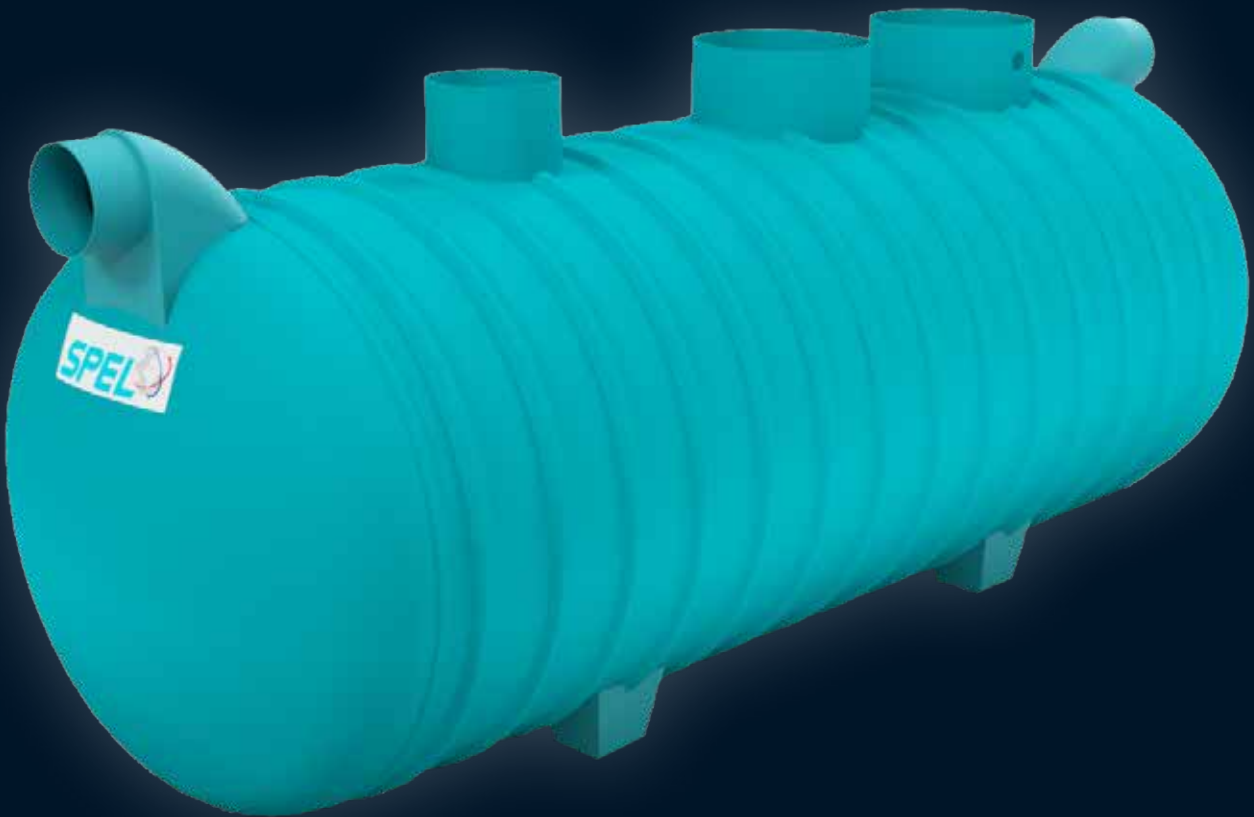




Quality solutions protecting our global environment

The *safest answer for pollution control and our environment*



SPEL Puraceptor

ESR (Enhanced Silt Retention)

Total Treatment SuDS Compliant ESR Range

SPEL Purceptor ESR Range

Full Flow Treatment System

The **total** treatment solution for SuDS

The new SPEL Purceptor ESR System is designed to treat the full flow from the catchment area and includes the important Automatic Closure Device (ACD). This device will close off the outlet of the separator when captured oil exceeds the maximum oil storage volume.

Fully certified to meet the CIRIA SuDS Mitigation Index, this system has been tested by WRc (for TSS and Metals) to the British Water Code of Practice for Manufactured Treatment Devices*, and by HR Wallingford to the British and European Standard BS EN 858.

