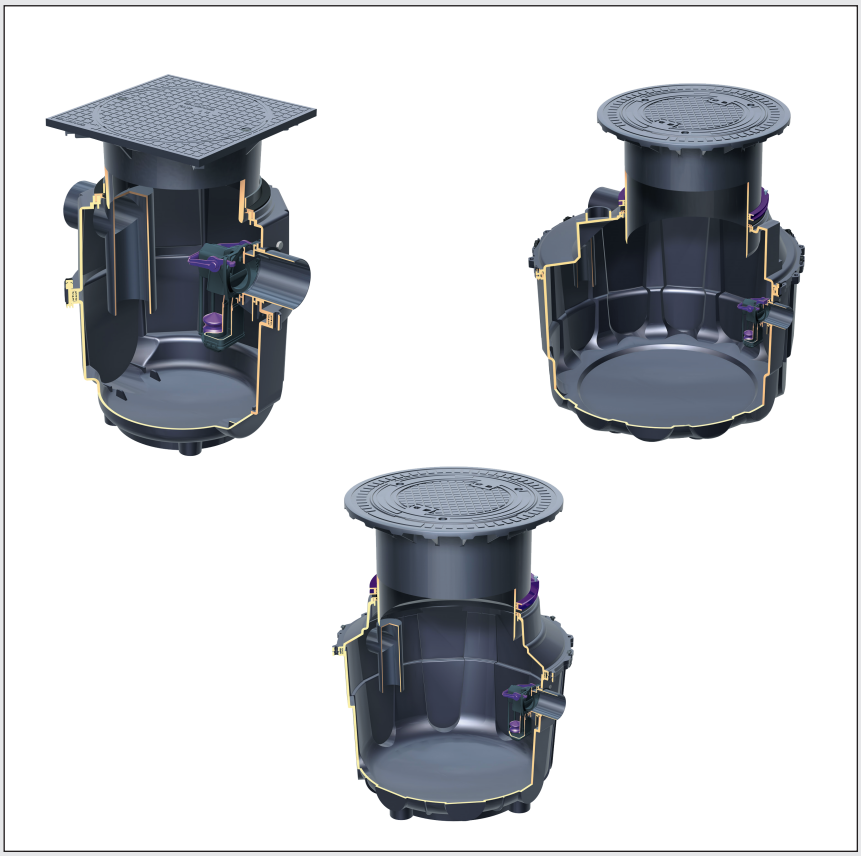
INSTRUCTIONS FOR INSTALLATION, OPERATION AND MAINTENANCE

KESSEL - Light Liquid Separator EasyOil

made of polyethylene NS 1.5

KESSEL - EasyOil NS 1.5 for underground installation



99601.002B
99601.016B/D
99601.041D

Product advantages

- Easy installation in the excavation pit possible without construction crane
- Fast, simple assembly
- Easily recycled material
- Absolutely watertight thanks to seamless monolithic construction

☐ Installation ☐ Commissioning ☐ Instructional briefing

for the system was carried out by your specialist company:

Name/Signature Date Location

Stamp of specialist company

Subject to technical modifications

06/2019

KESSEL

Part No. 308-100

Safety instructions

The installation, assembly, operating, maintenance and repair personnel must have the appropriate qualifications for this work. The owner/operating company must clearly define the responsibilities, accountability and monitoring of the personnel.

The operational safety of the delivered system is only ensured if it is used as intended. The limit values in the technical data must never be exceeded.

The accident prevention regulations and relevant standards, guidelines and directives must be complied with during installation, assembly, operation, maintenance and repair of the system. These include:

- Accident prevention regulations
- Safety rules for working in confined spaces of wastewater systems
- Handling biological agents in wastewater systems
- Guidelines for working in tanks and confined spaces
- Standards
  - Excavations and trenches - slopes, lining/supports, working widths to DIN 4124 or national equivalents
  - Construction and testing of drainage pipes and sewers EN 16100

SPECIFIC HAZARDS!

