



# BAUER

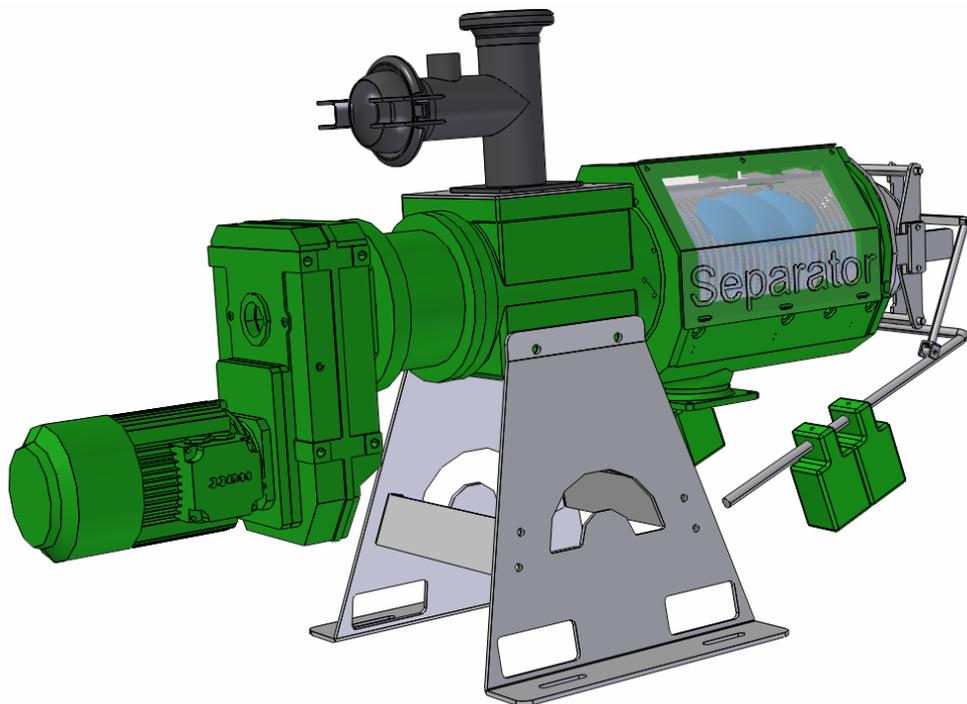
*FOR A GREEN WORLD*

## OPERATING INSTRUCTIONS

for

### SEPARATOR

S 655 and S 855



Version: Nov 2005

Separator  
E

## INTRODUCTION

### Thank you for buying a BAUER SEPARATOR!

We are happy to offer you a **BAUER Separator** with latest technology and top quality.

This manual describes operating and maintenance of the **BAUER Separator**. Yet for clarity reasons and in consideration of its numerous applications it is not able to treat each thinkable case of operation or maintenance.

So, if you need more information or if you are facing problems which are not mentioned in detail in this manual, please contact directly **BAUER, Kowaldstraße 2, A 8570 Voitsberg/Austria**.

Please note that the content of this manual neither constitutes part of nor alters in any way any previous or existing agreement, promise or legal relationship. **BAUER's** commitment is based solely on the respective purchase contract which also contains the complete and only valid warranty agreement. Said contractual warranty is neither extended nor limited by the content of this manual.

All information contained in the present manual is based on the latest product details available at the time of printing.

**BAUER** reserves the right to change without notice without assuming any liability!

The **BAUER Separator** is designed for highest performance safety and reliability provided it is operated in accordance with the present operating instructions.

Therefore you should study this manual thoroughly before starting your **BAUER Separator**!

Strictly observe all instructions concerning system handling, operation and service!

On this condition, the **BAUER Separator** will operate to your satisfaction for many years!

Non-observance of this manual may cause personal injury or damage the equipment.

This manual is to be considered an integral part of the **BAUER Separator**. Suppliers of separators are advised to put down in writing that they delivered the manual together with the machine.

Please make this manual available to your staff. State the type and serial number of your **BAUER Separator** in all inquiries, correspondence, warranty problems, or parts orders. You find these information on the inlet housing of the separator.

**We wish you a lot of success with your BAUER Separator !**

## PRODUCT DETAILS

Type description:: Separator

Type number: S 655; S 855;

Serial number:<sup>1</sup> \_\_\_\_\_

Dealer:: Name: \_\_\_\_\_

Address: \_\_\_\_\_

Tel./Fax: \_\_\_\_\_

Date of delivery: \_\_\_\_\_

Producer of the device: Röhren- und Pumpenwerk **BAUER** Ges.m.b.H.  
Kowaldstr. 2  
A - 8570 Voitsberg  
Tel.: +43 3142 200 - 0  
Fax: +43 3142 200 -320 /-340  
e-mail: [sales@bauer-at.com](mailto:sales@bauer-at.com)  
[www.bauer-at.com](http://www.bauer-at.com)

Owner or holder : Name: \_\_\_\_\_

Address: \_\_\_\_\_

Tel. / Fax: \_\_\_\_\_

Note: Please note the type- and the serial number of your Separator and of the accessories! Be sure to state these details every time you contact your dealer

<sup>1</sup> For every warranty claim and correspondence relating to the machine be sure to indicate the entire serial number (including all letters) of the machine and its required components. You can't underline enough this point.  
Operating Instructions for **BAUER Separator**

## General Safety Instructions

### Symbols and terms



The CE symbol that has to be affixed on the machine by the manufacturer outwardly demonstrates compliance of the machine with the directives for machines and other relevant EU directives.



#### WARNING!

This "Warning" symbol refers to important safety instructions in this manual. Whenever you see this symbol be aware of possible injury hazards. Read the note following the symbol very carefully and inform the other operators accordingly.



#### ATTENTION

Warning of electrical danger, e.g. working with live machines.

Live or moving parts in electrically driven machines can cause serious or fatal accidents. Only qualified personnel may carry out assembly, connection, commissioning, maintenance and repair work.

#### CAUTION

Non-observance of this instruction may cause damage to or destroy the machine or individual components.

#### NOTE

It is very important to observe this note or condition!

**Qualified operators** are persons who on account of their training, experience and instruction as well as their knowledge of relevant standards, rules, precautions to be taken for accident prevention, and prevailing operating conditions, have been authorized by the person in charge of plant safety to perform the respective tasks required, and in doing so are able to recognize and avoid potential hazards. Among other things, knowledge of first-aid procedures is also required.

### Product liability

As defined by the product liability law every farmer is also an entrepreneur!

According to §9 PHG (Product Liability Law), liability for damage to corporeal things caused by defective products is expressly excluded. This exclusion of liability also applies to parts not manufactured by BAUER itself but purchased from external suppliers.

### Duty to furnish information

Even if the customer passes on the machine later-on he is obliged to hand the operating manual on to the new receiver, too. The receiver of the machine must be instructed with reference to the mentioned regulations.

### Intended use

- The BAUER Separator is built exclusively for normal agricultural applications (intended use).
- Any use beyond this normal use is considered non-conforming. Manufacturer is not liable for damage resulting from such non-conforming use, the sole liability for damage from non-conforming use is with the user.
- Intended use also includes compliance with the manufacturer's operating, maintenance and service instructions.
- The BAUER Separator may be used and operated only by persons who are familiar with the device and aware of the hazards involved.
- All rules for accident prevention as well as any other generally valid specifications and regulations relating to safety, work medicine and traffic law must be strictly observed.
- Unauthorized modifications on the machine release the manufacturer from liability for damage resulting thereof.