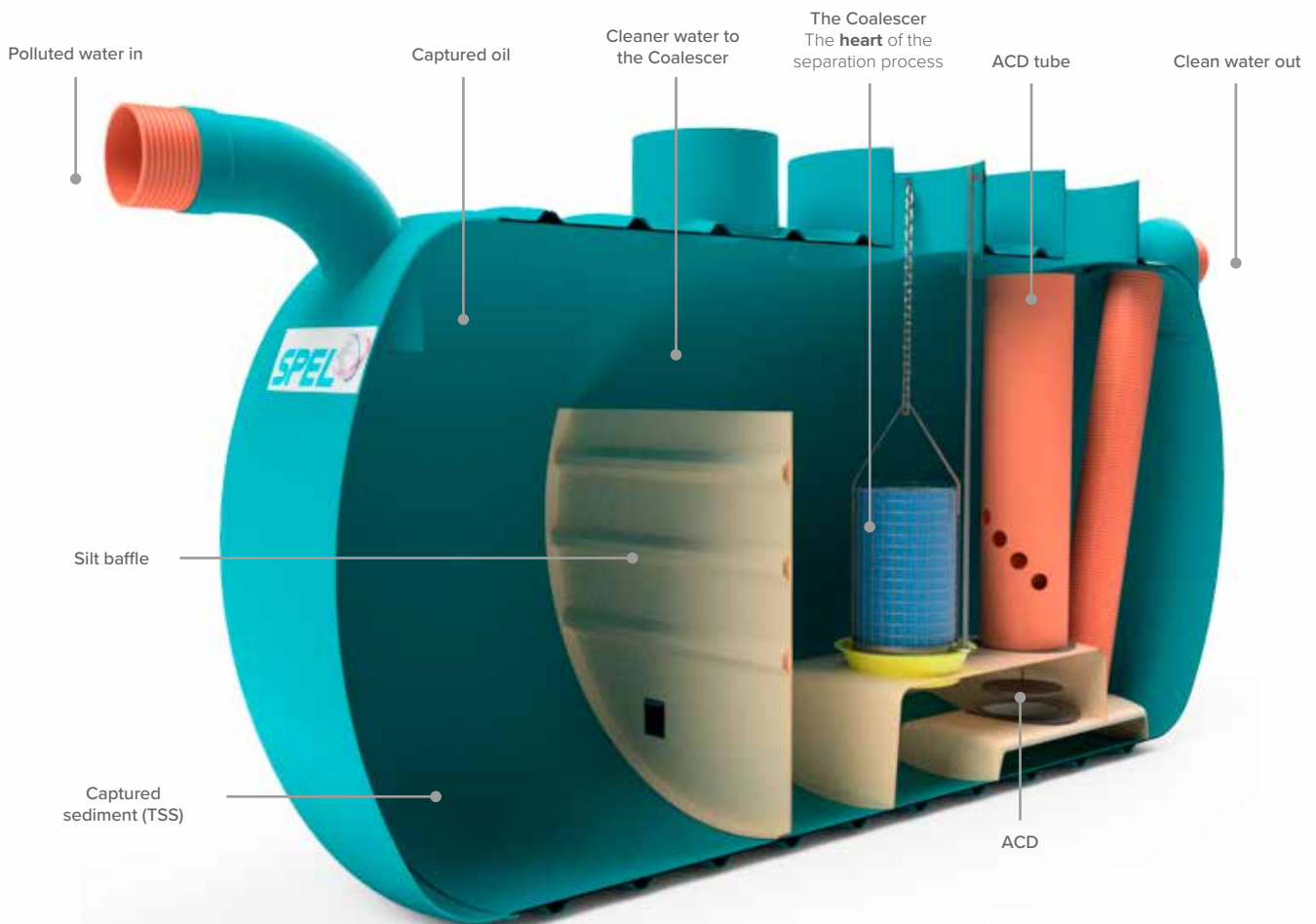
SPEL's ESR range is a total treatment system removing Hydrocarbons, Total Suspended Solids (TSS) and Metals (particulate) from stormwater. It's a highly efficient, single unit, SuDS water quality device.

SPEL ESR Purceptor Certified Mitigation Index

TSS	0.8
Metals	0.6
Hydrocarbons	0.99*

**H R Wallingford test results to BS EN 858: tested to it's maximum designed flow rate*

SPEL ESR Purceptor



SPEL Puraceptor ESR Range

Full Flow Treatment System



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	Puraceptor Type ESR P010/1C
General description	Full Retention Class 1 Separator with Silt Capacity
Envisaged application	Treatment of Surface Water Run-off
Pollutant(s) captured	Total Suspended Solids

Parameter	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	10*	l/s
Device head loss (at treatment flowrate)	0.286	m
Device head loss (at maximum capacity treatment flowrate)	0.286*	m
TSS capture and retention efficiency (Milsil W4 test sediment)	80	%
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*	60.3*	%
Total Metals reduction*	60.3*	%

* Maximum test flow for a Full Retention device equates to the device maximum design flow.