- Risks due to gas and fumes, such as risk of suffocation, risk of poisoning and risk of explosion
- Risk of falling
- Risk of drowning
- High physical and mental stress when working in deep, narrow or dark spaces
- Avoid open flames and fire near the separator system

WARNING!

Non-compliance with the operating instructions may result in considerable damage to property, personal injuries or fatal accidents.

CAUTION!

The system represents one component in a complete system. Please therefore also heed the operating instructions for the complete system as well as the individual components. During assembly, maintenance, service and repair work on one of the components, the complete system must always be put out of operation and secured against unintentional starting.

Modifications or changes to the system may only be made in consultation with the manufacturer. For safety reasons, use original spare parts and accessories approved by the manufacturer. The use of other parts may void the liability for any consequences arising thereof.

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Dear Customer,

As a premium manufacturer of innovative products for draining technology, KESSEL offers integrated system solutions and customer-oriented service. In doing so, we set the highest quality standards and focus firmly on sustainability - not only with the manufacturing of our products, but also with regard to their long-term operation. We strive to ensure that you and your property are protected long-term.

Yours KESSEL AG
Bahnhofstraße 31
85101 Lenting, Germany

Our qualified local service partners will be happy to help with any technical problems you may have. You can find your contact partner at: www.kessel.de/kundendienst

If necessary, our Factory Customer Service provides support with services such as commissioning, maintenance or general inspection throughout the DACH region, other countries on request.
For information about handling and ordering, see:
www.kessel.de/service/kundenservice.html

1. Area of use

KESSEL light liquid separator EasyOil
- for underground installation
- for mineral-based light liquids
- with a density up to 0.95g/cm3g/cm3
- with automatic closure device

This separator is not intended for treating stable emulsions, solutions of light liquids in water, grease and oil of vegetable or animal origin.

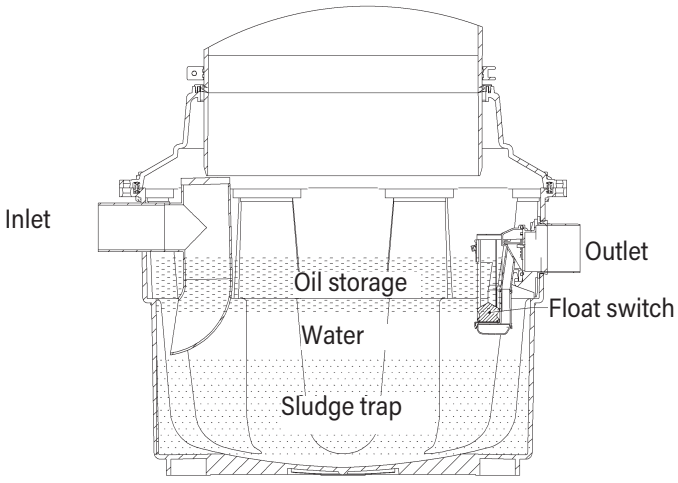
Oil and fuel separators are light liquid separators and are used to protect bodies of water and sewer systems from contamination with mineral oil products. They operate based on the principle that low-solubility mineral oil products float in wastewater due to their lower specific density and accumulate on the surface.
The wastewater flows into the oil/fuel separator via floor drains without odour trap; the inlet pipes should be kept as short as possible. A special inlet system in the KESSEL oil/fuel separatorEasyOil causes so-called plug flow. This means that the flow is uniformly distributed in the separator and is thus fully hydraulically effective. The sediment deposits (all particles with specific density higher than water) sink to the bottom, the light substances move to the surface of the water. The outlet system with automatic closure device prevents the discharge of separated substances.

Oil/fuel separators
<u>The separators are suitable for the following applications:</u>
1. For treating surface water run-off contaminated with light liquids from hard surfaces (e.g. petrol stations, oil storage and oil transfer areas, car parks and roads in water protection zones)
2. As retention or containment equipment for light liquids from facilities and areas in or on which light liquids are handled, for example:
   - private fuel dispensers
   - private cleaning and washing areas
   - private workshops and repair areas

The permit to discharge into the sewers or bodies of water must be agreed with the respective water authority.

