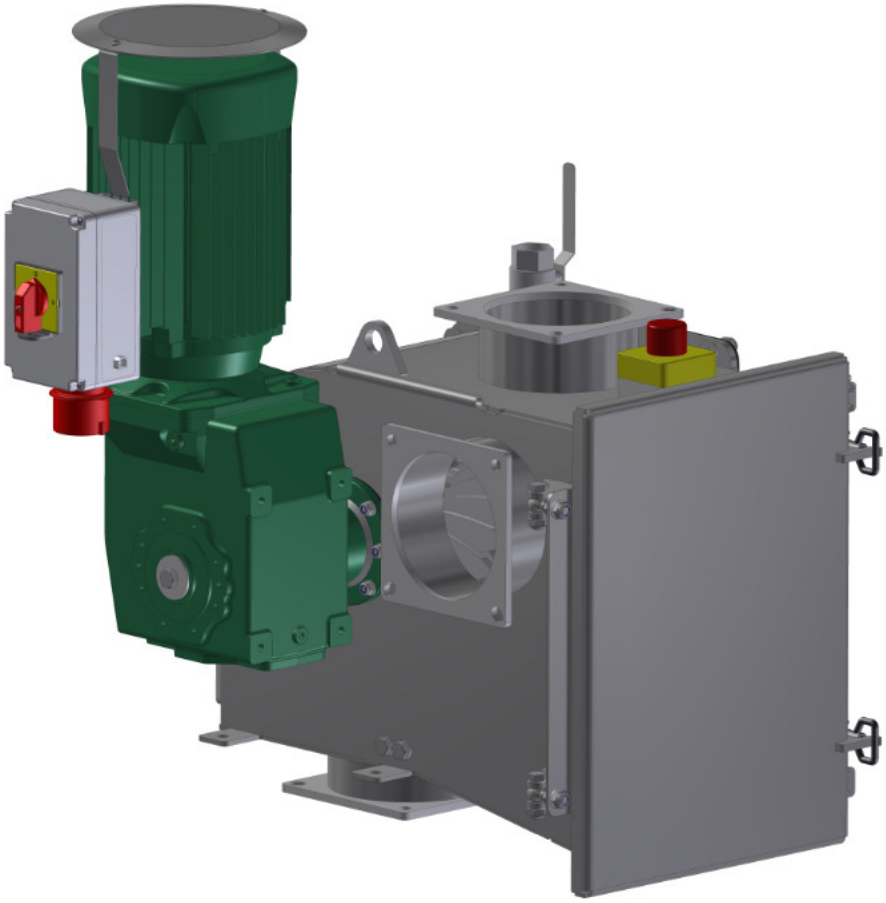
Stallkamp

# OPERATING MANUAL

# Cutting Filter SF 300
# M1708



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## Space for notes:

## General information

- **The technical specifications, weights and measures are to be considered approximate and not binding.**
- **Pictures are for illustration purposes and can deviate from the actual product.**

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# 1 TABLE OF CONTENTS

1 TABLE OF CONTENTS ..... 3

2 DECLARATION OF CONFORMITY PURSUANT TO MACHINERY DIRECTIVE 2006/42/EC, APPENDIX II 1. A ..... 5

3 GENERAL INFORMATION ..... 6
3.1 Designation of notices in the operating manual ..... 6
3.2 Unauthorised conversion and spare part manufacture ..... 6

4 SAFETY ..... 7
4.1 Qualification of the personnel ..... 7
4.2 Dangers if the safety instructions are not observed ..... 7
4.3 Safety-conscious work ..... 8
4.4 Safety instructions for maintenance, inspection and assembly work ..... 8

5 GUARANTEE ..... 9
5.1 General ..... 9
5.2 Exclusion of liability ..... 9

6 PRODUCT DESCRIPTION OF THE CUTTING FILTER SF 300 M1708 ..... 10
6.1 General description ..... 10
6.2 Functional principle ..... 10
6.3 Technical data ..... 11
6.4 Safety devices ..... 11
6.5 Proper use of the cutting filter SF 300 M1708 ..... 11

7 DIMENSIONS OF THE CUTTING FILTER SF 300 M1708 ..... 12

8 INSTALLING THE CUTTING FILTER SF 300 M1708 ..... 13
8.1 Scope of delivery ..... 13
8.2 Transport ..... 13
8.3 Setup ..... 14
8.4 Connection ..... 14

9 OPERATING AND COMMISSIONING THE CUTTING FILTER SF 300 M1708 ..... 16
9.1 Prior to commissioning: safety instructions ..... 16
9.2 Setting the flap pre-tension ..... 16
9.3 Control system ..... 17
9.3.1 External components ..... 17
9.3.2 Internal components ..... 18
9.3.3 Fault ..... 22
9.4 Starting the cutting filter ..... 22
9.5 Winter operation and extended periods of inactivity ..... 22

