

SPEL ESR Bypass

Treatment System

Overview

The SPEL ESR Bypass Treatment System treats flows up to and including the 1 in 1 year return events (27mm/h) in line with guidance from the CIRIA SuDS Manual (C753).

The SPEL ESR Bypass System is fully certified to meet the CIRIA SuDS Mitigation Index. It has been tested by WRc to the British Water Code of Practice for Manufactured Treatment Devices. This unit is also certified to the British and European Standard BS EN 858 by HR Wallingford.

SPEL's ESR range is a total treatment system removing Hydrocarbons, Total Suspended Solids (TSS) and Metals. It's a highly efficient, single unit, water quality SuDS component.

Product Range

200 Series

(1.2m internal diameter):

Treated Flow Rate: 10-15 l/s

Catchment Area: 1,333m² - 2,000m²

300 Series

(1.8m internal diameter):

Treated Flow Rate: 20-50 l/s

Catchment Area: 2,665m² - 6,665m²

400 Series

(2.6m internal diameter):

Treated Flow Rate: 60-160 l/s

Catchment Area: 8,000m² - 21,333m²

500 Series

(3.5m internal diameter):

Treated Flow Rate: 180-250 l/s

Catchment Area: 24,000m² - 33,333m²

600 Series

(4m internal diameter):

Treated Flow Rate: 300-700 l/s

Catchment Area: 40,000m² - 93,333m²

Applications

The ESR Bypass Treatment System will treat up to the 1 in 1 year storm event for surface water run-off to a Pollution Hazard Index of 'Medium'.

This covers surfaces such as:

Roofs

Private and public car parks

Residential roads and drives

Low and medium use roads

Commercial yards and delivery areas

The ESR Bypass Treatment System can be used as part of a treatment train to achieve a 'High' Mitigation Index. (See other SPEL SuDS treatment systems).

Shell Design

Designed with reference to BS EN 13121. All tank shells carry the SPEL 25 Year Warranty and life expectancy in excess of 50 years.

Shell Specifications

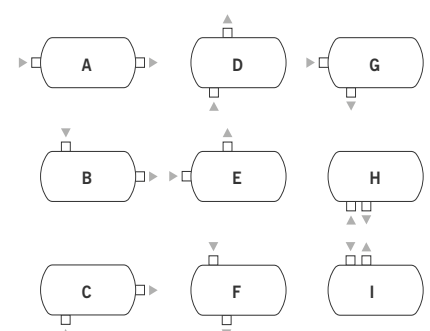
Different tank shell specifications are available dependent upon tank invert levels, ground conditions and ground water levels. (See Section 7)

Inlet/Outlet Connections

160/225/300mm diameter PVCU socket/spigot.

450, 600, 750, 900 and 1200mm diameter GRP spigot available, for connecting to site pipework via Flex-Seal/Band-Seal or similar flexible couplings.

The nine inlet/outlet options below are available to assist with design and installation.



SPEL ESR Bypass Treatment System

Stormwater Treatment System

The SPEL ESR Bypass Treatment System is fully certified to meet the CIRIA SuDS Mitigation Index. It has been tested by WRc to the British Water Code of Practice for Manufactured Treatment Devices. This unit is also certified to the British and European Standard BS EN 858.

SPEL's ESR range is a total treatment system removing Hydrocarbons, Total Suspended Solids (TSS) and Metals. It's a highly efficient, single unit, water quality SuDS component.

The coalescer inserts are easy to clean and simple to replace but rarely require replacing. The unique 'insert' format ensures that this unit can be extracted complete every time, compared to other systems where 'wrap around' style units allow the foam to slip off, requiring confined space entry to retrieve.