* 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).

Certificates of compliance from WRC and HR Wallingford for the SPEL Puraceptor ESR Range



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

Research and Development

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 new SPEL ESR Treatment System, available in both by-pass or full flow.

Protecting our environment for over 45 years

The SuDS Manual is leading good practise in drainage design, SPEL are endorsing this with the new SPEL Purceptor ESR range

Total Suspended Solids (TSS)	Metals	Hydrocarbons
0.8	0.6	0.99*

*H R Wallingford test results to BS EN 858

Added to these class-leading Mitigation Indices, the ESR range benefits from:

- British/European Standard BS EN 858-1 2002 certification.
- The SPEL 25 year shell Warranty.
- 50 year+ life expectancy.
- ISO9001 quality assurance.
- ISO14001 committed to environmental improvement
- Generously sized for high performance and low maintenance over a long life span.

26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads and trunk roads/motorways ¹	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways ¹	High	0.8 ²	0.8 ²	0.9 ²

26.3 Indicative SuDS mitigation indices for discharges to surface waters

Type of SuDS component	Mitigation Indices		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 ²	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond ⁴	0.7 ³	0.7	0.5
Wetland	0.8 ³	0.8	0.8
Proprietary treatment systems ^{5,6}	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Tables from The SuDS Manual (C753), p568-569

For reference notes, please see the full manual: https://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx

SPEL Puraceptor ESR Range Full Flow System

Specification Chart

Full flow devices must be sized on modelled flow rate



IMPORTANT: It is essential to cross-check the catchment-based flow rate from the chart below with the modelled flow rate to ensure the separator is correctly sized to treat the peak flow without causing restriction or overstressing the system.

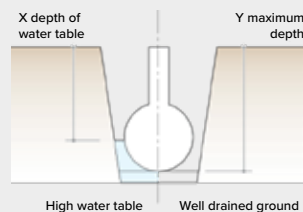
Model	Series	Max. Flow	Catchment Area	Overall length (mm)	Oil storage (L)	Silt capacity (L)	Overall diameter (mm)	Inlet Invert (mm)	Base to inlet (mm)	Base to outlet (mm)	Max in/out pipe diameter (mm)	Number of access shafts (dia. mm)			
		(l/s)	Based on 65mm/hr					A	B	C		600	750	900	1200
P004 1C/ESR	200	4	222	1,720	40	400	1,225	630	1,110	1,050	160	-	1	-	-
P006 1C/ESR	200	6	333	2,310	60	600	1,225	630	1,110	1,050	160	-	1	-	-
P010 1C/ESR	200	10	556	3,410	100	1,000	1,225	630	1,110	1,050	160	-	1	-	-
P015 1C/ESR	300	15	833	3,200	150	1,500	1,875	350	1,800	1,740	225	-	1	-	-
P020 1C/ESR	300	20	1,111	3,540	200	2,000	1,875	350	1,800	1,740	225	1	1	-	-
P030 1C/ESR	300	30	1,667	4,420	300	3,000	1,875	390	1,760	1,700	300	1	-	1	-
P040 1C/ESR	300	40	2,222	5,760	400	4,000	1,875	390	1,760	1,700	300	1	-	1	-
P050 1C/ESR	300	50	2,778	7,060	500	5,000	1,875	390	1,760	1,700	300	1	-	1	-
P065 1C/ESR	400	65	3,611	4,810	650	6,500	2,700	425	2,625	2,525	300	1	-	2	-
P080 1C/ESR	400	80	4,444	5,700	800	8,000	2,700	425	2,625	2,525	300	1	-	2	-
P100 1C/ESR	400	100	5,555	7,400	1,000	10,000	2,700	475	2,575	2,475	450	1	-	2	-
P125 1C/ESR	400	125	6,944	8,580	1,250	12,500	2,700	475	2,575	2,475	450	-	1	2	-
P150 1C/ESR	400	150	8,333	10,180	1,500	15,000	2,700	475	2,575	2,475	450	-	1	2	-
P165 1C/ESR	400	165	9,166	11,200	1,650	16,500	2,700	500	2,550	2,450	450	2	1	1	-
P200 1C/ESR	400	200	11,110	13,710	2,000	20,000	2,700	660	2,390	2,290	600	2	1	1	-
P250 1C/ESR	400	250	13,888	16,750	2,500	25,000	2,700	660	2,390	2,290	600	2	1	2	-
P280 1C/ESR	400	280	15,555	18,800	2,800	28,000	2,700	660	2,390	2,290	600	2	1	2	-
P300 1C/ESR	500	300	16,665	12,410	3,000	30,000	3,650	805	3,070	2,970	750	1	2	2	-
P400 1C/ESR	500	400	22,220	15,760	4,000	40,000	3,650	805	3,070	2,970	750	2	2	2	-
P500 1C/ESR	500	500	27,775	20,530	5,000	50,000	3,650	955	2,920	2,820	900	2	2	1	1
P500 1C/ESR	600	500	27,775	16,040	5,000	50,000	4,150	925	3,250	3,150	900	2	2	1	1
P600 1C/ESR	600	600	33,330	19,080	6,000	60,000	4,150	925	3,250	3,150	900	2	2	-	2
P700 1C/ESR	600	700	38,888	21,460	7,000	70,000	4,150	925	3,250	3,150	900	3	2	3	-
P800 1C/ESR	600	800	44,440	23,020	8,000	80,000	4,150	925	3,250	3,150	900	3	2	2	1
P900 1C/ESR	600	900	49,846	24,658	9,000	90,000	4,150	925	3,250	3,150	900	3	2	-	3