10 MAINTENANCE OF THE CUTTING FILTER SF 300 M1708 ..... 23
10.1 Maintenance intervals ..... 23
10.1.1 Recommendation: daily ..... 23
10.1.2 Recommendation: every 14 days ..... 23

10.1.3 Recommendation: every 3 months ....24
10.1.4 Recommendation: every 12 months....24
10.2 Recommendation at end of service life....24

**11 NOTICES .... 25**
11.1 Regulation of the professional association ....25

**12 LIST OF SPARE AND WEARING PARTS OF THE CUTTING FILTER SF 300 M1708 .... 26**
12.1 Notices....27

**13 MAINTENANCE AND REVISION LIST OF THE CUTTING FILTER SF 300 M1708 .... 28**

# 2 DECLARATION OF CONFORMITY PURSUANT TO MACHINERY DIRECTIVE 2006/42/EC, APPENDIX II 1. A

**Manufacturer:** Erich Stallkamp ESTA GmbH

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**Authorised representative for the composition of the technical documentation:**

Dipl.-Ing. (FH) HeikoAnsorge

In der Bahler Heide 4-49413 Dinklage-Germany

**Product name:** Cutting Filter SF 300 M1708

It is expressly stated that the machine complies with all relevant provisions of the following EC Directives or Regulations:

**2006/42/EC** **Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) (1)**

Reference for the harmonised standards applied in accordance with Article 7 (2):

| | |
|---|---|
| EN ISO 12100:2010-11 | Safety of machinery – General principles for design – Risk assessment and risk reduction |
| EN 60204-1:2006/A1:2009 | Safety of machinery – Electrical equipment of machines – Part 1: General requirements |
| EN ISO 13849-2:2012 | Safety of machinery – Safety-related parts of control systems – Part 2: Validation |
| EN 60204-1:2006/AC:2010 | Safety of machinery – Electrical equipment of machines – Part 1: General requirements |
| EN 1037:1995+A1:2008 | Safety of machinery – Prevention of unexpected start-up |
| EN ISO 13857:2008 | Safety distances to prevent hazard zones being reached by upper and lower limbs |
| EN 349:1993+A1:2008 | Safety of machinery – Minimum gaps to avoid crushing of parts of the human body |
| EN ISO 14120:2015 | Safety of machinery – Guards – General requirements for the design and construction of fixed and movable guards |
| EN ISO 13850:2015 | Safety of machinery – Emergency stop function – Principles for design |

Dinklage, dated27 March 2018 16:12:48

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Erich Stallkamp ESTA-GmbH, Dipl.-Ing. (FH) H. Ansorge (AL-TPR, Authorised representative for GL)

This declaration is not an assurance of characteristics in the sense of the German law on product liability. The safety instructions provided in the product documentation must be observed. If any conversions or modifications are made to the product, this declaration shall lose its validity with immediate effect.

# 3 GENERAL INFORMATION

Our devices are developed according to the current state of technology, manufactured with great care and subject to a continual quality control. This operating manual should help you to get to know the device and to employ its proper operational possibilities.

The operating manual contains important notices in order to operate the device safely, appropriately and cost-effectively. It is necessary to observe the operating manual to ensure the reliability and long service life of the device and to avoid hazards.

The operating manual does not take local, on-site requirements into consideration; the operator is solely responsible for ensuring that these are observed, including by external installers.

## 3.1 Designation of notices in the operating manual

In the operating manual, safety instructions warning of dangers to persons are identified with the general hazard symbol according to DIN 4844-W9.

In the operating manual, warnings about electrical voltage are identified with the safety signs according to DIN 4844-W8.

All other notices which might restrict the functional reliability of the device or represent a danger for the machine if not observed are marked with the word:

**ATTENTION!**

This machine unit may not be operated beyond the values defined in the technical documentation with respect to pumped liquid, delivery flow rate, rotational speed, density, pressure, temperature as well as motor power output or other instructions contained in the operating manual or contract documentation. If you have any queries, please consult the manufacturer.

The rating plate displays the most important operating data and the machine serial number. We request that this always be specified in the event of enquiries, subsequent orders and when purchasing spare parts.

Provided that additional information or notices are required or in case of damage, please contact our local field sales employee or contact us directly.

## 3.2 Unauthorised conversion and spare part manufacture

Conversions and modifications to the devices and their machine units are only permissible with the explicit approval of the manufacturer. The use of non-"genuine spare parts" abrogates all liability.

# 4 SAFETY

This operating manual contains fundamental information which must be observed during installation and operation as well as when performing maintenance work on the device.

It is therefore absolutely necessary that the installer as well as the responsible qualified personnel and operator read these instructions before installation and commissioning, and that they are continually available at the location where the machine is operated.

Not only the safety instructions in this operating manual must be observed, but also the warning signs and regulations of the respective professional association in the latest version.