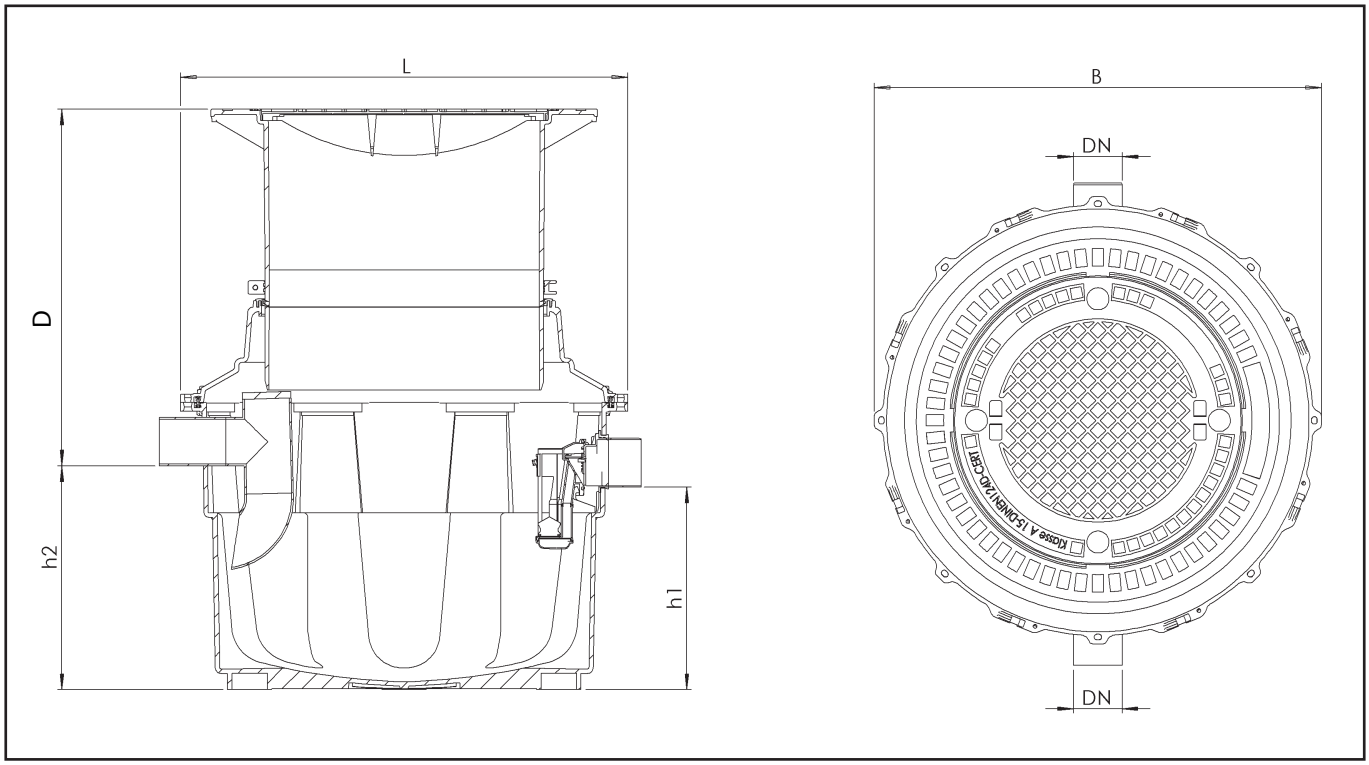
Automatic closure device
The separators are equipped with automatic closure devices.
This device prevents light liquid from discharging into the sewage system if the maximum oil storage quantity in the separator has been reached. In the KESSEL light liquid separator*EasyOil*, this safeguard consists of a floater guide pipe, which is normally filled with water. The floater is designed so that it floats in water and sinks in the light liquid (up to a density of 0.95 g/cm3). If the maximum oil storage quantity is reached, the floater sinks and closes off the separator's outlet.
The automatic closure device of a separator is an "emergency brake". If it is triggered in the event of an accident or spillage, the separator must be shut down and serviced. Light liquid separators must therefore be serviced and emptied, and their contents disposed of, regularly.