Tank shell specifications

The 'standard' specification is normally adequate for most installations but Heavy, Extra Heavy and Special 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.

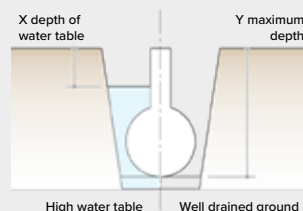
Standard tanks

Series	WT (m)	D (m)
100/200	1.0	4.0
300	0.9	4.0
400	1.3	5.0
500	1.9	5.7
600	2.4	6.2



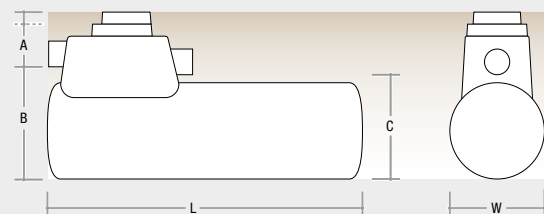
Heavy tanks

Series	WT (m)	D (m)
100/200	2.0	6.0
300	2.8	5.6
400	3.5	6.0
500	4.5	7.25
600	4.7	7.3

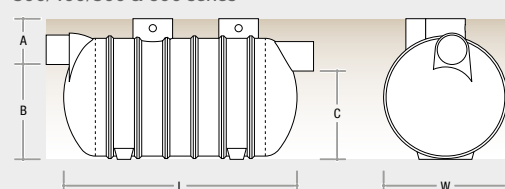


- 200 Series ESR** – Inside diameter 1200mm, outside diameter 1225mm.
- 300 series ESR** – Inside diameter 1800mm, outside diameter 1875mm.
- 400 series ESR** – Inside diameter 2600mm, outside diameter 2700mm.
- 500 series ESR** – Inside diameter 3500mm, outside diameter 3650mm.
- 600 series ESR** – Inside diameter 4000mm, outside diameter 4150mm.

200 series



300/400/500 & 600 series



Based on installation in concrete with concrete surround.
For pea gravel surround, see SPEL Data Manual p13.5

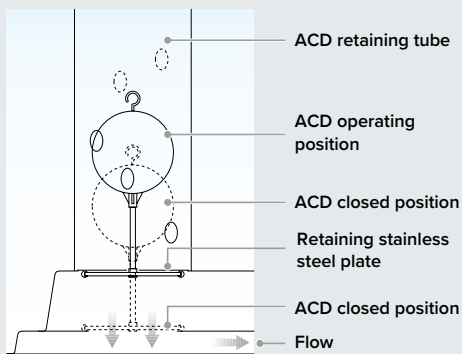
Commissioning, Installation and Maintenance

Automatic Closure Device: Protection in an event of a major spillage

The purpose of the automatic closure device (ACD) is to close the separator off automatically when the maximum oil storage capacity is attained. The ACD ensures that in the event of a major spillage, pollutants do not enter the drainage system, however the ACD should not be regarded as a substitute for an automatic alarm/monitoring system.

