KESSEL Grease separator for self disposal of waste “SE” M NS 2, NS 4, NS 7 and NS 10, with manual waste disposal device

KESSEL Grease separator for self disposal of waste

Art. # 99202.00/M1
Art. # 99204.00/M1
Art. # 99207.00/M1
Art. # 99210.00/M1

Product Advantages

- Compact / Light
- Separate disposal of fat and sludge
- Smooth wax-like surface hinders the building up to coagulated oils and fat

The installation and service of this unit should be carried out by a licensed professional servicer
EU-KONFORMITÄTserklärung
EC declaration of conformity/ Déclaration CE de conformité

KESSEL AG
Bahnhofstraße 31
D-85101 Lenting

Hiermit erklären wir, / Herewith we declare, / Par la présente, nous déclarons,

dass gemäß Bauproduktrichtlinie 89/106/EWG, das Bauprodukt/ that in accordance with Directive 89/106/EWG, the construction product/ qui selon les directives de construction 89/106/EWG, le produit

KESSEL- Fettabscheider “SE” M
KESSEL “SE” M Grease Separator
Séparateur à graisses KESSEL “SE” M

den Bestimmungen der EN 1825-1:2004 entspricht und die Vorraussetzungen für die CE-Kennzeichnung gemäß Anhang ZA der Norm erfüllt./
meets EN 1825-1:2004 requirements and fulfills the pre-requisites for the CE Mark attachment ZA./
est conforme à la norme EN 1825-1:2004 et présente les directives pour marquage CE selon complément ZA de la norme.

Zur Kennzeichnung der Übereinstimmung der Produkte ist auf dem Typenschild das Zeichen der Richtlinie 93/68/EWG angebracht./ The 93/68/EEC code mark should be located on the ID plate on the product./ Le marquage et l'identification du produit figurant sur la plaquette d'identification selon les directives 93/68/ EWG.

Lenting, den 16.11.2009

A. Kessel
Vorstand
Managing Board
Conseil d'administration

E. Thiemt
Vorstand
Managing Board
Conseil d'administration

Prüfstelle/ Accredited Laboratory/ Bureau de vérification:
LGA QualiTest GmbH, TÜV Rheinland Group, Dreikronenstraße 31, D-97082 Würzburg
Dear customer,

Before starting your „SE“ KESSEL fat separator, please read through these installation and operating instructions carefully and follow the safety instructions on Page 18.

The disposal of animal and vegetable oils and fats in public waste disposal plants or by feeding them into water systems is not allowed as they reduce the diameter of the drain pipes and cause blockages when cold. Furthermore, after a short time, fatty acids are produced which cause bad odours and attack dewatering systems and the pipework of drains.

The hardened layer of fat on the surface of the water limits the oxygen supply to the water and clarification plants. DIN 1986 Part 1 requires that harmful substances are retained. For this reason, fat separators in accordance with DIN 4040 must be provided and the fat disposed of appropriately.
1. Safety instructions

Follow the accident prevention regulations

An electrical heating cable is located in the heating cover.

It is FORBIDDEN to damage the heating cover by drilling, sawing, grinding it or subjecting it to any other process which takes away metal or by driving screws into it.

Isolate the control box from the power supply before carrying out maintenance work.

Even when the mains switch has to be switched off, components on the plant will still be live (see Page 10).

The motor protection relay on the rinsing motor and the internal temperature controller of the mixing motor automatically reconnect the motors to the power supply after cooling down. This means that the motors restart without any warning.

The fat/water mixture in the plant may become very hot. Please use appropriate care during all work on the plant.

During disposal, cleaning or maintenance, fat or water may spill on the floor of the operating area.

STEPPING ONTO THE PLANT
No part of the plant must be stepped onto.
The plant is not to be climbed on as a means of reaching other installations.
Use separate ladders etc. for this purpose.

Because of the possible formation of biogasses, SMOKING IS FORBIDDEN while the separator is open or the collection barrels are being exchanged.

VENTILATION
Only operate the heater in the heating cover (filled with water or fat) when ventilated.
The low heat conductance of a pocket of air can lead to OVERHEATING.

OPERATING AREA
- No access to UNAUTHORISED PERSONS
- No storing of foods (for reasons of hygiene)
- The operating area must be selected so that there is sufficient access around and above the separator plant for disposal, cleaning and maintenance work.

CARE

When leaving the plant, always check the following:
- The discharge valves must be shut
- The rinsing-line valve must be open.
- The cover to the sludge trap must be tightly closed
- The barrel lids and the filler heads must be screwed on tight.

Familiarise all service personnel with these safety instructions.
Method/Process
The special feature of the Type „SE“ fat separator for self disposal of waste is its method of disposal. While conventional separators must be emptied completely and shut down while this work is carried out, in the case of the „SE“, only the material which has been separated out and needs to be disposed of which is drained off via discharge pipes into exchangeable barrels. The fat separator can be emptied any time without having to interrupt the process. The separated material exists in smaller quantities and is in a significantly fresher state. Barrels which have been filled are replaced with empty ones. Displaced air from the separation system is fed back into the separator. If the fat solidifies, it can be returned to a liquid state via the separator’s heated cover. When the fat melts, a self cleaning process starts as occluded water and particles can settle out. Sediments which settle out in the separator tanks are pumped back to the sludge trap via a circulation system.

