

Environmental



**Klargester** Separators

A Range of Fuel/Oil Separators for Peace of Mind



*Sustainable, Reliable, Affordable*



**Kingspan**<sup>®</sup>

# Introduction

Surface water drains normally discharge to a watercourse or indirectly into underground waters (groundwater) via a soakaway. Contamination of surface water by oil, chemicals or suspended solids can cause these discharges to have a serious impact on the receiving water.

The Environment Regulators, Environment Agency, England and Wales, SEPA, Scottish Environmental Protection Agency in Scotland and Department of Environment & Heritage in Northern Ireland, have published guidance on surface water disposal, which offers a range of means of dealing with pollution both at source and at the point of discharge from site (so called 'end of pipe' treatment). These techniques are known as 'Sustainable Drainage Systems' (SuDS).

Where run-off is draining from relatively low risk areas such as car-parks and non-operational areas, a source control approach, such as permeable surfaces or infiltration trenches, may offer a suitable means of treatment, removing the need for a separator.

Oil separators are installed on surface water drainage systems to protect receiving waters from pollution by oil, which may be present due to minor leaks from vehicles and plant, from accidental spillage.

Effluent from industrial processes and vehicle washing should normally be discharged to the foul sewer (subject to the approval of the sewerage undertaker) for further treatment at a municipal treatment works

## Separator Standards and Types

A British (and European) standard (BS EN 858-1 and 858-2) for the design and use of prefabricated oil separators has been adopted. New prefabricated separators should comply with the standard.

## Separator Classes

The standard refers to two 'classes' of separator, based on performance under standard test conditions.

### Class I

Designed to achieve a concentration of less than 5mg/l of oil under standard test conditions, should be used when the separator is required to remove very small oil droplets.

### Class II

Designed to achieve a concentration of less than 100mg/l oil under standard test conditions and are suitable for dealing with discharges where a lower quality requirement applies (for example where the effluent passes to foul sewer).

Both classes can be produced as full retention or bypass separators. The oil concentration limits of 5 mg/l and 100 mg/l are only applicable under standard test conditions. It should not be expected that separators will comply with these limits when operating under field conditions.

## Full Retention Separators

Full retention separators treat the full flow that can be delivered by the drainage system, which is normally equivalent to the flow generated by a rainfall intensity of 65mm/hr. On large sites, some short term flooding may be an acceptable means of limiting the flow rate and hence the size of full retention systems.

## Bypass Separators

Bypass separators fully treat all flows generated by rainfall rates of up to 6.5mm/hr. This covers over 99% of all rainfall events. Flows above this rate are allowed to bypass the separator. These separators are used when it is considered an acceptable risk not to provide full treatment for high flows, for example where the risk of a large spillage and heavy rainfall occurring at the same time is small.

