

APPENDIX III

INTERCEPTORS

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**Interceptor for
Proposed New Extension**

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FULL RETENTION SEPARATORS

Introduction

The use of an oil/water separator is required wherever there is the risk of hydrocarbon pollutants causing contamination at the point of discharge, i.e. an open ditch, river, stream or groundwater. Normally the interceptors are made of GRP or PVC, which need to be installed on a reinforced concrete slab, filled with water and then encased in concrete. This is a slow and expensive method of installation. Our interceptors are manufactured from Precast Concrete, and are normally installed on a bed of cl804 stone and backfilled with the excavated material. This will result in considerable savings on time and materials. Our service also includes delivery to site and off-loading into position.

Description of basic type - Class I & II

Class I Separator

This type of unit is required where the hydrocarbon pollutant concentration in the liquid discharging from the tank must be 5 mg/L or less, or where discharge is to sensitive waters. Class I units contain a coalescing filter which prevents passage through the system, of oil droplets found in suspension in the liquid. Class I units also contain a float controlled closure device. In the event of a major spillage, as pollutants enter the separator, the closure device will sink and shut off the outlet flow. The pollutants are contained within the separator, thus preventing contamination of the outfall.

Class II Separator

This type of unit is required where the hydrocarbon pollutant concentration allowable is 100 mg/L or less. They are used where the effluent quality requirements are less stringent, but there is still a need to protect the environment by shutting the system down in the event of a spillage. Class II separators are provided with a closure device only.

Product Selection

Full Retention Separators

Full retention separators are used in areas where there is a high risk of spillage. These areas include garage forecourts, fuel depots and vehicle workshops.

As contaminated water passes through the separator,

it is retained long enough to allow pollutants to accumulate on the surface. Carlow Precast Full Retention Separators are single chamber vessels, resulting in minimal turbulence and velocity, and maximising retention time. The pollutants are retained within the separator, allowing treated water to discharge.

Garage forecourts are particularly high-risk areas. In accordance with Environment Agency Regulations, any separator serving a refuelling area should be at least capable of retaining the spillage from one compartment of a delivery tanker, normally 7,600 litres. The capacity for parking areas etc. within the forecourt is not included in this 7,600 litres capacity.

Materials

Carlow Precast Full Retention Separators are manufactured from Grade A C50-N15 concrete, with steel fibre reinforcement at 40kg per cubic metre. Larger units contain conventional steel reinforcement as well as steel fibre.

Installation

The unit should be installed on a level bed of sand, gravel or broken stone. The base of the excavation should be level and free from projecting hard points such as rocks or boulders. The separator is lifted into position by our truck-mounted crane, assuming there is suitable access for our delivery vehicle. Backfilling is commenced as soon as possible after placement of the separator.

In most installations, it is not necessary to backfill around the separator with concrete.

Design

In principle, we design to four basic classifications; Full Retention, Bypass, Class I and Class II. Classes I and II pertain to the Draft Eurocode prEN858 (Separator Systems for Light Liquids Part I)

Our designs comply with the requirements of the EPA Wastewater Treatment Manuals:-

- Preliminary Treatment: Part 5: Oils, Grease and Fats
- Primary Secondary and Tertiary Treatment: Part II

All of our products are engineered to the customers' requirements, using established design parameters. The designs are based on flow speeds, retention times, temperature and the settlement characteristics of the target materials. The tank structures are designed to BS8110, BS8007 and the Dramix Design Guidelines for Steel Fibre Reinforced Concrete Structures.



CARLOW PRECAST TANKS LTD.

Manufacturers and Suppliers of Septic and Effluent Tanks for Sewage Treatment Systems, Water Reservoirs, Pumping Chambers, Culverts and Special Products.
Fax Transmission.

Technical Specification for CP1300 FR Class 1 Interceptor

Normally interceptors are made of GRP or PVC, which need to be installed on a reinforced concrete slab, and then encased in concrete. This is a slow and expensive method of installation.

Our interceptors are manufactured from precast concrete, and are normally installed on a bed of cl 804 stone and backfilled with the excavated material. This will result in considerable savings on time and materials. Our service also includes delivery to site and off-loading into position.

In principle we design to four basic classifications, full retention, bypass, Class I and Class II. Classes I and II pertain to the Draft Eurocode prEN 858 (Separator systems for light liquids Part 1)

Our designs comply with the requirements of the EPA Wastewater Treatment Manuals:
Preliminary Treatment: Part 5: Oils Grease and Fats
Primary Secondary and Tertiary Treatment: Part 11

All of our products are engineered to the customer's requirements using established design parameters. We do not sell interceptors from stock. The designs are based on flow speeds, retention times, temperature and the settlement characteristics of the target materials. The tank structures are designed to BS 8110, BS8007 and the Dramix Design Guidelines for Steel Fibre Reinforced Concrete Structures.

