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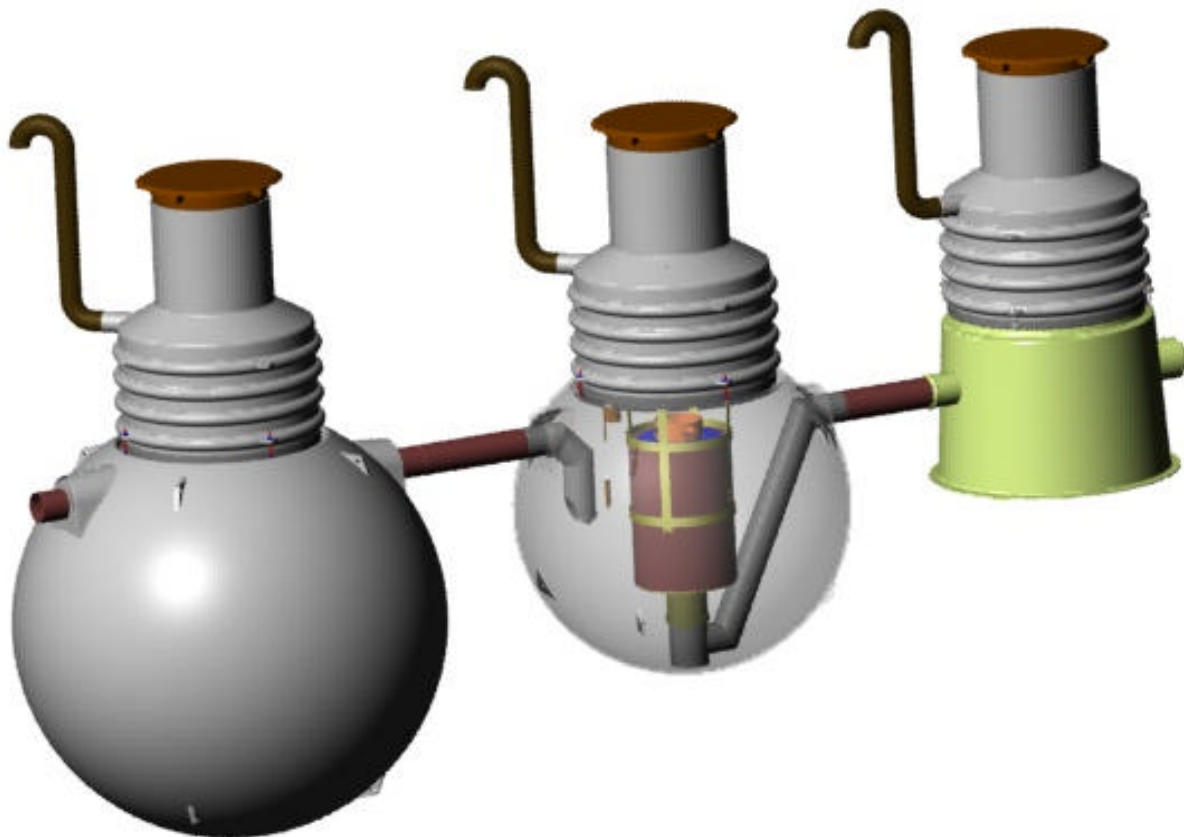
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# EuroPEK Omega - Oil Separator System

## Instructions for Installation, Operation and Maintenance



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## 1 GENERAL

### 1.1 Design parameters

These instructions contain a description of the operation, installation and maintenance of the EuroPEK Omega oil separator conforming to the requirements of the European standard EN 858 (Separator system for light liquids). In the EN standard, oil separators are divided into classes I and II. According to the standard, the hydrocarbon content of the wastewater, after being processed by a class I separator, should in laboratory tests stay under 5 mg/l. The EuroPEK Omega represents an oil separator of class I. In a class II oil separator, the hydrocarbon content should not exceed 100 mg/l. The cleaning effect of the separator is based on the coalescing 3D filter. A separator system meeting the requirements of the standard includes a sand and sludge trap, oil separator as well as a sampling shaft.