## Forecourt Separators

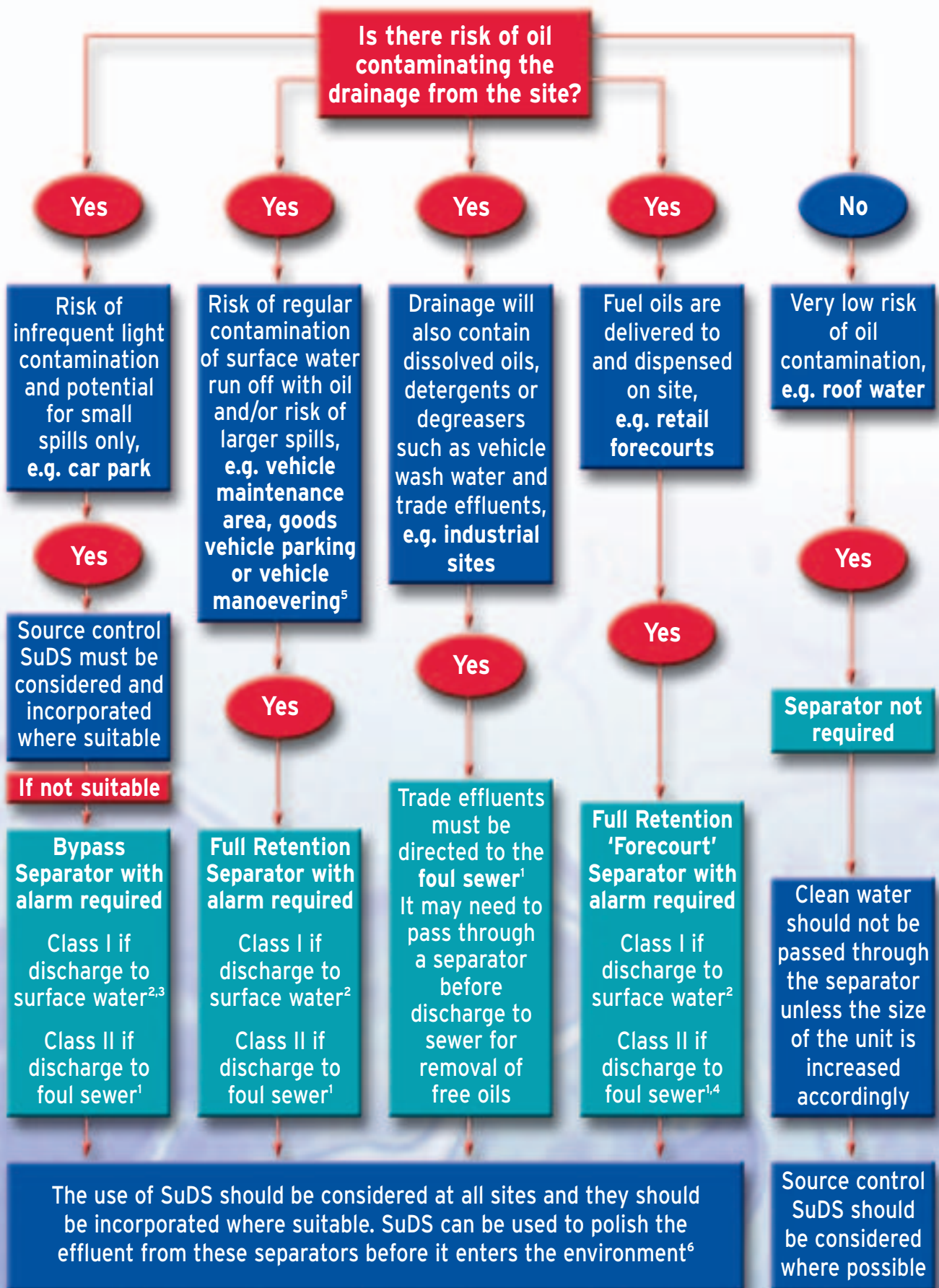
Forecourt separators are full retention separators specified to retain on site the maximum spillage likely to occur on a petrol filling station. They are required for both safety and environmental reasons and will treat spillages occurring during vehicle refuelling and road tanker delivery. The size of the separator is increased in order to retain the possible loss of the contents of one compartment of a road tanker, which may be up to 7,600 litres.

## Selecting the Right Separator

The chart on the following page gives guidance to aid selection of the appropriate type of fuel/oil separator for use in surface water drainage systems which discharge into rivers and soakaways.

For further detailed information, please consult the Environment Agency Pollution Prevention Guideline 03 (PPG 3) 'Use and design of oil separators in surface water drainage systems' available from their website.

Kingspan Environmental has a specialist team who provide technical assistance in selecting the appropriate separator for your application.



1 You must seek prior permission from your local sewer provider before you decide which separator to install and before you make any discharge.

2 You must seek prior permission from the relevant environmental body before you decide which separator to install.

3 In this case, if it is considered that there is a low risk of pollution a source control SuDS scheme may be appropriate.

4 In certain circumstances, the sewer provider may require a Class 1 separator for discharges to sewer to prevent explosive atmospheres from being generated.

5 Drainage from higher risk areas such as vehicle maintenance yards and goods vehicle parking areas should be connected to foul sewer in preference to surface water.

6 In certain circumstances, a separator may be one of the devices used in the SuDS scheme. Ask us for advice.

# Bypass Separator

## NSBD Range

### Application

Bypass separators are used when it is considered an acceptable risk not to provide full treatment, for very high flows, and are used, for example, where the risk of a large spillage and heavy rainfall occurring at the same time is small, e.g.