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# 1. General instructions for safety and accident prevention

**Check the operational safety of the machine before every start-up.**

1. In addition to the instructions contained in this manual, all specifications generally valid for safety and accident prevention must be observed!
2. The warning and instruction signs affixed to the machine give very important instructions for safe operation. Observing them serves your own personal safety!
3. Never put the machine into operation unless all guards and safety devices are completely mounted and in their proper working position!
4. Acquaint yourself with all equipment components and controls as well as their respective functions before starting to work. It is too late when the device is already running!
5. The operator's clothes should fit tightly. Avoid wearing loose clothes!
6. When handling slurry always keep in mind that the gasses produced are highly toxic and extremely explosive in combination with oxygen. Therefore, open fires, light tests, sparking and smoking are strictly forbidden!
7. Utmost care is required with regard to gasses in slurry and dung channels at open valves to the preliminary pit, before the main pit, or at cross channels. The same applies to mixing and withdrawal points when mixers or pumps are running!
8. When handling slurry always ensure sufficient ventilation!
9. Keep the machine clean to avoid fire hazards!

## Maintenance

1. Never perform any maintenance, service or cleaning work or fault elimination steps unless the drive is turned off and the engine is standing still! Turn off the master switch and lock it.
2. Check proper fit of all nuts and bolts regularly and tighten them, if necessary.
3. If maintenance work is required on the lifted machine always secure it by means of appropriate supports!
4. When exchanging tools with cutting edges always use proper tools and wear safe protective gloves.
5. Dispose of oil, grease and filters according to local laws and regulations!
6. Always turn off power before working on the electric system!
7. Spare parts must meet manufacturer's minimum technical specifications! This is the case for instance with original spare parts for instance!

## 2 General

### 2.1 Handling of slurry

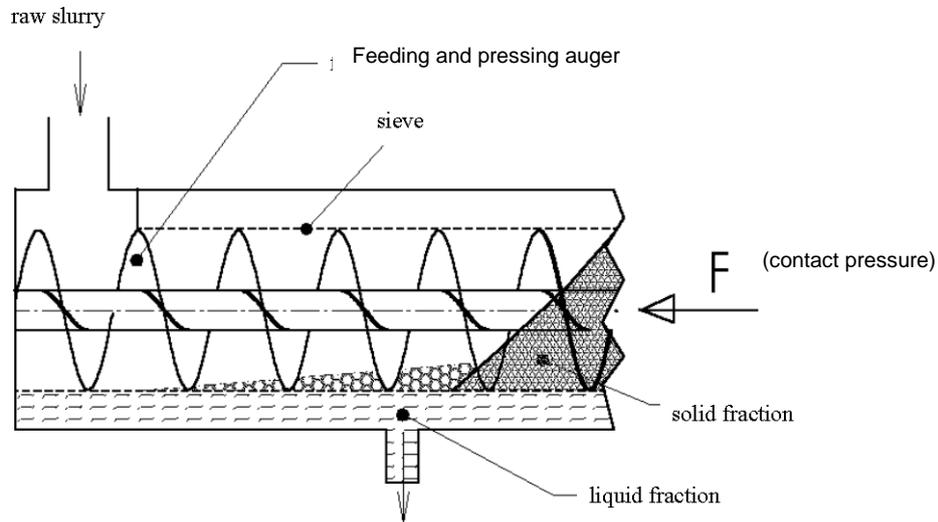
 <p><b>CAUTION!</b></p>	Apart from the dangers resulting from moving or pressurized parts the operation of slurry treating machines may be hazardous because of liquid manure gases. These gases (carbonic acid gas CO <sub>2</sub> , ammonia gas NH <sub>3</sub> , hydrogen sulfide H <sub>2</sub> S, methane CH <sub>4</sub> ) can cause intoxications and explosions. When operating mixers, agitators, intertank transfer systems, agitating lances and slurry aeration systems make sure to exclude the inflow of gases into the stable (provide siphons or gate valves). When handling slurry inside the stable take care of good forced ventilation.
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### 2.2 Proper Use

The BAUER separator splits pumpable slurry (which must be free of foreign objects like metal parts, stones, pieces of wood or cloth) into a solid and a liquid fraction. The BAUER separator is designed for continuous open air operating within a temperature range of 0°C to 40°C. In case of high air humidity (for example in coastal areas) or under extreme solar radiation special designs of gear and motor will be necessary. For further details please contact the manufacturer. When choosing the required delivery pump please observe that the separator is operating in unpressurized mode.

### 3 Functional description

The BAUER Separator splits pumpable mixtures of solids and liquids with relatively low solids contents such as slurry. As a compact unit it combines the functions of **two** separating devices: a screen and a press



In the inlet area inside the screen the mixture is drained by gravity. The internal auger transports the pre-drained material in horizontal direction to the solids discharge. On the last part of this way the auger continues to press out the liquid, which then leaves the separator through the screen by gravity. The necessary contact pressure from top and from bottom is applied by the lever weighted cover and the spring loaded shell respectively.

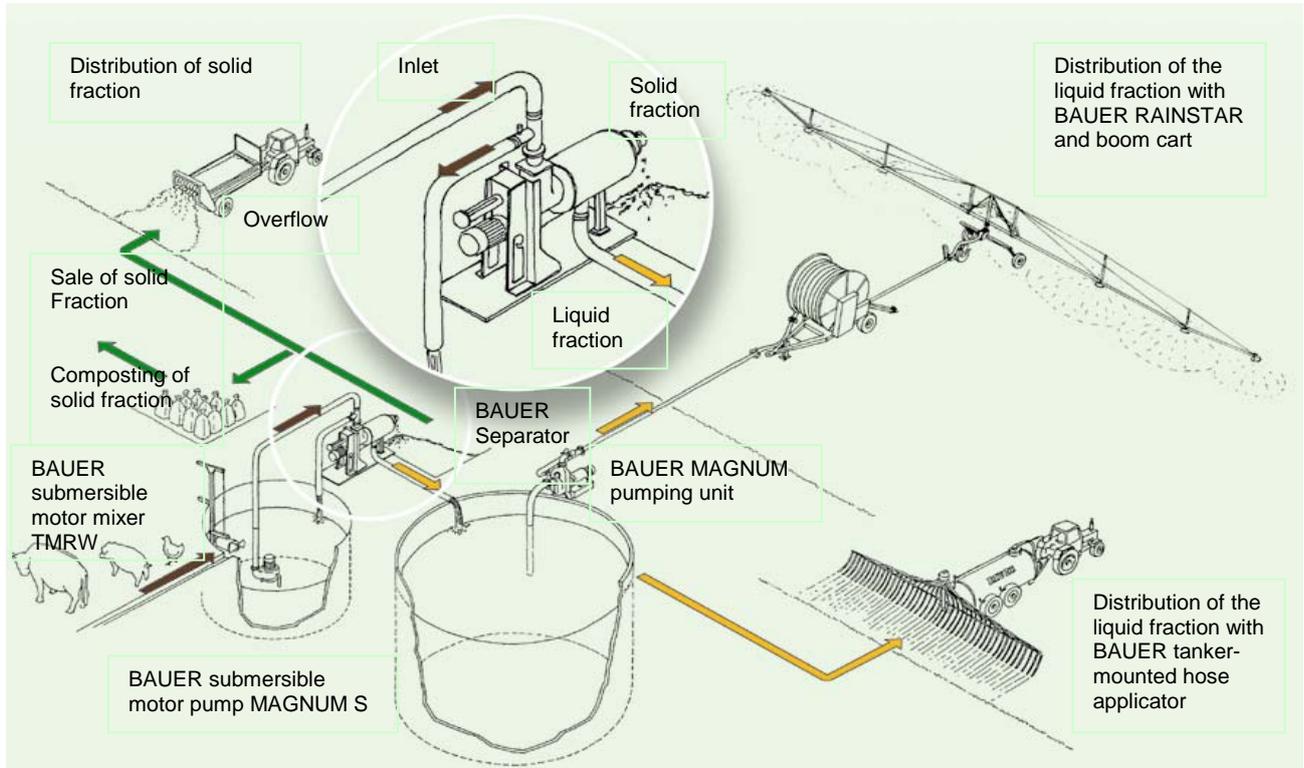
The separating effectiveness depends mainly on the kind of slurry. There are enormous differences in the drainability of slurries from dairy cattle, fatstock or from pig breeding. The user of the BAUER separator has got several possibilities for optimising the separating result:

- The throughput can be increased by mounting a screen of larger sized meshes.
- The residual moisture inside the separated solid matter is reduced when applying a higher contact pressure onto the discharge cone.
- The solids content of the separated liquid manure can be reduced by mounting a finer meshed screen
- The separation of solids improves by using finer meshed screens.