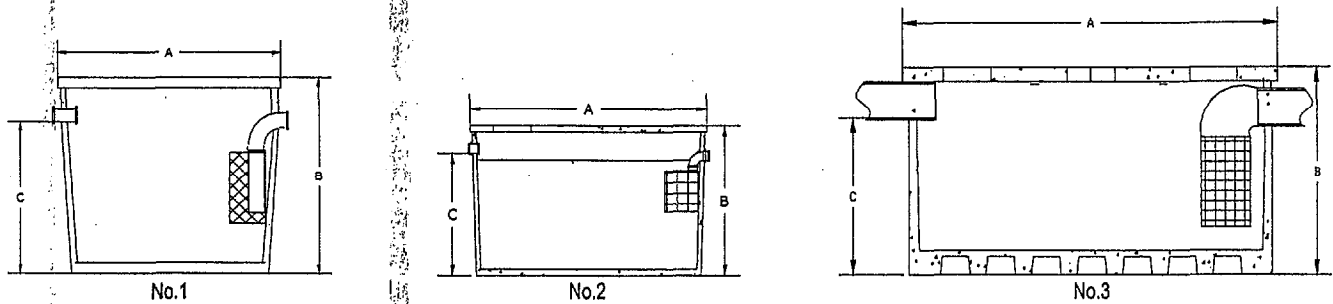
Class I Separator

This type of unit is required where the hydrocarbon pollutant concentration in the liquid discharging from the tank must be 5 mg/L or less, or where discharge is to sensitive waters. Carlow Precast Tanks Class I Separators contain a coalescing filter that prevents passage through the system, of oil droplets found in suspension in the liquid.

Class I units also contain a float controlled closure device. The closure device is a system for shutting off the outlet pipe, to prevent oil or pollutants from entering the storm drain. The closure device is controlled by a float, that will float in water but not in oil or other light liquids. In the event of a major spillage, as pollutants enter the separator and float on water, the closure device will sink and shut off the outlet flow. The pollutants are contained within the separator, thus preventing contamination of the outfall.

The housing for the coalescing filter is manufactured from stainless steel, and the closure device from PVC piping.

Kilnock, Ballon, Co. Carlow, Ireland
Tel. (+35359) 9159322 Mobile +353 87 6592199
Fax (+35359) 9159202



Model	Drainage Area M ²	Working Capacity	Max Flow L/s	Oil Retention Capacity L	A Outside Dimensions	B Overall Depth	C Inlet Invert to Base	D Fall Across Unit	Inlet/Outlet O.D.	Refer to Drawing
CP 150	300	1500	3	370	1400 Ø	2325	1825	50	110 Ø	No.1
CP 380	750	3800	6	900	2760 x 1400	1800	1445	50	160 Ø	No.2
CP 560	1100	5600	15	1400	2350 Ø	2275	1800	50	225 Ø	No.1
CP 1000	1800	10000	25	2200	3050 Ø	2325	1770	50	225 Ø	No.1
CP 1300	2600	13000	36	2650	3050 Ø	3025	2400	50	250 Ø	No.1
CP 1800	3600	18000	50	4000	4720 x 3150	2609	2060	50	315 Ø	No.3
CP 2600	5200	26000	72	4500	3050 Ø x 2	3025	2400	100	315 Ø	No.1

Detailed drawings for each Full Retention Separator are available on request

Advantages

- Ease of installation
- Speed of installation
- Reduced Civil Costs - no expensive concrete backfill
- Durability and robustness
- Tanks may be installed in heavily trafficked areas without extra reinforcement.

Accessories

Oil level Alarms can be fitted to indicate when the separator requires emptying. They are mounted remotely from the unit and are available with an audible or visual alarm.

Access Covers to suit all loadings are available on request.

Capacities available

From 1,500 litres up to 18,000 litres in a single chamber Full Retention Unit. Larger capacities can be achieved using a combination of tanks.

Data Available

- Detailed drawings of each unit.
- Detailed Installation Manual
- Maintenance Manual
- Capacity & Design Detail for each Separator

Production Selection

For assistance in selecting the required unit, please fill in the following questionnaire and return to our office at the address below, or fax to 059-9159202.

Questionnaire for Interceptor enquiry.

