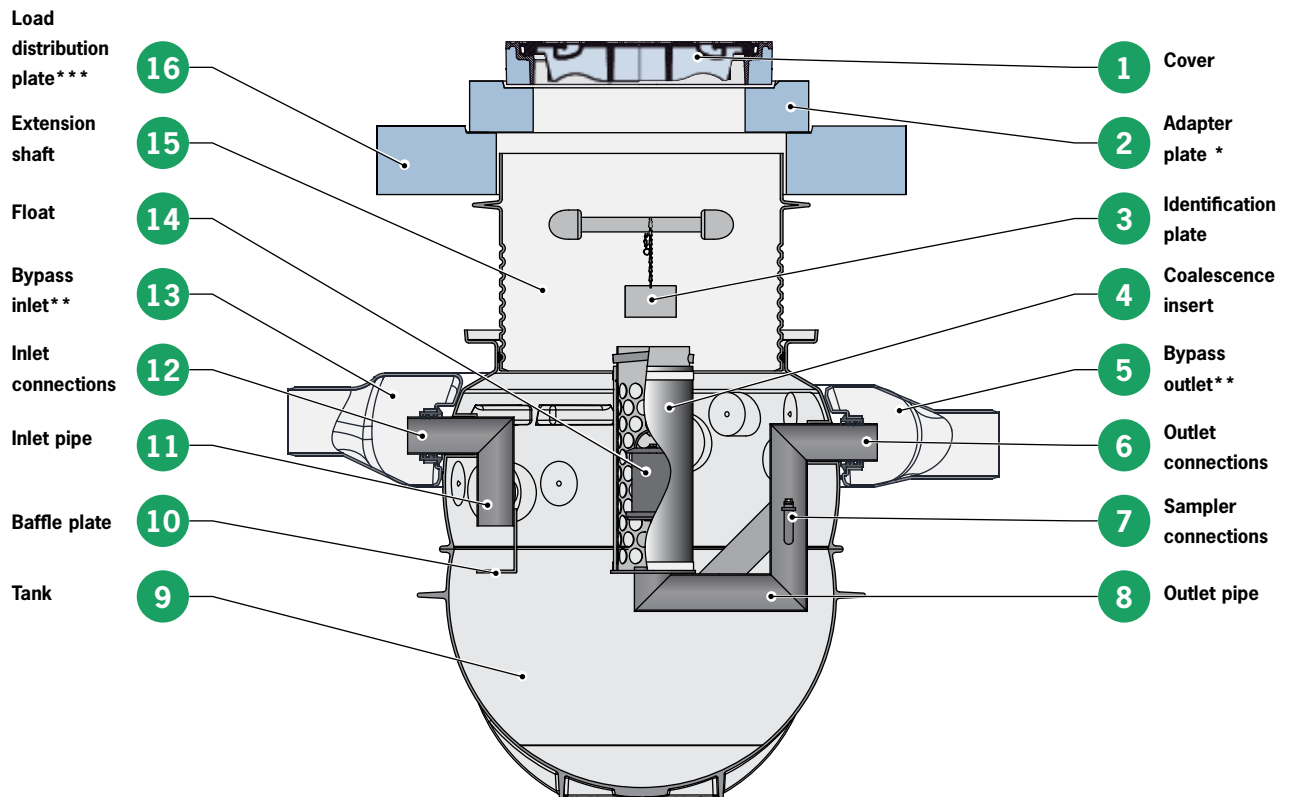


ACO Environment

Oleopator P Oil Water Separator Operating Guide

- 1. Installation**
- 2. Initial set-up/commissioning**
- 3. Operation**
- 4. Maintenance**

System Components



*only with load class D

**not used

***Cast on site by others; only class D (40 ton)

The ACO Oleopator P is a range of oil separators that allow sediments and oils to be separated out simultaneously in one tank. Separator systems are available with a range of different sludge and oil capacities to suit specific site requirements.

Alarm sensor systems are available to notify personnel when maintenance is required. Oil level sensors are required for compliance with UL 2215.

Class I light-oil separators

Include a coalescence unit which traps the smallest oil drops that are too small to float to the surface naturally and coalesces them to form larger oil drops capable of being separated out.

Capable of achieving effluent quality of 5 parts per million (ppm). Certified to EN 858.

Bypass separators

A bypass version is available for when full treatment of large flows is not required; 'first-flush effect' theory. The unit will fully treat flows until it reaches maximum inflow volume (GPM) at which point additional inflow bypasses the separator and diverts directly to the outlet pipe. Typically most pollutants are washed into the separator during the initial flow so effluent quality is not drastically affected.