Flow chart

- Feed
- Sludge collection barrel
- Fat collection barrel
- Discharge

- Re-utilisation
- Collection and disposal of waste material by delivery van

Sludge collection barrel
Fat collection barrel
DIN 4040
The KESSEL fat separators for the self disposal of waste „SE“ are designed in accordance with DIN 4040. The sludge trap and fat separator are housed in different tanks. The volumes, size of calming zones and shape of the installed units to some extent exceed the specifications laid down in the standard.

Without external energy requirements means that „SE“ fat separator plants operate without requiring an energy supply during fat separation. This is the case for conventional fat separators.

Reduced drinking water consumption and lower energy costs and waste water tax, resulting from improved water quality and possible re-utilisation of fresh fats, are the economical and ecological objectives. In accordance with the effluent disposal regulations, the operator can put a higher priority on re-utilisation than disposal.

No bad odours
In the fat separator, the light substances, such as fats, oils and floating sludge, accumulate on the surface and can be removed via the fat discharge pipe. The heavier material settles out on the floor of the sludge trap and is fed into the collection and transport barrels. Disposal of the material in closed barrels is achieved with almost no smell. When changing the barrels, there may be no temporary release of bad odours.

Materials
Series „SE“ KESSEL fat separator plants consist of a separate sludge trap and fat separator. The tanks, their integrated units and pipework are all made from PE-HD. The smooth, wax-like surface of polyethylene hinders the build-up of deposits and precipitates and is therefore easy to clean.

The plants are fitted with odour-proof covers made from Duroplast 2K. The fittings and units are resistant to effluent attack and designed for use in damp areas.
3.1 Installation instructions
The fat separation plant is supplied complete in pre-assembled units. Under normal circumstances, the equipment is set up by a pipe fitter or can, if you wish, be installed by a KESSEL technician for which you will be charged.

When installing the plant, the following must be observed
1. The safety instructions on Page 18 must be followed.
2. The instructions on the packaging must be taken into account.
3. The fat separation plant must be checked for transport damage immediately on arrival.
4. The technical data relating to your plant will be found on the serial plate on one of the tanks and the electrical data will be found on the serial plate attached to the control box. All data are recorded in these instructions as well the plant pass.
5. Bad odours will be released if the plant or barrels are not handled properly or maintenance work is not carried out in the proper manner. For this reason, we recommend installing the fat separator in a separate room with suitable ventilation (such as a fan). It is also advisable to install the fat separator in a tiled room with at least one drain and a hot water supply in order to ease maintenance and cleaning work. The height of the room must be sufficient for work to be carried out at the maintenance ports (minimum 30 cm from the ceiling). The width of the room should allow for a working space of about 1 m on each side.
6. In the case of rooms with restricted access, the tanks can be dismantled and reassembled. (* See exploded diagram on Page 9).
7. Maintenance of the maximum allowable floor loading must be checked by the client (* see weight table).
8. The plant must be installed on a level surface in a frost-free area. The maximum tolerance is 1 cm/m from the horizontal.
9. The service side is pre-assembled at the factory in accordance with the order. This can be altered on site. (* See assembly instructions).
10. Assemble the plant components using the connection elements supplied with the equipment. (Screw the tanks together using a maximum torque of 7 Nm).

11. The feed and discharge pipework must be connected by the client. Do this in accordance with the standards DIN 1986 and DIN 4040.

12. The fall pipes on the feed side should be preceded by an approximately 1 m long calming stretch with a minimum fall of 1:50. The transition from the fall pipe to the calming stretch must be constructed from two 45° bends. This reduces

► the risk of the siphon and siphon trap sucking empty
► the amount of air admitted to the system, air movements and build-up of bad odours
► the formation of foam in the separator.

If the separator plant is installed below the local back-up level, an effluent lifting unit must be fitted in accordance with DIN 1986 and DIN 4040*), providing local regulations do not require otherwise. Lifting units must also be provided with their own ventilation pipe.

Essential work to be carried out by the client for effective and odour-free fat separation

► Fat separator plants and their feed and discharge pipes must be provided with sufficient ventilation in accordance with DIN 4040 T2. Consequently, as a ventilation pipe, the feed must be taken above the roof. All pipes connected to the plant more than 5 m long must be ventilated separately. If the feed pipe is longer than 10 m and no separately ventilated pipe is connected to it, then it must be provided with an additional ventilation pipe near to the separator.

► In order to avoid the build up of bad odours, the feed and discharge pipes connections must be firmly connected and all seals must be fitted carefully.

► The discharge sites*) connected to the feed of the „SE“ must be fitted with siphon traps and floor discharge pipework must be provided with sludge pots in addition (DIN 4040 T2). Large items such as cutlery, mustard bags and bones etc will cause the separator, pumps and fans to malfunction.

*) also available from KESSEL - see catalogue „Everything for dewatering”

3.2 Suggested Installation

![Diagram of KESSEL fat separator installation]

- **KESSEL fat separator „SE“ M NS 2**
- **Sludge trap**
- **Sludge collection barrel**
- **Fat collection barrel**
- **Sampling device**
- **KESSEL „Universal“ cellar drain with back-up trap**
- **KESSEL Aqualift Duo lifting unit**

![Product Accessory Legend]
3. Installation

The plant which is pre-assembled into modules is set up according to the following steps (see also exploded diagram on Page 9).