Name:

Company:

Phone No: Fax No:

Site Location:

Type Required: Bypass
 Full Retention
 Unknown

Class I or Class II

Type of project Garage Forecourt
 Car Park
 Haulage Company
 Other, please specify below:

Surface area being drained by interceptor:

Where is it discharging to (council sewer, storm drain, percolation area, etc)?

Roof Loading - What type of traffic, if any, will cross unit?

For advice, please ring 059-9259322 or email us at sales@carlowprecasttanks.com



CARLOW PRECAST TANKS LTD.

Manufacturers and Suppliers of Septic and Effluent Tanks for Sewage Treatment Systems, Water Reservoirs, Pumping Chambers, Culverts and Special Products.
Fax Transmission.

Separator Chamber

Material: Prefabricated Fibre reinforced 40N concrete.
Outside Diameter: 3050mm
Overall Depth: 3025mm
Wall Thickness: 60mm
Floor Thickness: 150mm
Weight: 9.1tonnes
Volume of Separator: 13,000litre
Inlet Diameter: 250mm
Outlet Diameter: 250mm

Coalescence Separator

Type: Class 1 to EN 858
Manufacturer: Ortner Wassertechnik
Final Effluent: Less than 5mg/litre
Max. Flow: 36 l/s

If you need any further information please do not hesitate to contact us.

Regards,

Billy Dodd.

Kilnock, Ballon, Co. Carlow, Ireland
Tel. (+35359) 9159322 Mobile +353 87 6592199
Fax (+35359) 9159202

Existing Interceptors

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Envirocare Systems

Specialists in Water Pollution Control

I R E L A N D L I M I T E D

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(Kilcullen Rd., Naas, Co. Kildare. Tel/Fax: 045 874152 Mobile: 086 8197080. e-mail: envirocare@eircom.net
 From Single Homes to Busy Industrial Centres . . . The Solution is Envirocare Systems