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Product Information

Detailed product information available in product catalog, spec info sheets or on-line.



1. Safety considerations

The safety guidelines in this chapter are to be read before using the separator. Serious injuries or death could occur as a result of misuse.

1.1 Designated use

1.1.1 Areas of Application

Oleopator separators are designed to remove mineral light liquids from wastewater.

Applications where mineral oils or mineral light liquids are able to enter the sewer system should have separator systems connected downstream from drainage collection points. Such applications include petrol stations, parking lots, roadways, car washes, engine washes, garages, vehicle recycling, scrap yards, fueling stations, tank pits and transformer stations.

Stormwater from areas where no light liquids accumulate, such as roofs and courtyards, should not be fed into separator.

Separators should be installed such that no light liquids can escape in the event of backflow from the sewer or automatic closure of the float. An automatic alarm may be required. Regulations may vary by state.

1.1.2 Limitations

The separators are not to be installed for residential wastewater.

When delivering waste water into the public sewer system, the local hydrocarbon limits should be observed. Further treatment may be required.

1.1.3 Foreseeable misuse

No substances that pollute the water or limit the functionality of the separator should be introduced into the separator.

This is particularly important in regard to:

- wastewater containing feces,
- wastewater containing animal or vegetable greases,
- wastewater in which a considerable amount of stable emulsions is present.

1.2 Qualifications of personnel

All work performed on the separator equipment is to be carried out by trained personnel.

1.3 Personal safety equipment

Personal safety equipment is necessary for a variety of works on the separator.

1.4 Responsibility of owner

The owner is responsible for complying with the following points:

- Only operate the separator according to regulations and in proper condition
- Ensure that function of protection devices is not impaired
- Adhere to a scheduled maintenance program and immediately repair faults. Only repair faults yourself if the measures are described in these operating instructions. Contact ACO for all other measures
- Inspect data plate on the separator for completeness and legibility
- Adequate personal safety equipment must be available and used
- Provide complete and legible operating instructions at the separator's site of installation and training based on this
- Only employ qualified and authorized personnel.



Health & Safety

Safety instructions are intended to prevent damage to equipment or injury to personnel and must be read before any maintenance is performed.

The separated oils and any vapors are flammable and/or combustible so care must be taken whenever the system is opened.

- All safety instruction labels must be replaced if they become detached or illegible.
- Gas concentrations MUST be tested before entering the separator; breathing apparatus is recommended for all personnel entering separator.
- Safety lines, harness and radios/whistles are advised if entering separator.
- Smoking and naked lights are strictly forbidden anywhere in area surrounding the system.
- Installed devices (e.g. baffles, inlet and outlet parts, coalescence element, etc.) are intended for operation of separator system and are not load bearing - they must not be used as steps, footholds or resting places for cleaning equipment etc.
- The separator system is defined as a zone 0 explosion hazard area. Only authorized, properly trained, personnel are permitted to perform work on the electrical components of the separator (where used).
- Contact with wastewater containing light liquids, e.g. during maintenance, can lead to dry, irritated skin, skin infections, headaches, dizziness, nausea, vision problems, loss of consciousness, and, in serious cases, death. Ensure proper protective clothing is used and immediately wash any exposed skin.

2. Installation

Oleopator separators are intended for in-ground installation. Care must be taken to determine correct installation to take into account site loadings and traffic patterns. Details are provided for light duty and heavy duty applications.

Inspect Oleopator upon delivery and before installation to check for damage that may have occurred during shipping or at the job site prior to installation.

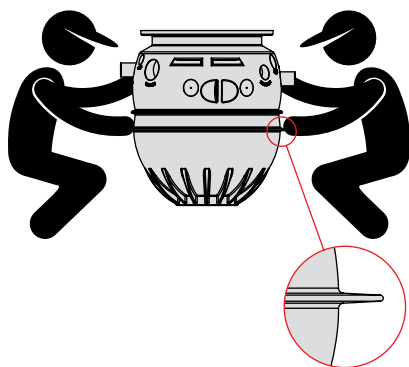
Light oil separators can be extremely large (depending upon flow and holding capacity) ensure correct equipment is available for proper unloading, moving around site and lowering into required final position.

Remove floats and filters during installation and protect separator openings from site run-off as stones and debris may cause surface damage inside the separator.



