

intesio

Intelligent stormwater solutions by Wavin

Oil Separation Systems Product and Installation Guide



wavin

For residential, commercial, industrial and infrastructure applications

Separators

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The Intesio Oil Separation Systems – Introduction

Intesio – for optimum stormwater management

Continuing urban development, a changing climate and the consequences of intensified rainfall: all are increasingly prominent issues on the political and environmental agenda. In combination, they represent a complex need for the most intelligent, effective solution.

Intesio is Wavin's specialist approach to responsible management of stormwater, including its efficient capture, transportation, control, cleansing and re-use. We're ready to contribute at any stage in a project, with one central goal: to help achieve the optimum project outcome. Our in-depth expertise, design insight and proven system technology is applied wherever required to ensure each installed scheme achieves maximum efficiency of cost and integrated function, and full compliance with the latest regulatory criteria.



Benefits of the System

- Comprehensive range of separators
- Tested to, and meets the requirements of, BS EN 858-1
- Included within the Environment Agency "List of Recommended Suppliers"
- Fulfills the UK requirements for Oil Separators (PPG3)
- Suitable for use within car parks, roads and industrial areas
- Prevents the washout of the separator chamber during heavy downpours
- Economical solution for stormwater treatment of large areas
- Treats up to 95% of the annual rainfall

The system consists of the following components:

P/E Unequal Flow Regulation Chamber



P/E Equal Sand/Sludge Separation Chamber

(NSB151002 shown)



P/E Equal NSB Oil Separation Chamber



P/E Unequal Sampling Chamber



The Intesio Oil Separation Systems – Applications

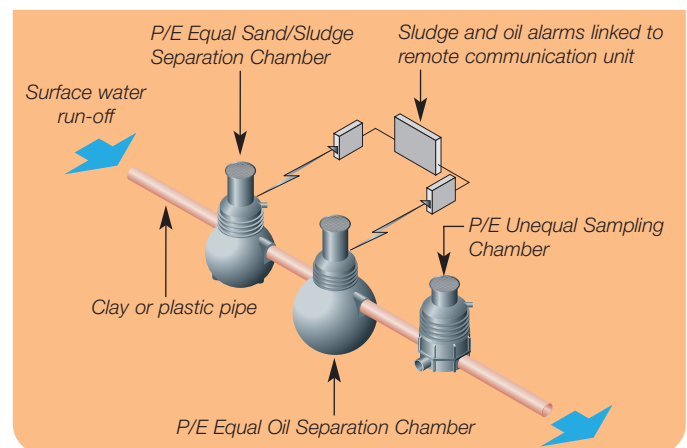
Due to the unique modular nature of the Intesio Oil Separation System, the Oil Separation Chamber can be designed/installed in such a way as to be fully compliant with the requirements of the Environment Agency's PPG3 and European Standard BS EN 858-1 for both "Full Retention" and "By-Pass" separators.



Typical 'Full Retention' Separation System

The system fully treats all flows generated by rainfall rates of up to 65mm/hr. Full retention separators are used where there is a high risk of regular contamination / spillage. The Intesio-Oil Separation Chamber has an automatic closure device incorporated in to the unit as standard, compulsory for all EA PPG3 compliant full retention separators.

Contaminates enter the Oil Separation Chamber, the contaminants are retained for a period which ensures that the oil which is lighter than water separates and rises to the surface of the separator and thus is retained within the "Coalescing Filter Plates". See page 12 for typical system layout.

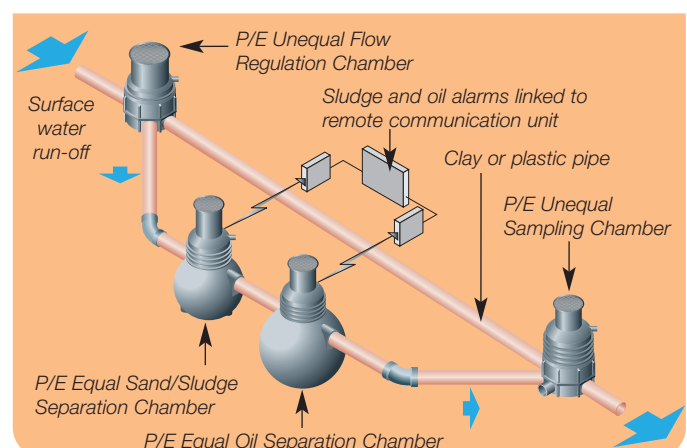


Typical 'Full Retention' separation system

Typical 'By-Pass' Separation System

The system fully treats flows generated by rainfall rates of up to 6.5mm/hr. These types of separators are used when it is considered an acceptable risk not to provide full treatment for high flows, for example where the risk of spillage is small such as short stay car parks.

The system is designed to treat all of the first flush flow up to the designed discharge rate. Any discharge in-excess of the design rate is allowed to by-pass the separation chambers, thus keeping contaminants, contained within the chambers. See Page 10 for typical system layout.