Invoice

Invoice Deltona Ltd.
 Ballindud
 Co. Waterford
 Waterford

Customer Code SD25

Delivery Deltona Ltd.
 Ballindud
 Co. Waterford
 Waterford

Date 23/06/00
Inv/Cr Note Reference No. 416

Page No. 1

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Product Description

Quantity	Price
1.00	1,073.26
1.00	1,904.76

KB003 class 1 interceptor
 KB008 class 1 interceptor

NSB3 C

A	2,978.02	21.00	625.38
B	0.00	N/A	0.00

Net Total	2,978.02
VAT Total	625.38
Gross Amount	3,603.40



Sewage Treatment Plant



Septic Tanks



Petrol Interceptors



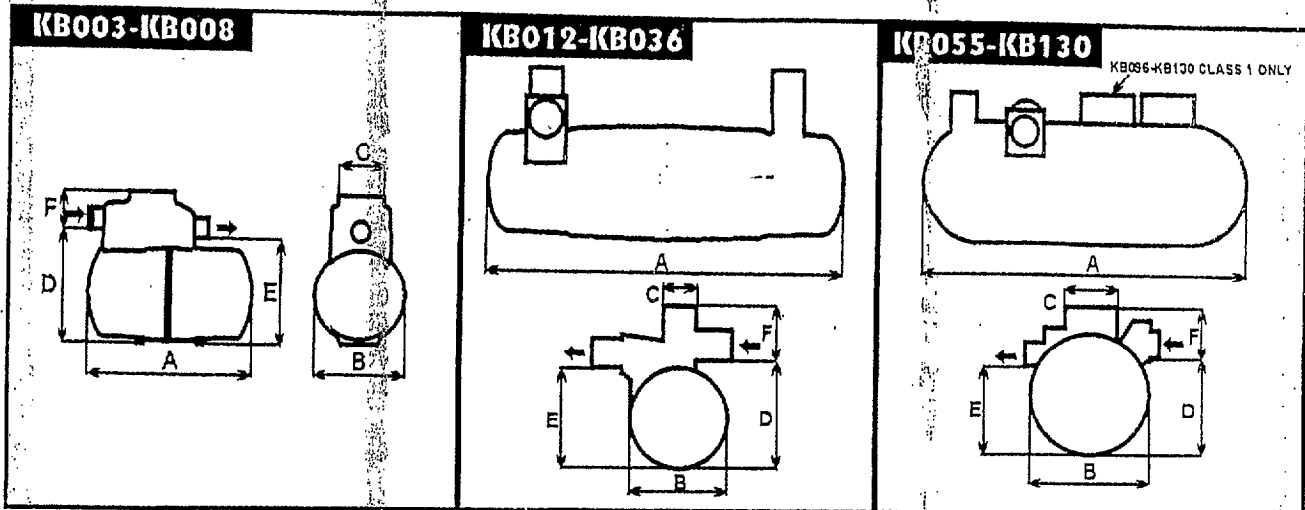
Grease Traps



Packaged Pumping Stations

VAT NO. IE 8266848T Company Reg No. 268846

CLASS 1 & CLASS 2 BYPASS SEPARATORS



Ref.	Nominal Flow (l/s)	Peak Flow Rate (l/s)	Drainage Area (m ²)	Nominal Working Capacity (litres)	Silt Storage Capacity (litres)	Length (A)	Dia. (B)	Access Shaft Dia.* (C)	Base to Inlet Invert (D)	Base to Outlet Invert (E)	Min. Inlet Invert (F)	Pipe work Dia.
KB003	3	30	2160	1080	389	1760	1225	600	1450	1350	500	160
KB006	6	60	4320	2160	778	3060	1225	750	1450	1350	500	300
KB008	8	80	5760	2880	1037	3910	1225	750	1450	1350	500	300
KB012	12	120	8640	4320	1555	4530	1442	600	1530	1430	1000	300
KB015	15	150	10800	5400	1940	3200	2075	600	2110	2010	1000	300
KB018	18	180	12960	6480	2333	3915	2075	600	2110	2010	1000	300
KB024	24	240	17280	8640	3110	4640	2075	600	2110	2010	1000	375
KB030	30	300	21600	10800	3888	5435	2075	600	2110	2010	1000	450
KB036	36	360	25920	12960	4666	6865	2075	600	2185	2010	1000	525
KB055	55	550	39600	19800	7128	7400	2820	1200	2310	2060	1000	600
KB072	72	720	51840	25920	9331	8700	2820	1200	2310	2060	1000	600
KB084	84	840	60480	30240	10886	9950	2820	1200	2310	2010	1500	600
KB096	96	960	69120	34560	12442	11250	2820	1200	2310	2010	1500	750
KB110	110	1100	79200	39600	14256	13360	2820	1200	2360	2010	1500	900
KB130	130	1300	93600	46800	16848	15100	2820	1200	2360	2010	1500	900

All dimensions are in millimetres. *Some units have more than one access shaft - diameter of largest given. Larger Separator units are available if required.

To specify a Klargest Bypass Separator, the following information is needed:

- The drainage area served or the calculated flow rate.

This determines the size of unit. The drainage area and peak flow rate in the chart above assume 50mm/hr rainfall intensity. Our designs are based on the assumption that any interconnecting pipework fitted elsewhere on site does not impede flow in or out of the separator. Run-off from low risk areas, such as roofs, should not be connected to a separator. When this cannot be avoided, the separator must be sized accordingly.

- The required discharge standard.

This will decide whether a Class 1 or Class 2 unit is required. Class 1 separators produce an improved effluent quality.

- The drain invert inlet depth.
- The difference between the drain invert depth and the minimum invert (F), above, rounded up to the nearest half metre, is the length of extension shaft(s) needed. Extension shafts, for site fitting, are available in 0.5 metre increments.

- With or without alternate Oil Probe position.
 - Oil Alarm System
- See separate data sheet for full details and options
- Pipework type, size and orientation.

Unless specified otherwise, units are supplied with the standard (minimum) invert depth and pipework size and orientation shown in the above table. They will be supplied without the alternate Oil Probe position. Please contact our Technical Sales Department if you require details of available options.