Please find more information on possible adjustments in chapter 6 "Putting into operation".

## 4 Separator installation

### 4.1 Installation scheme



### 4.2 Delivery scope

The BAUER separator is delivered completely assembled in working order, including the electric motor.

### 4.3 Required tools

For placing the separator a lifting tool is necessary (fork lift truck, tractor with front loader, crane, with the appropriate belts or chains. Installation and mounting and disassembling requires the standard tools of mechanics and electricians.

### 4.4 Installation and mounting



#### ATTENTION

The Separator has to be installed in a way that the solid matter can be ejected freely. There must be an appropriate height difference between the solids discharge and the ground. So the stack volume depends on the installation height.

Be sure also to provide a suitable tank where the liquid slurry leaving the separator can run into by gravity.



1. Mount the tee vertically onto the inlet flange (on top of the separator housing)
2. Connect the feeding line to the top ball of the tee (BAUER coupling HK 108). Hose connectors and bends are available as accessories.
3. The overflow line is connected to the side ball of the tee (HK108). The connecting dimension is HK 108.
4. Mount the ventilation pipe onto the overrun line of the tee. This prevents a vacuum being built up inside the separator in case the medium in the return line produces a vacuum. The height of the ventilation pipe should top the inlet and overflow lines by about 1 m.  
Connection: 1 ½" male thread.



5. The outlet for the separated slurry has got a flange. This flange can be connected either to a flanged fitting HK 108 or to a HK 133. Don't forget to introduce rubber sealing rings into the coupling balls. Connect the discharge line to this flanged fitting.

6. The electric motor is equipped with a terminal strip. The external motor control unit like all electric connections must be connected by a professional electrician. It is recommended to purchase the electric control unit for the separator and for the submersible pump from Bauer, because they comply already with the corresponding drive motors.

**CAUTION !**

The overflow line for the raw slurry as well as the discharge line for the separated slurry should have a free outlet into their corresponding tanks. The overflow line should not present a kind of „siphon“ in order to avoid a lifting effect and to guarantee the throughput of the separator (also see Chapter 7 “Malfunction - Remedy”).

**CAUTION !**

If the pump feeding the separator is no Bauer pump its capacity should in any case exceed 35 m<sup>3</sup>/h (50 m<sup>3</sup>/h for S 855) because otherwise the separator would not achieve its full performance. In order to keep pressure losses due to pipe friction as low as possible, the pipes should have a minimum diameter of 100 mm (4“).

## 4.5 ELECTRICAL CONNECTIONS

It is absolutely necessary to install a motor protecting switch or contractor with an over-current relay to prevent the motor winding from burning out. A safety fuse does not protect the motor against capacity overload but merely protects the power cables or switchgear from damage in the event of a short circuit. It is mandatory to protect the electric engine with a motor protecting switch that can be adjusted to the nominal current (as per type label) depending on the connection of the engine. See picture 1-4. It is allowed to use the motor protecting switches with authorization according to the following norms: IEC, UL, CSA.

- Set the motor protecting switch to the correct value. Never set it higher than the max. nominal current as per type label. See picture 1-4.

**Installing and operating the motor**

Standard motors are suitable for use at a max. ambient temperature of +40 °C (104 °F) and an altitude of up to 1000 m above sea level. When installing the motor, ensure that the intake is not obstructed and air can circulate freely. Do not remove the fan blade or cowl, or enclose the motor with a casing because in both cases there would not be enough air for cooling and the motor could overheat.

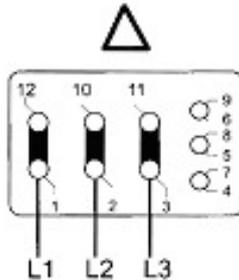
When using an original Bauer control please see chapter “accessory and circuit diagram of control.

**Condensate drain hole**

If motors are subject to great fluctuations in temperature or extreme climatic conditions, we recommend using a condensate drain hole.

**Connecting the E-motor to power supply voltage: 380 - 420V / 50Hz**

380 - 420V, 50Hz  
 380 - 480V, 60Hz  
 Dreieck Schaltung  
**Standard-Lieferung**  
*Delta connection  
 standard supply*



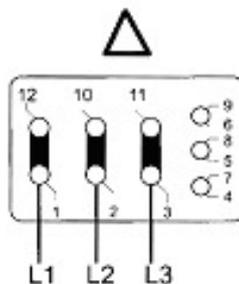
**picture. 1**

**Setting of the motor protecting switch:**

**13 A**

**Connecting the E-motor to power supply voltage: 380 - 480V / 60Hz**

380 - 420V, 50Hz  
 380 - 480V, 60Hz  
 Dreieck Schaltung  
**Standard-Lieferung**  
*Delta connection  
 standard supply*

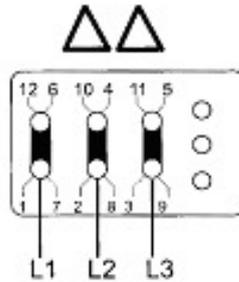


**picture. 2**

**Setting of the motor protecting switch: 11 .9 A**

**Connecting the E-motor to power supply voltage: 190 - 240V / 50Hz**

190 - 210V, 50Hz  
 190 - 240V, 60Hz  
 Dreieck/Dreieck Schaltung  
 Delta/delta connection

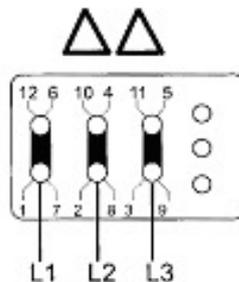


**picture. 3**

Setting of the motor protecting switch: 23,8 A

**Connecting the E-motor to power supply voltage: 190 - 210V / 50Hz**

190 - 210V, 50Hz  
 190 - 240V, 60Hz  
 Dreieck/Dreieck Schaltung  
 Delta/delta connection



**picture. 4**

Setting of the motor protecting switch: **26 A**



**WARNING!**

A motor circuit breaker or contactor with an overcurrent relay must be installed to prevent the motor winding from burning out. Fuses do not stop the motor overloading, but merely protect the power cables or switchgear from damage in the event of a short circuit.

## 5 PREPARATIONS FOR THE START-UP

Check oil level of gear box, fill up if necessary. Dispose of used oil properly. Find details in chapter 14 „Summary of structural components“, gear box.

Check connection and tightness of feeding line between pump and separator; connection and tightness of overflow line; free run-off into collecting tank; connection and tightness of line for run-off of separated slurry  
Set motor protection at required rated voltage; check correct direction of rotation following the arrow on the housing and on the motor; shut off the motor again.

