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Water Management Solutions

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# Separators

## Product Brochure

Fully compliant range of Separators for a variety of commercial and industrial applications



[kingspan.me/water](https://kingspan.me/water)

  
**Kingspan**

# Fuel/Oil Separators for Commercial and Industrial Applications

Surface water drains typically 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.

UK environment regulators, the Environment Agency; the Scottish Environment Protection Agency (SEPA); and the Department of Environment (DOE); have all published guidance on surface water disposal, which includes 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 or from across the plant, or from more major events like 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

The UK has adopted a two-part European Standard (BS EN 858-1:2002 and BS EN 858-2:2003; Reference 5) for the design, use, selection, installation, operation and maintenance of prefabricated oil separators. 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, a Class I separator should be used when the separator is required to remove very small oil droplets. Class I separators always discharge to a watercourse.

### Class II

Designed to achieve a concentration of less than 100mg/l oil under standard test conditions, Class II separators are suitable for dealing with discharges where a lower quality requirement applies. Class II separators discharge effluent to a foul sewer.

## 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.



## 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.

## 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

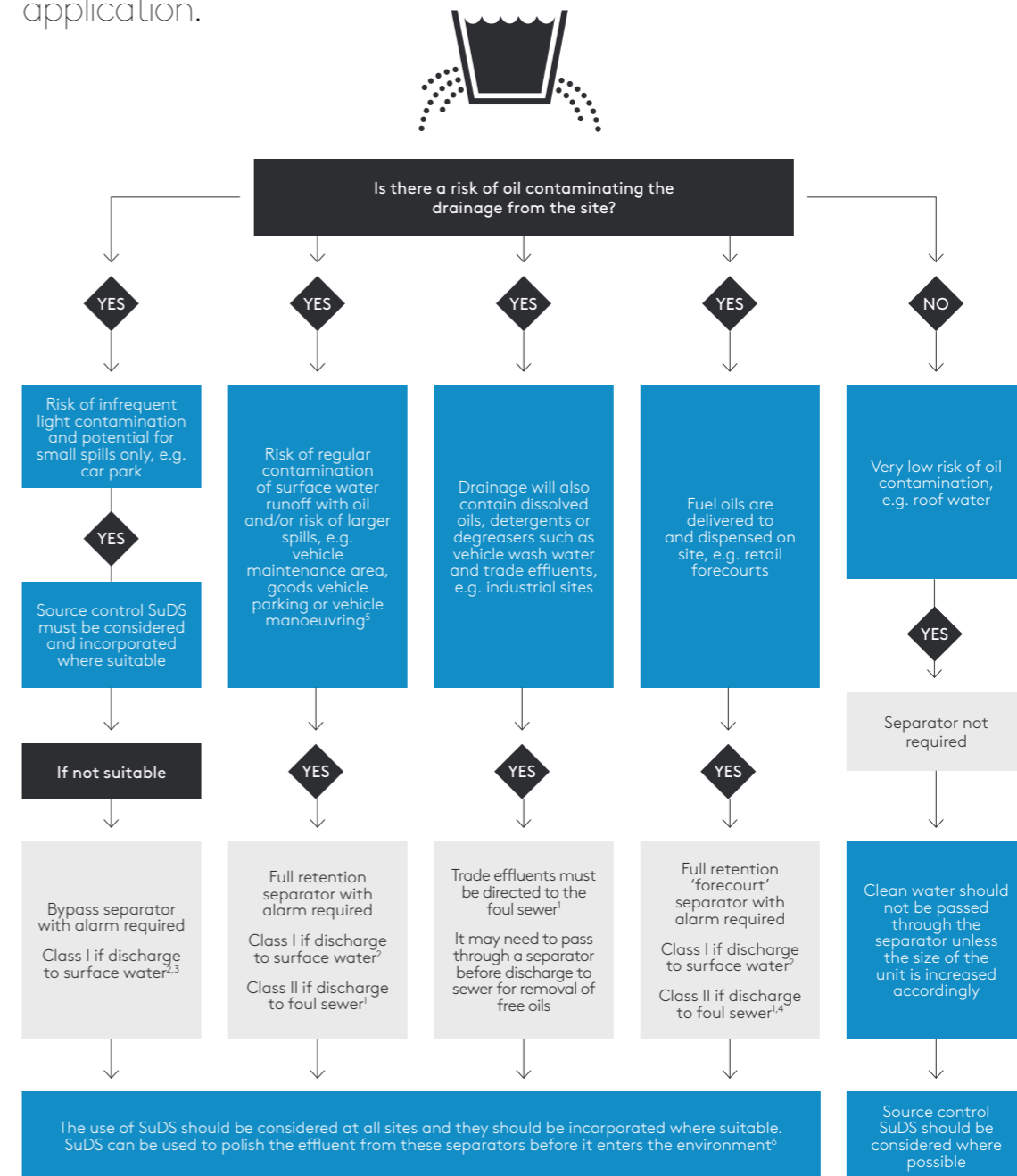
The chart on the following page gives guidance to aid selection of the appropriate type of fuel/oil separator for use in surface water drainage systems which discharge into rivers and soakaways. For further detailed information, please consult your local Water/Environmental Agency.