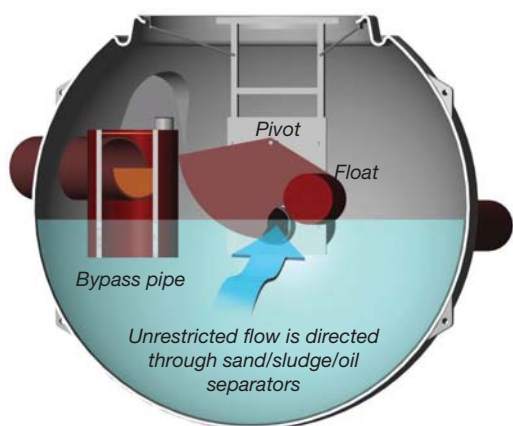
Typical 'By-Pass' separation system

The Intesio Oil Separation System – Product Selector

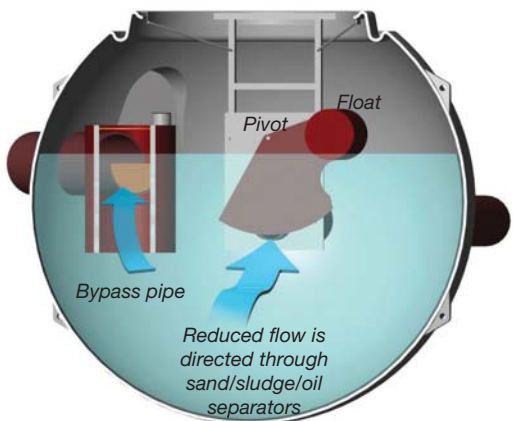
P/E Unequal Flow Regulation Chamber

During a heavy downpour, the Intesio Unequal Flow Regulation Chamber adjusts and restricts the incoming flow to the Oil Separation Chamber. The Flow Regulation Chamber contains a mechanical flow regulator, which provides an even design flow to the Oil Separator. Excess flow is directed away from the Oil Separator, via a bypass pipe to the discharge point as appropriate, avoiding the Oil Separator. This design prevents any washout of the oils and sands which are contained within the Oil Separator.

The Flow Regulation Chamber is designed to process approximately 95% of the annual run-off.



During low flow conditions the discharge is directed through the separator.



During peak flow conditions the minimum flow, equal to low flow conditions is directed through the separator. Excess flow is directed to the discharge point via the bypass pipe.



Typical P/E Unequal Flow Regulation Chamber



Detail of Flow Regulation Chamber

Table 1 P/E Unequal Flow Regulation Chamber Properties

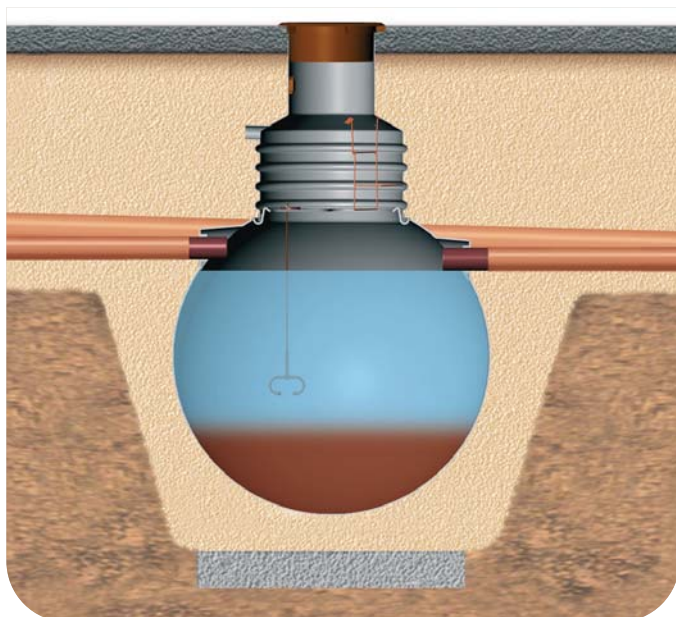
Part no.	Overall diameter (mm)	Overall height (mm)	Low flow (lit/sec)	Peak flow (lit/sec)	Inlet (mm)	Outlet (mm)	Outlet to separator (mm)
NSB31001	1300	1630 (min) - 3230 (max)	3	9	160	160	110
NSB61001	1300	1630 (min) - 3230 (max)	6	18	225	225	160
NSB101001	1300	1630 (min) - 3230 (max)	10	30	225	225	160
NSB151001	1300	1630 (min) - 3230 (max)	15	45	300	300	225

P/E Equal Sand/Sludge Separation Chamber

The function of the Intesio Equal Sand/Sludge Chamber is to separate the sand and sludge contaminants from the surface water discharge. This process contributes to the smooth operation of the oil separator and subsequently can contribute to lower maintenance costs. A sand/sludge chamber should precede the oil separator. The discharge to be treated flows into the sand/sludge chamber, allowing the solids to settle by means of gravitation; the solid particles which are heavier than water settle on the bottom of the separator. The solid-free rainwater then flows from the unit into the oil separator. BS EN 858-1 states that a sand /sludge trap should always be part of the oil separation system.

For sizing/capacity of chamber see BS EN 858-2.

The Intesio Sand/Sludge Chamber, comes complete with a SandSET 1000 Sludge Alarm. The sludge alarm indicates when the unit is full and must be emptied. The timely emptying and routine maintenance of the chamber will ensure the smooth operation of the Sand/Sludge Chamber.



Typical Sand/Sludge Separation Chamber



Typical P/E Equal Sand/Sludge Chamber



SandSET 1000 Sludge Alarm

Table 2 P/E Equal Sand/Sludge Separation Chamber Properties

Part no.	Overall diameter (mm)	Overall height (mm)	Inlet (mm)	Outlet (mm)	Sand storage (lit)
NSB31002	1300	1600 (min) - 3200 (max)	110	110	600
NSB61002	1300	1600 (min) - 3200 (max)	160	160	600
NSB101002	1350	2000 (min) - 3600 (max)	160	160	1000
NSB151002	1750 (ball)	2180 (min) - 3780 (max)	225	225	2000

The Intesio Oil Separation System – Product Selector

P/E Equal Oil Separation Chamber

Intesio Equal Oil Separation Chambers are Class 1 separators, tested in accordance with BS EN 858-1. The chambers are suitable for treating oily rainwater. The Intesio Oil Separation Chambers are available in size classes NSB3, 6, 10 and 15. The chamber's cleaning process is based on the coalescent 3D filter concept.

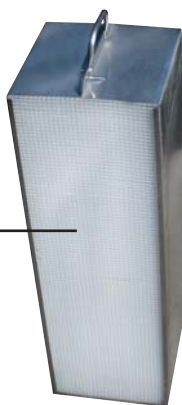
The Intesio Oil Separation Chambers are equipped with coalescing plates, which separate oil from water. The process is based on the fact that oil droplets congeal when they gather together on the oleophilic (oil attracting) plates. As the size of the droplets grows their upward velocity grows (Stokes Law). The oil droplets travel along the angled plates and then travel through the holes in the coalescing plates, always travelling to the surface. The separated oil is stored as a homogeneous layer on the surface of the water within the chamber.