**Take away the weights (minimum locking pressure)**

### ATTENTION !

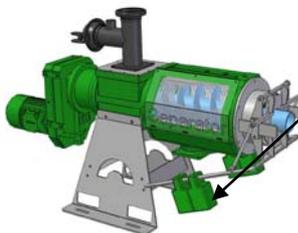
Make sure that no coarse foreign objects like metal parts, stones, pieces of wood or cloth can get into the separator for not overstraining especially screen and auger. Furthermore, be aware that abrasive substances (for instance high portion of sand) will shorten the lifetime of the machine.

## 6 START-UP

### ATTENTION !

**In order to achieve satisfactory separation results, it is necessary to mix the slurry before starting the separation procedure.**

### 6.1. Setting instructions



The steadiness of the plug and the solid matter consistency are set by changing the position of the weights on the two levers according to the requirements.

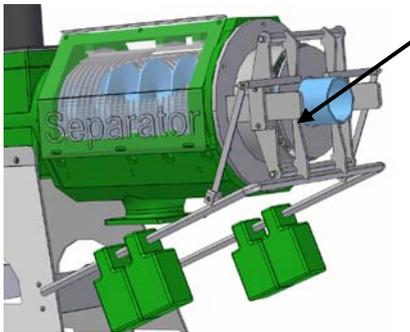


### ATTENTION !

It takes several minutes before changes of settings are to be realized. **So always take your time after a change and proceed only in small steps.**

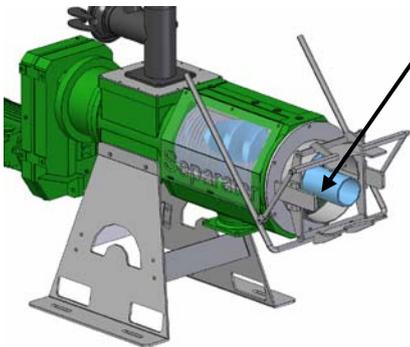
Before the first start-up or after a longer standstill period switch on the pump for a moment and flood the separator to avoid harmful dry-running.

### 6.1.1. Building up of the plug



If no plug is built up at the discharge side, make sure the discharge flaps fit closely to the mouthpiece.

After switching on the separator, start the pump for a moment for about 1 or 2 seconds – just long enough to fill up the feeding line and the separator. Then wait until no liquid manure runs out any more and repeat this procedure. After about five repetitions - depending on the slurry properties - a plug of solid matter will build up, pushing the cover away from the mouthpiece.



As an alternative you may make a plug by hand: take some fibrous material like hay, straw, silage etc. and stuff it firmly behind the flaps. For doing this you better unhinge first the weighted levers to get easier access to the flaps.

Then start the pump without further interruption.

Depending on the solid matter content in the untreated slurry, the plug may already have the right consistency with the first setting of the weighted levers or it may be too wet or too dry.

Before switching the pump to continuous operation after building up the plug and performing an output of **about 20cm of solid matter**, you may have to correct the basic settings because otherwise the plug may shoot, if it is too wet, or it may stop up the separator, if it is too dry.

As a general rule for getting a steady plug consistency observe the following: the plug is too wet if the solid matter is pasty, does not crumble, and is sliding instead of rolling down a 45° slope.

When squeezed (normal hand clasp) it is clearly draining.

It is too dry, if the solid matter crumbles into very small pieces, does not break about 30 mm behind the discharge from the mouthpiece, and when squeezed (very firm hand clasp) the plug does not show any traces of liquid matter.

The specifications give only a rough classification and are very much dependent on the pumped slurry. The actual limits must be determined in practical operation in each case. These specifications serve only as a guideline for building up a steady plug but they do not suit for determining the dry matter content of the solid fraction.

## 6.1.2. Settings for stabilizing the plug

### Plug is too dry

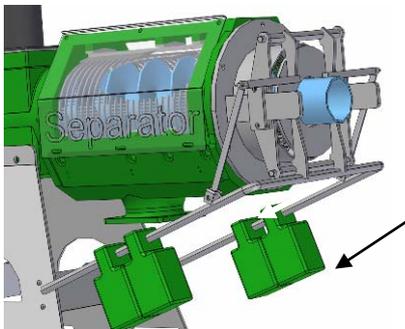
- Push back the weights of the levers or even remove them completely

If the plug is too dry, it may stop up the separator because it cannot be pushed any more out of the mouthpiece!

For an easier discharge of the plug from the mouthpiece push the weights forwards symmetrically. In case the plug is so dry that the motor protection gets actuated, it is possible to remove the weight arms completely, so that the solid matter is only charged by the own weight of the cover.

### Plug is too wet

If the plug is too wet, it may shoot, which means that the plug is going to melt and untreated slurry is escaping.



To stabilize the plug move the weights backwards symmetrically.

Depending on the slurry the above mentioned settings must be repeated several times at the start-up of the separator, until stable conditions have been found out, in order to optimize the separator performance.

## 6.2 Further instructions for trouble-free operation:

Take care that the overflow line does not form a kind of siphon.

Otherwise, due to the unfavourable flow conditions not enough solid matter could enter the separator, which would reduce the throughput on the one hand, while on the other hand it would disturb the self-cleaning mechanism of the screen by the solids.

Therefore make sure the overflow is well ventilated!

If the feeding pump capacity is too high this will also affect the intake by the separator.

The intake must be reduced until the run-off pipe of the overflow is not completely filled.  
As a guiding value the run-off pipe of the overflow should be filled by about  $\frac{1}{2}$  to  $\frac{1}{3}$  of its cross section!

The outlet of the overflow pipe must not be below the surface of the slurry pit; this would also create a kind of siphon and trouble the normal intake by the separator.

The overflow pipe must not present any bottlenecks and it has to be stable in shape. Otherwise it risks to stop up or to collapse which both would increase the pressure inside the separator too much and eject the plug.

Make sure, that the slurry is **mixed thoroughly before separation** – in order to avoid shooting and stopping up of the plug. **But note:** do not mix or pump the slurry too often (particularly when the collecting pits are of smaller size). This would change the consistency of the slurry and make it greasy. As a remedy it is advisable to install a buffer tank at the separator inlet which is filled by means of a level control.

## 7 MALFUNCTION – remedy

Malfunction	Cause	Remedy
Separator stops	Overload	Check motor protection for proper setting, if necessary adjust it to maximum value
	Plug too dry	See setting instructions – 6.1
Low output of solid and liquid fraction	Foreign object blocks up the auger	Check Separator inlet, remove foreign object; check auger and screen.
	Intake too low	Check the pump (direction of rotation) Check feeding line
	Lifting effect inside overflow line, slurry is sucked out of the Separator.	Mount vent valve/pipe onto tee of separator Reduce intake so that overflow pipe is only half filled at max. Make sure the overflow can run out freely.
	Screen clogged	Clean the screen through side shields or if necessary disassemble for cleaning. Activate reverse control – See 16.1
	Auger or screen worn out	Check auger diameter, replace the auger if necessary, check screen wear and replace it, if required.
	Screen is worn out only in places, wrong setting of screen guiding	Check obstruction or soiling of screen guiding
	Slurry mixed or pumped too often (squelched)	Install buffer tank at the separator inlet see: 6.2
	Solid output too low, plug is too dry	Weights too near to the front.
No solid output, minimum liquid discharge	Wrong direction of rotation of separator	Check electrical connections
	Auger channel plugged	Check and clean the auger See Disassembly – 10.1.
Increased auger and screen wear	Abrasive components in the slurry (sand)	Let abrasive components settle as far as possible before separation.
Moisture content of the discharged solid matter varies considerably	Different consistency of raw slurry	Mix and homogenize slurry thoroughly.
Plug is melting and liquid runs out of the mouthpiece	Solid matter content in raw slurry is too low. Weights pushed back too far.	Mix and homogenize the medium (slurry) properly See setting instructions 6.1.
	Solid matter is too fine and has got no fibrous structure	Use a finer screen