## 4.1 Qualification of the personnel

The personnel performing the operation, maintenance, inspection and installation must be appropriately qualified for this work.

Area of responsibility, competence and the monitoring of the personnel must be precisely regulated by the operator. If the necessary skills are not available to the personnel, then they should be appropriately trained and instructed.

Furthermore, the operator must ensure that the personnel fully understands the contents of the operating manual.

## 4.2 Dangers if the safety instructions are not observed

Failure to observe the safety instructions can endanger persons as well as the environment and the machine. Failure to observe the safety instructions results in the loss of all claims for damages.

Specifically, failure to observe instructions can, for example, result in the following dangers:

- Failure of important functions of the device or system.
- Endangerment of persons due to electrical, mechanical, chemical or other exposure.
- Endangerment of the environment due to leakage of hazardous materials.

**WARNING SIGNS**

Observe all notice and warning signs. Dangerous gases can escape when stirring the manure.

**DANGER OF POISONING!**

If the liquid manure is stored below slatted floors, the presence of persons in buildings during agitation or pumping is only permissible with sufficient ventilation. Therefore, windows and doors must be open and the ventilator set to full power.

## 4.3 Safety-conscious work

Observe all safety instructions presented in this operating manual, the existing national regulations for accident prevention as well as possible internal work, operation and safety regulations of the company at all times.

Safety instructions for the operator and attendant:

- ✓ If hot or cold machine parts can pose a hazard, then these parts must be protected on site against contact.
- ✓ Contact protection for moving parts may not be removed while the machine is in operation.
- ✓ Any leakage of dangerous materials must be conducted away so that there is no endangerment to persons and environment. Observe statutory provisions.

## 4.4 Safety instructions for maintenance, inspection and assembly work

The operator has to ensure that all maintenance, inspection and installation work is carried out by authorised and qualified personnel.

Fundamentally, all work on the machine can only be carried out when the machine is at a standstill.

Directly after completion of the work, all safety and protection equipment must be reattached or made functional.

***In all the different operating states (life cycles) such as:***

- ***Normal operation***
- ***Setup***
- ***Commissioning***
- ***Troubleshooting***
- ***Repair***
- ***Maintenance***
- ***Cleaning***

***all filling and outlet openings must be closed. Operating the system in the operating states mentioned above is prohibited. Before opening the cutting filter, no voltage must be present or it must be disconnected from the power supply.***

# 5 GUARANTEE

This section contains the general particulars for the guarantee. Contractual agreements are always treated with priority and are hereby not rescinded. The period of guarantee is a component of Stallkamp's general terms and conditions. Agreements deviating from this must be specified in writing in the order confirmation.

## 5.1 General

Stallkamp is obligated to repair every defect to products sold by Stallkamp under the condition:

- ✓ that it is a quality defect of the material, manufacture or design;
- ✓ that the defect is reported in writing to Stallkamp or the Stallkamp representative within the period of the guarantee;
- ✓ that the product is employed exclusively in the specified operating conditions described in the operating manual and employed for the intended purpose;
- ✓ that the monitoring device integrated in the product is correctly connected;
- ✓ that genuine Stallkamp parts are used.

## 5.2 Exclusion of liability

No guarantee or liability is assumed for damage to the device if one or several of the following points are applicable:

- A faulty configuration of the device on our part because of inadequate or incorrect information from the ordering party or operator.
- Failure to observe the safety instructions, regulations or the necessary requirements in this operating manual which apply according to German law.
- Installation, disassembly or repair of the device not in keeping with the regulations.
- Inadequate maintenance.
- Possible chemical, electrical or electrochemical influences.
- Wear and tear.

Since maintenance has an influence on the safety and functional capability of the device, it is an integral component of the guarantee. The operator of the device is obligated to have the manufacturer himself or a service approved by the manufacturer perform maintenance work according to the regulations of the manufacturer, including the necessary changing of oil and the repair and replacement of wearing parts. The operator is thus obligated to maintain a maintenance and revision list, which facilitates monitoring of the mandatory inspection and maintenance work (**see Point 13 Maintenance and revision list**).

We expressly emphasise that this device is a fluid flow engine in which the protective coating is exposed to constant wear from the abrasive contents of the medium being pumped and should consequently be classed as a wearing part. Wear, damage and secondary damages which result from external influences on the protective coating are expressly excluded from the guarantee. The use of devices and/or the field of application and reliability for the application must be verified by the operator and does not form part of the guarantee.

The liability of Stallkamp thereby excludes any liability for personal damages, material damages or financial losses.

The manufacturer reserves the right to modify the performance, specifications or configuration data without prior information.