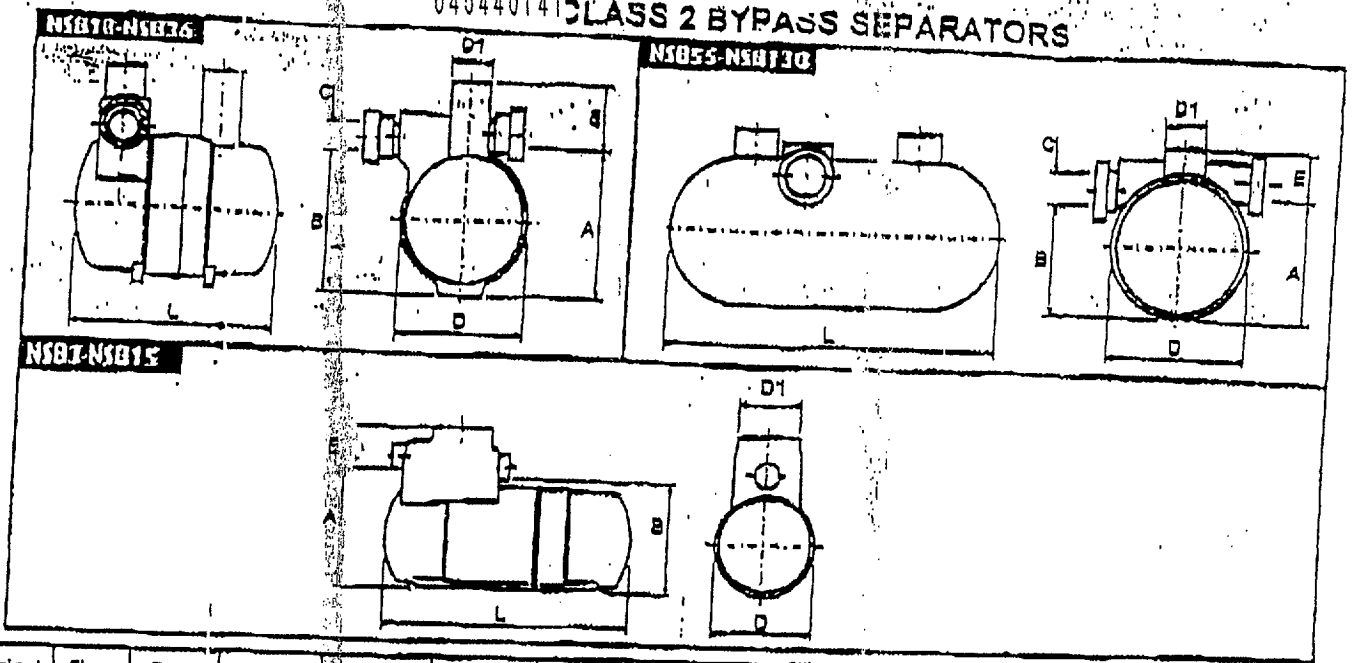
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Specialists in Water Pollution Control

IRELAND LIMITED
Kilcullen Road
Naas, Co. Kildare.
Tel/Fax: 045 874152
Mobile: 086 8197090 (Kevin)
086 2548362 (James)
envirocare@tinet.ie

Caring for Tomorrow's
Environment... Today

In keeping with the Company policy of continuing research and development, Klargest

045440141 CLASS 2 BYPASS SEPARATORS



Nominal Size	Flow (l/s)	Peak flow Rate (l/s)	Drainage Area (m ²) 5mm/hr (0.0014)	Drainage Area (m ²) PPG 3 (0.0018)	Silt Storage Capacity litres	Oil Storage Capacity Litres	Length (L)	Dia. (D)	Access Shaft Dia. (D1)	Base to Inlet Invert (A)	Base to Outlet Invert (B)	Fall	Min. Inlet Invert (E)	Standard Work DIN
NSB3	3	30	2160	1670	300	45	1765	1225	600	1420	1320	100	500	16
NSB4	4.5	45	3240	2500	450	68	1765	1225	600	1420	1320	100	500	20
NSB6	6	60	4320	3335	600	90	1765	1225	600	1420	1320	100	500	20
JSB8	8	80	5760	4445	800	120	3065	1225	750	1420	1320	100	500	22
NSB12	12	120	8640	6670	1200	180	3915	1225	750	1420	1320	100	500	30
NSB15	15	150	10800	8335	1500	225	3915	1225	750	1420	1320	100	500	30
NSB18	18	180	12960	10000	1800	270	4530	1442	600	1530	1430	100	500	37
NSB24	24	240	17280	13340	2400	360	3200	2012	600	2110	2010	100	1000	37
NSB30	30	300	21600	16870	3000	450	3945	2012	800	2110	2010	100	1000	37
NSB36	36	360	25920	20000	3600	540	4625	2012	800	2110	2010	100	1000	44
NSB55	55	550	39800	30500	5500	825	5820	2820	800	2310	2060	250	1000	60
NSB72	72	720	51840	40000	7200	1080	5820	2820	800	2310	2060	250	1500	67
NSB84	84	840	60480	47370	8400	1280	6200	2820	800	2310	2010	300	1800	71
NSB96	96	960	68120	53340	9600	1440	7375	2820	800	2310	2010	300	1500	81
NSB110	110	1100	79200	61110	11000	1650	7925	2820	800	2360	2010	350	1600	87
NSB130	130	1300	93600	72225	13000	1950	8725	2820	800	2360	2010	350	1500	91

All dimensions are in millimetres. *Some units have more than one access shaft - diameter of largest given.

