain a vertical wall from the bottom to the top of the excavation. DO NOT completely remove the shoring system until the backfilling is complete, but before the concrete fully hardens.
- 4.5. In areas where the water table is above the bottom of the excavation and/or the excavation is liable to flood, the excavation should be dewatered using suitable pumping equipment and this should continue until the installation is complete.
- 4.6. During installation care must be taken to ensure that the body of any unit is uniformly supported so that point loads through the unit are avoided.
- 4.7. The Concrete Specification is a *general* specification. It is not a site specific installation design.

<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
<b>NOTE: STANDARD MIXES SHOULD NOT BE USED WHERE SULPHATES OR OTHER AGGRESSIVE CHEMICALS EXIST IN GROUND WATER</b>	

### 5.0 Unit Installation

- 5.1. Excavate a hole of sufficient length and width to accommodate the tank and a minimum 225mm concrete surround and to a depth that allows for the burial depth of the unit plus concrete base slab.
- 5.2. Construct a suitable concrete base slab appropriate to site conditions. Ensure that the slab is flat and level.
- 5.3. When the concrete base slab has set enough to support the installed load, lower the unit onto the slab using suitable webbing slings and lifting equipment.
- 5.4. Pour no more than 300mm depth of clean water into the unit, avoiding shock loads. **DO NOT OVERFILL**, the unit is not designed to hold water whilst unsupported.
- 5.5. Place concrete backfill to approximately 300mm depth under and to the sides of the tank ensuring good compaction to remove voids. **DO NOT use vibrating pokers**. If the unit does not have stabilising feet, i.e. units of 2.6 diameter, allow initial concrete set to occur before proceeding.
- 5.6. Continue adding concrete backfill, simultaneously keeping the internal water level no more than 300mm above the backfill level at all times, until the backfill is just below the underside of the tank overflow, giving sufficient room to connect the pipe work.
- 5.7. Connect inlet and overflow pipes when safe access to the backfill can be gained.
- 5.8. Fit 40mm diameter ducting (your supply) into the predrilled hole within the neck and seal with a proprietary solvent mastic. Ensure that there is a draw cable fitted so as to allow sensor cable to be pulled through at a later time.
- 5.9. Supply and connect 25mm diameter medium density polyethylene pipe to the 25mm tank connector
- 5.10. Extension necks. Temporarily strut the extension neck(s) to avoid distortion during the concrete installation and back filling.

The neck(s) are provided with a 110mm pipe in the side wall and this is intended for the connection of above ground ventilation pipework. Ensure this pipework is suitably protected against ingress of vermin.

Flanged extension necks on 2.6 diameter tanks are supplied with mastic and bolts. Line up the necks. Ensure good & even compression of the mastic so as to provide a watertight seal. (Part No. 101326)

Spigot extension necks on 1.8 diameter tanks should be slipped inside the neck and sealed with silicone or mastic (not supplied) (Part No. 610EXT0-5M)

Sites with high ground water will require special attention. Consider sealing by GRP lamination (if skilled operatives are available).

Where more than one neck sections is required to suit a deep invert, back-fill section by section. If the extension neck is too long, it can be trimmed using a fine-toothed saw.

- 5.11. Continue back filling with concrete over the tank body to the required level. Build up a shell of concrete, minimum 225mm thick, around the access shaft(s). Temporarily strut the access shaft to avoid distortion.
- 5.12. Continue back-filling, ensuring minimum 225mm concrete thickness around the access shaft/extension neck and alarm access tube (as applicable).
- 5.13. Do not install in trafficked areas unless a suitable top slab has been designed and constructed. The top slab should bear on a suitable foundation to prevent superimposed loads being transmitted to the unit and access shafts. Loads applied to covers and frames must bear on the top slab, not the access shaft.

## **6.0 Unit Dimensions**

For unit details refer to enclosed documents.

## **7.0 Operation**

Please see the separate manual, which describes the fitting of the pump, and describes the operation of the Rainwater management system.

Should excess water be collected within the tank, it will automatically overflow into the discharge pipe which must be connected to either a suitable drain or soak away system.

## **8.0 Maintenance**

The tank may accumulate solids; the maintenance engineer who checks the pump operation should check the amount accumulated and retained. It may require emptying periodically. The period between emptying depends upon the condition of the surface being flushed.