- Surface car parks.
- Roadways.
- Lightly contaminated commercial areas.

### Performance

Kingspan Environmental were one of the first UK manufacturers to have separators tested to EN 858-1. Kingspan Environmental have now added the NSBD bypass range to their portfolio of certified and tested models. The NSBD number denotes the maximum flow at which the separator treats liquids. The British Standards Institute (BSI) tested the required range of Klargestar full retention separators and certified their performance in relation to their flow and process performance assessing the effluent qualities to the requirements of BS EN 858-1. Klargestar bypass separator designs follow the parameters determined during the testing of the required range of bypass separators.

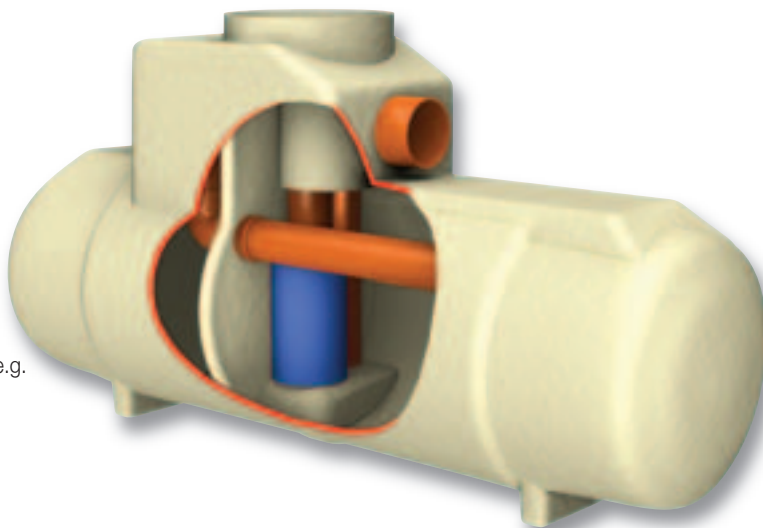
Each bypass separator design includes the necessary volume requirements for:

- Oil separation capacity.
- Oil storage volume.
- Silt storage capacity.
- Coalescer.

The unit is designed to treat 10% of peak flow. The calculated drainage areas served by each separator are indicated according to the formula given by PPG3  $NSB = 0.0018A(m^2)$ .

Flows generated by higher rainfall rates will pass through part of the separator and bypass the main separation chamber.

Class I separators are designed to achieve a concentration of 5mg/litre of oil under standard test conditions.



Class II separators are designed to achieve a concentration of 100mg/litre of oil under standard test conditions.

### Features

- Light and easy to install.
- Class I and Class II designs.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Oil alarm system available (required by BS EN 858-1 and PPG3).
- Extension access shafts for deep inverts.
- Maintenance from ground level.

To specify a nominal size bypass separator, the following information is needed:-

- The calculated flow rate for the drainage area served. Our designs are based on the assumption that any interconnecting pipework fitted elsewhere on site does not impede flow into or out of the separator and that the flow is not pumped .
- The required discharge standard. This will decide whether a Class I or Class II unit is required.
- The drain invert inlet depth.
- Pipework type, size and orientation.