The Intesio Oil Separator is made from strong recycled PE plastic. The chambers are light to transport and easy to install when compared to more traditional solutions. The spherical bottom of the chamber allows for the complete emptying of the unit if required.

The Intesio Oil Separation Chamber comes complete with a OilSET-1000 oil alarm. The oil alarm indicates when the coalescing plates should be cleaned. Routine maintenance of the unit will ensure the smooth operation of the Oil Separator.



Typical P/E Oil Separation Chamber



Detail showing the coalescent 3D filter housing



OilSET 1000 Oil Alarm

Table 3 P/E Equal Oil Separation Chamber Properties

Part no.	Overall diameter (mm)	Overall height (mm)	Flow (lit/sec)	Inlet (mm)	Outlet (mm)
NSB31003	1750	2180 (min) - 3780 (max)	3	110	110
NSB61003	1750	2180 (min) - 3780 (max)	6	160	160
NSB101003	2170	2630 (min) - 4230 (max)	10	160	160
NSB151003	2170	2630 (min) - 4230 (max)	15	225	225

The Intesio Oil Separation System – Product Selector

P/E Unequal Sampling Chamber

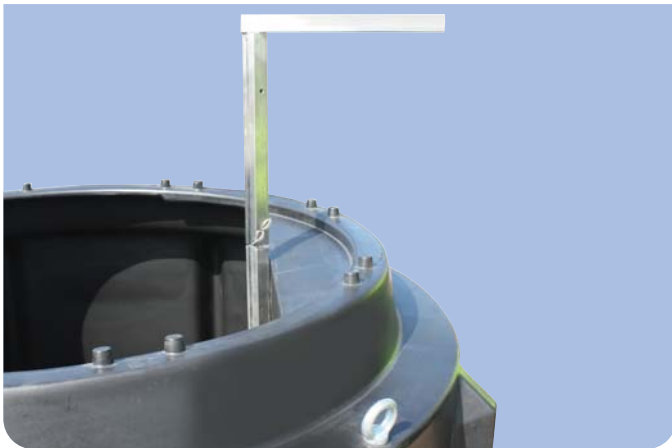
The Intesio Unequal Sampling Chamber is available as an optional extra, for use in connecting the discharge from the oil separator back into the main discharge pipework. The chambers are designed for use within the system when the components are designed in a by-pass configuration. The sampling shaft makes it possible to monitor the quality of the discharge, and also contains a shut-off valve for use in case of emergencies.

Should a sampling chamber be required for a full retention system use either:

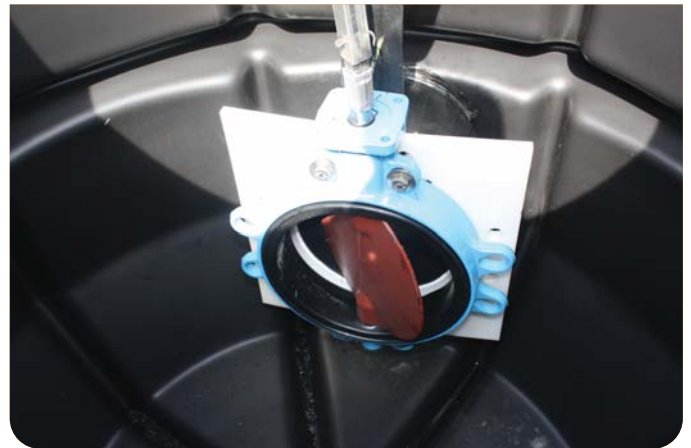
- a) a standard Wavin Tegra 600 Non Man-Entry Inspection Chamber, or alternatively, if a shut-off valve is required,
- b) the standard Intesio Sampling Shaft and simply close off the appropriate inlet pipe using a standard coupler/plug.



Typical P/E Unequal Sampling Chamber



Detail showing the Intesio Sampling Shaft shut-off valve handle (supplied with the unit)