To specify a Nominal Size Larger Bypass Separator, the following information is needed:

- The calculated flow rate (NS) or the drainage area served
- This determines the size of unit. The drainage areas given above relate to 5mm/hr rainfall intensity (0.0014) or the area using PPG-3 revised formula (0.0018)
- 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. Run-off from low risk areas, such as roofs, should not be connected to a separator. When this cannot be avoided, the separator must be re-sized accordingly.
- The required discharge standard. This will decide whether a Class 1 or Class 2 unit is required. Class 1 separators produce an improved effluent quality (when performance tested under lab conditions class 1 produced 1mg/l oil, class 2 = 30 mg/l oil)
- The drain invert inlet depth. The difference between the drain invert depth and the minimum invert (F) above rounded up to the nearest half metre, is the length of extension shaft(s) needed. Extension shafts, for site fitting, are

available in 0.5 metre increments. The maximum recommended extension is 1.5m above the standard i.e. 2 or 2.5m total. Units may be installed at greater depths with an appropriate civil engineering design which must include access for colescar removal.

- With or without alternate Oil Probe tube.
- Oil Alarm System.

See separate data sheet for full details and available options.

Pipework type, size and orientation. Unless specified otherwise, units are supplied with the standard (minimum) invert depth and pipework size and orientation shown in the above table. Pipework internal diameter less than 315 will be PVCu. Larger sizes are GRP connectors. Units will be supplied without the alternate oil probe position. Please contact our Technical Sales Department if you require details of available options, but please note we do not alter internal pipework.



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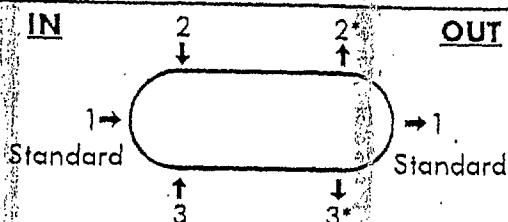


FULL RETENTION SEPARATORS

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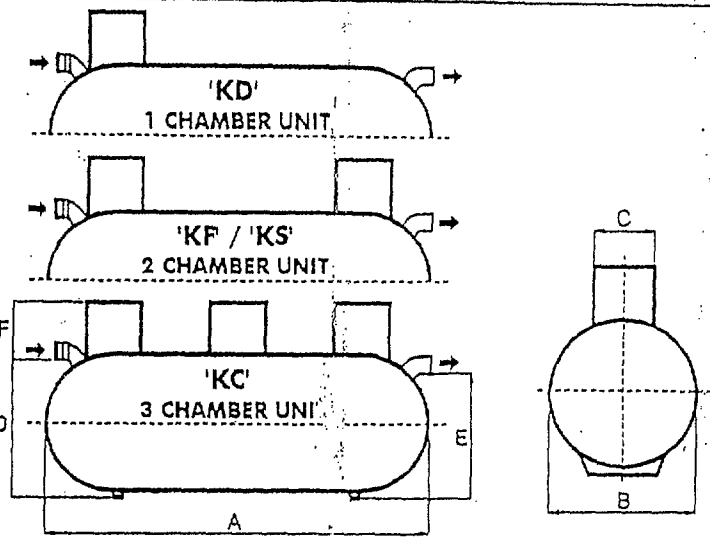
FULL RETENTION UNITS