### Sizes & Specifications:

Unit Nominal Size	Flow (l/s)	Peak Flow Rate (l/s)	Drainage Area (m <sup>2</sup> )	Storage Capacity (litres)		Length (mm)	Dia. (mm)	Access Shaft Diameter (mm)	Base to Inlet Invert (mm)	Base to Outlet Invert (mm)	Standard Fall Across Unit	Min. Inlet Invert (mm)	Standard Pipework Diameter (mm)
				Silt	Oil								
NSBD003	3	30	1670	300	45	1765	1225	750	1450	1350	100	500	315
NSBD004	4.5	45	2500	450	68	1765	1225	750	1450	1350	100	500	315
NSBD006	6	60	3335	600	90	1765	1225	750	1450	1350	100	500	315
NSBD008	8	80	4445	800	120	3065	1225	750	1450	1350	100	500	315
NSBD010	10	100	5560	1000	150	3065	1225	750	1450	1350	100	500	315
NSBD012	12	120	6670	1200	180	3915	1225	750	1450	1350	100	500	315
NSBD015	15	150	8335	1500	225	3915	1225	750	1450	1350	100	500	315
NSBD018	18	180	10000	1800	270	3200	2012	600	2110	2010	100	1000	375
NSBD024	24	240	13340	2400	360	3200	2012	600	2110	2010	100	1000	375
NSBD030	30	300	16670	3000	450	3915	2012	600	2110	2010	100	1000	450
NSBD036	36	360	20000	3600	540	3915	2012	600	2110	2010	100	1000	525
NSBD055	55	550	30560	5500	825	5085	2820	600	2310	2060	250	1000	750
NSBD072	72	720	40000	7200	1080	5820	2820	600	2310	2060	250	1500	750
NSBD084	84	840	46670	8400	1260	6200	2820	600	2310	2010	300	1500	750
NSBD096	96	960	53340	9600	1440	7375	2820	600	2310	2010	300	1500	825
NSBD110	110	1100	61110	11000	1650	7925	2820	600	2360	2010	350	1500	825
NSBD130	130	1300	72225	13000	1950	8725	2820	600	2360	2010	350	1500	825

# Full Retention Separator

## NSFA Range

### Application

Full retention separators are used in high risk spillage areas such as:

- Fuel distribution depots.
- Vehicle workshops.
- Scrap Yards

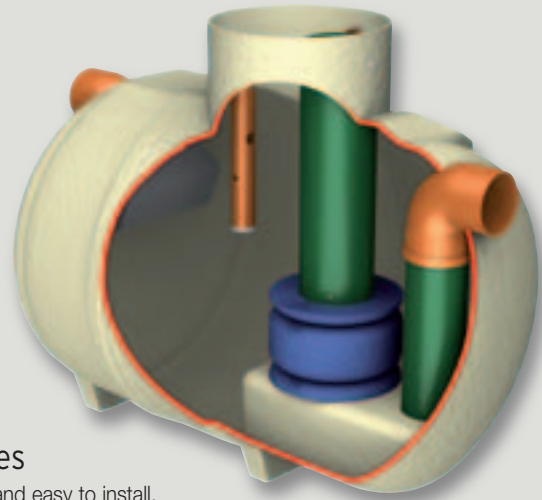
### Performance

Kingspan Environmental were the first UK manufacturer to have the required range (3-30 l/sec) certified to EN 858-1 in the UK. The NSFA number denotes the flow at which the separator operates. The British Standards Institute (BSI) have witnessed the performance tests of the required range of separators and have certified their performance, in relation to their flow and process performance to ensure that they met the effluent quality requirements of BS EN 858-1. Larger separator designs have been determined using the formulas extrapolated from the test range.

Each full retention separator design includes the necessary volume requirements for:

- Oil separation capacity.
- Oil storage volume.
- Silt storage capacity.
- Coalescer (Class I units only).
- Automatic closure device.

Largest full retention separators treat the whole of the specified flow.



### Features

- Light and easy to install.
- 3-30 l/sec range independently tested and performance sampled, certified by the BSI.
- Class I and Class II designs.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Oil alarm system available.
- Vent points within necks.
- Extension access shafts for deep inverts.
- Maintenance from ground level.

To specify a nominal size full retention separator, the following information is needed:-

- The calculated flow rate for the drainage area served. Our designs are based on the assumption that any interconnecting pipework fitted elsewhere on site does not impede flow into or out of the separator and that the influent is not pumped.
- The required discharge standard. This will decide whether a Class I or Class II unit is required.
- The drain invert inlet depth.
- Pipework type, size and orientation.