Detail showing the Intesio Sampling Shaft shut-off valve

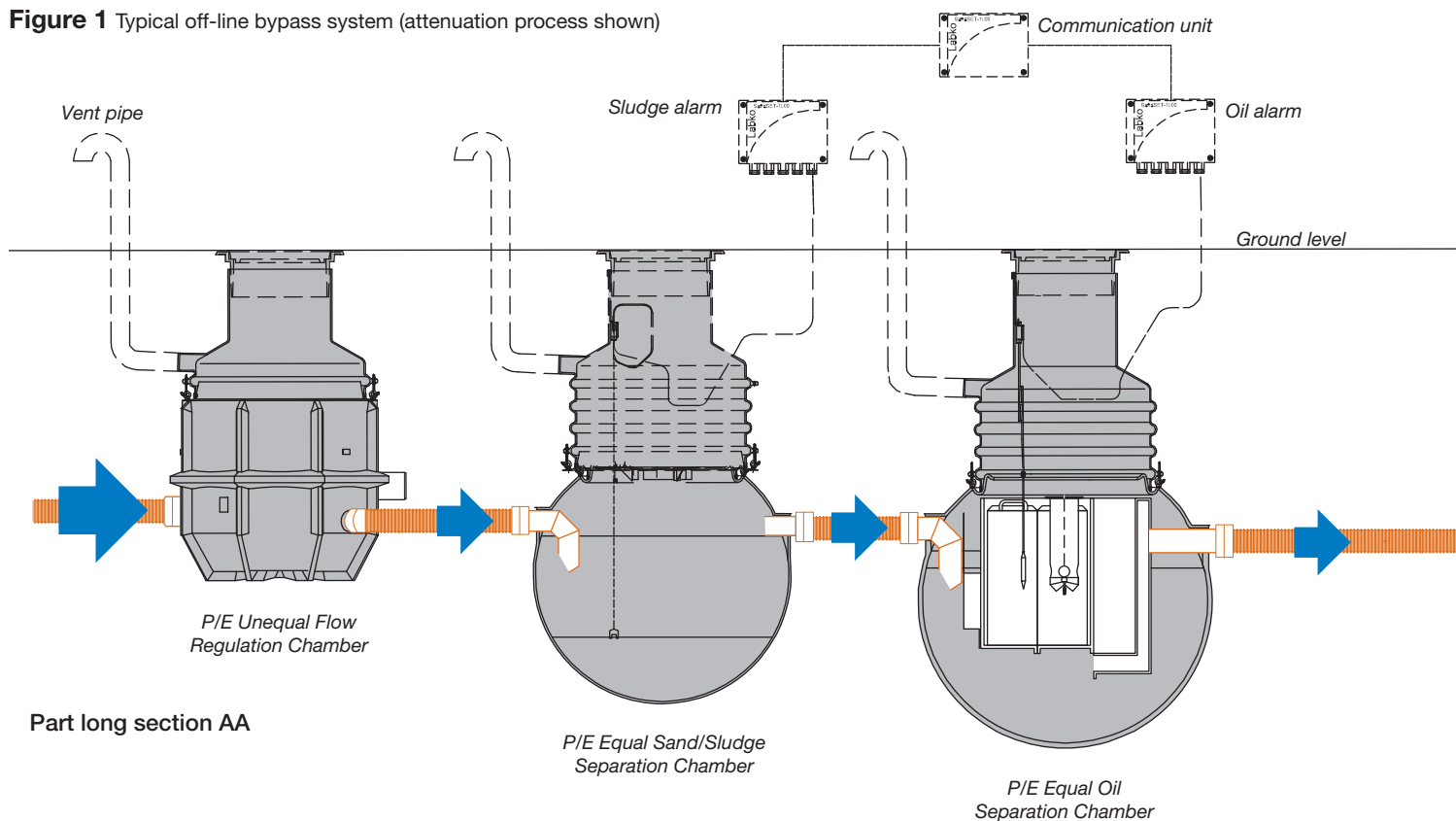
Table 4 P/E Unequal Sampling Chamber Properties

Part no.	Overall diameter (mm)	Overall height (mm)	Inlet (mm)	Outlet (mm)	Inlet from separator (mm)
NSB31004	1160	1330 (min) - 2930 (max)	160	160	110
NSB61004*	1160	1330 (min) - 2930 (max)	225	225	160
NSB151004	1300	1730 (min) - 3330 (max)	300	300	225

* For use in both NSB6 and NSB10 oil separation systems

The Intesio Oil Separation System – By-pass Configuration

Figure 1 Typical off-line bypass system (attenuation process shown)