Static calculation
The stability of the tank is only ensured for its self weight, transport and for the described installation in accordance with the intended use (e.g. load class, road construction). Additional loads from single or strip footings or other external impacts must be avoided. If such actions are to be expected, it may be necessary to take special measures.



2. Technical data

2.1 Dimensioned drawing



NS	LW (mm)	Sludge trap (l)	Qmax. (l/s)	DN	L (mm)	B (mm)	D min	D max	h2 (mm)	h1 (mm)	Oil storage (l)	Excess depth (mm)	Weight (kg)	Art. no.	Separator capacity (l)
1.5	400	17	1.5	100	582	520	231	324	389	342	17.6	50	12	99601.002B	43
1.5	800	130	1.5	100	1091	1012	518	942	508	461	70.5	50	74	99601.016B/D	230
1.5	1000	360	1.5	100	1425	1300	570	995	630	583	110	70	110	99601.041B/D	580

3. Packaging, transport and storage

Note and follow the chapter „Safety instructions"!

3.1 Transport

The tanks must be transported in such a way that they are not subjected to excess loading and a change in position during transport is prevented. Transport restraints must be used to prevent damage to the tanks (e.g. use of textile straps, hemp ropes). Use of wire ropes or chains is not permitted.

3.2 Storage

If it is necessary to store the tanks prior to installation, this may only be done temporarily and on level ground that has been cleared of any sharp-edged objects. In case of outdoor storage, the tanks must be protected against damage, exposure to storms and dirt.

4. Installation and assembly

During temporary storage of the separator and until completion of the installation work, suitable safeguarding measures must be taken on the building site to prevent accidents and damage to the separator.

Note and follow the chapter „Safety Instructions"!

4.1 Installation requirements

The ground conditions must be surveyed with regard to their structural suitability (Soil classification for civil engineering purposes DIN 18196). The maximum groundwater level must be determined. The groundwater level must not rise above the level of the inlet. Adequate discharge (drainage) of seepage water is mandatory for soils impermeable to water.

The types of loads that occur, such as maximum traffic loads and installation depth, must be clarified. The stability of the tank is only ensured for its self weight, transport and for the described installation in accordance with the intended use (e.g. load class, road construction).. Additional loads from single or strip footings or other external impacts must be avoided. If such actions are to be expected, it may be necessary to take special measures.

A separator for underground installation outside the building should be installed as close to the drains as possible. If necessary, the inlet connection pipes to the separator must be laid with thermal insulation or heated. A frost-free installation depth (differs depending on region) is ensured by using vertically adjustable upper sections as well as a simple adaptation to the inlet and outlet pipe (sewage system). The covers for load classes A / B / D are unbolted and conform to EN 124.

4.2 Fill material

The separator may only be installed in non-cohesive to heavy-cohesive soil (Group G1 to G2 to ATV-DVWU - A127).

Subbase:	compactable broken gravel (97% Dpr) (max. grading range 0/16)
Tank bed:	Sand
Tank encasing:	compactable broken gravel (97% Dpr) (max. grading range 0/16)
Area outside the tank encasing:	Material of suitable quality
Top layer:	Humus or similar

4.3 Excavation pit

The ground must be horizontal and level, so that the system can be positioned properly and fully supported by the ground. In addition, the ground must ensure sufficient load bearing capacity. Compacted crushed rock (max. grading range 0/16, approx. 30 cm thick, compaction DD_{Pr}=97%) covered with 3 - 10 cm compacted sand is necessary as a subbase.. The clearance between excavation wall and tank must be at least 70 cm.. The slopes must comply with DIN 4124. The depth of the excavation pit must be dimensioned so that the soil coverage limits are not exceeded. MIN ≤ D ≤ MAX (see 2.1 Dimensioned drawing).