1. Lower frame
   ► The frame unit (1) is supplied pre-assembled. Position and align using a spirit level. Maximum allowable fall for the floor is 1:100. Larger falls must be compensated for by the client.
   The lower frame must be bolted to the floor.
   ► The pump and parts of the pipework and valves are already fitted at the factory.
   ► Be careful of the seals and make sure that they are correctly seated.

2. Sludge trap
   ► When dismantling, be careful of the seals. These should be lightly greased if necessary during assembly. The seals should be checked to make sure that they are correctly seated.
   ► Set up sludge trap (2). Make sure that the connections are correctly positioned.
   ► Install the hose for the rinsing pipe (3a) and connect it to the back of the sludge trap, top, and the pump.
   ► The sludge discharge valve (4a) is already fitted. The direction of the valve can be altered. (See „Adjusting service side“ Section 4)
   ► The sludge trap tank must be screwed to the lower frame.

3. Fat separator
   ► Push the fat separator (5) on to the sludge trap and connect the top pipe with the tensioning nut.
   ► Screw the rinsing-pipe stub (3b) to the valve rinsing pipe (1c) and align the tank.
   ► The heating cover must be handled carefully and must not be dropped.
   ► The heating cover (5c) is assembled at the factory. When dismantling, be careful of the seals. These should be lightly greased if necessary during assembly. The seals should be checked to make sure that they are correctly seated.
   ► Attach the compensation tank (7) with discharge and ventilation pipe (8) to the fat separator and position the discharge pipe of the compensation tank in the desired direction.

4. Installing the service side
The units are fitted to the service side at the factory but may be altered at the site of installation. In order to do this
   ► Rotate the flange cover (4b; 6c). Make sure that the seal is correctly seated and grease if necessary.
   ► Exchange the rinsing-pipe connector (3c) with that of the sludge-collection barrel ventilator pipe (11d).
   ► Mount the control box and cables on the adjacent side and connect the cable tails.

5. Control box and cables
   ► Screw the control box (9a) to the service side on the frame and fasten the cables using retainer clips.
   ► Connect the pump cable (9b) and the cables for the heating cover (9c) and the mixer motor (9d).

6. Collection barrels
   ► Install collection barrels for fat (10a) and sludge (11a).
   ► Connect filling hoses (10b and 11b) to the sludge discharge valve (4a) and fat discharge valve (5a).
   ► Connect ventilation hoses (10c and 11c) to the front stub at the top of the sludge trap and to the ventilation pipe.
   ► Provide exchange barrels.

7. Connection
Connect the „SE“ KESSEL fat separator to the client’s supply and discharge connections and the ventilation system.

8. Checking the plant
All pipe, hose and tank connections must be checked to make sure that they are complete and correctly seated. The valves must be set to their starting positions, i.e.
   ► Sludge and fat discharge valves (4a and 6a) CLOSED.
   ► Rinsing system valve (1c) OPEN.
3. Installation

SPÜLENMOTOR/CRSCHUTZHEIZ/CRREGLERMOTOR/CRSCHUTZ HEIZEN
MISCHEN
EINAUS

1a 1b 1c 3a 3b 4a 4b 3c 5a 2a 2b 2c 6a 9a 9b 9c 9d 2f 2e 2d 11a 11b 11c 11d
3. Installation

3.4 Control box „SE“

Power supply connection
400 V  50 Hz

Fused at 16 A slow blow and e.l.c.b. contamination switch

Warning:

Connection must only be made by a qualified electrician. Protective measures must be carried out in accordance with the VDE1 Regulations or the regulations of the electrical supply company responsible.

Before starting, set Relay F11 to \(I_{\text{nom}}\) [Nominal]. The setting at the factory is 0.8 A. Check the direction of rotation of the motor.

The temperature controller settings must not be altered. The setting at the factory is 50°C.

The control box must not be installed in an area where there is a risk of explosion.

Even when the main switch is switched off, some components on the plant will still be live:
- Main switch Q1
- Connection terminal X1
- Relay K11

and the cables connected between the above-mentioned components.

The motor protection relay of the rinsing motor and the internal temperature controller of the mixing motor automatically reconnect the motors to the power supply after cooling down. This means that the motors restart without any warning.
3.5 Settings on the control box

1. General information

The following operations on the plant are started and controlled from the control box:
- Rinsing
- Heating
- Mixing

These operations are started and stopped automatically in accordance with the program. If need be, they may also be controlled manually, i.e. by pressing the corresponding buttons on the control box. The two modes of operation do not interfere with each other.

2. Programming the functions

Warning
Before carrying out any work, disconnect the control box from the power supply.

In order to set the programs, the control box must be opened using the key supplied with the equipment.

The start times of the individual functions and the current date and time are set at the time switch K31. The duration of individual functions are adjusted at the corresponding relays (K21 / K22 / K23).

3. Operating the time switch (brief instructions)

In the following, the operation of the time switch will be briefly described. However, this does not replace the main operating instructions. For this reason, please read the operating instructions for the time switch which were supplied with the equipment. They have been placed in the control box.

The time switch actuator may be removed in order to program more easily. It is provided with a rechargeable battery which can maintain operation of the time switch for 160 hours after receiving sufficient charge (150 hours).