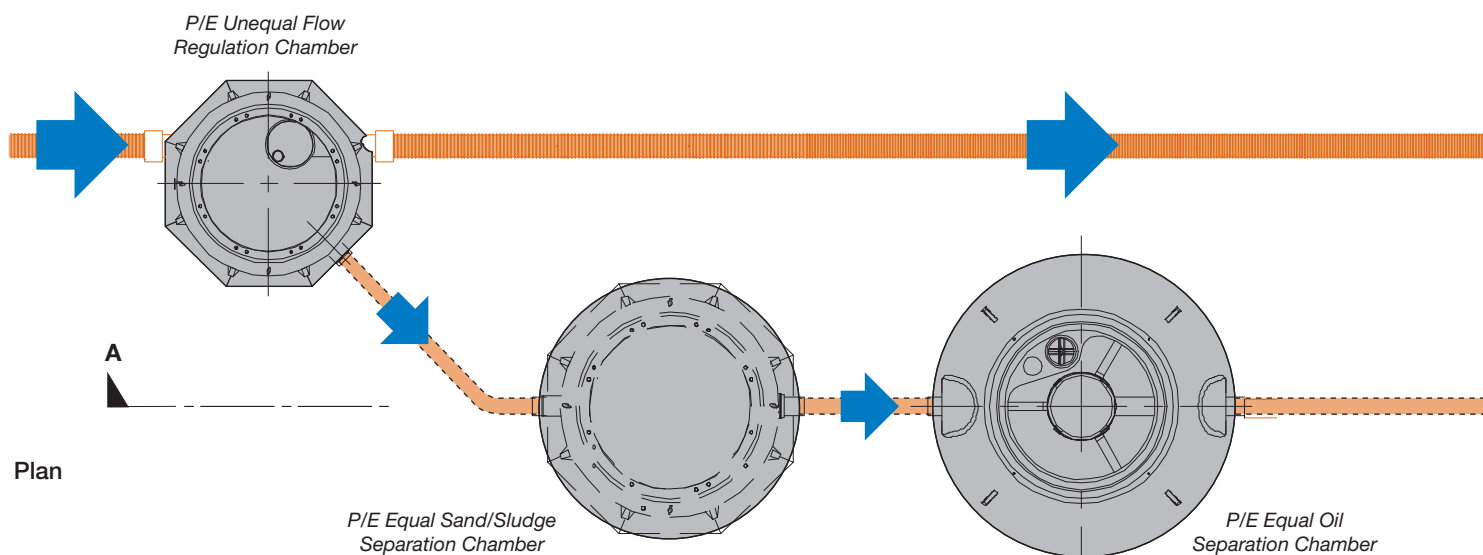


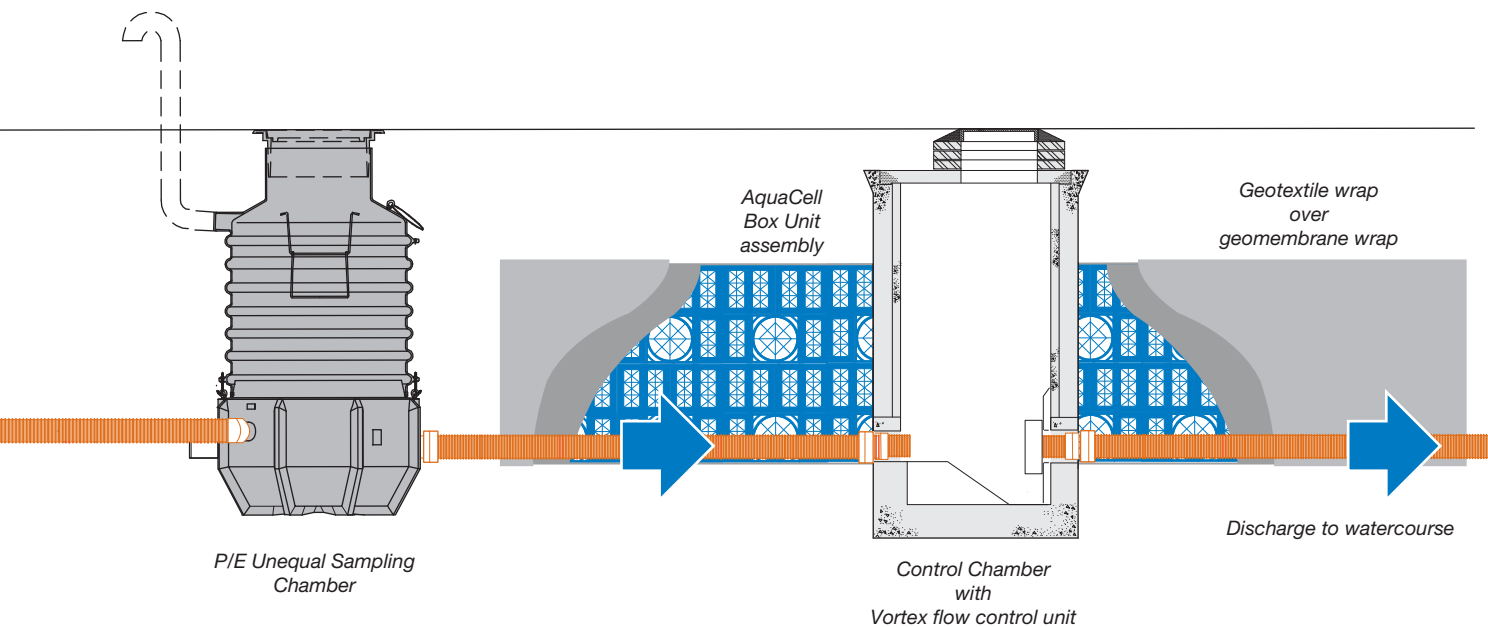
Part long section AA

Venting requirements

For petrol stations: Comply with Health and Safety Guidance Note 41 (HS(G)41)

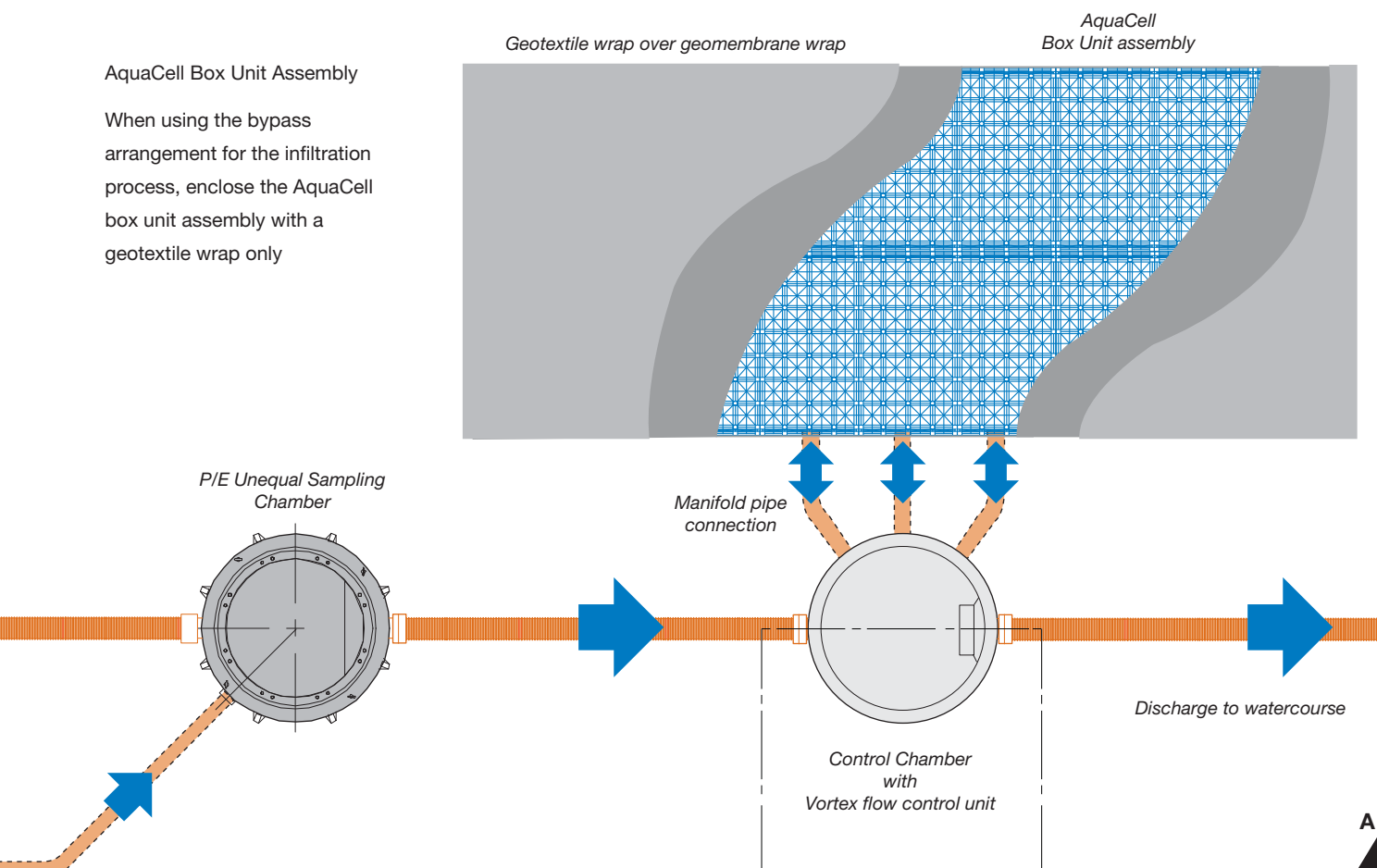
For other applications: Comply with BS EN 752 Building Drainage