# 6 PRODUCT DESCRIPTION OF THE CUTTING FILTER SF 300 M1708

## 6.1 General description

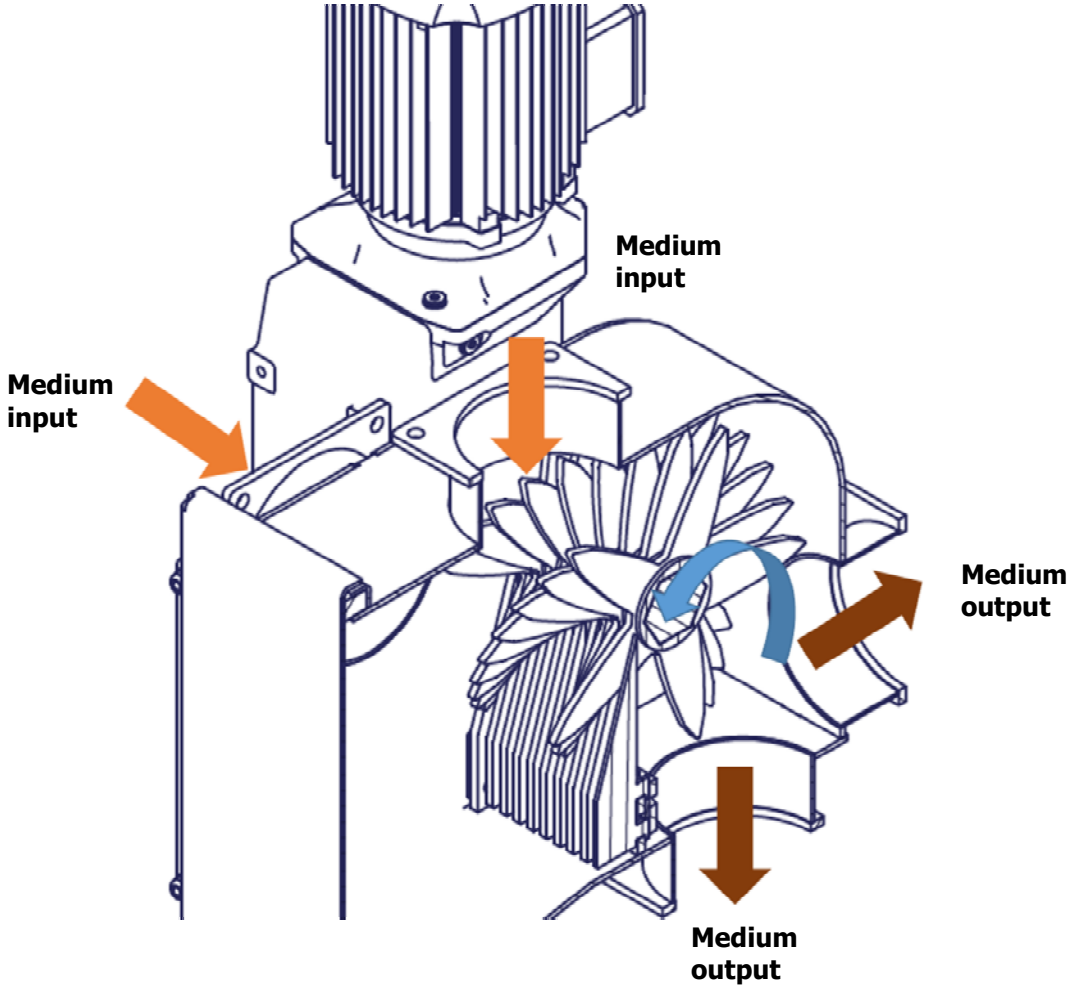
This operating manual applies to the standard model of the Stallkamp cutting filter. The cutting filter must not be operated in explosive environments.

Cutting filter SF 300 comprising:

- 1x cutting filter SF 300 with 3 kW gear motor

## 6.2 Functional principle

The Stallkamp cutting filter filters foreign bodies from the medium and shreds coarse pieces.




The medium can be fed to the cutting filter either through the top opening or the left side of the housing. Inside, the shaft rotates, creating a shearing action between the blades on the shaft and the fixed blade counterparts. This shearing action shreds the coarse pieces in the medium. Foreign bodies which cannot be shredded are caught in the catchment space in front of the blade counterparts. The medium can escape through openings on the bottom and back side of the cutting filter.

## 6.3 Technical data

Cutting filter SF 300 M1708 comprising:

- Three phase motor: 220/380V, 50 Hz, 3 ph., 292.8 rpm
- Protection category: IP55
- Insulating category: F = 155°C
- Motor power output: 3.0 kW, 4-pole
- Nominal current: 6.4 A
- Connection (electrical) 16-amp CEE connector with phase inverter
- Gearbox seal: Radial shaft seal ring
- Throughput: approx. 800 l/min