The following procedure must be adopted when programming the clock:

a) Press the Reset button (for approx. 3 seconds using a pencil or sharp object). This will erase the previous settings.

b) Adjusting the current date and time

Hold down the * button while carrying out the adjustment and the corresponding year (Year), month (Month), day (Day), hour (h+, h-), Minute (m+, m-) until all the desired settings appears on the display.

Example of a display:

*) Conversion from Summer to Winter time takes place automatically on the last Sundays in March and September. Other switchovers can be entered manually (see the operating instructions for the time switch).
3. Installation

c) Setting the start times and the individual functions:

- Channel 1 = Rinsing
- Channel 2 = Heating
- Channel 3 = Mixing

Setting the start times is carried out in the same way for all three functions (channels).

Use the following procedure to program the start times:

- Press Button R until —:— appears on the display.
- Activate the desired channel by pressing the I/O button of the corresponding channel. A bar (I) appears on the display to the left of the channel number selected.
- Press Buttons h+, h- or m+, m- in order to program the start time.

- Example of a display:

![Display Example]

- The CL button can be used to clear the program setting shown on the display.

- The display switches over to the date automatically after approx. 90 seconds or after pressing the button.

Warning

- The display must now show the symbol for each channel.

4. Operating the time relay

The duration of each function is set at the corresponding time relay (in the control box on the right next to the time switch).

The time relays are identified in the control box as follows:

- K21 = Rinsing
- K22 = Heating
- K23 = Mixing

Open the cover in order to set the time relays.

Example of a setting:

Duration of program step: 35 minutes

= 5 minutes x 7

Time unit to be set: 5 m

Multiplier to be set: 7

<table>
<thead>
<tr>
<th>Function</th>
<th>Channels (Time relay Clock K21)</th>
<th>Start time</th>
<th>Weekday</th>
<th>Time relay</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rinsing</td>
<td>1</td>
<td>7.00, 15.00, 21.00</td>
<td>Monday + Thursday</td>
<td>K 21</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Heating</td>
<td>2</td>
<td>7.00</td>
<td>Monday + Thursday</td>
<td>K 22</td>
<td>2 hours</td>
</tr>
<tr>
<td>Mixing</td>
<td>3</td>
<td>8.50</td>
<td>Monday + Thursday</td>
<td>K 23</td>
<td>10 minutes</td>
</tr>
</tbody>
</table>

Nearly every time period required can be set in this way. Frequently, several combinations of time periods and multipliers may be possible for the settings.

Important information

Heating must last at least 2 hours for optimum operation of the fat discharge and the mixer must run in parallel during the last few minutes of the heating. For this reason, when changing the heating times, the mixing times must be adjusted to match and vice versa.
4. Commissioning

4.1 Preparing for operation

(Comment: The numbers given in the following relate to the exploded diagram on Page 9)
The following steps must be carried out before supplying the plant with fat-containing waste water.

1. Cleaning
The plant must be thoroughly cleaned, including the feed and discharge pipes. Solid and coarse material must be removed.

2. Filling
Switch all valves to their starting position (i.e. closed, only the valve for the rinsing system (1c) is to be open). Next, once the plant has been cleaned, fill it with cold water to the plant overflow. This is usually achieved via the discharge points connected to the separator feed pipe.

3. Ventilation
The cover of the fat separator must be ventilated. This is achieved by opening the fat discharge valve (6a) while water is being fed to the plant until water in the filling hose (10b) of the fat collection barrel emerges. After this, water must also run out again at the plant discharge point. Shut off water.

4. Connection to the power supply
The control box must be connected to a 400 V three-phase a.c. power supply (fused at 16 A, slow blow). The connection must only be made by a qualified electrician.
Plug in the connections from control box to mixer, control box to pump, control box to heater cover and the nominal 4 between the control box and the immersion heaters.

The direction of rotation of the pump (1b) must be checked (see arrow on pump indication direction of rotation).

4.2 Induction and hand-over
Commissioning and hand-over is usually carried out by the pipe fitter but, if desired, this can be done by a KESSEL technician. In this case, you will be charged for this service.

1. Hand-over
The following people must be present at the hand-over:

▶ Person delegated by the client to receive the plant
▶ Plant operator
▶ Service staff
▶ Sanitary engineer

2. Prerequisites for induction
For the induction, it is necessary that the sanitation installation and Steps 1-4 from Section 4.1 have been carried out.

3. Induction
▶ Checking the plant for transport and installation damage and leaks. Checking the plants connections.
▶ Information on disposal of waste and maintenance
▶ Practical demonstration of the control functions
▶ Hand-over of the operating instructions
▶ Preparation of the Hand-over record.

After completing the induction, the fat separator must made ready for service again.

The waste water can now flow into the plant.

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### 3. Installation

Blank table for your own control box settings

<table>
<thead>
<tr>
<th>Function</th>
<th>Channel</th>
<th>Start time</th>
<th>Weekday</th>
<th>Time relay</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rinsing</td>
<td>1</td>
<td>K 21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating</td>
<td>2</td>
<td>K 22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixing</td>
<td>3</td>
<td>K 23</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PLEASE NOTE**
If more than 150 hours elapses between the time the equipment is programmed at the factory and the time the plant is started (period when the plant is not connected to the mains electricity supply), the settings may be lost, in which case, they will have to be reprogrammed.
5. Disposal of waste

The aim of re-utilising fats requires the most frequent waste disposal from the fat separator possible in order to keep the biochemical decomposition processes within certain boundaries.