The oil separator system EuroPEK Omega NS 3/L and NS 6/S consists an integrated sand and oil trap. In the separators EuroPEK Omega NS 10 and NS 15 there is no sand trap, and thus the sand and sludge trap should be bought as a separate unit. In addition, the standardised system also contains a sampling shaft EuroNOK.

The oil separator system EuroPEK Omega also contains the backwater and oil alarms. An optional extra is the Labcom Data Transferring Unit which enables the alarm signal to be automatically forwarded to the person or company responsible for emptying the separator.

### 1.2 Important when handling and installing the separator

- The separator must be handled with care and it must be fastened properly for the transport.
- Immediately after transport, at the installation site, the separator must be inspected for any damage that might have occurred during the transport.
- The maximum installation depth of the EuroPEK Omega oil separator, from ground level to the lower edge of the input sewer, is 2.5 metres. If installed deeper, the separator should be ordered in a reinforced construction. In this case, please contact Wavin-Labko / Tanks.
- Anchor the separator to prevent it from floating; this is the buoyancy-effect caused by the groundwater or the rainwater that pours into the excavation. See further information in "Instructions for Mounting in the Ground".
- In the area of heavy and medium weight traffic a traffic compensating slab must be laid on the separator to equalize the wheel loads. See further information in "Instructions for Mounting in the Ground".

## 2 TECHNICAL DATA

### 2.1 Operation

In a separator system, a sand and sludge trap precedes the oil separator. In the sand and sludge trap (like EuroHEK Omega) the solid matter is separated from the wastewater. The operation of the sand and sludge trap is based on gravitation; the solid particles, heavier than water, settle on the bottom of the separator. This is an essential part of the separation process, since the trapping of the sand before its accessing the oil separator prevents the filter from being blocked by the heavier solids. Consequently, this contributes to a longer service-span of the oil separator.

In the oil separator EuroPEK Omega, both the free and partially the mechanically emulsified oils are separated from the wastewater. The separator is used for handling different kinds of oily wastewaters. The operation of the oil separator Omega is based on gravitation, which is intensified by a coalescing 3D filter. The filling of the oil storage volume of the separator or the backwater, caused by the blocking of the filter as the surface level rises, is indicated by an alarm device SET-2000, whose installation and operation are described in separate instructions – SET-2000 Instructions for Installation and Operation.

The oil separator system also contains a sample shaft EuroNOK, which is used for taking samples from effluent. There is also a shut-off valve in the shaft for cutting off the flow to the outlet sewer in case of an exceptional emission.