Installation in sloping ground

When installing the separator in an area with sloping ground, ensure that the lateral soil pressure of made ground is absorbed by an appropriately designed retaining wall.

Frost-free depth for use all year round

When installing the separator always note the locally determined frost-free depth. To ensure problem-free operation in winter, the inlet and outlet pipes must also be laid at frost-free installation depth.

4.4 Tests before installation

Immediately before placing the tank in the excavation pit, the technical expert of the installation contractor must check and certify the following:

- the sound condition of the tank wall;
- the proper condition of the excavation pit, especially with regard to the dimensions and clean layer designed with adequate structural properties;
- the quality of the backfill material.

4.5 Installation

Placement
The tank must be placed in the excavation pit using suitable equipment and positioned on the clean layer (see also chapter "Transport").

Please note:
Weather effects or cooling of the tank during the installation phase (due to filling with cold water) can cause dimensional deviations from the data given in the catalogue.n. Therefore, please check the height specifications in particular before installation.

Filling the tank
Fill the tank up to the outlet with water. If a leak test is required, fill higher accordingly and then discharge back down to the outlet level.

Backfilling the excavation pit
The tank encasing must be at least 50 cm wide. The individual layers of fill should not exceed 30 cm. They must be compacted using light compacting equipment (min. D_{pr}=97%). Damage to the tank wall and shifting of the tanks during and after installation must be prevented. For installation in areas driven over by trucks (cover load class D), a load distribution slab must be provided as the top layer. A respective formwork plan and reinforcement drawing can be provided by KESSEL.

Tank connection
Once the excavation pit has been backfilled and compacted up to the bottom of the inlet and outlet pipe connections, the inlet/-/outlet pipes must be laid at a frost-free depth and connected.

Insert the KESSEL telescopic upper section into the opening of the separator and move to the required position.. The clamping ring provided can now be used to fix the upper section in the required position (aligned with the ground surface level).. The fine adjustment to the final height is then effected using the adjusting screws. Ground slopes can be levelled out easily by the continuously height-adjustable and inclinable upper section. The upper section must then be sufficiently backfilled and compacted.
For larger installation depths, the specially designed KESSEL extension section must be used.

The maximum light liquid storage quantity of the separator with automatic closure device, based on a light liquid density of 0.85 g/cm3 and the excess depth of the stored quantity above the relevant level of the wastewater inlet are given in the following table:

NG	LW (mm)	Sludge trap (l)	Oil storage (l)	Excess depth (mm)
1.5	400	17	17.6	50
1.5	800	130	70.5	50
1.5	100	360	110	70

To prevent light liquid from escaping from the separator or upper section, they must be installed so that the clearance height from the bottom of the covers to the relevant wastewater inlet level corresponds to the potential excess depth of the stored quantity. The relevant level is

- the top of the lowest connected wastewater drain, if no surface water is discharged into the separator.
- the highest possible surface water level, if surface water is also discharged into the separator.

Compliance with the clearance height is a safe measure to prevent discharge of light liquid.

4.6 Installation levels for probes

Tank system		LW 800	LW 1000
917801	Height of layer thickness measuring device, measured from the inner basen (in mm)	**410**	**522**
917802	Height of backwater probe, measured from the inner base (in mm)	**826**	**990**

5. Commissioning

Note and follow the chapter „Safety Instructions"!

5.1 Getting the system ready for operation

Before wastewater containing mineral oil is fed into the separator,

➢ it must be cleaned completely (including inlets and outlets). Solids and coarse materials must be removed.

➢ The cleaned separator must be filled with cold water up to the bypass.. (This can be omitted if the tank has been tested for leaks beforehand and the water was not pumped out).

➢ Move floater to floating position.
To do this, lift the floater by hand or using a suitable tool until the water level has reached the outlet edge.
Then check the floating position and movability of the floater.

5.2 Briefing / handover

The commissioning and briefing are usually carried out by an installation contractor, but they can also be carried out by a KESSEL representative on request and for an extra charge.