SPEL ESR Bypass Treatment System

Certified Mitigation Index

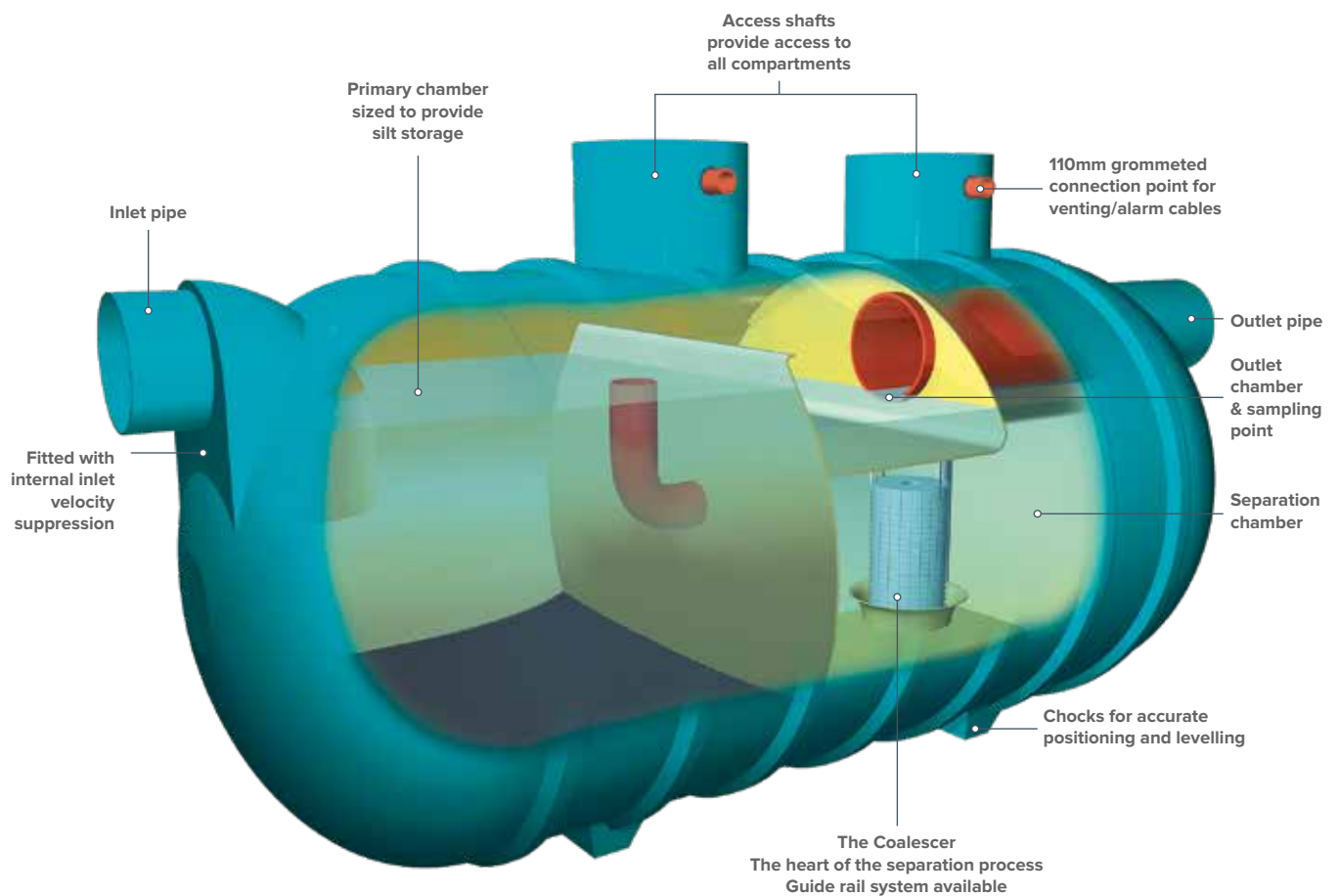
TSS	0.8
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Metals	0.6
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Hydrocarbons	0.9*
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**H R Wallingford test results to BS EN 858*

The total treatment solution for SuDS



SPEL ESR Bypass Treatment System

Testing and Certification

Research and development is at the heart of what we do at SPEL, our passion as Zero Pollution Ambassadors is to be at the cutting edge of clean surface water technology.

Months of rigorous testing has resulted in the SPEL ESR Range.