AquaCell Box Unit Assembly

When using the bypass arrangement for the infiltration process, enclose the AquaCell box unit assembly with a geotextile wrap only



The Intesio Oil Separation System – Full Retention Configuration

Figure 2 Plan of typical on-line full retention system (with off-line attenuation process shown)

Arrangement equally suitable for the infiltration process,
but enclose the AquaCell box unit assembly with a geotextile wrap only

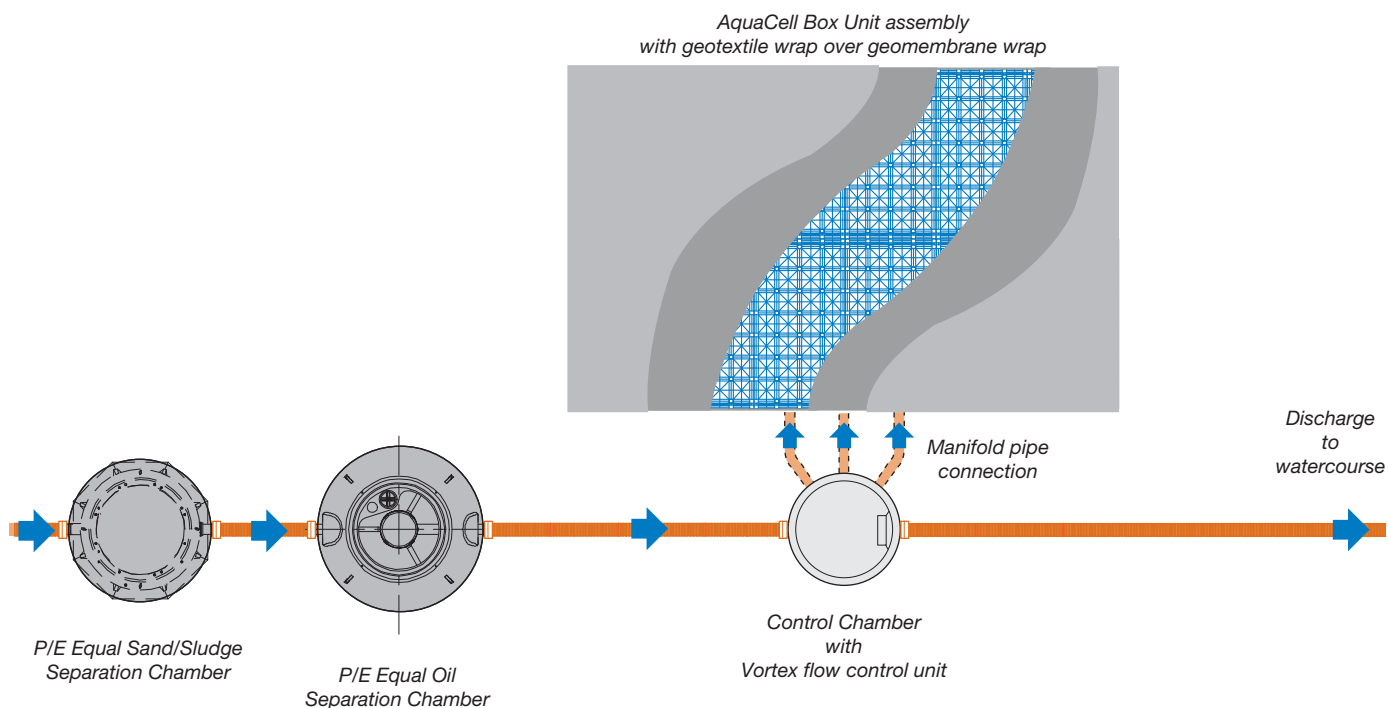
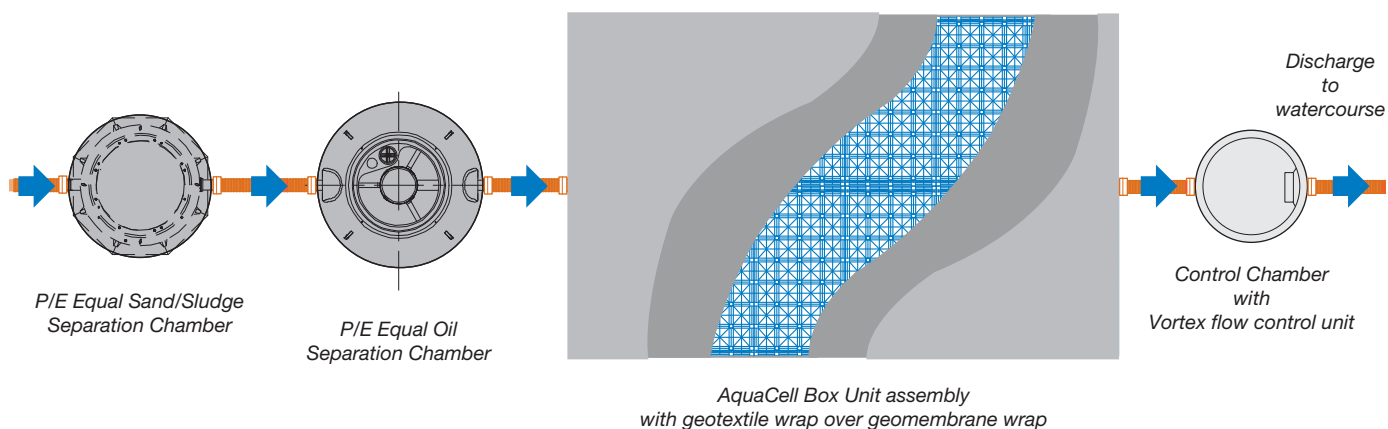