1. The following persons should be present at the handover:

➢ Person authorised to perform the acceptance on behalf of the building owner

➢ Specialist company

In addition, we recommend the participation of

➢ Operating staff

➢ Disposal company

2. Preparation of briefing and handover:

➢ Sanitary installations must have been completed.

➢ System filled with water ready for operation.

3. Briefing:

➢ Check the system for tightness, transport and installation damage and test the pipe connections.

➢ Information about disposal (extraction).

➢ Practical demonstration of the operating possibilities.

4. Handover of the installation and operating instructions.

5. Filling out the commissioning record.

➢ Once the briefing has been completed, the system must again be made ready for operation.

➢ The commissioning record is provided by your service partner.

6. Disposal

Emptying intervals:

The light liquid retained in the separator must be removed at the latest, when the quantity of separated light liquid has reached 80% of the maximum storage capacity.

The sludge in the sludge trap must be removed and disposed of at the latest, when the separated sludge quantity has reached half the sludge trap volume.

Attention: Correct functioning is only ensured if the separator is emptied in good time.

For this reason, a disposal contract should be concluded with a specialist company. If possible, emptying / disposal work should be carried out outside business hours.

		Sludge (50% fill capacity)		Light liquid (80 % fill capacity)	
Art. no.	Tank system	measured layer thickness	Disposal volume	measured layer thickness	Disposal volume
99601.002	LW 400	65 mm	8.5 l	95 mm	12 l
99601.016	LW 800	125 mm	65 l	95 mm	48 l
99601.041	LW 1000	180 mm	180 l	95 mm	75 l

7. Maintenance

1. In-house checks
➢ Technical experts
➢ Measurement of the layer thickness of:
- Light liquid
- Sludge
➢ Check the automatic closure device and the probes
➢ monthly (at least half-yearly)

2. Maintenance
➢ Technical experts
➢ Measurement of the layer thickness of:
- Light liquid
- Sludge
➢ Check the automatic closure device and the probes
➢ Emptying and cleaning, if necessary, cleaning of the sampling chamber
➢ Check the log book
➢ Half-yearly (at least yearly)

3. General inspection
➢ Qualified body - technical specialists
➢ Complete emptying and cleaning
➢ Testing/inspecting for proper condition and proper operation, but at least:
- Safety against the escape of light liquids from the separator or chamber sections (clearance height).
- Structural condition and tightness of the separator.
- Condition of the installed parts and electrical equipment.
- Taring of the automatic closure device.
- Completeness and plausibility of records in the log book.
- Disposal verifications for the removed substances.
- Required approvals and documents.

If the separator is used to treat commercial wastewater or wastewater from the cleaning of vehicles, the following additional points must be checked:
- Actual quantity of wastewater produced (origin, quantity, constituents, cleaning agents, supplies, prevent stable emulsions).
- Design, suitability and performance of the separator.

➢ Before commissioning, then every 5 years.

PLEASE NOTE:
➢ Operating instructions are to be displayed near the separator.
➢ The emptying/disposal process must be carried out exactly according to the instructions.
➢ Only allow approved disposal companies to empty the separator and dispose of its contents.

➢ Comply with accident prevention regulations!
➢ When working on the open separator SMOKING IS PROHIBITED due to the formation of an explosive gas-air mixture.

Technical experts:
Technical experts are employees of the owner/operating company or assigned third parties, whose training, knowledge and practical experience ensure that they can properly carry out self-checking and maintenance work on separators.

Technical specialists:
Technical specialists are the employees of independent companies, experts or other institutions, who verifiably have the technical knowledge required for the operation, maintenance and checking of separators to the scope named here and also have the technical equipment required to test separators.

Mat. Des.

Mat. no./Order no./Prod. Date

Rev.hrs./Material/Weight

Standard/Approval

Dimensions

Volume

Density

Designation 1

Designation 2

The system was checked for completeness and for leaks before it left the factory.

Date

Name of the tester

NOTES