Automatic Closure Device

Dependent upon site conditions it is advisable to remove the ACD periodically taking care not to raise it too quickly and damage the plastic/copper float. Clean from debris/silt to prevent premature closing. Check the seating in the base unit is free of debris/silt that could prevent proper closing in an emergency.



SPEL Puraceptor® Class 1 Separators Single Chamber Models Models P004/1C/ESR to P050/1C/ESR

After the tank has been installed, leave the water in.

1. Remove the ACD from the packing box, taking care not to cause damage.
2. Remove the retaining cap from the top of the retaining tube in the separator.
3. Insert the ACD into the retaining tube using the lifting eye provided. Allow it to sink to the bottom. The stainless steel retaining plate should seat on the base flange and the ACD attain its operating position as shown in the open position.
4. Replace the retaining cap. This is to safeguard against the removal of the float by unauthorised persons or rising above the tube under abnormal conditions.

Note: If the tank's invert depth exceeds 1m it is advisable to remove the retaining cap prior to installation and only replace after inserting the ACD, if it is possible to do so from ground level.

Larger Models

Where the ACD is already positioned in the unit, proceed as follows:

1. Before putting any water in the tank, lift rope attached to ACD up to the next knot and hang it from the slot and shaft. This is now in the 'operating position'.
2. As soon as the water level in the tank is above the ACD, the rope must be removed altogether. Ensure the ACD automatically remains in the 'operating position'.

Installation

SPEL Separators can be installed with a concrete or pea gravel surround, dependent upon ground conditions and water table level. Detailed installation instructions are provided with each unit, see Installation TSII or SPEL Data Manual Section 13.

Site access and conditions

It is the responsibility of the contractor to ensure suitable access to good hard ground that is safe and suitable for off-loading.

Off-loading/handling

The contractor is responsible for off-loading. The tank must be handled with care to prevent accidental damage from impact or contact with sharp objects.

Tanks should be lifted using slings, not chains or wire ropes. Do not drag tanks along the ground for any distance and avoid jarring or bumps. Do not lift with water in the tank.

Health and safety

Installation should be carried out by a competent contractor in accordance with Health & Safety at Work legislation and good building practice.

A warning notice should be visible at the top of each access shaft – 'danger, harmful fumes' and 'respirators must be worn in this tank'. Before entering persons must be qualified in accordance with 'confined space' requirements.

Maintenance Requirements

We recommend the SPEL Separator is checked at 3, 6 or 12 monthly intervals to determine the depth of silt in the primary chamber.

The SPEL automatic alarm/monitoring system will automatically warn you when the SPEL Separator requires emptying of light liquids. See ref. 3.10 – 3.19. However, silt will accumulate and require removing at intervals depending on the site conditions.

SPELGuard Commissioning & Maintenance



SPELGuard contracts available.

For more information contact us:

info@spelproducts.co.uk | 01743 445 200

Optional extras

SPEL coalescer unit guide rail systems

To facilitate easy insertion of coalescer units, the SPEL guide rail system manufactured in stainless steel can be incorporated into SPEL Puraceptors and class 1 Stormceptors.

Brackets fixed to the top and bottom of the coalescer unit simply engage the stainless steel guide rail 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 unit lifting, locating and locking system

The SPEL lifting, locating and locking system is manufactured in stainless steel and replaces the standard coalescer unit handle.

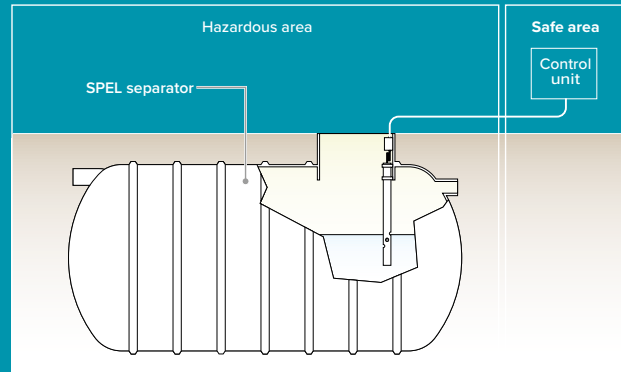
The locating/locking handle ensures the coalescer unit is seated and locked in its correct position after maintenance.