The discharge of separated material must therefore be carried out not only according to quantity but also according to time - at least twice per week. The volume of the fat separator in the case of NS 2 is 80 litres and in the case of NS 4, it is 160 litres in accordance with the Standard. The collection barrel holds approx. 60 litres.

Failure-free and proper operation of the plant is only guaranteed if the waste from the plant is disposed of in time.

For the flow chart of the separation operation, see Section 2.

A brief set of instructions in which the most important functions are explained are attached to the control box on the plant.

5.1 Steps for disposal of waste

Please follow the safety instruction on Page 18.

Step 1: Rinsing (see also Page 16)

During the rinsing process, the sediments are transferred from the fat separator into the sludge trap and fat films and floating sludges are conveyed from the sludge trap into the fat separator.

Warning

The sludge trap must be filled to the overflow edge. The rinsing process must not be started immediately after sludge discharge otherwise, the fat-separation area will be pumped out.

Automatic rinsing

Automatic rinsing is triggered via a time switch which is set at the factory to activate rinsing three times per day. For this reason, leave the valve on the rinsing line (1c) open during normal operation of the fat separator. In order to check that the pump is operating properly, rinsing should be carried out briefly by hand once per month during waste disposal. Whether the pump is delivering or not can be established by the noise of liquid running into the sludge trap.

Manual rinsing

- The valve on the rinsing line (1c) must be open (initial position)
- Start the pump using the „ON“ button.
- Shut down the pump using the „OFF“ button

Step 2: Drawing off the fat (see also Page 16)

Disposal should take place at the end of the programmed heating times.

Setting at the factory: Monday and Thursday at 9.00 in each case

However, the heating time can be set individually and adapted to the operating conditions. (See Section 3.5: Settings on the control box)

At the end of the set heating time (set at 2 hours at the factory), slowly open the fat discharge valve (6a). Observe the flow of fat through the transparent filling hose (6b). Let out the fat and, if necessary, the floating sludge until the waste water is visible in the transparent hose (10b) or until the collection barrel (10a) is full (which can be recognised by the flow stopping in the hose). Close the fat discharge valve again.

If no liquid emerges, the heating time must be appropriately lengthened until the hardened fat liquefies. Depending on the starting temperature and quantity of fat, heating may be required for a duration of up to three hours. The green indicator lamp on the control box indicates the heater operating state. The integrated temperature probes control the heating until the heating period has elapsed. The heaters are switched on and off automatically.

If during discharge, the fat stream dries up without any water emerging, then

a) the waste water feed is not sufficient for driving out the fat or is absent. In this case, additional water must be fed to the fat separator via the connected discharge points.

b) hardened fat is still residing in the separator. The waste disposal interval must be appropriately shortened (disposal three times per week or more frequently).

Step 3: Drawing off the sludge (see also Page 17)

Slowly open the valve to the sludge trap (4a). Observe the flow of sludge through the transparent filler hose (11b). Close the sludge discharge again as soon as the proportion of sludge particles significantly decreases or the collection barrel is full. The volume of liquids discharged from the sludge trap to extract fat and sludge will be replaced by the next flow of contaminated water into the plant.
Step 4: Changing the barrels

Warning: close the valves

Set up an empty barrel next to the plant and open the screwed cap. After loosening the cap nut, remove the filling head from the full barrel (the excess liquid in the tube will run into the barrel). Set the filling head on the empty barrel and screw the cap nut tight.

Close the full barrel immediately using the cap from the empty barrel. Label the barrel to indicate its contents (e.g. using chalk „F“ for „fat“ and „S“ for sludge). We recommend that the barrel change is not carried out until a cooling and settling time has elapsed, preferably at the time of the next waste disposal. In most cases, a layer of hard fat or sedimentation water will then form on the surface inside the collecting barrels. This will mean that the small amount of bad odours released while changing over the filling head will be reduced even further.

Work swiftly and cleanly, at the same time, making sure that the filling head is firmly seated.

Note.

► If the medium is standing in the hoses, the barrels must be changed immediately so that no solid deposits form in the hoses.
► Store full and empty barrels away from frost.
► Send full barrels away as soon as possible. If they are left to stand for long periods, the contents may begin to ferment, depending on the room temperature. The pressure which develops as a result may cause the odours to escape.
► The effluent disposal company in your area will be available to take the waste away. We will be happy to assist you in locating a suitable effluent disposal service if you so require.
► When exchanging the barrels with the effluent disposal company, make sure that you receive identical barrels in exchange with genuine KESSEL closures.

Warning
At the end of the disposal work, satisfy yourself that
► all valves have been returned to their starting positions. I.e. all valves must be closed except the valve in the rinsing line (1c) which must be open.
► the heating is switched off.
► the pump is switched off.
► the filling heads are correctly and firmly seated on the barrels.

Barrel change

1. Exchange barrel with screwed cap used as a closure for transport
   1 Screwed cap

2. Exchange barrel with filling head for fat
   2 Ventilation stub
   3 Filling connection
   4 Filling head
   5 Cap nut

3. Exchange barrel fitted with filling head for sludge
   2 Ventilation stub
   3 Filling connection
   4 Filling head

4. Exchange barrel with filling head raised. The space released is sufficient for residual liquid from the hose to run into the top of the barrel.
5. Disposal of waste

5.2 Illustration of principle

Rinsing

The circulation system draws sludge from the separator (A) into the sludge trap (C) and fat films from the sludge trap into the separator.