### Sizes & Specifications:

Unit Nominal Size	Flow (l/s)	Drainage Area (m <sup>2</sup> ) PPG-3 (0.018)	Storage Capacity (litres)		Length (mm)	Unit Dia. (mm)	Manhole Cover Dimensions (mm)	Base to Inlet Invert (mm)	Base to Outlet Invert (mm)	Min. Inlet Invert (mm)	Standard Pipework Diameter (mm)
			Silt	Oil							
NSFA 3	3	170	300	30	1760	1225	600	1050	1000	500	200
NSFA 6	6	335	600	60	1760	1225	600	1050	1000	500	200
NSFA 10	10	555	1000	100	2610	1225	600	1050	1000	500	200
NSFA 15	15	835	1500	150	3910	1225	600	1050	1000	500	200
NSFA 20	20	1115	2000	200	3200	2010	600	1810	1760	1000	315
NSFA 30	30	1670	3000	300	3915	2010	600	1810	1760	1000	315
NSFA 40	40	2225	4000	400	4640	2010	600	1810	1760	1000	315
NSFA 50	50	2780	5000	500	5425	2010	600	1810	1760	1000	315
NSFA 65	65	3610	6500	650	6850	2010	600	1810	1760	1000	315
NSFA 80	80	4445	8000	800	5744	2820	600	2500	2450	1000	315
NSFA 100	100	5560	10000	1000	6200	2820	600	2500	2450	1000	400
NSFA 125	125	6945	12500	1250	7365	2820	600	2500	2450	1000	450
NSFA 150	150	8335	15000	1500	8675	2820	600	2550	2450	1000	525
NSFA 175	175	9725	17500	1750	9975	2820	600	2550	2450	1000	525
NSFA 200	200	11110	20000	2000	11280	2820	600	2550	2450	1000	600

# Washdown & Silt Separator Range

## Application

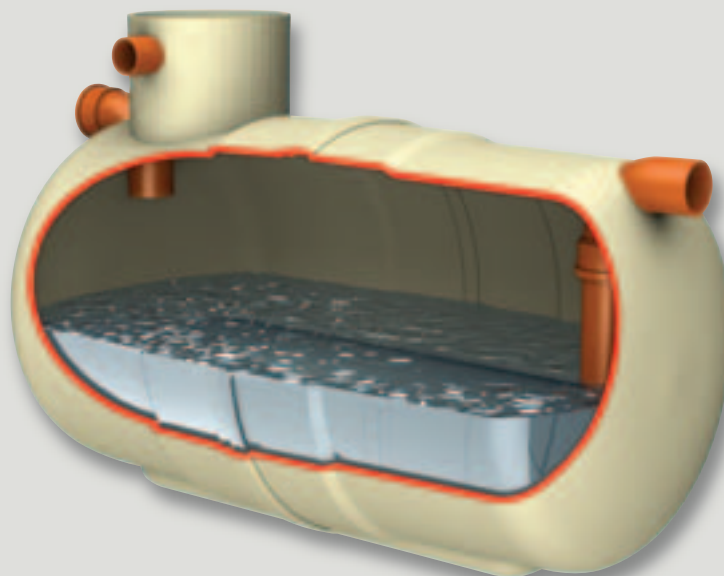
This unit can be used in areas such as car wash and other cleaning facilities that discharge directly into a foul drain, which feeds to a municipal treatment facility.

If emulsifiers are present the discharge must not be allowed to enter an NS Class I or Class II unit.

- Car wash.
- Tool hire depots.
- Truck cleansing.
- Construction compounds cleansing points.

## Performance

Such wash down facilities must not be allowed to discharge directly into surface water but must be directed to a foul connection leading to a municipal treatment works as they utilise emulsifiers, soaps and detergents, which can dissolve and disperse the oils.



## Features

- Light and easy to install.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Extension access shafts for deep inverts.
- Maintenance from ground level.

### Sizes & Specifications:

Ref.	Total Capacity (Litres)	Max. Rec. Silt	Max. Flow Rate (l/s)	Length (mm)	Diameter (mm)	Access Shaft Dia. (mm)	Base to Inlet Invert (mm)	Base to Outlet Invert (mm)	Standard Fall Across Unit	Min. Inlet Invert (mm)	Standard Pipework Diameter (mm)	Approx Empty (Kg.)
W1/012	1200	600	3	1310	1225	460	1150	1100	50	500	160	60
W1/020	2000	1000	5	2210	1225	460	1150	1100	50	500	160	120
W1/030	3000	1500	8	3060	1225	460	1150	1100	50	500	160	150
W1/040	4000	2000	11	3910	1225	460	1150	1100	50	500	160	180
W1/060	6000	3000	16	4530	1440	600	1360	1310	50	500	160	320
W1/080	8000	4000	22	3200	2020	600	2005	1955	50	500	160	585
W1/100	10000	5000	27	3915	2020	600	2005	1955	50	500	160	680
W1/120	12000	6000	33	4640	2020	600	2005	1955	50	500	160	770
W1/150	15000	7500	41	5435	2075	600	1940	1890	50	500	160	965
W1/190	19000	9500	52	6865	2075	600	1940	1890	50	500	160	1200