Figure 3 Plan of typical on-line full retention system (with on-line attenuation process shown)



Introduction

The following installation instructions outline the basic requirements for the Intesio Oil Separation Chamber when installed in typical installations as shown in Fig 4 and Fig 6. Full installation details, together with details to be used when installing the chamber in areas with high groundwater and/or in areas where the bearing capacity of the soil is poor (see Fig 7), are available from Wavin Technical Design Department.

Installation Procedure

1. Excavate the chamber pit to the required depth, ensuring that the plan area is slightly greater than that of the chamber being installed.
2. Depending on site and/or soil conditions, lay a 300mm stone-free sand layer placed on the bottom of the pit (see Fig 4 for light traffic/pedestrian areas and/or Fig 6 for medium/heavy traffic areas).
3. Pour approximately 200mm of water into the separator to stabilise it.
4. Surround the chamber as appropriate, with either concrete or a suitable non-angular material. The type of surround depends on the individual site conditions, so guidance should be obtained from Wavin Technical Design Department prior to work commencing.

If using a non-angular material as the backfill, compact the sidefill around the chamber with care. Compaction should be carried out in 150mm layers up to the level of the inlet/outlet. While this work is being done, keep adding water to the chamber to keep it steady.

5. Make the appropriate connection to the inlet and outlet of the chamber using the appropriate pipe system and/or adaptors.
6. Remove the storage cover from the access hole of the chamber. Install the rubber sealing ring (provided) onto the bottom edge of the chamber shaft. Assemble the maintenance shaft in a vertical position onto the mounting collar of the chamber. Fix the maintenance shaft in its place with the threaded bars through the lugs and tighten with nuts. See Fig 5.
7. Fix the alarm device. Alarms are supplied with the chamber as appropriate but not installed. Detailed installation instructions are supplied with the alarm/chamber.
8. Connect the ventilation pipe to the chamber as appropriate. Continue compacting the granular surround in 150mm layers up to ground level. Avoid the use of heavy vibration tools when compacting the granular surround on top of the chamber.
9. Cut the chamber shaft down to the correct height.
10. Install the appropriate cover and frame to the required loading for the application.
11. Finally, fill the chamber completely with water to ensure effective operation of the unit.

Figure 4 For areas with light traffic and pedestrians

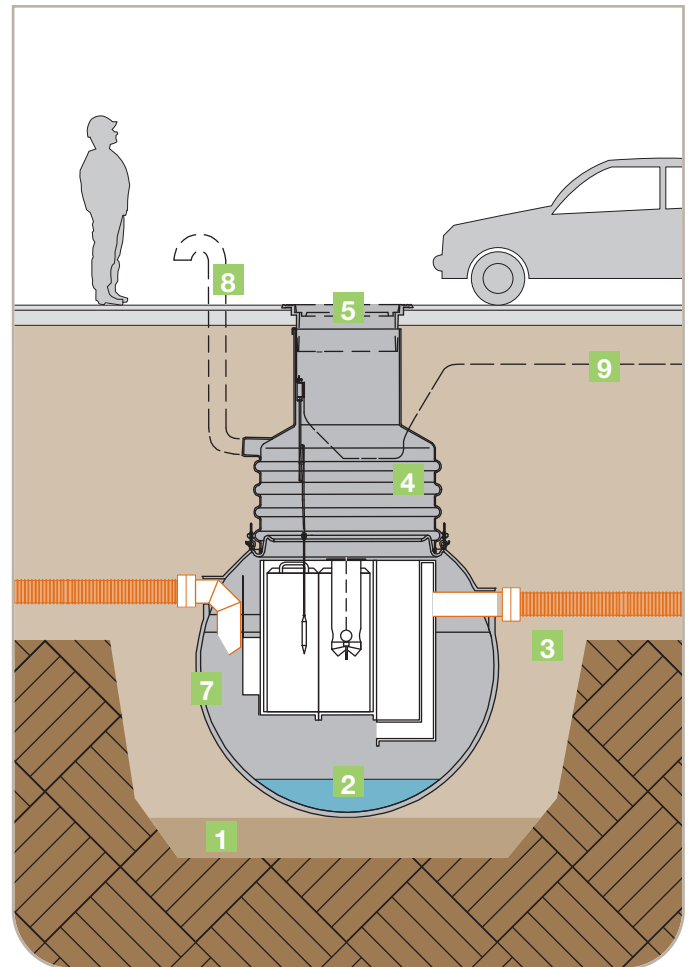
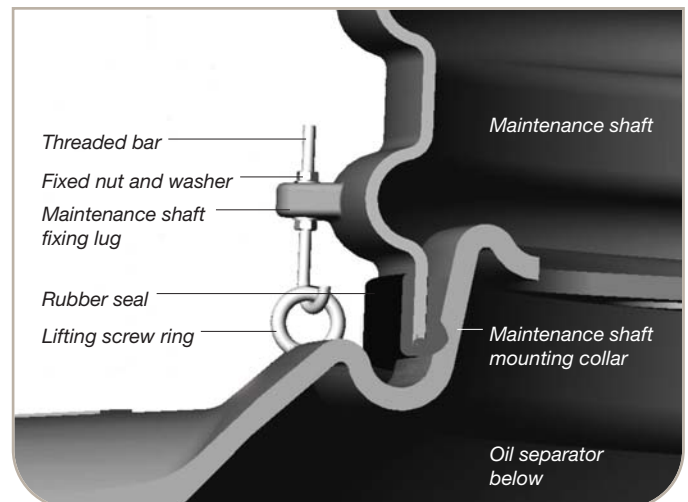