**Control system (optional)**

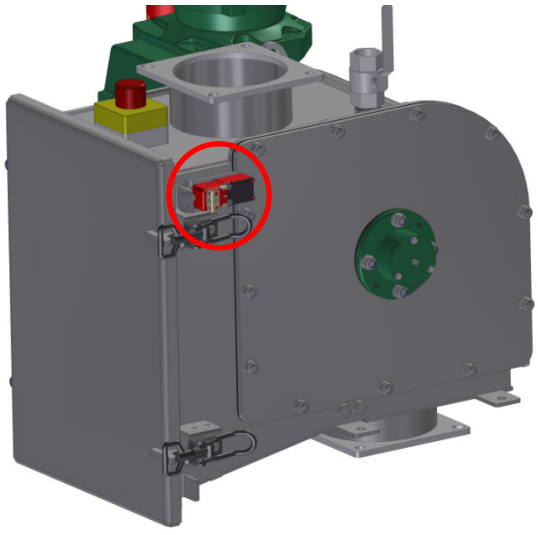
- Connection: 16-amp CEE phase-inverter connector

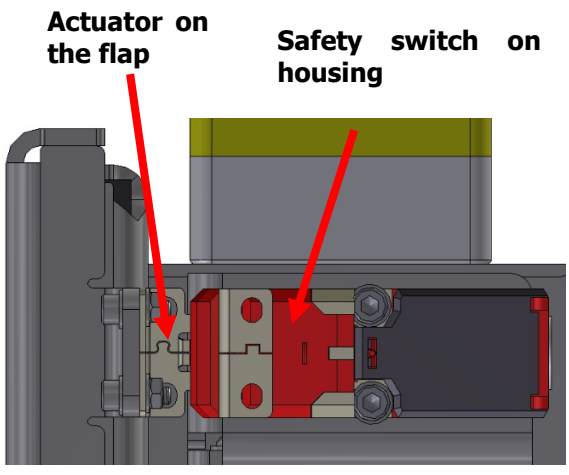
**Dimensions** 840 mm x 761 mm x 631 mm

**Tare weight** 170 kg

## 6.4 Safety devices

The switch attached to the top of the cutting filter housing is used to switch off the drive as soon as the cleaning flap is opened. On the housing, there is also a motor protection switch with undervoltage release to prevent the cutting filter from starting while the cleaning flap is open. In order to restart the cutting filter, you have to first close the cleaning flap properly and tighten it with the tension locks, before the motor protection switch can be reactivated. An Emergency OFF push button is also attached to the housing to allow the cutting filter to be brought to an immediate standstill in case of emergency.






## 6.5 Proper use of the cutting filter SF 300 M1708

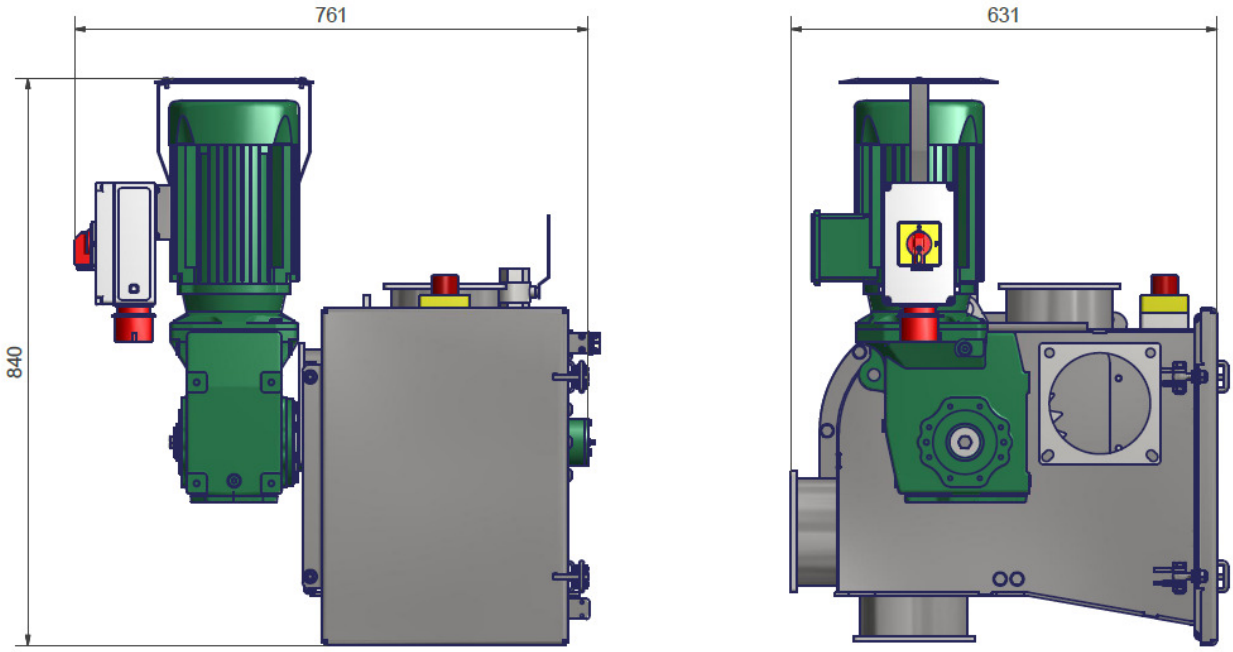
The cutting filter is designed for a variety of applications requiring foreign bodies to be filtered from a pumpable medium and coarse components shredded. The cutting filter mainly acts as safety equipment for downstream moving elements such as pumps and/or separators. However, the cutting filter effectiveness depends on the viscosity of the medium.