Surface Water Treatment Device Performance Declaration

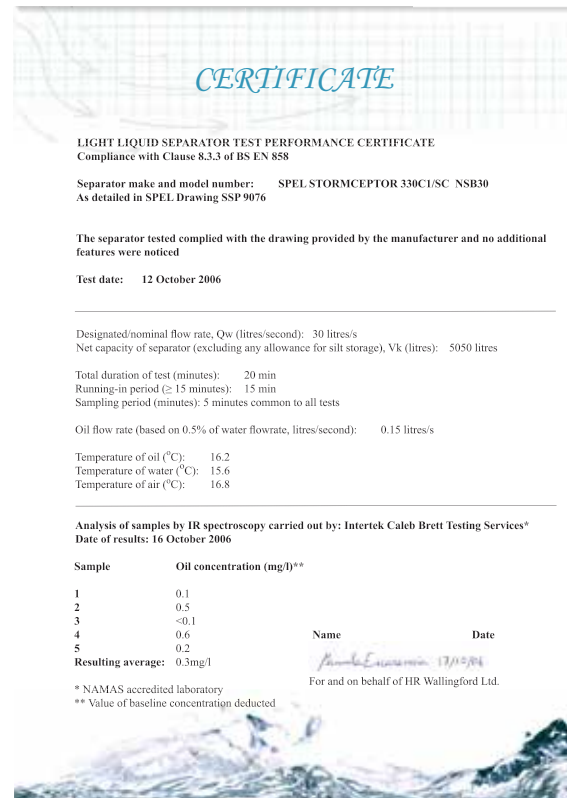
Testing carried out according to British Water Code of Practice

Product Details	Description
Manufacturer	SPEL Products
Treatment Device Name/Model	Stormceptor Type 210 C1/SC
General description	Class 1 By-pass Separator with Silt Capacity
Envisaged application	Treatment of Surface Water Run-off
Pollutant(s) captured	Suspended Solids

Test	Value	Unit
Treatment device capacity	3200	litres
Sediment Storage capacity	1000	litres
Treatment Flow rate	10	l/s
Connected Area	1,333	m ²
Pollution retention flow rate	10	l/s

Parameter	Value	Unit
Maximum capacity flow rate	100	l/s
Device head loss (at treatment flowrate)	0.15	m
Device head loss (at maximum capacity treatment flowrate)	-	m
TSS capture and retention efficiency (Milisil W4 test sediment)	82	%
Zinc capture efficiency (if tested)	Not tested for dissolved metals	%
Zinc retention efficiency (if tested)	Not tested for dissolved metals	%
Copper capture efficiency (if tested)	Not tested for dissolved metals	%
Copper retention efficiency (if tested)	Not tested for dissolved metals	%
Dissolved Metals reduction	0.0	%
Particulate metals reduction*	61.5*	%
Total Metals reduction*	61.5*	%
Total Metals Mitigation Index	0.615*	-

* Extrapolated value in accordance with British Water How to Guide: Applying the CIRIA The SuDS Manual (C753) Simple Index Approach to Proprietary / Manufactured Stormwater Treatment Devices. Version 7, Section 4.3, (2021- under pre-publication review).



SPEL's Head of Technical Development alongside the WRC testing officer.

SPEL ESR Bypass Treatment System

Specification Chart

As directed by the SuDS Manual, treatment trains should be sized according to the **connectible area**, see column 5 below.