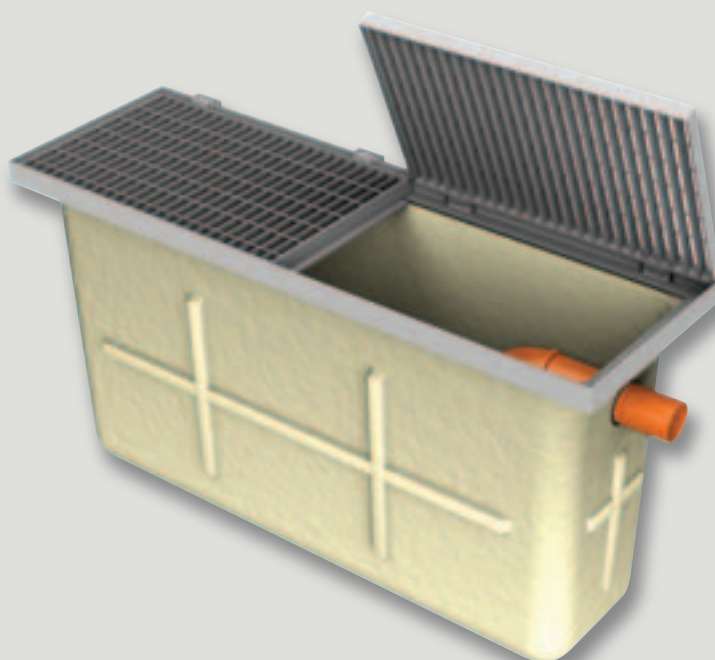
# Car Wash Silt Trap

## Application

Car Wash silt trap is designed for use before a separator in car wash applications to ensure effective silt removal.

## Features

- Galvanised heavy duty cover.
- Light and easy to install.
- Maintenance from ground level.



# Forecourt Separator Range

## Application

The forecourt separator is designed for installation in petrol filling station forecourts and similar applications. The function of the separator is to intercept hydrocarbon pollutants such as petroleum and oil and prevent their entry to the drainage system, thus protecting the environment against hydrocarbon contaminated surface water run-off and gross spillage.

## Performance

Operation ensures that the flow cannot exit the unit without first passing through the coalescer assembly.

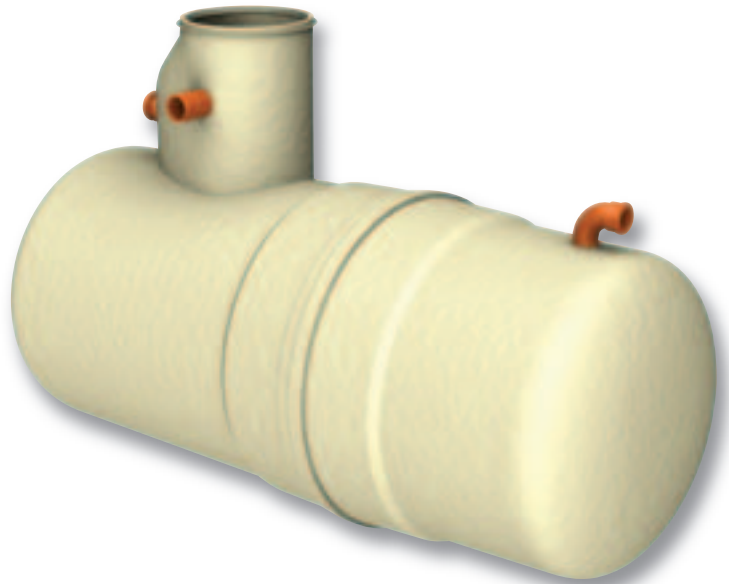
In normal operation, the forecourt separator has sufficient capacity to provide storage for separated pollutants within the main chamber, but is also able to contain up to 7,600 litres of pollutant arising from the spillage of a fuel delivery tanker compartment on the petrol forecourt. The separator has been designed to ensure that oil cannot exit the separator in the event of a major spillage, subsequently the separator should be emptied immediately.