Figure 5 Fixing maintenance shaft to oil separator



The Intesio Oil Separation System – Installation Methods

Figure 6 For areas with medium or heavy traffic

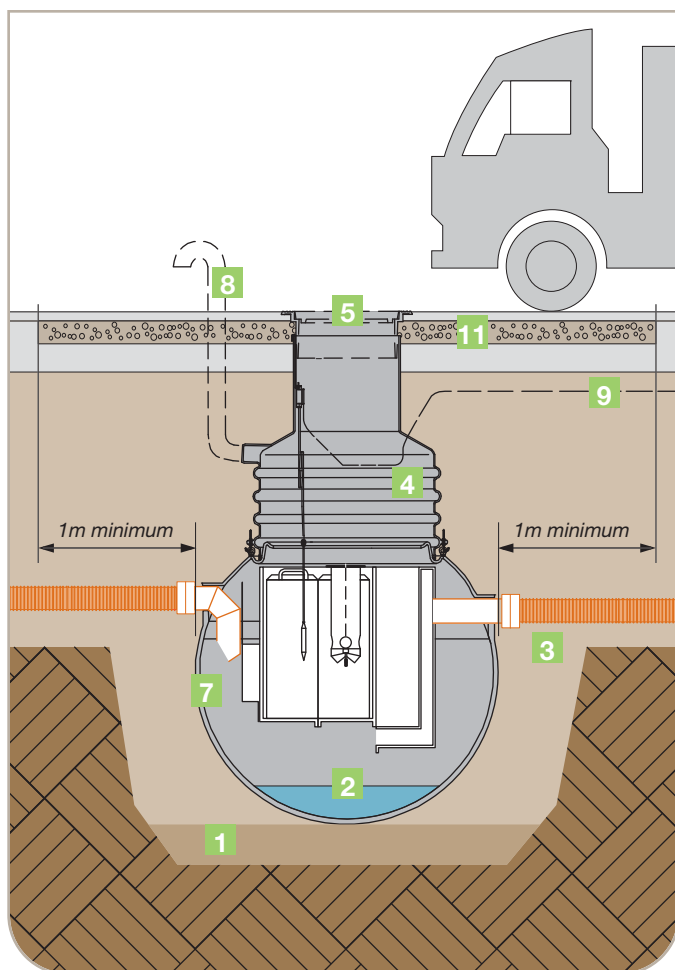
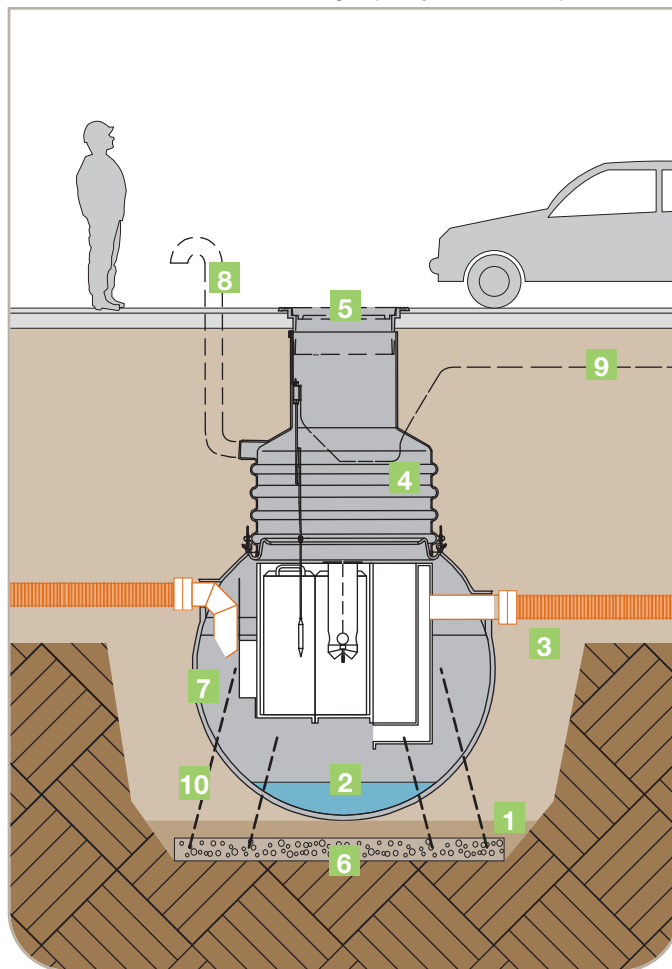


Figure 7 Anchoring the separator in groundwater and/or in areas where the bearing capacity of the soil is poor



Key to Details

- 1** Bedding (base)
- 2** 200mm of water inside the unit
- 3** Backfill material
- 4** Chamber shaft
- 5** Cover and frame
- 6** Concrete slab
- 7** Oil separation chamber
- 8** Ventilation outlet
- 9** Alarm cable
- 10** Anchoring belts
- 11** Reinforced concrete slab around cover and frame



Intesio – working to ensure optimum stormwater management


The combination of urban development and intensified rainfall from climate change can create serious problems. Stormwater situations are challenges that may be unavoidable, but they can be very effectively overcome when the right expertise is applied.

Intesio is Wavin's specialist focus for the most efficient capture, transportation, control, cleansing and re-use of stormwater at source.

The Intesio Team has the essential experience and design insight to help engineer the best possible solution, in its widest sense, every time.

Our well-proven system technology is intelligently applied to the individual needs of each location and situation. We make thorough checks to ensure efficient performance and full adherence to the latest statutory regulations.

By making Intesio part of your project approach, the outcome is assured: the optimum balance of cost, function and compliance.

A close-up photograph of a water splash, showing a crown-like shape of water droplets in mid-air, with a colorful, iridescent reflection on the surface below. The colors range from blue and green to pink and purple.

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