Model	Series	Treated Flow Rate	Maximum Flow	Connectible/ Catchment area (m ²)*	Oil Storage (litres)	Silt Capacity (litres)	Tank Length (mm)	Internal Diameter (mm)	Inlet Invert (mm)	Base to Inlet (mm)	Base to Outlet (mm)	Optimum in/out pipe diameter** (mm)	Number of Access Shafts (dia. mm)			
													600	750	900	1200
210C1/ESR	200	10	100	1,333	150	1,000	2,920	1,220	550	1,350	1,300	300	-	1	-	-
212C1/ESR	200	12	120	1,600	180	1,200	3,570	1,220	550	1,350	1,300	300	-	1	-	-
215C1/ESR	200	15	150	2,000	225	1,500	4,237	1,220	550	1,350	1,300	300	-	1	-	-
320C1/ESR	300	20	200	2,665	300	2,000	3,200	1,800	700	1,450	1,350	450	2	-	-	-
325C1/ESR	300	25	250	3,333	375	2,500	3,535	1,800	700	1,450	1,350	450	2	-	-	-
330C1/ESR	300	30	300	4,000	450	3,000	4,420	1,800	700	1,450	1,350	450	-	1	1	-
340C1/ESR	300	40	400	5,333	600	4,000	5,760	1,800	740	1,410	1,310	450	1	1	-	-
345C1/ESR	300	45	450	6,000	675	4,500	6,563	1,800	740	1,410	1,310	450	1	1	-	-
350C1/ESR	300	50	500	6,665	750	5,000	7,060	1,800	740	1,410	1,310	450	1	1	-	-
460C1/ESR	400	60	600	8,000	900	6,000	4,400	2,600	950	2,100	2,000	600	-	1	1	-
470C1/ESR	400	70	700	9,333	1,050	7,000	5,250	2,600	950	2,100	2,000	600	-	1	1	-
480C1/ESR	400	80	800	10,665	1,200	8,000	6,170	2,600	950	2,100	2,000	600	-	1	1	-
4100C1/ESR	400	100	1,000	13,333	1,500	10,000	7,400	2,600	1,100	1,950	1,850	750	-	1	1	-
4125C1/ESR	400	125	1,250	16,665	1,875	12,500	9,000	2,600	1,100	1,950	1,850	750	-	1	1	-
4150C1/ESR	400	150	1,500	20,000	2,250	15,000	9,930	2,600	1,100	1,950	1,850	750	-	-	2	-
4160C1/ESR	400	160	1,600	21,333	2,400	16,000	11,830	2,600	1,250	1,950	1,850	750	-	1	2	-
5180C1/ESR	500	180	1,800	24,000	2,700	18,000	7,472	3,500	1,185	2,690	2,550	900	-	1	2	-
5200C1/ESR	500	200	2,000	26,665	3,000	20,000	8,530	3,500	1,185	2,425	2,325	1,200	1	1	2	-
5250C1/ESR	500	250	2,500	33,333	3,750	25,000	10,040	3,500	1,185	2,425	2,325	1,200	2	1	2	-
6300C1/ESR	600	300	3,000	40,000	4,500	30,000	10,310	4,000	1,325	2,850	2,675	1,200	1	1	2	-
6350C1/ESR	600	350	3,500	46,665	5,250	35,000	11,499	4,000	1,325	2,850	2,675	1,200	-	2	3	-
6400C1/ESR	600	400	4,000	53,333	6,000	40,000	12,690	4,000	1,325	2,850	2,675	1,200	-	2	3	-
6500C1/ESR	600	500	5,000	66,665	7,500	50,000	15,880	4,000	1,325	2,850	2,675	1,200	-	2	4	-
6600C1/ESR	600	600	6,000	80,000	9,000	60,000	18,256	4,000	1,325	2,850	2,675	1,200	2	1	4	-
6700C1/ESR	600	700	7,000	93,333	10,500	70,000	22,250	4,000	2,850	2,850	2,675	1,200	-	2	5	-

*These connectible/catchment areas are based on the SuDS Manual requirement for bypass devices to treat the 1 in 1 year storm event (27mm).

**SPEL ESR Bypass Treatment Systems are designed for a maximum flow (NS/NSB) but can be fitted with larger than the recommended maximum connection size IN/OUT or with the addition of adapters providing the maximum flow (NS/NSB) cannot be exceeded or any increase in the operating level in the SPEL Separator to cause the captured pollutants to escape into the vent connections or through access shaft connections. Any overriding of the above criteria could jeopardise performance to the European Standard BS EN 858-1.

Shell Specification

The 'standard' specification is normally adequate for most installations but Heavy, Extra Heavy, Special, Extra Special, Ultra and Ultra Plus specifications are available depending upon the burial depth and water table level, in winter. The concern is when the system is emptied completely and remains empty for a period of time.