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

# Choosing the Right Separator

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

The chart below 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.



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

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

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

<sup>4</sup> In certain circumstances, the sewer provider may require a Class I separator for discharges to sewer to prevent explosive atmospheres from being generated.

<sup>5</sup> 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.

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



# Bypass Separators

NSB RANGE



Kingspan NSB range achieved on average <math><1\text{mg/l}</math> under EN 858-1 testing conditions

## Performance

Kingspan was one of the first UK manufacturers to have separators tested to BS EN 858-1. In 2006, we introduced the NSB range of bypass separators. The NSB number denotes the maximum flow at which the separator treats liquids. The British Standards Institute (BSI) tested the required range of Kingspan bypass 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. Kingspan 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 (Class 1 units only).

The unit is designed to treat the first 10% of peak flow ('first flush principle'). The calculated drainage areas served by each separator are indicated according to the formula  $\text{NSB} = 0.0018A(\text{m}^2)$ . Flows generated by higher rainfall rates will pass through part of the separator, bypassing the separation chamber.

Class 1 separators are designed to achieve a concentration of 5mg/litre of oil under standard test conditions.

## Features

Light and easy to install.

- Inclusive of silt storage volume
- Fitted inlet/outlet connectors
- Vent points within necks
- Oil alarm system available (required by BS EN 858-1)
- Extension access shafts for deep inverts
- Maintenance from ground level
- GRP or rotomoulded construction (subject to model).

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 assumptions 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 drain invert inlet depth
- Pipework type, size and orientation.

