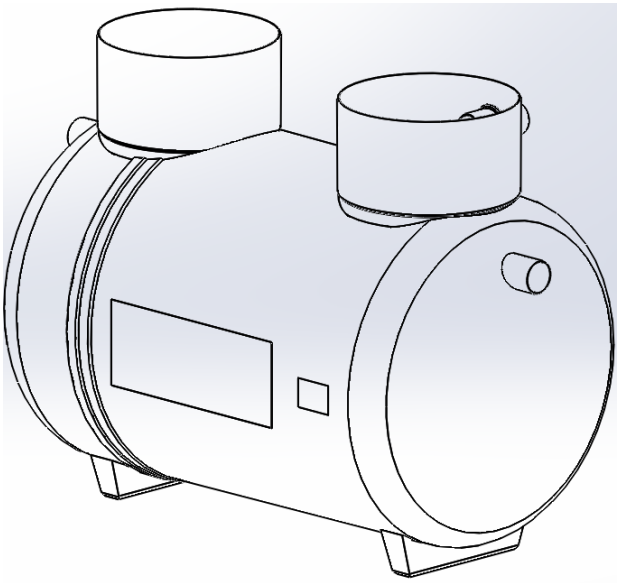
015141

Grease Separators, 1.2m - 1.8m Diameter Units.
2,000 – 11,000Litres
Installation & Operation Guidelines

Kingspan Environmental

Kingspan Environmental Service Contact Numbers:

GB: 0844 846 0500
NI: 028 3025 4077
IRL: 048 3025 4077



Attached Documents

DS1269P	**Ø1.2 NSG04 Grease Separator 2000L Sales Drawing**
DS1270P	**Ø1.2 NSG06 Grease Separator 3000L Sales Drawing**
DS1271P	**Ø1.2 NSG09 Grease Separator 4000L Sales Drawing**
DS1327P	**Ø1.4 NSG14 Grease Separator 6000L Sales Drawing**
DS1272P	**Ø1.8 NSG18 Grease Separator 8000L Sales Drawing**
DS1273P	**Ø1.8 NSG24 Grease Separator 11000L Sales Drawing**

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.

Installation should only be carried out by a suitably experienced contractor, following these guidelines.

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

Electrical work should be carried out by a qualified electrician.

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 Separator 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.

The removal of sediment and retained oil/grease should be carried out by a contractor holding the relevant permits to transport and dispose of such waste. The contractor must refer to the guidelines in this document.

CONTENTS

1 Introduction

1.1.1 These Guidelines represent Best Practice for the installation of our grease separator units. Many years of specialist experience has led to the successful installation of thousands of separator 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, any information or advice given by our employees or agents regarding the design of an installation must be verified by a qualified specialist (e.g. Civil engineering consultant).

1.1.2 Grease separators are designed for use on the dedicated outlets of communal kitchens connected to individual package wastewater treatment plants or septic tanks. Examples of applications include public houses, restaurants, hotels, nursing homes, schools and activity centres. The grease separator is designed to retain most of the fats and greases discharged from a catering environment. Fats, oils and greases must not be allowed to be discharged into a package treatment unit as they affect the biological process. They contribute towards extra organic load; they can block the media and affect the liquid distribution systems. Their presence can affect the development of the active bacteria in the treatment plant and as a result the treatment plant may not operate correctly.

1.1.3 The units are sized based on the facilities advised number of meals per day. The wastes discharged into the unit are expected to come from pot washing sinks, dishwashers and other kitchen wash sinks. The addition of excess emulsifying agents to break up the fats can adversely affects the units' performance. The temperature of the wastewater also affects performance.

1.1.4 Waste disposal units must not be connected to the unit. Waste fats from fryers must not be disposed of into the unit. Mineral oils must not be discharged into the unit. Organic wastes from toilets and staff wash rooms must not be connected. Surface water drains must not be connected.

1.1.5 The positioning of the separator must be considered. The installation should be arranged to accept and discharge wastes by gravity. If the waste water is mainly dishwasher waste, the separator should be placed in a location which allows the waste water to cool so as to allow the fats to separate. (This can be difficult to predict as it depends on the nature of the fat and the amount of emulsifying agents used). Dishwasher flow rates and their usage should be advised in order to select a separator volume. Good kitchen practices must be employed. Before placing dishes in the washers, plates must be scraped well, or rinsed to avoid excess food being transferred into the system.

1.1.6 Venting locations must be selected carefully considering the use of the building and its surrounds, the location of the high level vents and drain access points.