## 2.2 System components: EuroPEK Omega NS 3/L, NS 6/S, NS10 and NS15

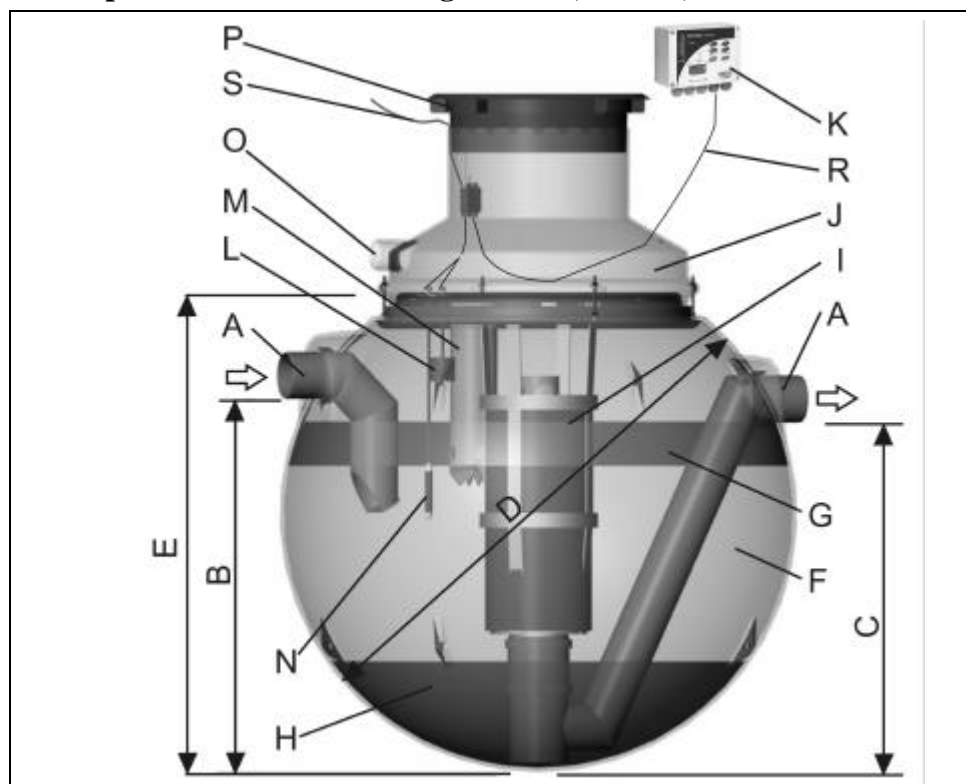


Figure 1. Components of the Sand and Oil Separator EuroPEK Omega.

EuroPEK Omega Oil separator system		3/L	6/S	10	15	
	Maximum flow rate of rain water	l/s	3	6	10	15
	Maximum flow rate of waste water	l/s	1,5	3	5	7,5
A	Inlet/outlet connection	DN	110	160	160	200
B	Bottom/inlet connection	mm	1300	1300	1300	1790
C	Bottom/outlet connection	mm	1220	1220	1220	1630
D	Diameter of the tank	mm	1780	1780	1780	2170
E	Height	mm	1660	1660	1660	2100
F	Effective capacity	l	2100	2100	2100	4200
G	Oil storage volume	l	280	280	280	380
H	Sludge storage volume	l	950	650	separate sand trap	
I	Coalescent 3D filter	pc	1	1	1	1
J	Maintenance shaft EuroHUK (accessory)	pc	1	1	1	1
K	Oil alarm unit SET-2000	pc	1	1	1	1
L	Backwater probe SET/OE2-O*	pc	1	1	1	1
M	Oil skimming pipe	pc	1	1	1	1
N	Oil probe SET DM/3*	pc	1	1	1	1
O	Ventilation pipe, D110	pc	1	1	1	1
P	Cast iron cover and frame 5...40 tn (accessory)	pc	1	1	1	1
R	Cable to the alarm unit (not included in delivery)*	pc	1	1	1	1
S	Wire for equipotential ground (not included in delivery)*	pc	1	1	1	1

\* For more information, see the SET-2000 Installation and Operation instructions.

### 3 INSTRUCTIONS FOR MOUNTING IN THE GROUND

#### 3.1 Anchoring

The spherical tank should be anchored in order for the buoyant force of the water in the ground not to move the tank. A reinforced concrete slab is recommended to be used as an anchor. A non-stretching anchoring belt, attached on the lugs on the tank, is used for anchoring the tank.

An anchoring slab should be cast, if

- the ground water level in the area is higher than the bottom of the separator;
- the water transmission in the ground is weak and the rain water may gather into the mounting pit of the separator; or
- the bearing capacity of the ground is weak.

The measures of the anchoring slab are presented in the figure 2. If necessary, a larger amount of concrete can be used in anchoring. Note! A layer of 200 mm (minimum) of compacted sand must be laid between the slab and the separator.

Alternatively, the anchoring can be made also by using 4 pcs of impregnated wooden logs sized 100x100x2500–4000 mm, depending on the size of the tank. The logs should be placed on both sides of the tank so that they are completely covered in sand. There should be at least a 500 mm layer of sand between the tank and the anchoring logs. Non-stretching anchoring belts are tied around the logs so tightly that in case of a possible lifting force they will not give in. **NOTE! In any case the belts should be fixed to each anchoring lug of the spherical tank.**

Non-stretching, 25 mm wide polyester belts with weight capacity of 2000 kg are used for anchoring the EuroPEK Omega separator tanks. Approximately 4 m long belts (4 pcs) are tightly tied to the upper lugs of the separator, and about 2 m belts to the lower lugs. If you have ordered the anchoring belts from Wavin-Labko Ltd, we deliver 4 pcs of 6 m long belts, which by installing should be measured and cut as mentioned above.