## Technical Specifications

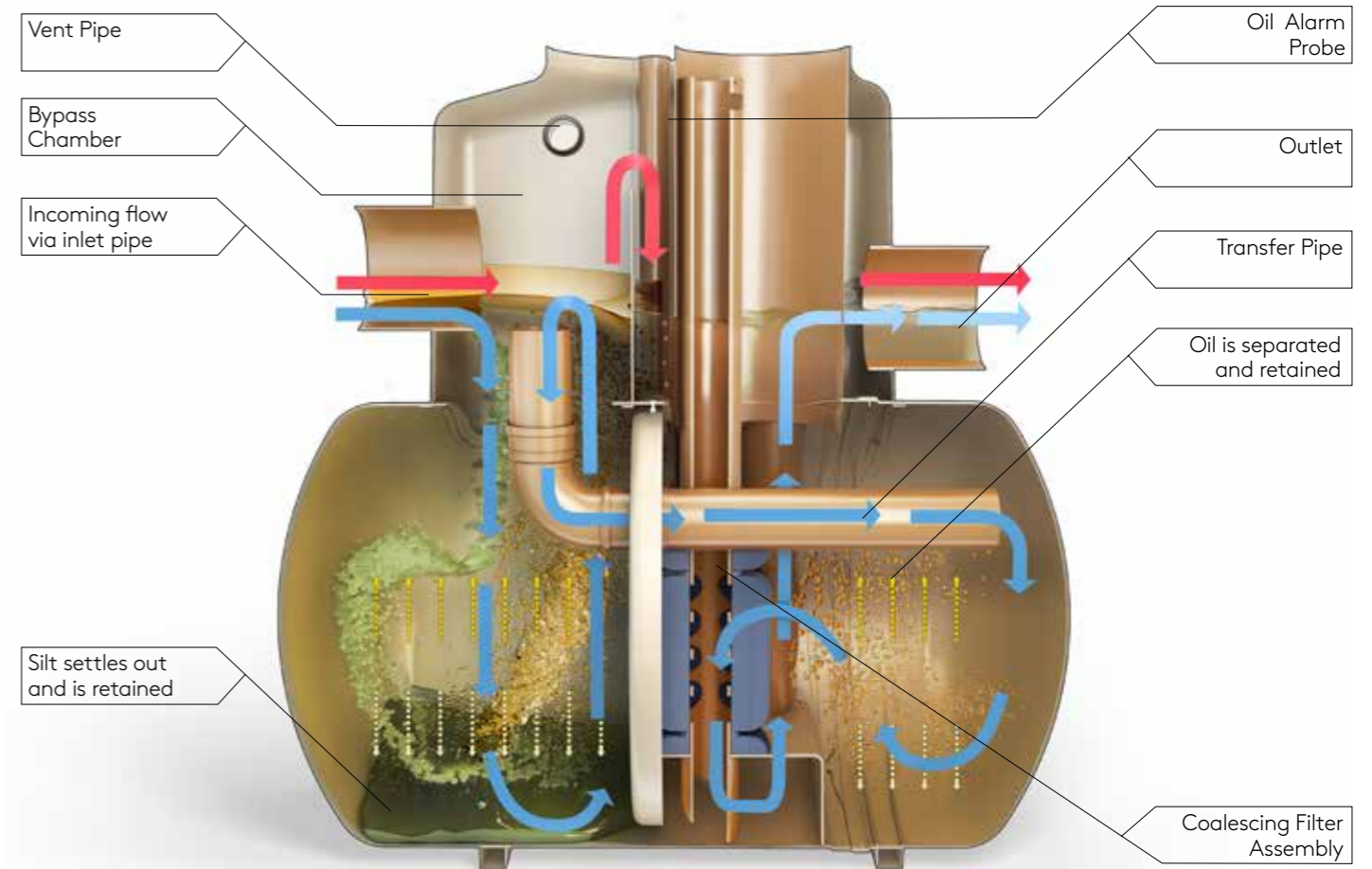
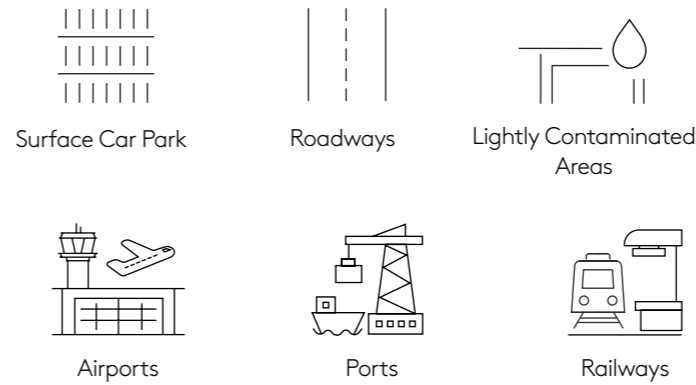
Model Reference	Flow (l/s)	Peak Flow Rate (l/s)	Drainage Area(M <sup>2</sup> ) Based on UK rainwater flow	Storage Capacity (Ltrs)		Length (mm)	Diameter (mm)	Access Shaft Diameter (mm)	Base Inlet Invert (mm)	Base to Outlet Invert (mm)	Standard Fall Across (mm)	Min Inlet Invert (mm)	Standard Pipework Diameter (mm)**
				Silt	Oil								
<b>Polyethylene Chamber Construction</b>													
NSBP003	3	30	1670	300	45	1700	1350	600	1420	1320	100	500	160
NSBP004	4.5	45	2500	450	60	1700	1350	600	1420	1320	100	500	160
NSBP006	6	60	3335	600	90	1700	1350	600	1420	1320	100	500	160
<b>GRP Chamber Construction</b>													
NSBE010	10	100	5560	1000	150	2069	1220	750	1450	1350	100	700	315
NSBE015	15	150	8335	1500	225	2947	1220	750	1450	1350	100	700	315
NSBE020	20	200	11111	2000	300	3893	1220	750	1450	1350	100	700	375
NSBE025	25	250	13890	2500	375	3575	1420	750	1680	1580	100	700	375
NSBE030	30	300	16670	3000	450	4265	1420	750	1680	1580	100	700	450
NSBE040	40	400	22222	4000	600	3230	1920	600	2185	2035	150	1000	500
NSBE050	50	500	27778	5000	750	3960	1920	600	2185	2035	150	1000	600
NSBE075	75	750	41667	7500	1125	5841	1920	600	2235	2035	200	950	675
NSBE100	100	1000	55556	10000	1500	7661	1920	600	2235	2035	200	950	750
NSBE125	125	1250	69444	12500	1875	9548	1920	600	2235	2035	200	950	750

\* Systems to cater for larger flow rates are available on request. Email [water-ME@kingspan.com](mailto:water-ME@kingspan.com) for further information.