***In all the different operating states (life cycles) such as:***

- ***Normal operation***
- ***Setup***
- ***Commissioning***
- ***Troubleshooting***
- ***Repair***
- ***Maintenance***
- ***Cleaning***

***all filling and outlet openings must be closed. Operating the system in the operating states mentioned above is prohibited. Before opening the cutting filter, no voltage must be present or it must be disconnected from the power supply.***

## 7 DIMENSIONS OF THE CUTTING FILTER SF 300 M1708




All measurements are rounded off!

# 8 INSTALLING THE CUTTING FILTER SF 300 M1708

## 8.1 Scope of delivery

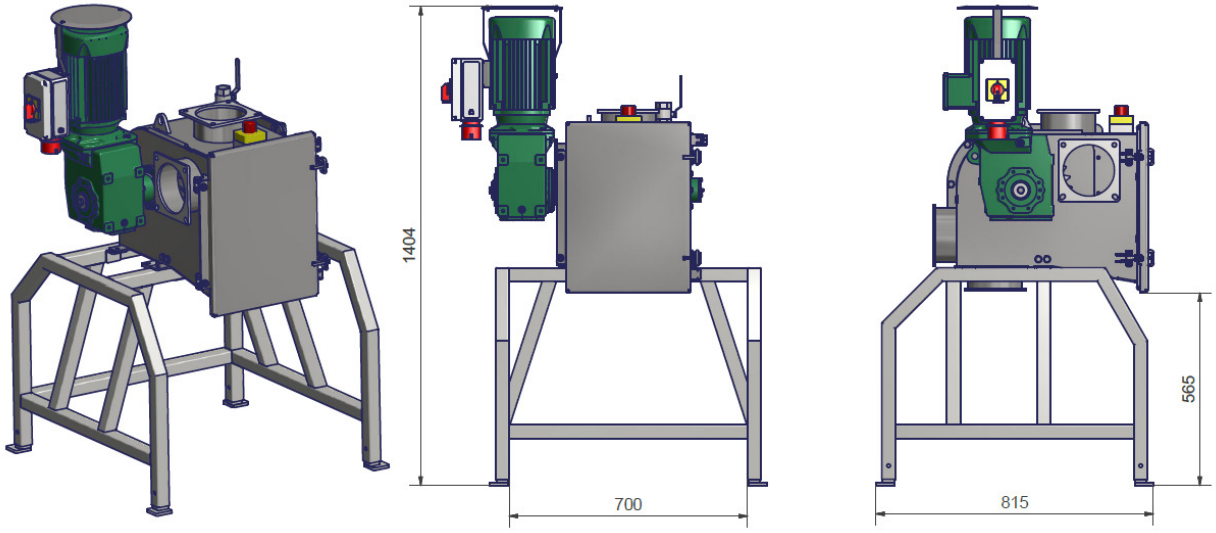
The Stallkamp cutting filter is delivered completely assembled. Two blanking plates for the unneeded inputs and outputs and the corresponding seals are also supplied. The supply and disposal lines are installed by the customer. It is also possible to include a control system and/or support frame in the delivery.

## 8.2 Transport

An eyelet is attached to the housing for safe lifting and transportation of the cutting filter. A chain with a shackle or hook (or something similar) can be attached to it in order to suspend the cutting filter for transport.

## 8.3 Setup

The cutting filter cannot stand firmly on the ground by itself. Therefore, the bottom plate includes fastening lugs on both sides. For firm hold, it is recommended to use the purposely created Stallkamp support frame. The cutting filter can be lifted with a fork lift truck and positioned on the support frame from the eyelet described in Section 8.2.




All measurements are rounded off!

## 8.4 Connection

***In all the different operating states (life cycles) such as:***

- ***Normal operation***
- ***Setup***
- ***Commissioning***
- ***Troubleshooting***
- ***Repair***
- ***Maintenance***
- ***Cleaning***