## 8 PUTTING OUT OF OPERATION

1. Switch off the feeding pump of the separator
2. Leave the separator on for approx. 1-2 min. until no solids or separated slurry comes out; then switch off the separator.  
Depending on the kind of treated slurry, the separator may be out of operation for a week or even longer without that the plug will have to be removed.
3. For longer standstills remove the plug and clean the separator. Withdraw the cover and clear away the plug by hand.
4. If the separator is going to be used at temperatures below zero, be sure to drain completely all inlet and return pipes as well as the separator itself after finishing the separation in order to avoid slurry freezing inside the machine. If the plug has firmly frozen in the separator melt it with hot water before putting the separator into operation again.

## 9 MAINTENANCE OF SCREEN AND SCREEN GUIDING RAILS

In principle the screen and the screen guiding rails need inspection every 1-3 month, depending on the medium of separation. For this you need to take out the screen, clean it with a high pressure cleaner and check it for damages and signs of wear out. Make sure that the plastic profile of the screen guiding rails have a uniform contact pattern and fit well. Damaged profiles may lead to damaging the screen. Always replace also the plastic profiles when exchanging the screen.

Disassemble the screen and the auger as explained in the following:

1. Turn off the pump for the inlet or stop the inlet.
2. Withdraw the weights of the mouthpiece; open the flaps of the mouthpiece.
3. Leave the separator on until no liquid or solid parts comes out.
4. Turn off the separator and the main switch of the control panel.
5. Loosen the counter nut of the straw screw and turn the straw screw for approx. 1 turn counter clockwise backwards (see picture 4.11)
6. Loosen the screw (inner cross beam) inside the head of the auger. The length of the screw is equal to the length of the auger. Remove the mouthpiece by loosen 8 nuts that hold the mouthpiece.
7. Remove the rest of the plug. Use a bigger screwdriver for that. In case the plug is very hard, use a high pressure cleaner to make the plug softer. Remove auger and screen.
8. Take out the screen. In case this is too difficult because solid parts seize the screen and the auger, rinse it with a lot of water in order to get out the screen.

**Attention: Never hit the screen or the auger in order to loosen them. These are high-precision elements that need to be treated carefully. Never open the machine between the screen housing and the inlet.**

Inside the screen guiding there is a plastic profile guiding strip (T or G strip). The screen guiding rails are inside the housing of the separator as shown in picture 4.2

The plastic profile guiding strips serve for absorbing the thrusts when the separator starts and to reduce friction. The screen "floats" [„breathes"] in the guiding rails, depending on the hardness of the plug. The slight raising and lowering of the lever arms of the mouthpiece is a sign for the "floating" of the screen inside the separator.

Check the screen as well as the plastic profile strips inside the guiding rails for possible wear out. If you notice a non-uniform wear out of the plastic profile strips, you need to replace them. Whenever you exchange a screen also replace these plastic profile strips as well. Rinse solids that are around the guiding rails.

**Attention:** there are screen guiding rails with G-groove and others with T-groove

Screen guiding rails with G-groove (see picture 4.3):

- HD screens: insert T-strip
- Standard screens: insert G-strip

Screen guiding rails with T-groove:

- only with standard screens possible

In case you would like to use HD screens, the separator needs to be changed over for screen guiding rails with G-groove. For this change over you need a special adjusting device that can be requested at Bauer together with a special instruction.

**Attention: Never loosen the fixing bolts on the screen guiding rails on the housing (picture 4.5)**

The screen guiding rails are adjusted with a special setting jig when assembling the separator. They are fixed with fixing bolts and should not be loosened again. In case this adjustment changes due to faulty operation, it needs readjustment. You can get the necessary adjusting device together with instructions at your next Bauer dealer. Please follow chapter 5 and 6 when starting up the machine again.

Clean the area, where the body protection ring is located. It is located in the back part of the housing, near the passage to the inlet (see picture 4.4). It is fixed to the housing with three bolts. This ring protects the housing against wear out when the screen "floats" during the operation. The body protection ring should be replaced at a radial wear out of approx. 1mm (inner diameter of body protection ring approx. 263 mm) in order to prevent damages to the screen. Take out the body protection ring of the screen housing and replace it.

## 10 MAINTENANCE AND INSPECTION

### 10.1 Gear box and Motor

Gear box and motor are delivered ready for operation. They are pre-filled with the specified quantity of synthetic oils and are **maintenance-free**. After about 10.000 operating hours or 3 years of operation, the oil must be changed and the bearings checked. More details in the gear box and motor documentation in chapter 12 „Technical Data“.

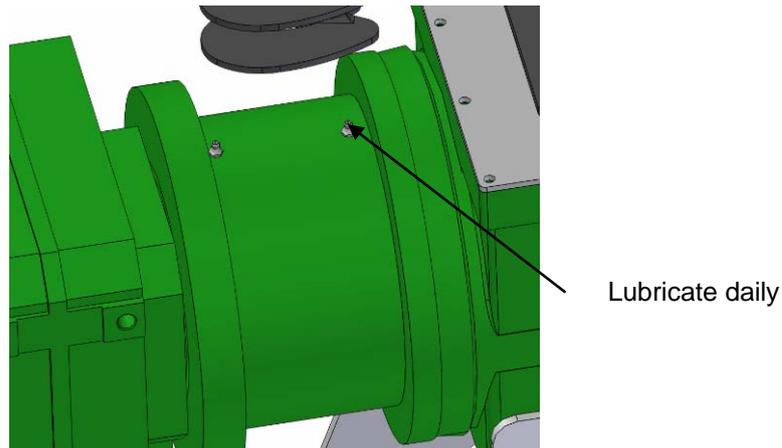
During operation a visual inspection of gear box and separator tightness should be made daily. Check the gear box oil level as well as the wear of screen and auger (see chapter 10 „Disassembly“) about twice a year.

Except for routine greasing the Bauer separator requires minimal maintenance.

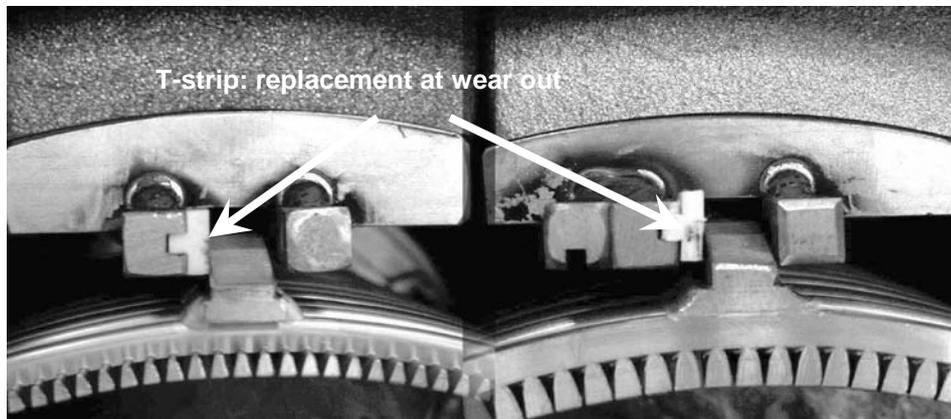
## 10.2 Fitting with stoppage medium

It is important to provide the stoppage sealing in the mounting flange of the inlet housing of the separator in operation with a stoppage medium (protecting material) daily in order to protect the sealings in the mounting flange against the separated medium. In principle this can be done with grease. Daily put a volume of 3 to 5 cm<sup>3</sup> of grease through the grease nipple (see picture 4.1) with the help of a grease gun. The greasing should be done when the machine is in operation to ensure that the entire sealing area is filled with grease.