2.1 On-site handling

2.1.1 People



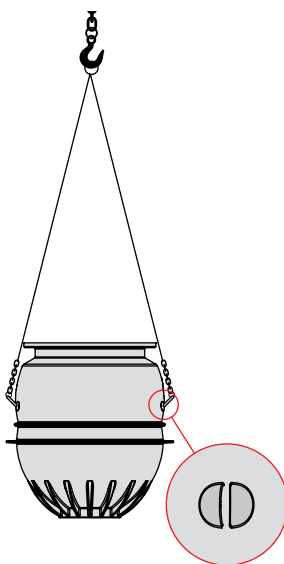
Carry separator with 2 people using circular ring as a grip and pipe connections for additional stability.

NOT suitable for single person lift.

2.1.2 Crane

Sling attachment points are provided for proper handling of the tank.

DO NOT transport separator with extension shaft sections and/or covers assembled.

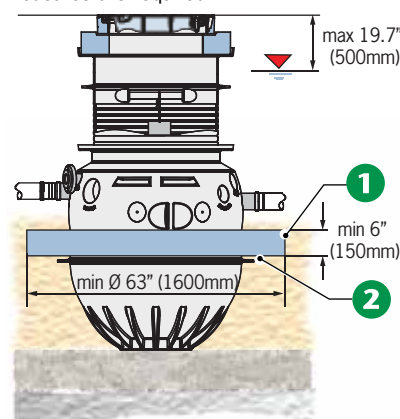


2.2 Ground conditions

Where groundwater is present, certain additional measures may need to be taken to prevent lifting.

Pedestrian applications - if groundwater level is less than 20" (0.5meters) below grade no additional measures are required. Where groundwater level is higher than 20" (0.5meters) below grade, an on-site 63" (1600mm) dia x 6" (150mm) thick concrete ring **1** is cast in-situ over the large, lower tank ridge (see diagram) **2** to avoid 'floating'.

Heavy duty applications - no additional measures are required.



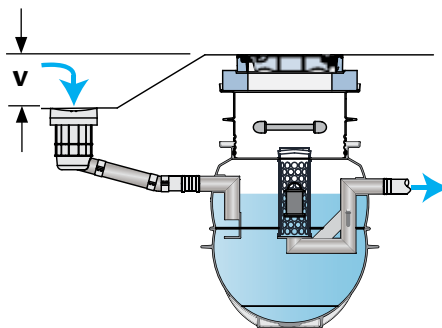
2.3 Separator positioning

The purpose of a separator is to collect light oils for proper disposal. Timely emptying and maintenance is critical for effective operation. Alarm systems can help ensure light oils and sludge are removed in a timely fashion and can alert potential maintenance issues.

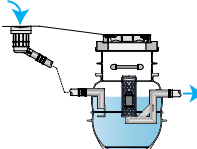
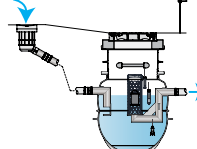
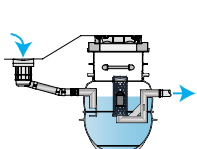
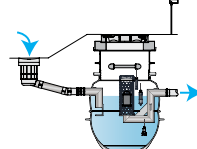
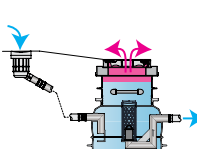
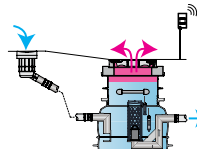
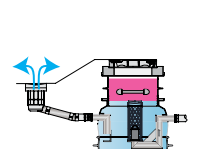
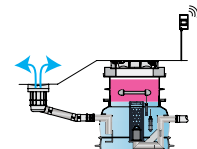
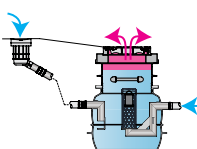
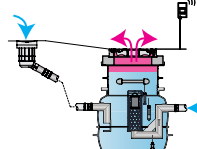
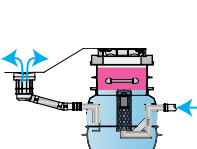
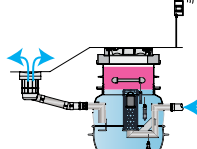
Alarm failure (or failure to action alarm alerts) and back flow from sewer are potential causes of operation error and pollution.

These can be overcome in certain applications by adjusting height of separator relative to collection vessel/drain.

Super elevated positioning is where the cover of the separator is higher by a minimum height (V) than the collection fixture.