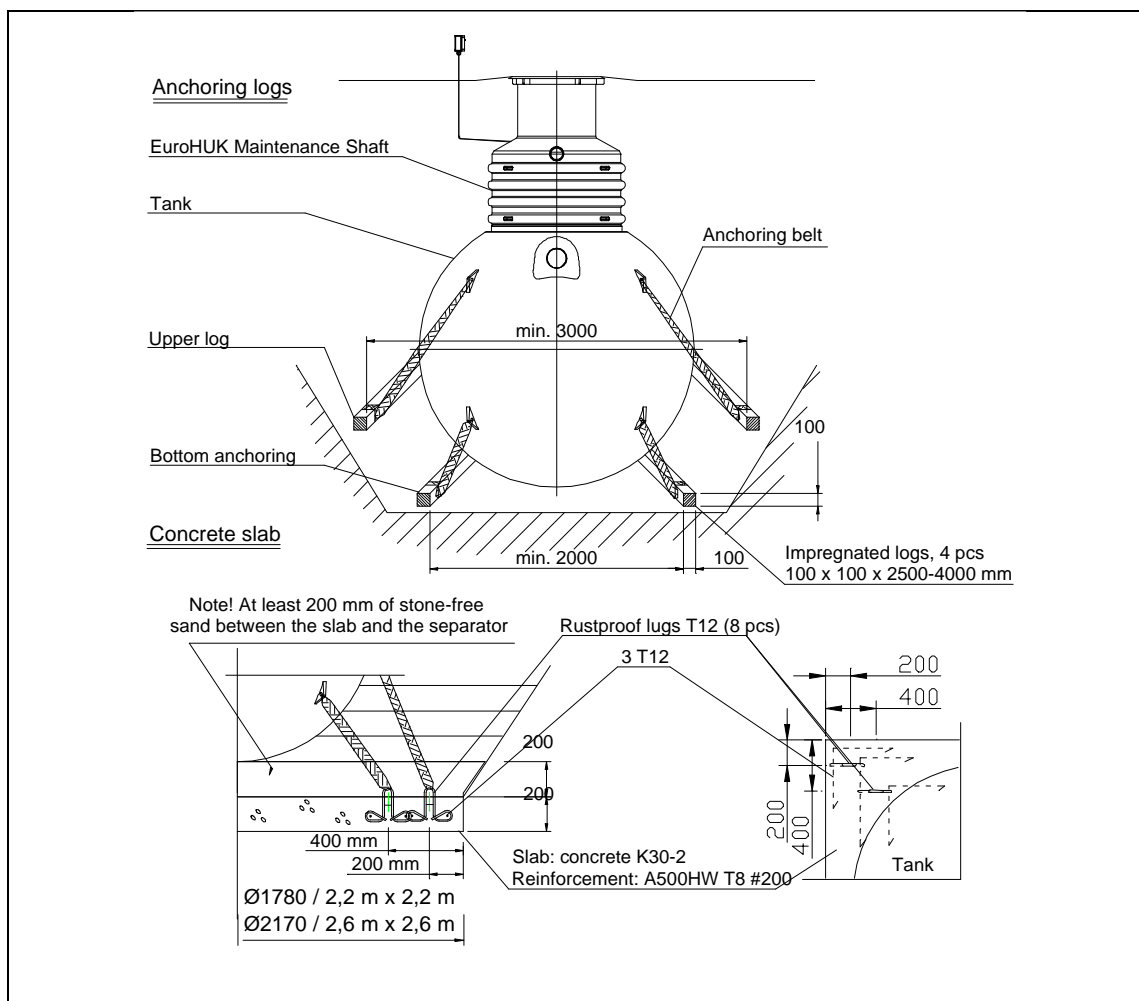
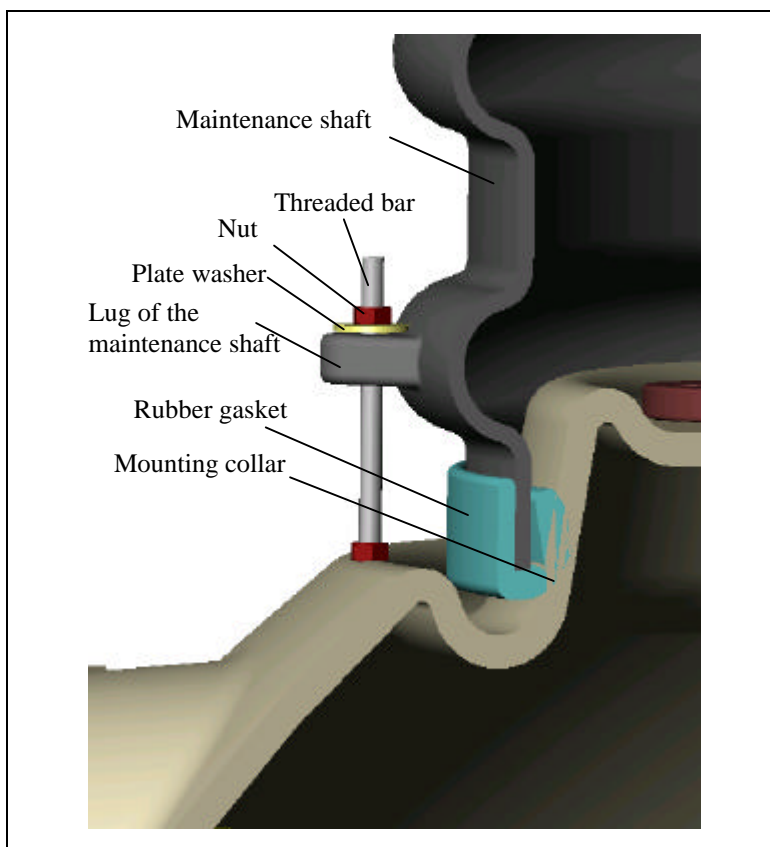