Automatic rinse
Normal rinsing is carried out automatically via the time switch.

Checking the pump:
Pump (P) ON
Valve in rinsing line (D): OFF
(Starting position)

' Pay attention to the sound of liquid running into the sludge trap

Fat discharge

Fat and, if present, floating sludge emerge from the cover (B) in the collection barrel (F) until water appears:
Shut off fat discharge and change the barrel.

Automatic heating/ mixing
Normal heating and mixing takes place automatically via the time switch.

Fat discharge valve (E)
OPEN ' discharge operating
CLOSED ' no fat appears, the barrel is full or the valve is in its starting position.
5. Disposal of waste

**Drawing off the sludge**

Allow the sludge to run out from the sludge trap (C) into the collection barrel (S) until the proportion of sludge decreases.

If the flow stops in the hose, shut off the sludge discharge and change the barrel.

Sludge discharge valve (G)
OPEN ' discharge operating
CLOSED ' no fat appears, the barrel is full or the valve is in its starting position.

---

**Hints on avoiding the build up of bad odours**

When changing the barrels, work swiftly and cleanly.
Make sure that the barrel cap and filling connections are firmly seated.
Remove spilt fluids without delay
Depending on contents and room temperature, do not delay the disposal of full barrels for more than four weeks.

The fermentation processes cause a build-up of internal pressure which causes the release of bad odours.

If odours persist, follow the instructions in Section 7 „Faults and remedies“.
6. Faults and remedies

Follow the safety instructions before carrying out any work on the separator (see Page 4)
The following checks and remedies must be carried out by a licensed professional servicer. If necessary please contact the company that made the commissioning of this separator.

Fat separator

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible caus</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No or hardly any fat discharged</td>
<td>No heating or heating time too short</td>
<td>Switch heating on again.</td>
</tr>
<tr>
<td></td>
<td>Large quantity of fat stored</td>
<td></td>
</tr>
<tr>
<td>Surrounding temperature close to 0°C</td>
<td></td>
<td>Switch on heating for longer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If possible, raise the temperature of the room.</td>
</tr>
<tr>
<td>Gradual build-up of solid layer of fat</td>
<td></td>
<td>Heat at regular intervals, even in the case of cold flow oils.</td>
</tr>
<tr>
<td>Build-up of layer of floating sludge</td>
<td></td>
<td>Discharge floating sludge during each disposal.</td>
</tr>
<tr>
<td>Foreign matter in fat discharge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>valve</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Coarse material blocking the fat discharge valve | Pressure reduction in the heating cover (see Maintenance). Dismantle hose and valve and clean. Unblock the discharge nozzle with a spiral or something similar and dismantle if necessary. | - Avoid the entry of coarse material into the system (coarse material trap).  
- Clean the fat discharge valve. |
| Air in the heating cover                |                                      |                                                                        |
| Not ventilated during start-up          |                                      |                                                                        |
| Too little fluid in the sludge-trap tank |                                      | Ensure that the sludge-trap tank is filled to its upper edge.          |
# 6. Faults and remedies

## Sludge trap:

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No or hardly any sludge discharged</td>
<td>Sludge discharge line blocked</td>
<td>Connect the rinsing nozzle supplied with the equipment to the valve, connect to the rinsing line and rinse through.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discharge sludge more frequently.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Empty the sludge trap completely and clean it.</td>
</tr>
<tr>
<td></td>
<td>Sludge discharge valve blocked with coarse material</td>
<td>- Avoid the entry of coarse material into the system (coarse material trap).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Clean sludge discharge valve.</td>
</tr>
<tr>
<td>Layer of fat in the sludge trap</td>
<td>Very low waste-water flow, high fat loading</td>
<td>Apply the „Rinsing“ disposal step at more frequent intervals</td>
</tr>
</tbody>
</table>

## Pump:

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump is not delivering</td>
<td>Air in pump</td>
<td>Carry out the disposal step „Rinse“. Full delivery power will be reached after approx. 1 minute.</td>
</tr>
<tr>
<td></td>
<td>Pump blocked or pumping area blocked</td>
<td>Disconnect the control box from the power supply. Remove the protective cover from the cooling fan and turn the motor shaft. If the pump continues to be stuck, close the valve, disconnect the pump motor from the flange and clean the pump impeller and pump chamber. The contents of the rinsing line will run out during this process.</td>
</tr>
<tr>
<td></td>
<td>The pump shaft is rotating in the wrong direction</td>
<td>Warning: only allow this work to be carried out by a qualified electrician. Disconnect the control box from the power supply. Change round the electrical connections as appropriate.</td>
</tr>
<tr>
<td>The motor safety cut-out triggered</td>
<td>Pump is overloaded. The proportion of sludge is too high</td>
<td>Motor cut-out recovers after the motor cooling time has elapsed. The pump is then ready to operate. Warning: The pump will start by itself automatically.</td>
</tr>
</tbody>
</table>
### 6. Faults and remedies

Sustained development of bad odours:

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of bad odours</td>
<td>Waste water pipework</td>
<td>Check that the seals are firmly seated and service as necessary.</td>
</tr>
<tr>
<td></td>
<td>No ventilation line, cross-section too small</td>
<td>Client to remedy ventilation system.</td>
</tr>
<tr>
<td></td>
<td>Barrel cover, screwed cap, filler connection</td>
<td>Check that the seals are firmly seated and service as necessary.</td>
</tr>
<tr>
<td></td>
<td>Hoses</td>
<td>Check hose clips and retighten as necessary.</td>
</tr>
<tr>
<td></td>
<td>Full barrels stored for too long, contents fermenting</td>
<td>Send barrels away more often.</td>
</tr>
<tr>
<td></td>
<td>Lifting unit</td>
<td>Ventilation insufficient.</td>
</tr>
<tr>
<td></td>
<td>Closed area without any air exchange</td>
<td>Provide ventilation facilities, forced air ventilation.</td>
</tr>
</tbody>
</table>
1. The system must be checked for leaks at start-up and at regular intervals afterwards (e.g. every month or during disposal).

2. The transparent hoses must be cleaned at regular intervals. For this purpose, they can be removed and rinsed out with warm water.

3. The sludge trap and the overflow must be checked for the build-up of layers of fat (visual inspection through the cover of the sludge trap and the cleaning ports). If necessary, the running periods of the circulation system will have to be increased.

4. An inspection must be carried out once per year, as the need arises or more often. For this purpose, the plant must be completely emptied and cleaned out. The condition of the sludge trap and the separator must be checked from inside and outside. We recommend having this work done by a company specialising in this type of work. Our Customer Service Department can arrange contact with an appropriate company for you.

5. In regard to the implementation of the legal requirements and controls, we recommend that all operators document all work carried out on, and all events taking place at the separator in an operator's log book and that they keep all paperwork relating to disposal as evidence.

Notes:

- Fix the operating instructions in the vicinity of the separator.
- Follow the safety instructions.
- Follow the accident prevention regulations.
- Dispose of the collecting barrels using an approved effluent disposal company.
- An application form for a maintenance contract is available from the KESSEL Customer Service Department.
- Subject to technical alterations

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**Maintenance instructions for KESSEL „SE“ fat separator plants**

The person carrying out maintenance must be familiar with the operation of the plant.

A spare seal for the heating cover of the corresponding „SE“ plant should be taken to the site so that this can be changed if necessary.

When opening the fat separator, bad odours must be expected.

**Preparation**

1.) It must be ensured that no waste water runs into the fat separator during maintenance work (inform the operator).

2.) Dispose of fat and sludge in accordance with the operating instructions (abide by the heating times).

**Maintenance work on the Sludge trap**

1.) Open the cover to the sludge trap and remove all the water from inside (e.g. by having it pumped out by an effluent disposal company).

2.) Check the sludge discharge valve for obstructions, clean the inner discharge area and remove any possible blockages caused by larger objects.

3.) Wash down the inner walls of the sludge trap with warm clarified water, free them from any contamination and deposits and clean them.

4.) Check the feed to the sludge trap for obstructions and deposits and clean if necessary.

5.) Check the outlet of the rinsing line and clean if necessary.
Maintenance work on the fat-separator tank

1) Pump the water from the fat-separator tank to the sludge trap using the rinsing pump until the sludge trap is completely full.

2.) WARNING: Isolate the control box from the power supply before starting work.
   The electrical heating cover can now be removed. In order to do this, release the electrical plug connection(s), the transparent hose and the heating cover fasteners. Remove the heating cover.

3.) Have the residual water pumped out by, for example, an effluent-disposal company.

4.) Wash down the inside of the fat-separator tank and the heating cover with warm clarified water and clean them, carefully removing any deposits that may be there.

5.) Flush through the transparent hoses with warm water and clean them.

6.) Clean the pipe connections between the sludge trap and the fat separator tank, rinse and clean the discharge valves, rinse pump and special covers for the disposal barrels and check for obstructions.

7.) Check the heating cover seal for any possible damage and exchange if necessary. Clean and grease the surface of the seals and reinstall the heating cover.

8.) Reassemble the plant.

Maintenance work on the rinsing pump

WARNING: Isolate the control box from the power supply.
1.) Shut off the rinsing system valve, release the electrical plug connection and place a flat container underneath to catch the water from the rinsing line.

2.) Slacken the screwed fasteners in the feet of the motor and remove the impeller pump.

3.) Clean the impeller and free the pump from any blockages that may be there.

4.) Reassemble the pump, open the valve and check that the pump is operating properly (check flow).

Additional comments

If present, free the sample-extraction shaft from any deposits that may be there.

Carry out maintenance on the lifting unit in accordance with the manufacturer’s installation instructions.

Warning: The sample-extraction shaft and the lifting unit may be in a different area to the fat separator.

Re-commissioning

1.) Check the whole plant for leaks.

2.) Re-start the KESSEL „SE“ fat separator plant in accordance with Section 4.1
8. Accessories, plant extensions and spare parts

It is usually possible to fit accessories to the plant at a later date. The plant can also be extended or adaptations relating to the site of installation may be carried out. In regard to this, we request that you direct your enquiries to your wholesaler.

8.1 Sampling device
KESSEL supplies different sampling devices for installation in areas protected from frost and in the ground. All sampling devices are sealed against the escape of bad odours. Using these samplers, it is possible to extract waste-water samples from the whole cross-section of the stream. Analyses can therefore be carried out in accordance with, for example, DIN 38 409.