V - Super elevated positioning			
	Cover only	Cover & Shaft	Cover & Shaft
Size	Pedestrian in (mm)		Heavy duty in (mm)
NS3/450	1.78 (45)	2.75 (70)	5.90 (150)
NS3/670	1.78 (45)	2.75 (70)	5.90 (150)
N 3/950	1.78 (45)	2.75 (70)	5.90 (150)
NS6/660	1.57 (40)	2.56 (65)	5.71 (145)
NS6/1210	1.57 (40)	2.56 (65)	5.71 (145)
NS10/1080	1.97 (50)	2.95 (75)	6.10 (155)

		Installation situation			
Super elevated positioning		No	No	Yes	Yes
Alarm system		No	Yes	No	Yes
Operating situations	Ready for use	 Normal operation	 Normal operation	 Normal operation	 Normal operation
	Max. oil = float closure = blockage	 Oil will leak from cover	 Alarm will alert and oil will leak from cover	 Oil will stay in separator, wastewater will flood from collection fixture	 Alarm will alert and oil will stay in separator, wastewater will flood from collection fixture
	Backflow from sewer	 Oil will leak from cover - unless a backflow prevention pump is used downstream from separator	 Alarm will alert and oil will leak from cover - unless a backflow prevention pump is used downstream from separator	 Oil will stay in separator, wastewater will flood from collection fixture	 Alarm will alert and oil will stay in separator, wastewater will flood from collection fixture

2.4 Installation

2.4.1 Light Duty Installations

1. Excavate area 60" wider and 12" deeper than the separator; this allows for a 12" aggregate base compacted to Proctor density 97%.
2. Check level of unit and inverts of inlet/outlet pipes
3. Backfill around unit to the level of inlet/outlet pipes (backfill should be 2-16mm sand/gravel); take care when compacting fill not to damage separator
4. Connect inlet/outlet pipes - pipes should be resistant to hydrocarbons. Flexible couplings will be required as inlet/outlet pipes are metric dimensions
5. Inlet pipes should be installed with as few bends and slopes as possible to prevent blockages and reduce turbulence of incoming wastewater
6. Install extension shaft (if used) - cut to required height, place seal in lowest notch of remaining section. Grease seal and tank collar with acid-free grease to ensure watertight seal.
7. Install wiring conduit for alarm system (if used)
8. Recheck levels
9. Continue to backfill and compact
10. Install cover with 4" deep concrete collar to ensure it is held securely in place
11. Install alarm sensors (if used)



2.4.2 Heavy Duty Installations

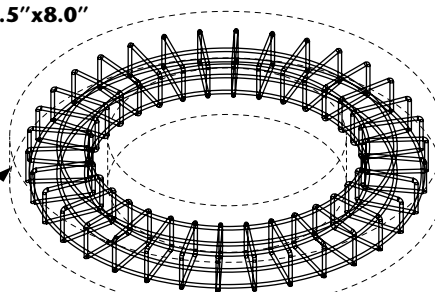
1. Excavate area 60" wider and 12" deeper than separator; this allows for a full 12" concrete encasement
2. Check level of unit and inverts of inlet/outlet pipes
3. Pour concrete to level of inlet/outlet pipes
4. Connect inlet/outlet pipes - pipes should be resistant to hydrocarbons. Flexible couplings will be required as inlet/outlet pipes are metric dimensions
5. Inlet pipes should be installed with as few bends and slopes as possible to prevent blockages and reduce turbulence of incoming wastewater
6. Install extension shaft - cut to required height, place seal in lowest notch of remaining section. Grease seal and tank collar with acid-free grease to ensure watertight seal.
7. Install wiring conduit for alarm system (if used)
8. Continue backfilling up to 8" (200mm) below top of access shaft
9. Install reinforcement, form and pour concrete load distribution plate - 8" thick and extending 14" around shaft in all directions (see below for details)
10. Install cover, frame and concrete adaptor plate to ensure it is held securely in place
11. Install alarm sensors (if used)



Load distribution plate Ø 61.0" / 33.5" x 8.0" (1550/850x200mm)

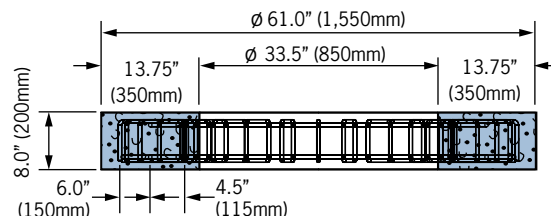
Concrete: 5,000psi (35MPa)
Concrete Steel: #4 rebar (10M)
Concrete Cover: 1.2" (30mm)