PIPEWORK ORIENTATION OPTIONS



IN	OUT	IN	OUT	IN	OUT
1 STD.	1	2	1	3	1
1	2	2	2	3	2
1	3	2	3	3	3

*Not available for Model X1



REFER TO TECHNICAL DATA SHEET FCS FOR DETAILS OF CLASS I, CLASS II AND 'ENVIROCEPTOR' FORECOURT SEPARATORS

Ref.	Total Capacity (L)	Drainage Area* (m ²)	Flow Rate* (l/s)	Main Dimensions (mm)								
				Length (A)	Diameter (B)	Access Shaft Dia. (C)	Base to Inlet Invert (D)	Base to Outlet Invert (E)	Standard Fall Across Unit	Min. Inlet Invert (F)	Std. Pipework Dia.	Aprox. Empty Weight (kg.)
X1	1200	240	3.3	1310	1225	460	1145	1095	50	500	160	60
A1	2000	400	5	2210	1225	460	1145	1095	50	500	160	120
B1	3000	600	8	3060	1225	460	1145	1095	50	500	160	150
C1	4000	800	11	3910	1225	460	1145	1095	50	500	160	180
D	6000	1200	16	530	1440	600	1380	1310	50	500	160	320
E	8000	1600	22	6200	2020	600	2005	1955	50	500	160	585
F	10000	2000	27	3915	2020	600	2005	1955	50	500	160	680
G	12000	2400	33	4640	2020	600	2005	1955	50	500	250	770
H	15000	3000	41	5435	2075	600	1940	1890	50	500	250	965
J	19000	3800	52	6865	2075	600	1940	1890	50	500	250	1200
10	22500	4500	62	5090	2820	600	2460	2410	50	1000	300	1205
11	25000	5000	69	5600	2820	600	2460	2410	50	1000	300	1320
12	27500	5500	76	6190	2820	600	2460	2410	50	1000	400	1455
13	30000	6000	83	6540	2820	600	2460	2410	50	1000	400	1540
14	35000	7000	97	7740	2820	600	2460	2410	50	1000	400	1770
15	40000	8000	111	8600	2820	600	2460	2410	50	1000	400	1975
16	45000	9000	125	9460	2820	600	2460	2410	50	1000	400	2105
17	50000	10000	138	10390	2820	600	2460	2410	50	1000	400	2325
18	55000	11000	152	11180	2820	600	2460	2410	50	1000	450	2440
	60000	12000	166	12100	2820	600	2460	2410	50	1000	450	2660

*Applies to 'KD' type single chamber separator only. Sizing should be based on six minutes retention per chamber or the largest separator chamber, in accordance with Environment Agency Pollution Prevention Guidelines PPG3. See separate Technical Data Sheet FRS for full sizing details.

The above table is based upon the assumption that interconnecting pipework does not impede flow through the separator and the drainage system as a whole is not adversely affected.

Drainage area and flow rate assume a 50mm/hr rainfall intensity. The total capacity is calculated to provide 5 minutes retention within each, or the largest, separator chamber at the design flow. Some controlling authorities use different design criteria from the above. Please contact Klargesters' Technical Sales Department for advice in this case.

Invert depths (F) can be supplied in additional increments of 500mm from the minimum stated above. Please indicate the inlet drain invert required when specifying units.

To specify the Klargesters Full Retention separator you require, the following information is needed.

- The number of chambers and type of separator. Prefix Reference (see table) with:
 - KC - if you require a 3 chamber oil/water separator (Model X1 not available)
 - KF - if you require a 2 chamber oil/water separator (Model X1 not available)

- KD - if you require a 1 chamber oil/water separator
- KS - if you require a 2 chamber silt separator (Model X1 silt separator is 1 chamber)

- The capacity of the separator in litres (see table), usually derived from the drainage area served
- Drain inlet invert depth
- Pipework type, size and orientation (see illustration)

Example: KFE 8000i 1.0M Invert 160mm PVCU 1-1 orientation.

The abbreviated description above specifies a KFE 2 chamber Klargesters Full Retention oil/water separator 8000 litres capacity with a 1.0 metre drain inlet invert depth and 160mm diameter PVCU pipework with standard in-line orientation.

Note: If drain inlet invert, pipework size and orientation are not specified, it will be assumed that the minimum invert depth (F) and standard pipework size and orientation, as shown above will apply.

Non-standard inlet/outlet pipe sizes and reduced falls across the unit can be supplied on request. Please contact the Technical Sales Department for advice on the options available.



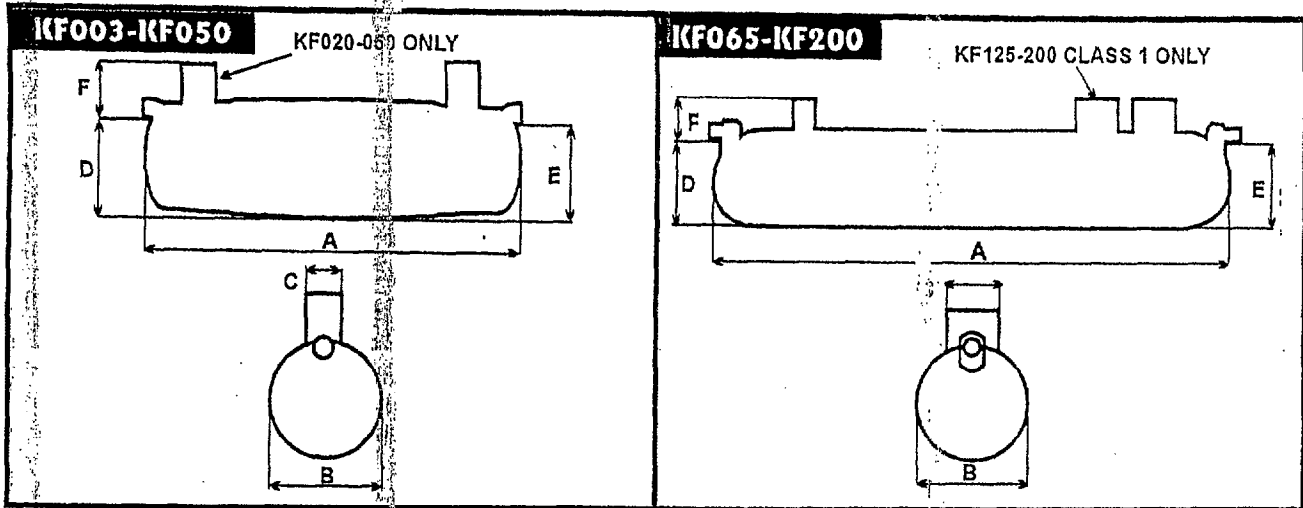
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Specialists in Water Pollution Control