Figure 2. Anchoring of the separator in an area influenced by ground water or in an area where the bearing capacity of the ground is weak.

### 3.2 Installation

1. Cast the anchoring slab on the 30 cm levelled stone-free sand layer on the bottom of the pit. Compact a min. 20 cm stone free sand layer on the anchoring slab. Sifted gravel of granular size 3...20 mm can be used as sand filling, too. Lay the separator horizontally on the sand layer. Anchor the separator using the lugs installed on the concrete slab and the non-stretching anchoring belts (qty 8). (See also: 3.1 "Anchoring")
2. Pour about 20 cm of water into the separator to stabilize it.
3. Compact the sand layer around the separator with extreme care. Keep compacting the sand bed around the separator in 15 cm layers up to the level of the inlet/outlet. Install the sampling shaft according to its separate installation instructions. Install the inlets and outlets of the separator and of the sampling shaft. While this work is being done, keep adding water to the separator to keep it steady.
4. Remove the storage cover from the manhole of the separator. Install a rubber gasket onto the bottom edge of the maintenance shaft in a way that

sets it tightly on the mounting collar of the separator. Install the EuroHUK maintenance shaft in a vertical position into the mounting collar of the separator. Fix the maintenance shaft in its place setting the threaded bars through the lugs and tighten with nuts. (Figure 3)



*Figure 3. Connecting the EuroHUK Maintenance Shaft to the EuroPEK Omega Separator.*

5. Lower the alarm probes, fixed to the flange, down into the separator into the space reserved for them. On the manhole of the separator there is a profiled collar, onto which the flange is set. In the oil separator there are two holes in the collar. Set the flange on the smaller hole. The oil skimming pipe will be in the bigger hole. The probes will be automatically set at the correct height as the flange is supported to the profiled collar of the maintenance manhole. The flange does not need to be fixed.

The probes are already connected to the connection box. Hang the connection box from the upper edge of the maintenance shaft by the metal hook (in the alarm packet). The hook should be placed between the maintenance shaft and the cast iron frame. (See Figure 4) The probes have adjustable cables, which are set to the right length in the factory. The correct position of the probes should be ensured when installing.