## Features

- Light and easy to install.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Extension access shafts for deep inverts.
- Maintenance from ground level.
- Class I and Class II design.

## Sizes & Specifications:

Enviroceptor Class	Backfill Type	Total Cap. (L)	Drainage Area (M <sup>2</sup> )	Max. Flow Rate (l/s)	Length (mm)	Diameter (mm)	Access Shaft Dia. (mm)	Base to Inlet Invert (mm)	Base to Outlet Invert (mm)	Std. Fall Across Unit	Min. Inlet Invert (mm)	Std. Pipe-work (mm)	Empty Weight (Kg.)
I	Concrete	10000	720	15	3915	2020	600	2180	2130	50	600	160	620
II	Concrete	10000	720	15	3915	2020	600	2180	2130	50	600	160	620



- Oil storage volume.
- Coalescer (Class I unit only).
- Automatic closure device.
- Oil alarm system available.

## Installation

The unit should be installed on a suitable concrete base slab and surrounded with a concrete backfill. Structural grade units can also be supplied suitable for installation within a granular backfill (i.e. pea gravel). Please specify unit required when ordering.

If the separator is to be installed within a trafficked area, then a suitable cover slab must be designed to ensure that loads are not transmitted to the unit.

The separator should be installed and vented in accordance with Health and Safety Guidance Note HS(G)41 for filling stations, subject to Local Authority requirements.

## Alarm Systems

British European Standard BS EN 858-1 and Environment Agency Pollution Prevention Guideline PPG3 requires that all separators are to be fitted with an oil level alarm system and that it should be installed and calibrated by a suitably qualified technician so that it will respond to an alarm condition when the separator requires emptying.

- Easily fitted to existing tanks.
- Excellent operational range.
- Visual and audible alarm.
- Additional telemetry option.



# Kingspan Environmental Solutions



Commercial Sewage Treatment Plants



Large Capacity Pumping Stations



Stormwater Attenuation Systems



Residential & Commercial Rainwater Harvesting



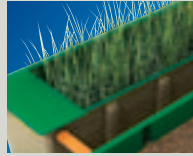
Oil/Water Separators



Domestic Sewage Treatment Plants



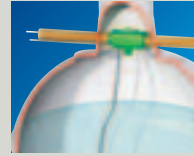
Packaged Pump Systems



Reed Beds



Domestic Rainwater Harvesting



Garden Watering Systems



Septic Tanks



Below Ground Storage Tanks



Grease & Silt Traps

## Kingspan Environmental Certified Installers

Strategically located throughout the UK and Ireland, Kingspan Environmental Certified Installers are appointed following rigorous selection procedures which assess their installation expertise, reputation and financial status.

These performance criteria, together with their design skills and knowledge of Kingspan Environmental products are also reviewed on an annual basis to ensure that the highest levels of professionalism are maintained.

## Kingspan Environmental Service

Kingspan Environmental have a dedicated service division providing maintenance for waste water treatment products. Factory trained engineers are available for site visits as part of a planned maintenance contact or on an 'on-call' basis.

## Unique Customer Care

Kingspan Environmental offers a unique and comprehensive care package both before and after supply. Throughout the UK and Ireland, our team of service engineers is always on hand to ensure that Kingspan Environmental products provide their owners with a long and cost-effective life. Call our Customer Care Department for further information.

## Other Applications

As specialists in wastewater treatment we are able to provide solutions for many different applications. Please contact us for further information.

*In keeping with Company policy of continuing research and development and in order to offer our clients the most advanced products, Kingspan Environmental reserves the right to alter specifications and drawings without prior notice.*



This brochure is printed on paper made from 80% post-consumer waste and 20% virgin pulp.



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