The sampler must be cleaned before extracting the sample.

The installation and design of sampling devices is not uniformly controlled. However, they are a basic requirement of DIN 1986 Part 1. Please follow the relevant local regulations.

8.2 Oil film measurement
In the case of plants used solely for the separation of vegetable oils, an electronic oil film monitor with an optical and acoustic alarm can be fitted to monitor oil-film growth. The length of the probe is 390 mm. The threaded connection is already provided for in the separator and the probe need only be screwed in and connected to the control box.

8.3 Lifting unit
KESSEL supplies different lifting units of different design and performance which may be connected before or after the fat separator.

8.4 Spare parts

<table>
<thead>
<tr>
<th>Name</th>
<th>Stock no.</th>
<th>Name</th>
<th>Stock no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 litre collection barrel (10a/ 11a)</td>
<td>915 780</td>
<td>Filler hose for sludge discharge (11b)</td>
<td>917 320</td>
</tr>
<tr>
<td>Special cover for collection barrel</td>
<td>917 608</td>
<td>Filler hose for fat discharge (10b)</td>
<td>917 325</td>
</tr>
<tr>
<td>Duroplast 2K cover (2a)</td>
<td>916 901</td>
<td>Cover seal (6d)</td>
<td>917 330</td>
</tr>
<tr>
<td>Tubular seal for cover (2d)</td>
<td>917 201</td>
<td>Tank seal for separator tank NS 2 and Sludge trap NS 2 and 4</td>
<td>840 113</td>
</tr>
<tr>
<td>Profiled retainer for cover (2f)</td>
<td>917 001</td>
<td>Tank seal for separator NS 4</td>
<td>860 113</td>
</tr>
<tr>
<td>Set of screwed fittings</td>
<td>917 310</td>
<td>Refer also to the exploded diagram on Page 9</td>
<td>20 300</td>
</tr>
</tbody>
</table>

Diagram shows Stock no. 20 300

Diagram shows Stock no. 915 650 / 915 862 / 915 863

Diagram shows Stock no. 28 641

Diagram shows Stock no. 915 650 / 915 862 / 915 863

Diagram shows Stock no. 20 300
9. Warranty

1. In the case that a KESSEL product is defective, KESSEL has the option of repairing or replacing the product. If the product remains defective after the second attempt to repair or replace the product or it is economically unfeasible to repair or replace the product, the customer has the right to cancel the order / contract or reduce payment accordingly. KESSEL must be notified immediately in writing of defects in a product. In the case that the defect is not visible or difficult to detect, KESSEL must be notified immediately in writing of the defect as soon as it is discovered. If the product is repaired or replaced, the newly repaired or replaced product shall receive a new warranty identical to that which the original (defective) product was granted. The term defective product refers only to the product or part needing repair or replacement and not necessarily to the entire product or unit. KESSEL products are warranted for a period of 24 month. This warranty period begins on the day the product is shipped form KESSEL to its customer. The warranty only applies to newly manufactured products. Additional information can be found in section 377 of the HGB. In addition to the standard warranty, KESSEL offers an additional 20 year warranty on the polymer bodies of class I / II fuel separators, grease separators, inspection chambers, wastewater treatment systems and rainwater storage tanks. This additional warranty applies to the watertightness, usability and structural soundness of the product. A requirement of this additional warranty is that the product is properly installed and operated in accordance with the valid installation and user's manual as well as the corresponding norms / regulations.

2. Wear and tear on a product will not be considered a defect. Problems with products resulting from improper installation, handling or maintenance will also be considered a defect.

**Note:** Only the manufacturer may open sealed components or screw connections. Otherwise, the warranty may become null and void.

01.06.2010

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### Important contacts / Info

<table>
<thead>
<tr>
<th>Separator Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>KESSEL Art. #</td>
<td></td>
</tr>
<tr>
<td>Production Date</td>
<td></td>
</tr>
<tr>
<td>Project description / Building services supervisor</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Telephone / Fax</td>
<td></td>
</tr>
<tr>
<td>Planner</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Telephone / Fax</td>
<td></td>
</tr>
<tr>
<td>Contracted plumbing company</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Telephone / Fax</td>
<td></td>
</tr>
<tr>
<td>System operator / owner</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Telephone / Fax</td>
<td></td>
</tr>
<tr>
<td>Other remarks</td>
<td></td>
</tr>
</tbody>
</table>

The system operator, and those responsible, were present during the commissioning of this system.

---

Place and Date
This unit has been checked for watertightness to be sure that it is fully operational before leaving the factory.

<table>
<thead>
<tr>
<th>Mat.-No./Order-No./Prod. Date</th>
<th>Ref. No./Material/Weight</th>
<th>EN Approval</th>
<th>Dimensions</th>
<th>Volume</th>
<th>Density</th>
<th>Description 1</th>
<th>Description 2</th>
</tr>
</thead>
</table>

**Separator characteristics**
- Backwater protection
- Lifting Stations and pumps
- Drains and shower channels
- Separators
  - Grease Separators
  - Oil-/Fuel-/Coalescence Separators
  - Starch Separators
  - Sediment Separators
- Septic Systems
- Inspection Chambers
- Rainwater Management Systems