IRELAND LIMITED

Kilcullen Road
Naas, Co. Kildare.
Tel/Fax: 045 874152
Mobile: 086 8197080 (Kevin)
086 2548362 (James)
envirocare@tinet.ie

**Caring For Tomorrows.
Environment. Today**

CLASS 1 & CLASS 2 FULL RETENTION SEPARATORS



Ref.	Nominal Flow (l/s)	Drainage Area* (m ²) (No Silt Storage)	Drainage Area* (m ²) (With Silt Storage)	Nominal Working Capacity litres	Length (A)	Dia. (B)	Access Shaft Dia.* (C)	Base to Inlet Invert (D)	Base to Outlet Invert (E)	Min. Inlet Invert (F)	Pipe work Dia.
KF003	3	216	175	1080	1310	1214	600	1154	1104	500	160
KF006	6	432	290	2160	2210	1214	600	1054	1004	500	160
KF010	10	720	500	3600	3910	1214	600	1054	1004	500	160
KF015	15	1080	860	5400	4530	1440	600	1254	1204	500	160
KF020	20	1440	1110	7200	3200	2075	600	1810	1760	1000	160
KF030	30	2160	1730	10800	4640	2075	600	1810	1760	1000	250
KF040	40	2880	2035	14400	5435	2075	600	1810	1760	1000	250
KF050	50	3600	2720	18000	6865	2075	1200**	1810	1760	1000	250
KF065	65	4880	3620	23400	5600	2820	1200**	2500	2450	1000	300
KF080	80	5760	4170	28800	6300	2820	1200**	2500	2450	1000	400
KF100	100	7200	5370	36000	7800	2820	1200**	2500	2450	1000	400
KF125	125	9000	6510	45000	9400	2820	1200	2500	2450	1000	400
KF150	150	10800	7730	54000	11000	2820	1200	2500	2450	1000	450
KF175	175	12600	9065	63000	12700	2820	1200	2500	2450	1000	450
KF200	200	14400	10440	72000	14450	2820	1200	2500	2450	1000	450

All dimensions are in millimetres. * Some units have more than one access shaft - diameter of largest given. ** 750mm for Class 2 units

To specify a Klargestar Class 1 or 2 Full Retention Separator, the following information is needed:

- The drainage area served, or the calculated flow rate.

This determines the size of unit. The drainage area and peak flow rate in the chart above assume 50mm/hr rainfall intensity. Our designs are based on the assumption that interconnecting pipework provided and fitted elsewhere on site does not impede flow in or out of the separator. Run-off from low risk areas, such as roofs, should not be connected to a separator and if this cannot be avoided, the separator must be re-sized accordingly.

- The required discharge standard.

This will decide whether a Class 1 or Class 2 unit is required.

- The drain inlet invert depth.

The difference between the drain invert depth and the minimum invert (F), rounded up to the nearest half metre, is the length of extension shaft(s) needed. Extension shafts, for site fitting, are available in 0.5 metre increments.

- Pipework type, size and orientation.

The above table indicates standard pipework.

- With or without alternate Oil Probe position.

- Oil Alarm System

See separate data sheet for details and options.

Unless specified otherwise, units are supplied with the standard (minimum) invert depth and the pipework size and orientation shown in the above table. They will be supplied without the alternate oil probe position.

Please contact our Technical Sales Department if you require details of available options.



IRELAND LIMITED

Kilcullen Road
Naas, Co. Kildare.

Tel/Fax: 045 374152
Mobile: 086 8197080 (Kevin)
086 2548362 (James)
envirocare@tinet.ie

ester.co.uk
at:

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In keeping with the Company policy of continuing research and development, Kl