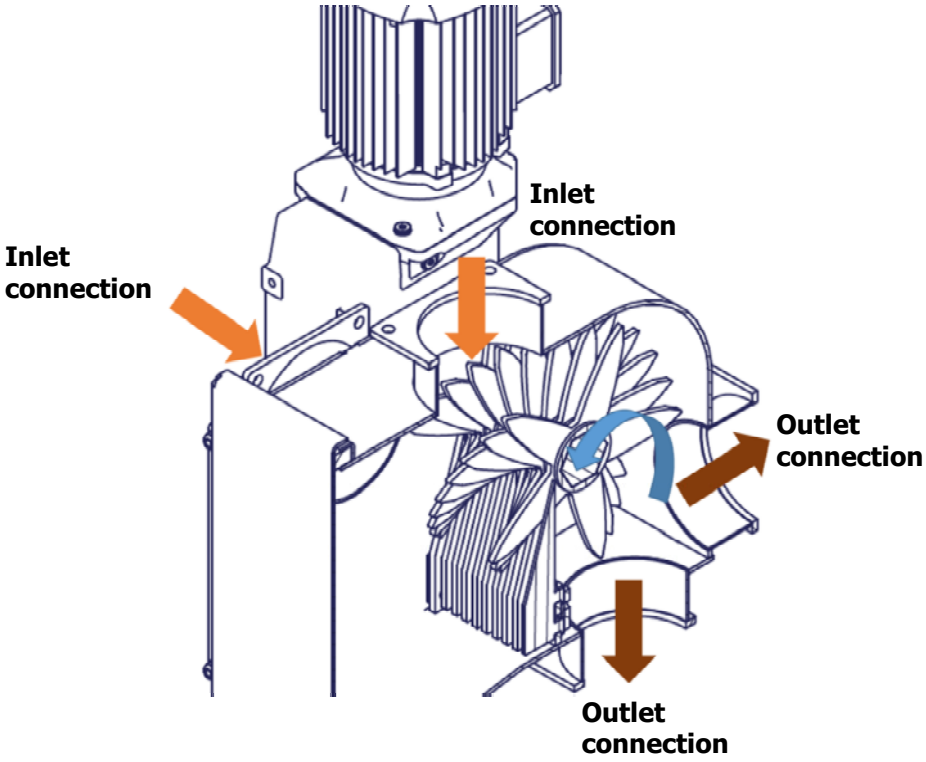
***all filling and outlet openings must be closed. Operating the system in the operating states mentioned above is prohibited. Before opening the cutting filter, no voltage must be present or it must be disconnected from the power supply.***

The following connections need to be connected in order to operate the cutting filter:

- Inlet connection:
  Clamp the supply line, which leads to the medium, to one of the two inlet connections.
  The other connection must be closed (blanking plate, gate valve, etc.).

- Outlet connection:
  Clamp the disposal line, which leads to the suction connection of the pump, to one of the two outlet connections. The other connection must be closed (blanking plate, gate valve, etc.).
  For maximum efficiency, ensure that the suction path from the medium to the pump via the cutting filter is as short as possible. The maximum length should not exceed 10 metres!

- 16-amp CEE connector:
  A 16-amp electrical connection is required for operation. The connector has a phase inverter for a correct rotating magnetic field.



# 9 OPERATING AND COMMISSIONING THE CUTTING FILTER SF 300 M1708

## 9.1 Prior to commissioning: safety instructions

The operating manuals for the installed devices (DKP and separator) must be followed!

The following rules should fundamentally be observed to prevent accidents during maintenance and installation work:

(1) Check that the cutting filter has a firm hold.

(2) Check the oil level of the gear motor and fill up if necessary. Lubricate the bearing.

(3) Check that the suction and pressure connections are connected correctly. Any shut-off valves must be opened. Check for leaks.

(4) Check that the motor protection is set correctly.

***In all the different operating states (life cycles) such as:***

- ***Normal operation***
- ***Setup***
- ***Commissioning***
- ***Troubleshooting***
- ***Repair***
- ***Maintenance***
- ***Cleaning***

***all filling and outlet openings must be closed. Operating the system in the operating states mentioned above is prohibited. Before opening the cutting filter, no voltage must be present or it must be disconnected from the power supply.***

## 9.2 Setting the flap pre-tension

The cleaning flap of the cutting filter is tightened on the right side with two tension locks. If the pre-tension of the tension locks is too high or insufficient to make the housing air- and liquid-tight, one can adjust it using one of two methods.

On the one hand, it is possible to continue turning the lock eyelet on the threaded bolt. If the thread end has already been reached, you can still loosen the pan head screws on the tension lock and move the entire lock to its support along the slots. In both methods, make sure that the pre-tension is the same for both tension locks so that the cleaning flap is tightened evenly.

## 9.3 Control system

The cutting filter can be optionally equipped with a control system. Please refer to the documents included with the control system. The following section provides a description of the individual components and functions.

**Attention: A control system may only be retrofitted by qualified and authorised Stallkamp personnel.**

### 9.3.1 External components

**(10) Power supply / CEE connector**

The control system is supplied with power over a 16-amp CEE connector. The connector is also equipped with a phase inverter (illustrated below).

The power supply must be protected appropriately depending on the connector!

### (11) Main switch

To switch on the machine, turn the main switch to "ON". Turn the main switch back to "OFF" to switch off the machine.