**Attention: Ensure compatibility of sealing material (material FPM) with the medium**



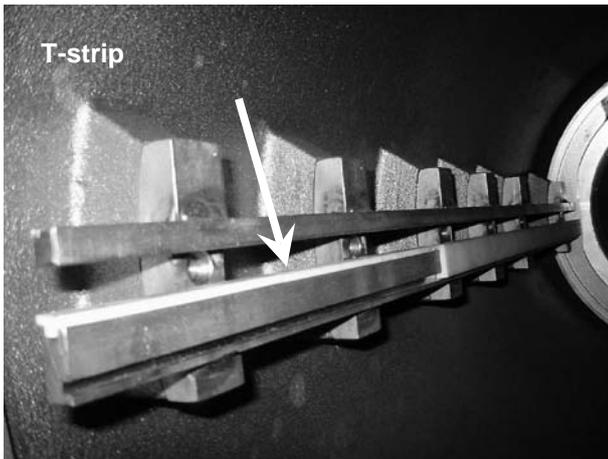
picture 4.1: Lubricating



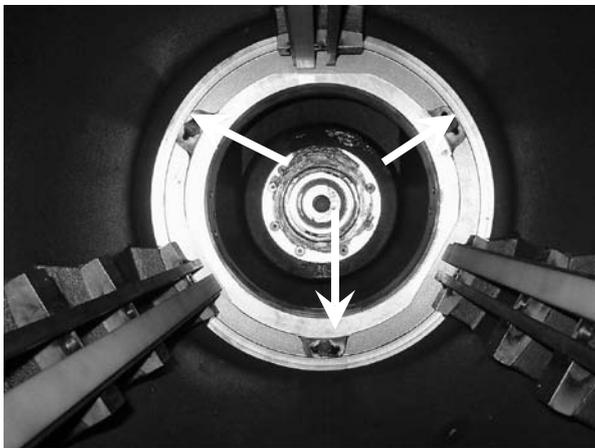
picture 4.2: Plastic profile strip in the guiding rail

left side: screen guiding rail with T-groove, only for standard screen;

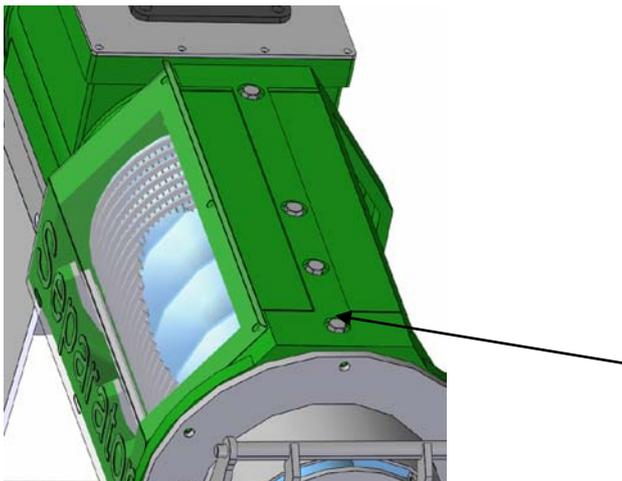
right side: screen guiding rail with G-groove, only for standard screen with G-strip and for HD screens with T-strip.



picture 4.3: S855 with a screen guiding rail with G-groove: with G-strip for standard screen and T-strip for HD screens



picture 4.4: Location of the fixed body protection ring with markings of the fixing spots.



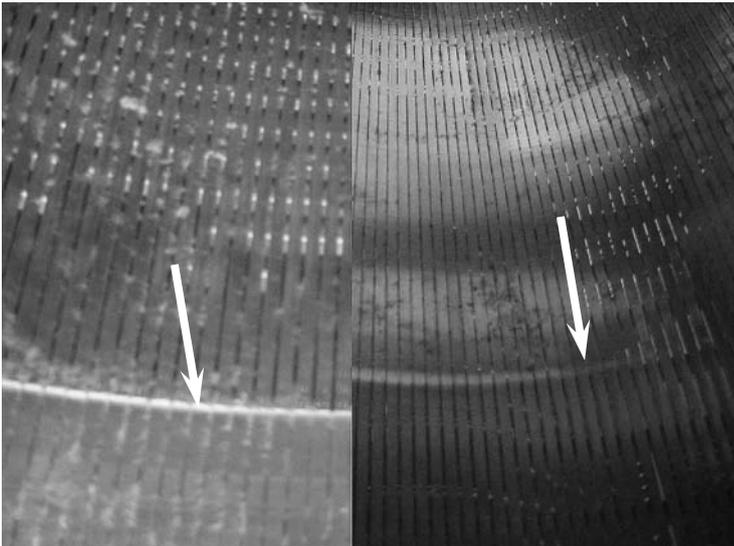
picture 4.5: Location of the fixing bolts for the screen guiding rails

### 10.3 Inspection of the screen and re-assembly of the screen

The wear on the screen takes place mainly where the auger ends and in the area of transition between the dewatering zone and the press zone of the Separator.

If there is a circulatory, sharp edged recess, as shown in picture 4.6, left side, the screen was not installed properly. The screen could not move ("float") in the body and was therefore damaged.

When replacing the screen, insure that the bar that has a "triangle" punched on it is at the "top" of the mouthpiece (12 o'clock position), see picture 4.7. By inserting the screen in this manner, uneven wear on the screen can accurately be identified. The screen has to be movable ("floating") after the reinstallation and must not be fixed in an axial direction. If the screen is installed properly, it is possible to move the screen a little by hand. There has to be a small gap of some tenth parts of millimeter between the mouthpiece and the screen. This can be checked with a feeler gauge (picture 4.8).



picture 4.6: Wear in screen of a not movable screen (left side) and normal wear of screen (right side)



picture 4.7: Mounting position of the screen, punched triangle on the top and to the front of the Separator.



picture 4.8: Movable screen in the Separator checked by hand (left side) and checked with a feeler gauge (right side)

#### **10.4 Control and reassembling of the auger**

The auger is made of stainless steel. The flights are re-enforced with hard facing with a special procedure (see picture 4.9).

Check the auger for possible damages and clean it. The axial contact surface (see picture 4.9) and the grooves of the feather keys have to be free of solids and must not show any damages or wear marks. Otherwise the auger will not move correctly and thus damage the screen. Grease the endplate, if grease is used as a "stoppage medium" (see picture 4.1), and put it on the auger again (picture 4.10). The endplate serves as an additional protection for the mouthing flange of the gear motor and is a step in the labyrinth sealing.

If the auger and the screens are acceptable (appraisal factors for auger and screens see the following chapter), re-install the auger.