35 x #4 rebar @ 3.15"
(10M @ 80mm)
stirrups



Typical reinforcement plan

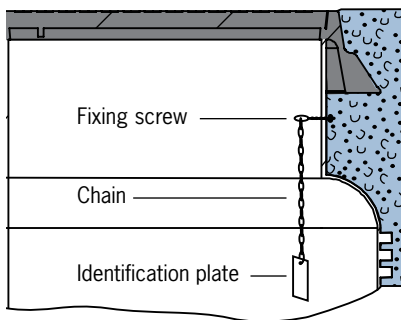
Cross section



3. Initial Set-up/Commissioning

3.1 Prior to filling the system

- Ensure all required air and water tests are completed before finished installation of unit.
- All system components; baffles, coalescing units and internal piping must be inspected to ensure that nothing is missing, loose or damaged.
- Installation of identification plate in maintenance shaft as shown in diagram below. (This will assist in future maintenance and ordering of consumables etc.)



Identification plate provides:

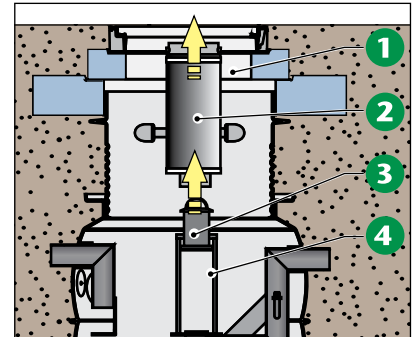
- Separator type identification
- Nominal size
- Class
- Number of the LGA Test report.
- Volume of separator and sludge trap
- Maximum storage volume and maximum thickness of light oil layer
- Maximum permissible sludge thickness

3.2 Filling separator system

- System **MUST** not be filled until installation is complete and all mortared and sealed joints have been allowed to cure properly.
- System should be cleaned before use.
- Float **MUST** be removed before the separator is filled. Failure to do so may cause outlet pipe to be blocked by float and improper functioning of separator may occur.

3.2.1 Removing float & coalescent filter

1. Lift coalescence insert **2** out of separator via extension system **1**.
2. Remove float **3**, located in the supporting cage **4**.
3. Remove sheeting from coalescence insert **2**.
4. Store coalescence insert and float in water, in safe place until separator is filled and they are required for reinstallation.



3.2.2 Filling procedure

1. Ensure inlet and outlet valves are open.
2. Fill separator with clean water, either via manhole cover or inlet/trench drain.
3. When separator is full, water will start to flow out of outlet; this can be identified from outlet sampling chamber/hose (if used), or when water reaches outlet invert using a depth gauge stick.
4. Allow water to continue to run to check for blockages in outlet pipe - if water depth remains constant then no blockage exists. If water starts to back-up, then an investigation into the cause of blockage is required.
5. Refit float and coalescent filter.
6. Fit and check alarm sensors if used.

4. Operation

The ACO Oleopator is designed to be easy to operate with minimal intervention required.



4.1 Entering the Separator

All relevant local accident prevention regulations must be strictly observed when entering a separator.

Size NS 3 to NS 10 Separators

Separators can be entered via maintenance shaft located above the float cage. The following steps ensure easy accessibility:

1. Clean out separator sludge/oils
2. Remove coalescence unit (if installed - Class I separators only)
3. Remove float
4. Pull float cage from the holder and remove it. (if possible)

The separator can now be entered.

Once all work has been carried out, ensure original condition of separator is reinstated:

1. Place float cage back in holder (taking care to properly align pins in the cage)
2. Replace float after separator has been filled
3. Install coalescence unit (if installed - Class I separators only)

4.2 Oil/Sludge Level Sensors

Optional alarm system makes operation easier and ensures compliance with UL2215. It does not replace visual maintenance but ensures timely disposal of oil and/or sludge to guarantee continued operation of system.

Sensors will alert when;

- Oil has reached 80% maximum capacity (once oil reaches 100% capacity float will sink and close outlet pipe)
- Sludge has reached 50% maximum capacity (once sludge reaches 100% capacity inlet pipe will become blocked)
- When liquids in the separator reach a specific level, alarm indicates that outlet pipe is blocked
- The oil sensor is also able to identify if tank has failed and liquids are leaking into surrounding ground

When any of these events occur a signal is sent to the building management system which can send out audio, visual and SMS alerts to ensure maintenance can be carried out before the separator system fails.