For more information and to see burial depth charts see Section 7.

200 Series ESR – Inside diameter 1200mm, outside diameter 1225mm.

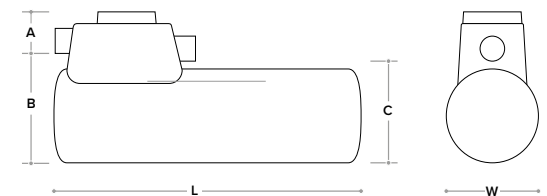
300 Series ESR – Inside diameter 1800mm, outside diameter 1875mm.

400 Series ESR – Inside diameter 2600mm, outside diameter 2700mm.

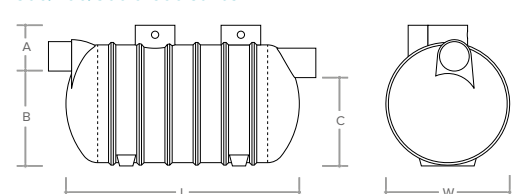
500 Series ESR – Inside diameter 3500mm, outside diameter 3650mm.

600 Series ESR – Inside diameter 4000mm, outside diameter 4150mm.

200 series



300/400/500 & 600 series



SPEL ESR Bypass Treatment System

Components and Accessories

SPEL Coalescer Guide Rail Systems

To facilitate easy insertion of coalescer units, the optional SPEL guide rail system manufactured in stainless steel can be incorporated into SPEL ESR Bypass Treatment Systems.

Brackets fixed to the top and bottom of the coalescer unit simply engage with the stainless steel guide rail which is fixed to the top of the stub access shaft. The coalescer unit is then lowered in the normal way, being guided at the correct angle into the conical base.

Lifting chains are available for the larger coalescer units and where extension shafts are fitted.

Extension guide rails can be incorporated into SPEL extension shafts to suit.

SPEL Coalescer Lifting, Locating and Locking system (3L)

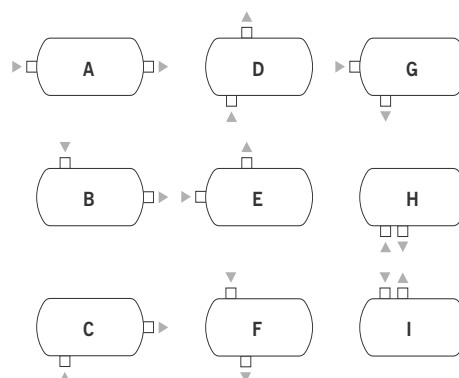
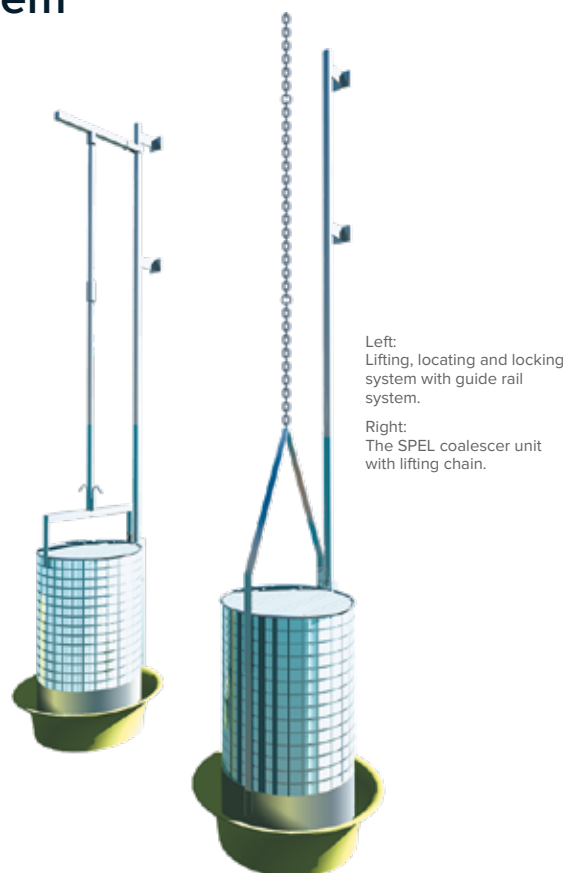
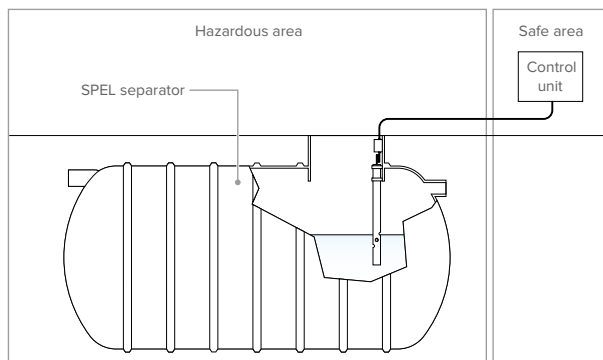
Where SPEL ESR Systems can be subjected to surcharging and/or tidal outfall, then the SPEL 3L system should be included.