\* Some units have more than one access shaft – diameter of largest shown | \*\* Larger pipework available on request.

## Applications

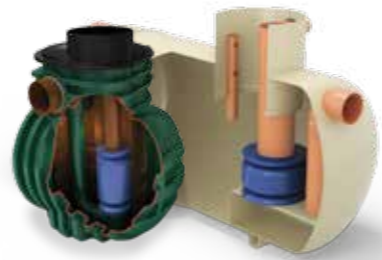
Kingspan's range of bypass separators are typically used for the following applications:



● Bypass flow route ● Normal flow route

# Full Retention Separators

NSF RANGE



Kingspan NSF range achieved on average <1mg/l under EN 858-1 testing conditions

## Performance

Kingspan were the first UK manufacturer to have the required range (3-30 l/sec) certified to BS EN 858-1 in the UK. The NSF 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 meet 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.

Kingspan 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
- Inclusive of silt storage volume
- Fitted inlet/outlet connectors
- Oil alarm system available

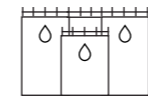
- Vent points within necks
- Extension access shafts for deep inverts
- Maintenance from ground level
- GRP or rotomoulded construction (subject to model)

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

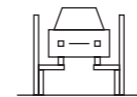
- The calculated flow rate for the drainage area served. Our designs are based on the assumptions that any interconnecting pipework fitted elsewhere on site does not impede flow into or out of the separator and that the influent is not pumped
- The required discharge standard
- The drain invert inlet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