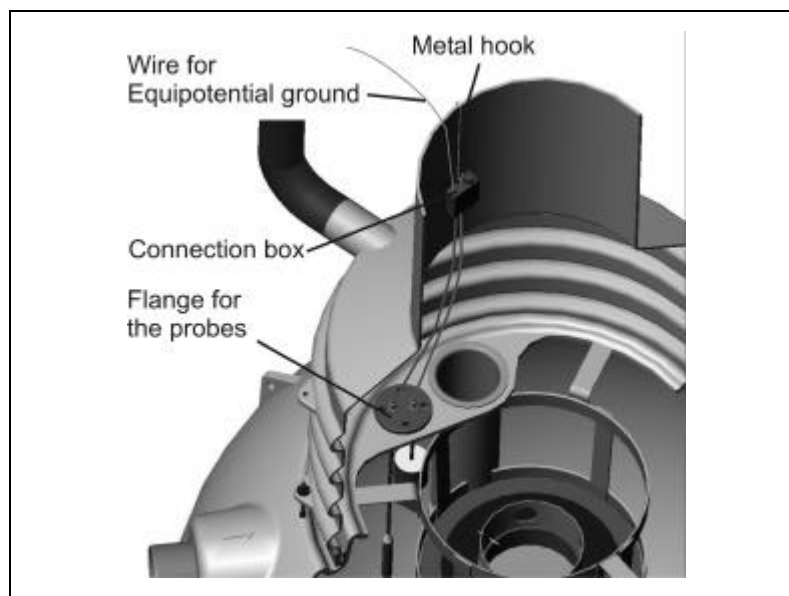


Figure 4. Installing the junction box and probes inside the maintenance shaft

6. The alarm device is supplied with the separator, but not installed. Metallic connection box of the probes must be connected to equipotential ground using the connector on the top of the connection box. Place the bushing of the cable to the feed through in the upper part of the shaft. Lead the cable in a protecting tube to the building and connect it to the alarm unit. **NOTE! Enough cable should be left inside the maintenance shaft so that the probes can be pulled up to the surface for installation and checking of the connection box and probes.** (See also SET-2000 Instruction for Installation and Operation –document) **NOTE! Oil separators are included to the high-explosive spaces. Obey the proper instructions when doing the electrical installations.**
7. Continue compacting the sand in 40 cm layers. Install the ventilation pipes on the maintenance shafts. Avoid the use of heavy vibration when compacting sand layers on top of the tanks or their inlets and outlets. Fill the excavation until the ground level is reached. After filling the pit, cut the maintenance shafts in a proper height. Note that the cover and frame will give about 100-150 mm extra height to the maintenance shaft.
8. After cutting the maintenance shafts in a proper height, the frame of the cover and frame assembly is installed on the maintenance shaft. The frame must not lean against the maintenance shaft, but against the surrounding compacted layers of sand or a load compensation plate and the asphalt layer laid on the ground surface.
9. In an area of heavy and medium weight traffic, a load compensation plate and a layer of asphalt must be laid to equalize the wheel loads. (Figure 5)
10. Finally, fill the separator completely with water to ensure its effective operation. Filling with water will also diminish the effect of the groundwater buoyancy.