Above left: Lifting, locating and locking system with guide rail system.

Above right: The SPEL coalescer unit with lifting chain.

SPEL Automatic Alarm/Monitoring Systems



SPEL offer a range of alarms, for full details refer to the *SPEL Data Manual Section 3*. Kiosks with beacons and provision for BMS and remote information via browser user interface.

SPEL Model Alarm-DY14400

Oil alarm only – not BMS compatible

SPEL Model IdOil-20

Oil, silt and/or high level alarm with volt free terminal for beacon and BMS capability

SPEL Model IdOil-30

For oil, silt and/or high level as required. This alarm provides a range of options for BMS and remote information to on or off-site monitoring facilities.

SPEL Model IdOil Solar Oil Separator Alarm

for remote off-grid areas.

SPEL extension access shafts

Extension access shafts are available for deep invert applications.



Socket joint stub access shaft with extension shaft.

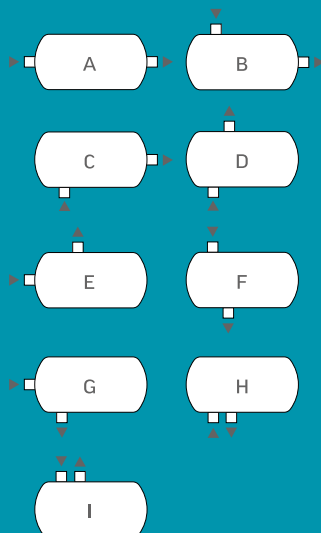
600mm, 750mm, 900mm and 1200mm diameter.

See tripod drawing below for other extension adjustments

Double seal if required

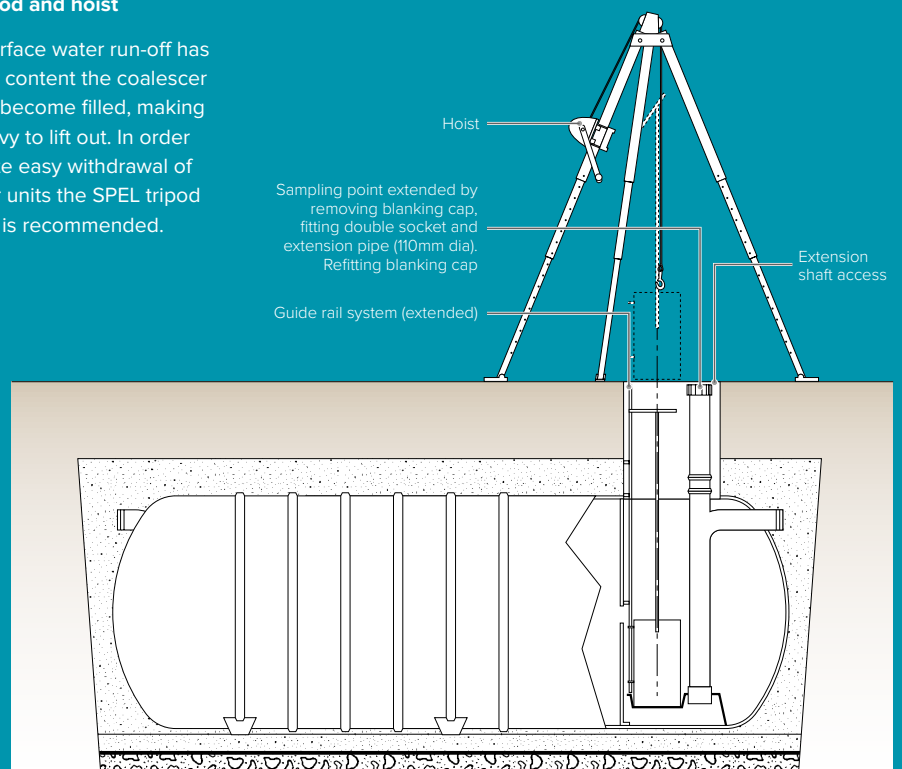
SPEL ESR Range – Inlet/outlet orientation

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 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.



Purceptor ESR

Enhanced Silt Retention

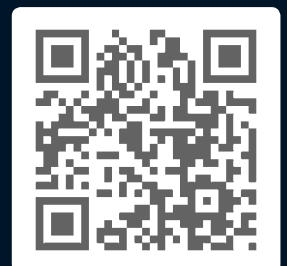
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