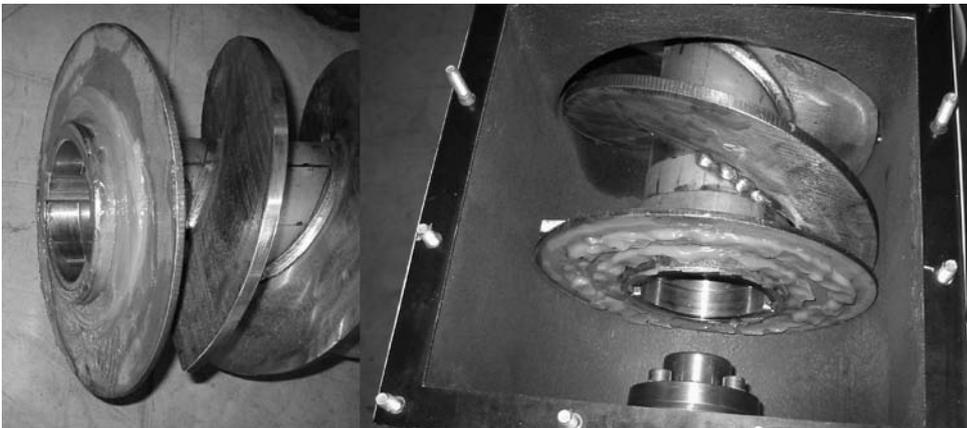
Insert the auger carefully and make sure that the feather keys **do not** hit the axial contact area of the auger. This could make the auger "wobble". Turn the auger until the feather keys of the auger entry match with the groves of the feather keys of the auger. Tighten de auger with a torque of 150 ft.lbs.

Check the radial movements (wobbling) of the auger. It should be lower than 1 mm (5/128 inch); otherwise the auger will damage the screens. Picture 4.11 shows the control of the radial movement of the auger in the factory. If the radial movement is higher than allowed, the auger and the connecting elements must be checked for marks, damages or dirt again.

Readjust the straw bolts, if existing. Unscrew the lock nut and slowly adjust the straw bolts while turning the auger till the straw bolts touch the auger flights. Then turn back the bolts 30° and lock with the lock nuts. Readjust the straw bolts every 4 weeks!



picture 4.9: Auger with re-enforced flight and hub connection, new condition



picture. 4.10: Auger with endplate as additional protection for the gear motor with mounting flange



picture. 4.11: Control of the radial movement of the auger (left side); adjustment of the straw bolts (right side)

## 10.5 Appraisal factors for auger and screens of wear and refurbishing

All the moving parts of the separator are subject to wear. Proper maintenance and periodic monitoring of the wear parts are essential in prolonging the „normal“ life of the separator. Worn-out parts should be replaced as soon as possible in order to avoid consequential damage.

The wear parts that directly affect the normal operation of the separator are the screen and the auger. Independent from the wear parts the „normal“ operating status of the separator is also influenced by other parameters than wear out. In principle, only the auger can be refurbished. The refurbishment of the screen is not possible. The auger can be properly refurbished, but only by a company authorized by BAUER GmbH to meet the necessary standards.

**Do not use other manufacturers for the refurbishing of old augers, as the screen may be damaged if the flights do not match the designed tolerances, thereby forfeiting the warranty.**

(see picture 4.6: wear of a screen)

The normal wear of the screen corresponds with the enlargement of the inner screen diameter and an increase of the slot size as a result of the rod-geometry of the screen. Generally, the wear of the screen and auger also affects the normal operation of the separator, e.g. lower flowrate, worse effluent, etc. assuming no change of the medium and consistency. The wear of the screen or the outer edges of the flights of the auger change the spacing configuration. In new condition the gap between the screen and the auger is the same as the slot size of the screen. The slot size of the screen can be measured with a feeler gauge (picture 4.12).

If the radial gap between screen and auger reach values of two times of the slot size or higher, not only direct influences to the normal operation condition of the separator will be observed but there is also a greater risk of damaging the screen or even break it. If the radial gap between the screen and the auger exceeds twice the slot size of the screen after inserting a new screen, the auger has to be refurbished.

The most important criteria for the radial wear of the screen and auger is the operation condition of the machine. Namely, if the operation results (flow rate, quality of the effluent, etc.) differ from the „normal“ operation, than the screen must be changed or the auger refurbished.

Further indication for the necessity of the auger refurbishment is the appearance of the hard facing as shown in picture 4.13.

In principle, the auger has to be refurbished before the hard facing deteriorates and the main material of the auger appears, because the wear rapidly increases and the cost for the refurbishment of the auger becomes less economic.

E.g. the auger hard facing in picture 4.13 (right and middle picture) has significant wear on the outer flight. Nevertheless this auger can be refurbished because the hard facing on the front end has 20% of the normal thickness and the original flight of the auger is not damaged. The flights of the auger in this area have a thickness of 10 mm without hard facing, therefore the thickness of the hard facing can easily be measured with a caliper gauge.

The auger in picture 4.13 (left picture) shows a flight, where the axial hard face on the outer flight has been worn completely and the thickness of the flight is only half of its new condition. In this case, an economic refurbishment is not possible since the stiffness of the flight is too low. Therefore, a new hard facing would break off. In this case the purchase of a new auger is necessary.



picture. 4.12: Measurement of radial space between screen and auger



picture. 4.13: Indications for the necessity of the auger refurbishment

## 11 Technical data

### 11.1 Technical data of separator

Denomination	Data	Material
auger, auger shaft	Surface especially hardened	Stainless steel
Screen	Available sizes 0.25 / 0.5 / 0.75 / 1.0 mm	Stainless steel
Intake housing		Grey cast iron
Housing shell		Grey cast iron
Feeding line, overflow	BAUER T coupling HK108	Hot galvanised steel
Discharge	Square flange (hole spacing 150mm) for connection of BAUER coupling HK108 / HK133	Hot galvanised steel
Base frame		Hot galvanised steel
Motor	5,5kW, 190-220/380-420V, 50Hz, IP55, F, 1440 rpm and 190-240/380-480V, 60Hz, IP55, F, 1740rpm respectively	
Gearbox	Spur gear, 32rpm (50Hz) and 39rpm (60Hz) respectively Oil quantity and type – see type plate on the gearbox 5 l Castrol Alpha SP 220	Grey cast iron

## 11.2 Type plates

**Always** refer to the **serial number** of the machine in all correspondence with the dealer or the manufacturer of the BAUER Separator. You will find this required serial number on the type plates fixed to intake housing, gearbox, and motor.

### 11.2.1 Separator

**Type** S 655 / S 855 and indication of installed screen size, e.g. 0.5/0.75/1.0mm

**No.** First digit: type number, second and third digit: year of construction, following digits: count numbers

### 11.2.2 Gearbox

**Quantity and specification of filled gear oil**

**Type** gear oil (e.g. FU 85A)

**No.** serial number of gear

**kW** power of gear

**min<sup>-1</sup>** auger rotation per minute

**Nm** gear torque

**H50** design geared motor(see chapter 15.2)

### 11.2.3 Motor

Kind and standard of electric motor

Internal code **Type** motortype according to catalogue (e.g. WAR 114M4)

**NoM** serial number of motor, isolation class, protection, admissible frequency, voltage and circuiting of motor  
cos φ and rated speed

## 11.3 Decal information

The following decal information are affixed to the BAUER Separator::

- Arrow on electric motor: indicates proper direction of rotation.
- Arrow on housing shell: indicates proper direction of rotation of screw shaft.
- Yellow textbox on housing shell: reminds of hazards in slurry handling.