5. Maintenance

5.1 Maintenance Schedule

Table below provides a recommended schedule of maintenance and inspection to ensure trouble free operation of separator.

Note: Refer to 4.1 (Pg 9) Entering the Separator before maintenance is undertaken

Measures	What must be done?	Who should do it?	Interval
Visual Inspection and Maintenance	<ul style="list-style-type: none"> Check proper functioning of self-actuating closure and coalescence unit in the separator Measuring thickness and volume of oil layer separated out at top of separator Measuring height of sludge layer in sludge trap Empty and clean separator as required (see disposal requirements). Remove any coarse floating material Inspect all components of alarm system (if used) Immediately rectify any faults identified Report findings and any work carried out in operating 	Properly qualified operative	Maximum every 6 months and immediately after any large oil spill incident and/or excessive rain storm
Disposal (Service)	<p>The separator must be emptied when:</p> <ul style="list-style-type: none"> 80% of the maximum oil storage volume has been reached, and/or 50% of the max sludge trap volume has been reached 	Properly authorized disposal company	As required, but at least every year
General Inspection	<ul style="list-style-type: none"> Separator must be emptied and contents properly disposed of Inside of separator must be cleaned Check proper functioning of self-actuating closure Check water-tightness of the system Check condition of installed devices and interior surface condition 	Properly qualified technician	Prior to initial use and then every five years.

ACO Control Kit

ACO offer a control kit to assist with maintenance and inspection; the kit contains: a dipstick, dipstick plate, water verification paste, pH indicator rods, operations log.



5.2 Cleaning Coalescing Units

Coalescing unit must be removed periodically for cleaning, the separator is not functional during this process.

1. Ensure inlet / outlet valves are closed
2. Pull coalescence unit up above water level in the separator, using a hoist where necessary
3. Allow water to drip into separator before removing coalescing unit
4. Clean unit in bucket, or appropriate area, to contain wastewater for proper disposal (contaminated water can be poured back into separator)
5. Completely remove all dirt by spraying with clean water from either:
 - a min. ¾ inch hose, under mains pressure (min. 58psi), or
 - a high pressure device at max 870psi and using cold water
6. Only use cleaning products when absolutely necessary (ensure cleaning agent will not damage separator; consult cleaning product MSDS details for suitability), rinse thoroughly with a high pressure device with max 870psi and 140 °F (60 °C)

Removing coalescence mats

Mats need only be removed from basket if soiling is particularly bad. Coalescence mats are attached to a supporting basket at top and bottom with tensioners and Velcro strips (fluffy side outwards). Once these are removed, mat can be unwound from basket.

Replacing coalescence mats

To replace, wrap mat around supporting basket and replace tensioners and Velcro straps (fluffy side outwards). When wrapping mat around basket ensure no openings are left that could allow wastewater to flow through untreated. Avoid wrapping coalescence mats too tightly to prevent damage.

Tip – Lengthy operational hold-ups can be prevented by swapping dirty coalescence units for clean back-up/spare coalescence unit. The dirty coalescence unit can be stored in a water-filled container until, to prevent dirt drying hard onto unit, until it can be cleaned.



5.3 Oil / Sludge Disposal

Maximum levels for emptying separator are when:

- 80% of maximum oil storage has been reached, and/or
- 50% of maximum sludge trap volume has been reached.

Identification plate shows maximum thicknesses of each layer (identification plate is located inside separator).

Even if levels remain below these limits, separator should be emptied at least every year.

- Contents of separator must be disposed of by authorized disposal company
- Care must be taken not to damage inside walls and internal equipment of separator
- Rinse down walls and base of separator using hot water to loosen hardened solids and suction out left over slurry
- Refill separator with clean water, following initial set-up procedure (See **3.2 Filling separator system - Pg 8**)

5.4 General Inspection

Prior to initial use, and thereafter at regular five yearly intervals, a “properly qualified technician”* must inspect the separator to ensure it is in good condition and operating properly – separator must be completely emptied and cleaned before general inspection can be carried out.

An integral part of every general inspection is a water-tightness test carried out in accordance with EN 858-2.

1. Close inlet & outlet pipes
2. Fill separator with water until full
3. Check for changes in water level indicating possible leaks - investigate/repair/replace as required

* “Properly qualified technician” is defined as staff of independent companies, independent experts, or other institutions with certified special technical knowledge on the operation, maintenance and testing of the separators described here, and have the necessary equipment.



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