The SPEL Lifting, Locating and Locking system is manufactured in stainless steel and replaces the standard coalescer unit handle.

The locating/locking handle ensures the coalescer unit is seated and locked in its correct position.

SPEL Automatic Monitoring Alarms

SPEL offer a range of alarms, for full details refer to the SPEL Data Manual Section 8.



SPEL ESR Range Inlet/Outlet Orientation

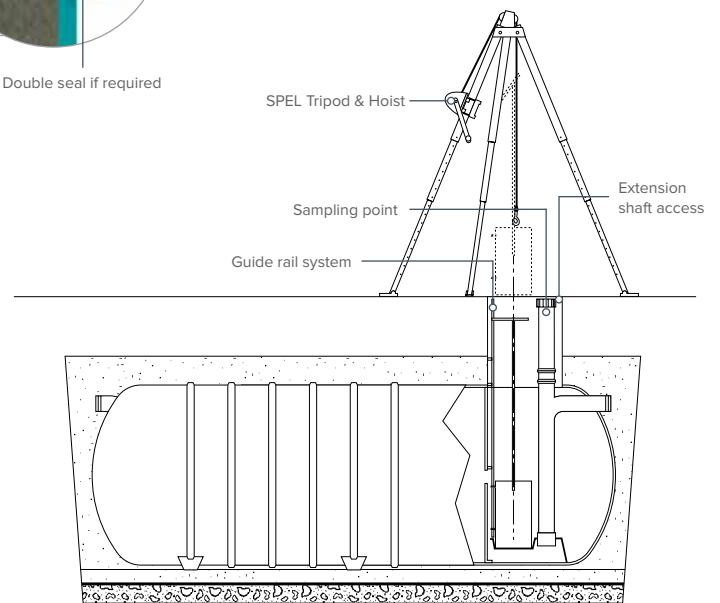
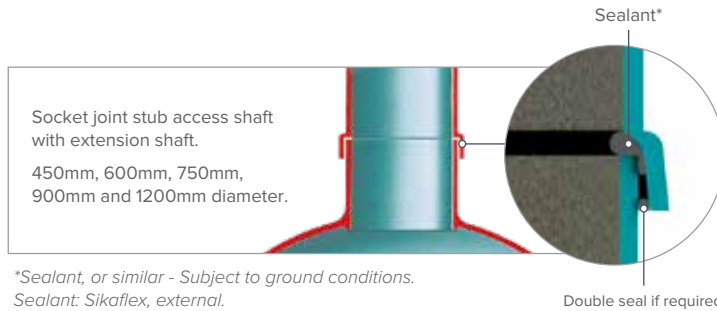
Dependent upon model and diameter of connections, these nine different orientations are available. However on the larger models it is important to check with our technical department.

SPEL ESR Bypass Treatment System

Components and Accessories

SPEL extension access shafts

Extension access shafts are available for deep invert applications.



SPEL tripod and hoist

Where surface water run-off has a high silt content the coalescer units can become filled, making them heavy to lift out. In order to facilitate easy withdrawal of coalescer units the SPEL tripod and hoist is recommended.