Decals must be replaced immediately when they are damaged. They can be ordered from your retailer. As to the part numbers please see the lists of spare and wearing parts

## 12 Spare and wear parts

See extra spare parts list

## 13 Accessories

### 13.1 Separator control with reverse control

Article number: 018 5045  
 Wiring diagram: 018 5046.4

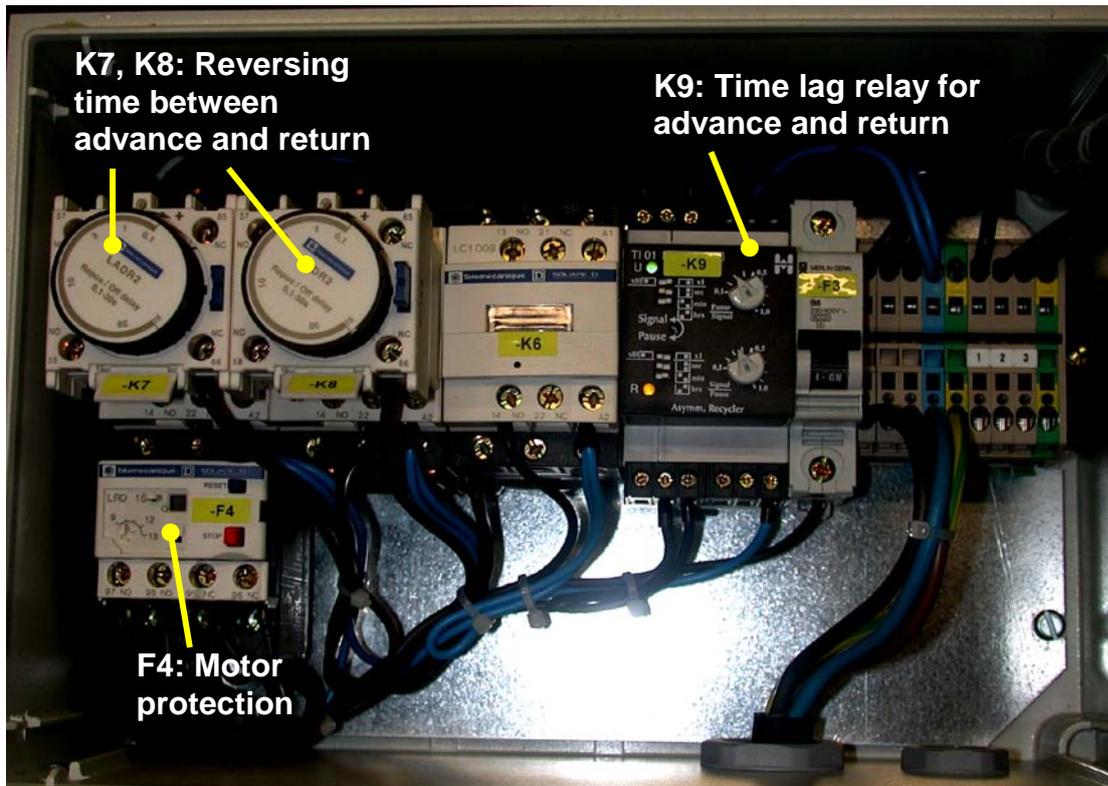


This control unit allows changing the direction of rotation of the separator auger.

**Purpose:** When the separator is treating difficult fluids (slurry), the screen might get clogged with fibrous material over the time, which would impair the functioning of the separator – so the separator would no longer be able to separate properly the liquid from the solid parts and the output of solid matter would also be reduced. A brief change to return mode (so that the auger turns against working direction) **will clear** the screen and the liquid will freely pass again through the gaps.

Advance and return intervals can be individually set. In practice the following intervals have proven to suit best:

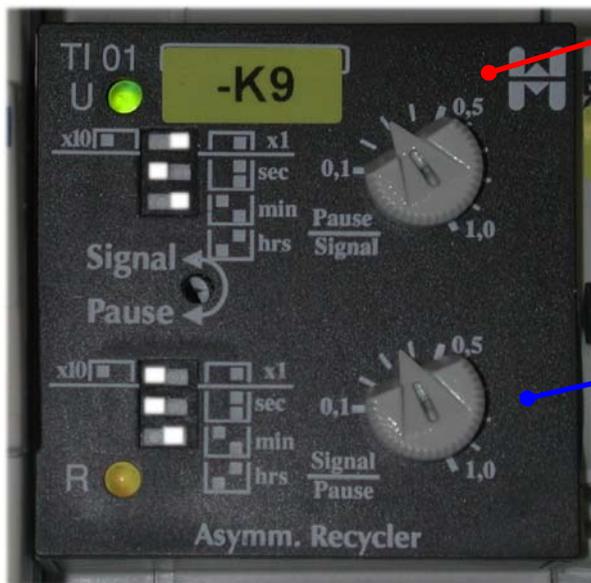
Advance....	2 to 4 minutes
Return ....	10 to 20 seconds



#### K9: Time lag relay for advance and return mode

The reversing time is set by means of **three touch switches** and one **turn switch**.  
 (Set seconds **sec**, minutes **min** or hours **hrs** by changing the position of the touch switches.)

**Pre-setting:** see picture below.



**Return mode (top)**

Uppermost touch switch: factor **x1**  
 The two touch switches below: **minutes**  
 Turn switch: approx. **0.3**

**Operation time= 0.3 min x1 =  
 = 18 seconds**

**Advance mode (bottom)**

Uppermost touch switch: factor **x10**  
 The two touch switches below: **minutes**  
 Turn switch: approx. **0.35**

**Operation time = 0.35 min x10 =  
 = 3.5 minutes**

**WARNING:**            **When connecting the electrical components observe the correct direction of rotation of the auger shaft.**

The auger shaft turns counter clockwise in advance mode  
 (line of vision to gear motor)

The necessary response time vary with different mediums and can be adjusted individually.

If no return mode is required change the advance time to hours by means of the touch switches.

Other possible settings:

Yet normally there is no need for changes !!!!

**F4: Motor protection**



**Pre-setting: 10 A**

**When changing amperage never exceed 12 A!**

**K7, K8: Reversing time (pause between advance and return mode)**



**Pre-setting of reversing time: 1 to 3 seconds**

**WARNING:**                      **The motor is running after!**  
    **Never set a value below 1 second!**

## 14 CONFORMITY CERTIFICATE

### EC Declaration of Conformity according to EC Directive 2006/42/EC

The manufacturer

Röhren- und Pumpenwerk BAUER Gesellschaft m.b.H.  
Kowaldstraße 2, 8570 Voitsberg, Austria  
phone +43 3142 200-0; fax: +43 3142 200-320/-340

herewith confirms that the machine component mentioned below

Designation of machine	<b>BAUER Separator</b>
Machine type / basic units	<b>S655, S855</b>

corresponds analogously to the requirements of the Machinery Directive 2006/42/EC.

In case of a modification of the machine not accorded with BAUER GmbH, this declaration will cease to be valid.

The following standards as amended have been applied analogously:

DIN EN ISO 12100-1	Safety of machines – Basic concepts, general principles for design, Part 1: Basic terminology, methodology
DIN EN ISO 12100-2	Safety of machines – Basic concepts, general principles for design, Part 2: Technical principles and specifications
DIN EN 60204-1	Safety of machines - Electrical equipment of machines, Part 1: General requirements
EN ISO 14121-1	Safety of machines – Risk assessment
DIN EN 809	Pumps and pump units for liquids - Common safety requirements

The documents belonging to the machine according to annex VII, part B have been attached.

The machine component must not be put into operation unless it has been proven that the machine where the machine component shall be installed, corresponds to the regulations of the EC Machinery Directive (2006/42/EC). The CE mark is applied by the operator as final manufacturer.

Person in charge of documentation: Thomas Theissl, Kowaldstraße 2, 8570 Voitsberg, Austria,



Technical Designer in Charge



Commercial Manager

Voitsberg, 18.04.2011