1.2 Handling & Storage

1.2.1 Care must be taken to ensure that units are not damaged during delivery and handling on site. Please take care and place unit so that it cannot fall and become damaged.

1.2.2 The design requirements of our 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.

1.2.3 When lifting units, use webbing slings of a suitable specification. Do not use chains.

1.2.4 A suitable spreader bar should be used to ensure that units are stable and that loads are evenly distributed during lifting. When lifting separators, a spreader bar should be used where the slings would otherwise be at an angle > 30 degrees to the vertical.

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

1.2.6 We accept no responsibility for the selection of lifting equipment.

1.2.7 Whenever 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 and the unit orientated onto its side with even support. Do not roll separators.

1.3 Site Planning

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

1.3.1 The effluent discharge will require further treatment either by a package or municipal treatment plant and its final discharge will usually require the consent of the relevant Environmental Regulator.

1.3.2 The installation should have Planning and Building Control approval.

1.3.3 The kitchen /catering waste must be cool enough to allow the fats and oils to separate.

1.3.4 The waste must not contain any added organic content, e.g. any waste from toilets or waste disposal units etc. (see introduction above).

1.3.5 The location of the unit is very important.

1.3.6 The drains laid to the unit should have a fall of 1:50 (2%) to prevent accumulation of grease.

1.3.7 **Venting**. Be aware that grease separators may contain and discharge strong wastes which can become anaerobic and as a result their contents and discharge can produce foul odours. The odours produced tend to be hydrogen sulphides, (rotten eggs smell) or methyl mercaptans (rotting cabbage smell); these gases are heavy and when vented, may be spun down from a high level vent, or wafted out and around by a low level vent.

1.3.8 **It is recommended that pipelines connected to grease separators shall be adequately vented**. The discharge pipe to the separator should be provided with a stack vent. Branch ventilating pipes should be connected to all upstream pipes more than 5 m long. Where the nearest vent is further than 10m upstream of the grease separator, the supply pipes should be fitted with an additional vent pipe terminating as close as possible to the separator. High level vent positions should consider prevailing wind directions and possibly include as spinner to assist the draw and gas dispersion and dilution.

1.3.9 Considering the above, an alternative is to fit the grease separators and subsequent drain run with **well sealed covers**, venting only the drain above the separator at a high level point. The following drain run, including manhole covers should be sealed as far as the treatment plant. (Sewage treatment units must be vented at the head of the system, using high level vents sited to take account of prevailing wind, it may also be necessary to fit a vent local to the treatment unit). If the separator drain connection joins other drains, there is a possibility that odours will be released from the discharged liquid into this drain run.

1.3.10 If the grease separated effluent is to be sampled, before discharge into a treatment facility, consider installation of a sampling point downstream of the separator. There is no suitable facility to effectively sample inside the unit.

1.3.11 Uncontaminated run off such as roof water must be excluded from separators.

1.3.12 Ground conditions and water table level should be assessed. If the water table will be above the base of the units 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.

1.3.13 The separator must be installed at a level, which will allow connection to the incoming drain and a free discharge at the system outlet.

1.3.14 Do not install the unit deeper than necessary; ensure that you purchase extension shaft kits. The minimum invert depth of the unit is shown on the customer drawing. The maximum inlet invert is 2.0m.

1.3.15 Adequate access must be provided for routine 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.

1.3.16 There must be at least 1 metre of clear, level ground all around the access covers to allow for routine maintenance.

1.3.17 It is essential that a mains water supply is accessible for routine cleansing and refilling after removal of waste material and liquid.

1.3.18 Installation should only be carried out by suitably qualified and experienced contractors in accordance with current Health and Safety Regulations.

1.3.19 This unit is designed to operate with gravity in and out flows. The unit is not designed to operate with a pumped influent.

2 Installation

2.1 Installation – General

2.1.1 When units are installed in unstable ground conditions where movement of the surrounding material and/or unit may occur, the connecting pipework should be designed to minimise the risk of damage from differential movement of the unit(s) and/or surrounding material.

2.1.2 For separators 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.

2.1.3 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.

2.1.4 In situations where the excavation will not maintain a vertical wall, it will be necessary to shore up the sidewalks 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.

2.1.5 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.

2.1.6 During installation care must be taken to ensure that the body of the unit is uniformly supported so that point loads through the unit are avoided.