## Applications

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



Fuel Distribution Depots



Vehicle Workshops



Scrap Yards



Airports



Ports

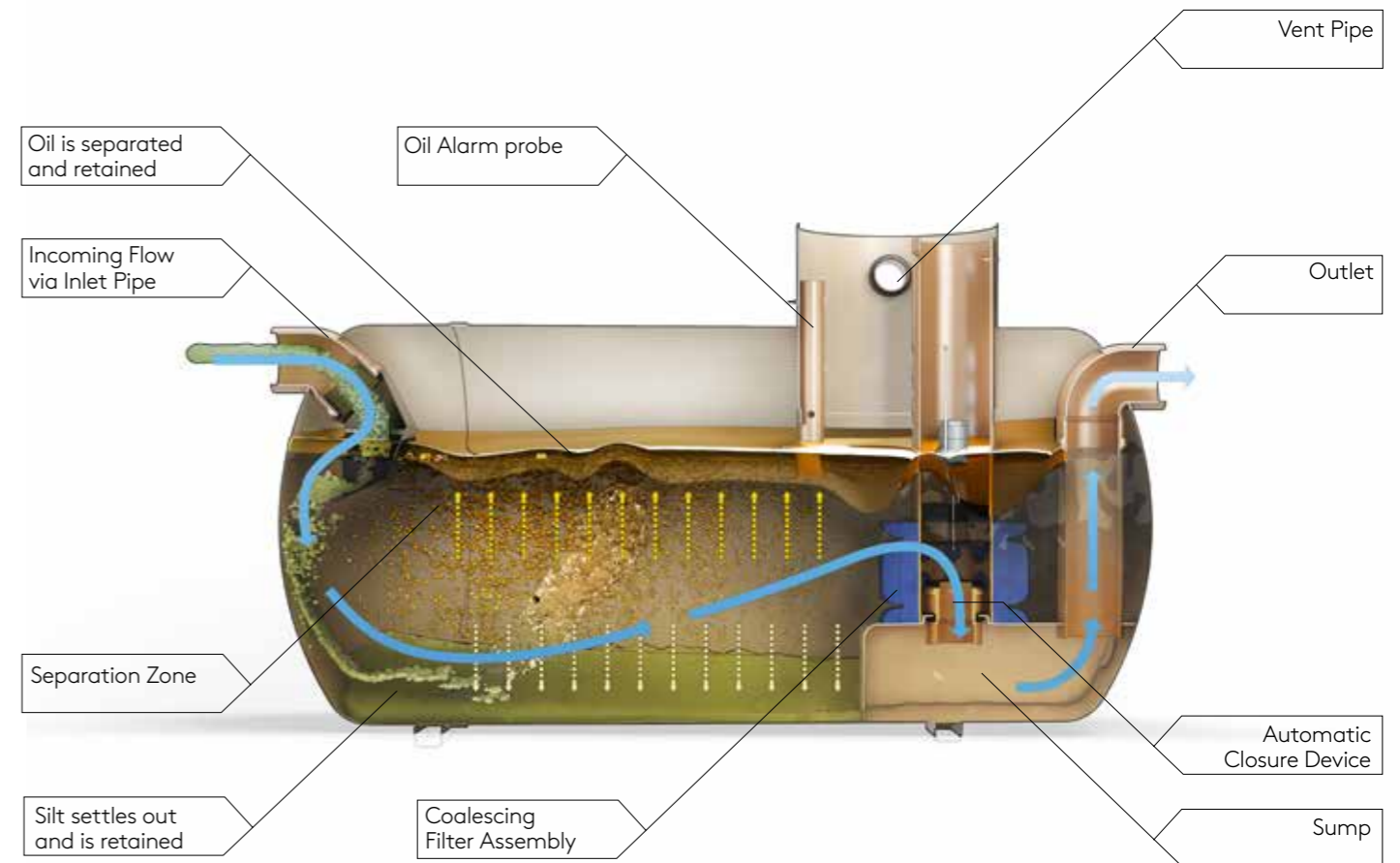


Railways

## Technical Specifications

Model Reference	Flow (l/s)	Drainage Area (m <sup>2</sup> ) PPG-3 (0.018)	Storage Capacity (Ltrs)		Length (mm)	Diameter (mm)	Manhole Cover Dimensions (mm)	Base Inlet Invert (mm)	Base to Outlet Invert (mm)	Min Inlet Invert (mm)	Standard Pipework Diameter (mm)
			Silt	Oil							
<b>Polyethylene Chamber Construction</b>											
NSFP003	3	170	300	30	1700	1350	600	1410	1335	550	160
NSFP006	6	335	600	60	1700	1350	600	1410	1335	550	160
<b>GRP Chamber Construction</b>											
NSFA010	10	555	1000	100	2610	1225	600	1050	1000	500	200
NSFA015	15	835	1500	150	3910	1225	600	1050	1000	1000	200
NSFA020	20	1115	2000	200	3200	2010	600	1810	1760	1000	315
NSFA030	30	1670	3000	300	3915	2010	600	1810	1760	1000	315
NSFA040	40	2225	4000	400	4640	2010	600	1810	1760	1000	315
NSFA050	50	2780	5000	500	5425	2010	600	1810	1760	1000	315
NSFA065	65	3160	6500	650	6850	2010	600	1810	1760	1000	315
NSFA080	80	4445	8000	800	5744	2820	600	2500	2450	1000	315
NSFA100	100	5560	10000	1000	6200	2820	600	2500	2450	1000	400
NSFA125	125	6945	12500	1250	7365	2820	600	2500	2450	1000	450
NSFA150	150	8335	15000	1500	8675	2820	600	2500	2450	1000	525
NSFA175	175	9725	17500	1750	9975	2820	600	2500	2450	1000	525
NSFA200	200	11110	20000	2000	11,280	2820	600	2500	2450	1000	600

\* Systems to cater for larger flow rates are available on request. Email [water-ME@kingspan.com](mailto:water-ME@kingspan.com) for further information  
 \* Some units have more than one access shaft – diameter of largest shown.



# Forecourt Separators

## Compliance

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, therefore 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
- 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 concrete or pea gravel backfill.

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 local Health and Safety guidelines.