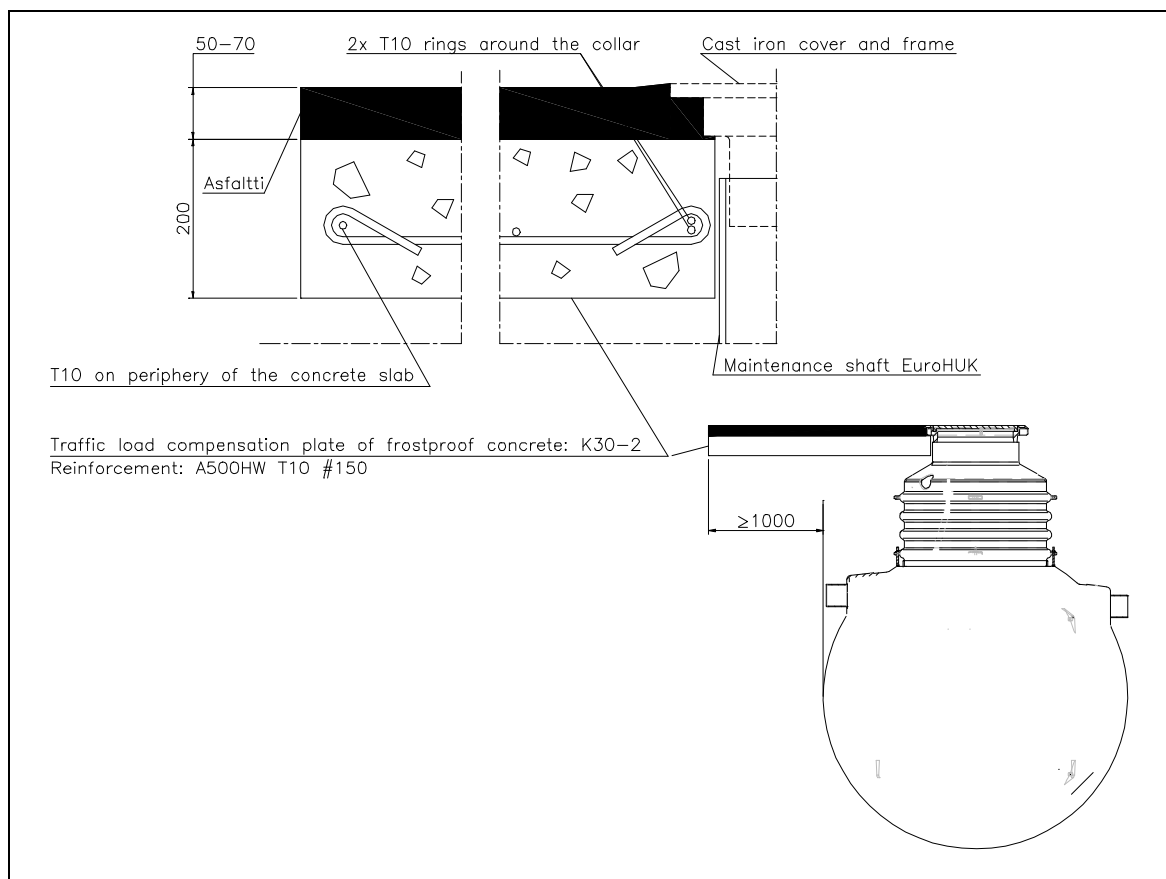


Figure 5. Construction of the load compensating plate

## 4 MAINTENANCE

The need for maintenance depends on the location and purpose of the system. If the separator system is used to process waste waters produced at vehicle washing sites or for other purposes where the separator system is exposed to a degree of solid matter load, its operation should be monitored and maintenance procedures performed more often than e.g. in systems which process rain waters gathered from asphalted areas.

When processing wastewaters e.g. from vehicle washing sites, should the condition of the oil and sludge separator be inspected even no less than weekly, in addition to the situation in which the central unit of the alarm device signals backwater alarm. The alarm may be raised by a blockage in the filter caused by oils and solids carried by the wastewater, and thus the filter must be immediately cleaned.

### 4.1 Emptying the oil storage space

1. The oil alarm unit SET-2000 will switch on a signal light when the oil storage space is full.
2. Drain off the oil layer as the full storage volume is reached, or at least after every six months.
3. Set the suction hose of the container truck to the skimming pipe and begin to suck off the oil layer that has gathered on the surface of the separator. Stop sucking when the surface of the separator sinks to the lower level of the

suction grooves or the pump starts taking in air. Should a considerable amount of water emerge in the tank during the suction, it is the water beneath the oil layer that is sucked off, not the oil.

The alarm probes must always be cleaned, when oil waste is drained. The probes can be lifted off the maintenance shaft by the cables for cleaning. Do the lifting carefully to avoid stretching the cable and any damage to the probe. If necessary, wash the probes with mild detergent (e.g. dish washing liquid) and set them back in their places. Also check the operation of the alarm unit and probes, as described in the installation and operating instruction of the alarm unit SET-2000.

#### **4.2 Maintenance of the tank**

When the backwater alarm is signalled, the condition of the separator system should be immediately inspected. Backwater can be caused by a blockage obstructing the system from functioning, and this must be removed.