2.1.7 The concrete Specification is not a site specific installation design.

GENERAL CONCRETE SPECIFICATION IN ACCORDANCE WITH BS EN 206-1 (BS 8500-1)		
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^3 220 - 230 Kg/M^3
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		

2.2 Separator Installation

2.2.1 Excavate a hole of sufficient length and width to accommodate the tank and a minimum 225mm concrete surround and to a depth, which allows for the burial depth of the unit plus concrete base slab and haunch.

2.2.2 Construct a suitable concrete base slab appropriate to site conditions. Ensure that the slab is flat and level.

2.2.3 When the concrete base slab has set enough to support the installed load, add a concrete haunch so as to provide even support under the unit and then lower the unit onto the haunch using suitable webbing slings and lifting equipment.

2.2.4 Pour no more than 300-mm depth of clean water into the unit, avoiding shock loads. DO NOT OVERFILL; the unit is not designed to hold water whilst unsupported.

2.2.5 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. Continue adding concrete backfill, simultaneously keeping the internal water level no more than 200 mm above the backfill level at all times, until the backfill is just below the underside of the outlet drain, giving sufficient room to connect the inlet and outlet pipework.

2.2.6 Connect inlet and outlet drains and vent pipes when safe access to the backfill can be gained.

2.3 Pipework Connections

2.3.1 In all cases, ensure that the outlet pipework level is maintained for correct operation. The fall across the unit must be maintained.

2.3.2 Small units are generally fitted with PVCu pipe spigots at the inlet and pipe at the outlet.

2.3.3 Connect using the same size PVCu socket.

2.3.4 The connecting pipe work should be pushed into the socket. Ensure that the seal is secure and watertight before backfilling the pipe.

2.3.5 Continue backfilling 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.

2.3.6 It is advisable to seal the joints on the extension shafts (particularly on sites with high ground water) with proprietary sealant or by GRP lamination. Temporarily strut the extension neck(s) to avoid distortion during back filling. Where more than one neck section is required to suit a deep invert, consider back-filling section by section. If the extension neck is too long, it can be trimmed using a fine-toothed saw.

2.3.7 The maximum recommended inlet invert is 2000mm (using extension sections).

2.3.8 Continue back-filling, ensuring minimum 225mm concrete thickness around the extension neck.

2.3.9 In traffic areas a suitable top slab must be 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.

2.3.10 The unit should be filled with clean water up to the invert level of the outlet pipe. Ensure the unit identification is placed/ marked inside the neck for future information. The unit is now ready for use.

3 Operation

3.1.1 The unit is sized to treating a daily volume of meals. The unit will treat the entire flow. (If the load is greater than design then at times the flow will pass through the unit too quickly, the grease will not separate and the unit will discharge poorly separated liquid. The unit is not designed to be used for the disposal of macerated kitchen food waste, or for the disposal of oil when emptying and cleaning fryers. (These products must be taken off site and NOT be discharged into the separator).

3.1.2 The chamber will accumulate fat and any solids entering with the waste.

3.1.3 The liquid is discharged from a submerged pipe, from a point well below the accumulation of floating fat and above any settled particles.

3.1.4 From time to time, the unit must be completely emptied.

4 Maintenance

4.1 Waste Removal and Servicing

4.1.1 Every site is different, in respect to the amount and type of fat and solids generated by the usage and kitchen practices. We recommend following the initial installation, that regular inspections of the separator contents be made to check the rates and level of fat accumulation. The inspection and emptying programme can then be defined following the first 6 months site experience. Removal is expected to be required within this period.

4.1.2 We recommend leaving a maximum interval between removals of 6 months (more frequently if experience dictates). A log should be maintained detailing the depth of floating fat and grease detected, any volume removed and any solids or cleaning carried out. A specimen maintenance log is included in the appendices.

4.1.3 All the liquid solids and fats **must** be removed from the separator. No more than 200mm of fats should be allowed to accumulate

4.1.4 **Grease separator waste is usually considered to be domestic waste which maybe collected by a licensed waste disposal contractor. The waste producer should ensure that the Cleansing contractor is registered with the Environment Agency /Regulator and that the final disposal of the waste is to a licensed facility.**

4.1.5 Remove access covers and lower the desludging hose in to the separation chamber. Draw off the surface oil/fat.

4.1.6 To remove the settled solids, lower the desludge hose to the base of the tank and empty the contents of the chamber.

4.1.7 Replace the access covers.

4.1.8 Re-fill the separator with clean water up to the outlet level.

SEPARATOR MAINTENANCE LOG

Site address/location .....

.....

Separator location .....

.....

Type of separator .....

Nominal Flow .....

Total capacity .....

Inspection/ Maintenance Date	Comments	Waste Volumes Removed (if appropriate)