## Technical Specifications

Separator Class	Backfill Type	Total Capacity (Ltrs)	Drainage Area (m <sup>2</sup> )	Peak Flow Rate (L/s)	Length (mm)	Diameter (mm)	Access Shaft Diameter (mm)	Base Inlet Invert (mm)	Base to Outlet Invert (mm)	Standard Fall Across (mm)	Min Inlet Invert (mm)	Standard Pipework Diameter (mm)	Empty Weight (kg)
I/II	Concrete	10000	835	15	3915	2020	600	2180	2130	50	600	160	620
I/II	Concrete	10000	1115	20	3915	2020	600	2180	2130	50	600	200	620

# Local and remote separator monitoring solutions

Kingspan offer both local oil level alarm systems and remote monitoring solutions, specifically designed to help you manage your separator system(s).



## SmartServ Remote Monitoring Solution

Kingspan's intelligent fuel/oil separator monitoring system ('SmartServ') is a cost effective solution designed to offer greater control over your separator system.

SmartServ is also fully compliant with British European Standard EN 858-1.

## Benefits

- Helps avoid costly overflows
- Saves money
- Greater control over assets

## Oil Level Alarm System

British European Standard EN 858-1 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.

## Benefits

- Easily fitted to existing tanks
- Excellent operational range
- Visual and audible alarm



# Washdown and Silt Units



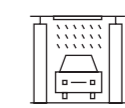
## Performance

Vehicle wash down facilities must not be allowed to discharge directly into surface water. Instead, their discharge must be directed to a foul connection leading to a municipal treatment works as it is likely to contain emulsifiers, soaps and detergents, which can dissolve and disperse the oils.

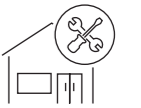
## Features

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

## Applications



Car Wash



Tool Hire Depots



Truck Cleansing



Construction compounds cleansing points

## Technical Specifications

Model Ref	Total Capacity (Ltrs)	Max.rec. Silt (Ltrs)	Max. Flow Rate (L/s)	Length (mm)	Diameter (mm)	Access Shaft Diameter (mm)	Base Inlet Invert (mm)	Base To Outlet Invert (mm)	Standard Fall Across (mm)	Min Inlet Invert (mm)	Standard Pipework Diameter (mm)	Approx. Empty (Kg)
W1/010	1000	500	3	1123	1225	460	1150	1100	50	500	160	60
W1/020	2000	1000	5	2074	1225	460	1150	1100	50	500	160	120
W1/030	3000	1500	8	2952	1225	460	1150	1100	50	500	160	150
W1/040	4000	2000	11	3898	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

## Features

- FACTA Class B covers
- Light and easy to install
- Maintenance from ground level



## Technical Specifications

Model Ref	Total Capacity (Ltrs)	Max.rec. Silt (Ltrs)	Max. Flow Rate (L/s)	Length (mm)	Diameter (mm)	Access Shaft Diameter (mm)	Base Inlet Invert (mm)	Base To Outlet Invert (mm)	Standard Fall Across (mm)	Min Inlet Invert (mm)	Standard Pipework Diameter (mm)	Approx. Empty (Kg)
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



# Middle Eastern Installations

Kingspan operate in over 85 countries worldwide, with currently over 5 million water management system installations. Take a look at a selection of our case studies below.

Experience  
OVER  
**60**  
YEARS

QA

Hamad International Airport  
Qatar  
Fuel/Oil Separators



EAU

Jumeirah Lake Towers  
Dubai  
Fuel/Oil Separators



EAU

Four Seasons Hotel  
Abu Dhabi  
Fuel/Oil Separators and Grease Separators



OM

Sohar Labour Camp  
Oman  
Forecourt Separators and Sewage Treatment Plants



KW

AZ-Zour Desalination Plant  
Kuwait City  
Fuel/Oil Separators and Package Pumping Stations



OM

Muscat Airport  
Oman  
Fuel/Oil Separators



SA

Haramain 'Western Railway'  
High Speed Rail Project  
Saudi Arabia  
Fuel/Oil Separators



# Other Water Management Solutions from Kingspan

Expert Advice Available



Kingspan offer a full range of commercial, domestic and industrial wastewater treatment solutions. To find out more information on any of our products featured, email [water-ME@kingspan.com](mailto:water-ME@kingspan.com) or visit our website at [kingspan.me/water](http://kingspan.me/water)

## Domestic Sewage Treatment Plants



## Commercial Sewage Treatment Plants



## Domestic and Commercial Pumping Stations



## Rainwater Harvesting Systems



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