1. The separator tank should be emptied and its condition checked thoroughly at least every five years (EN 858 - Separator systems for light liquids). In this case, the following should be checked: tightness of the system, condition of the body, inner surfaces of the tank, condition of inner structures, probes and probe cables, installations and the operation of the alarm system.
2. Drain the separator tank for inspection and clean the inside of the tank with tap water by using a high-pressure washer. While working inside the separator, the stand of the filter can be used as a support. Note! One must not stand on the filter. Drain the cleaning water completely from the separator with the suction hose of the container truck before checking the tank.
3. Fill the separator immediately with water to ensure its effective operation from the very beginning. Also, if the ground water level is high around the separator, filling will reduce the influence of the buoyant force caused by the ground water. Alarm probes must always be cleaned when emptying the separator or skimming the oil layer. If necessary, wash the probes with mild detergent (e.g. dish washing liquid). The filling of the separator with clean water after cleaning will restore the operation of the probes and prevent false alarms.

#### **4.3 Maintenance of the filter**

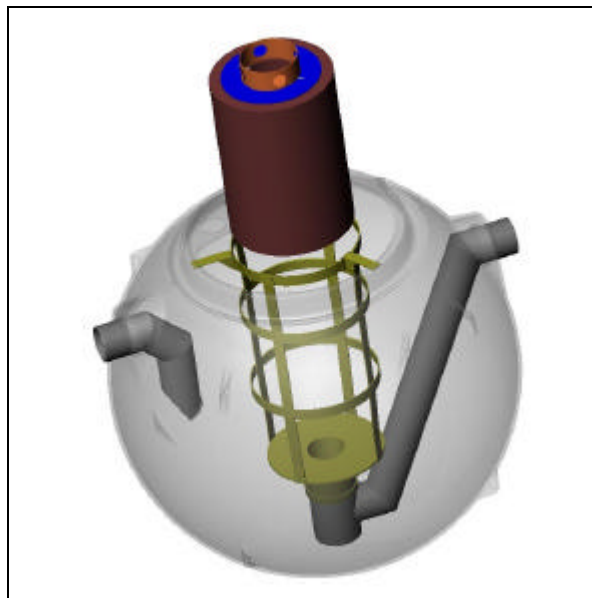
1. The filter should be regularly cleaned to prevent its blockage and decrease of the effluent quality.

The necessity for cleaning the filter depends on the purpose of the separator use. If the separator system is used to process waste waters produced at vehicle washing sites or for other purposes where the separator system is exposed to a degree of solid matter load, the filter should be cleaned monthly. Should the separator be less loaded by solids and oil waste, e.g. in rainwater processing in asphalted areas, the maintenance of the filter can be done every 6 months. However, the separator and the filter must always be checked if the central unit signals a backwater alarm.

2. It is not necessary to empty the separator to clean the filter unless otherwise required. Remove the filter from its frame by lifting it directly upward. Filter can be lifted out of the separator while standing on the ground level and using e.g. a metal stick with a hook. Note, that the filter containing a lot of solids and oil is very heavy, up to 80 kg. Regular cleaning of the filter contributes to easier maintenance.
3. Wash the filter with tap water and pressure washer. To wash out the oil and solids from the filter you can use waxless detergents used in car washing. Lead the washing water to the separator, but not directly to the outflow connector, or alternately wash the filter in a place where the dirty washing water can be properly taken care of.
4. For a more thorough cleaning, the filter may be disassembled into parts. The filter consists of several slices which are connected by bars inside the centre cavity (*Figure 6*). The bars are connected with each other and their upper ends are fixed to the filter lid. On the lid, there is also a handle for lifting the filter.

Open the fixing nuts from the filter lid, disassemble the filter into parts and clean the parts with a pressure washer. Do not aim a strong dot spray at the filter. Lead the washing waters to the separator, but not straight to the outflow connector, or alternately wash the filter in a place where the dirty washing water can be properly taken care of.

5. Assemble the filter and install it back into the separator. Push the filter downward and make sure that the filter stays steady in its place and that the lid is pressed under the locking cam of the bars.



*Figure 6. The filter of the oil separator EuroPEK Omega during maintenance*

It is recommended to keep a service log of all draining and maintenance operations. All maintenance operations concerning the separator should be entered in this log.