### (12) Forward push button

This push button can be operated manually for the duration of the operation of the cutting filter in the usual direction.

### (13) Reverse push button

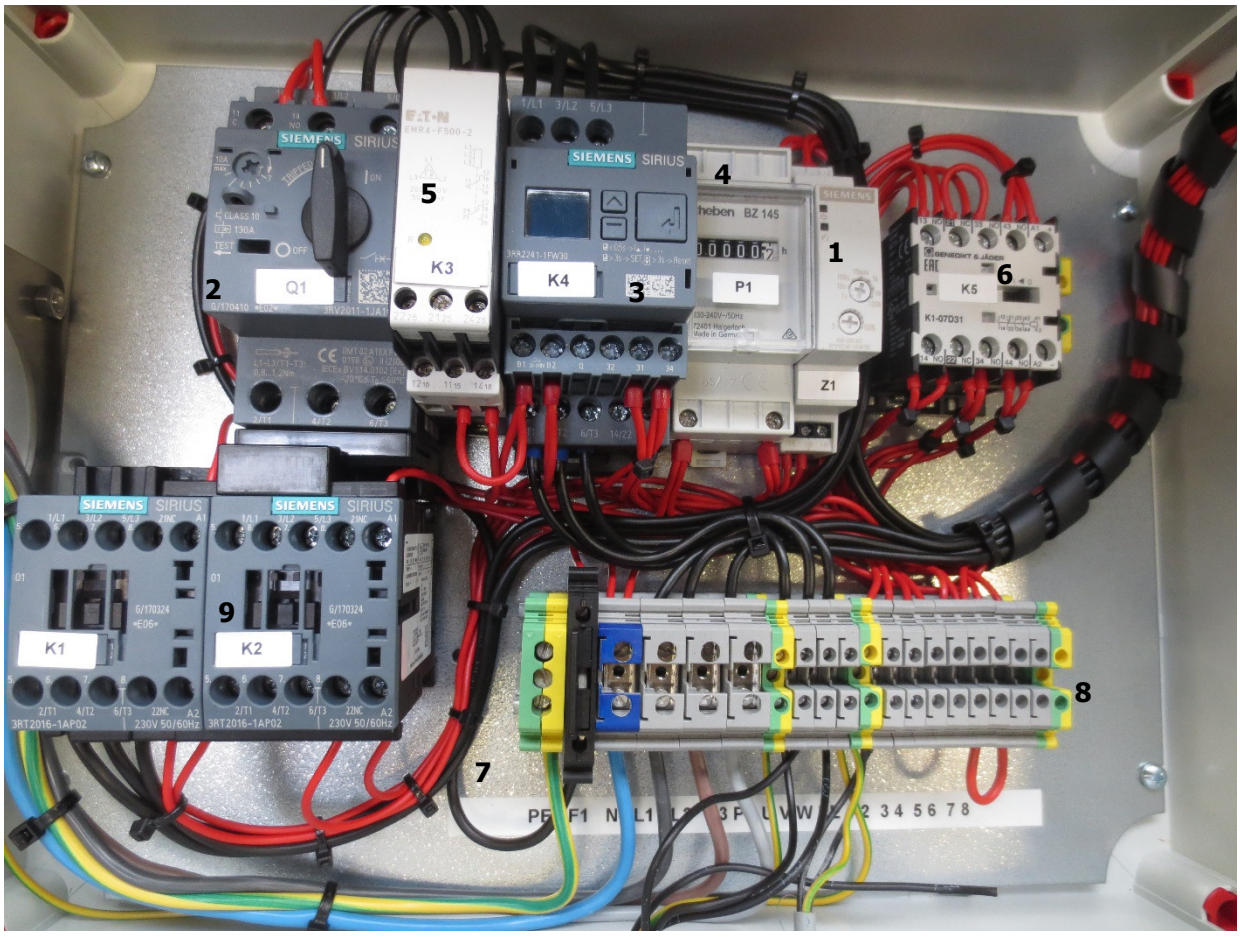
This push button can be operated manually for the duration of the operation of the cutting filter against the usual direction.

### (14) Fault indicator / push button

The red lamp illuminates in the case of a fault. The fault can be acknowledged using the built-in spush button after it has been rectified. If the cutting filter is supplied with power for the first time or the main switch is turned to the "ON" position, the push button must be pressed only once.

You can find an overview of all possible faults and their troubleshooting in Section *9.2.3 Malfunctions.*

## 9.3.2 Internal components



**(1) Timing relay**

The timing relay bridges the current measuring relay when starting the cutting filter, because at first there is no medium in the cutting filter, and the no-load current would otherwise cause the disconnection of the cutting filter.

Depending on the suction path and suction duration, the time range can be set from the two potentiometers. The top potentiometer specifies the exact time range, while the bottom potentiometer the percentage.

**E.g.:**

Top potentiometer: 100 s
Bottom potentiometer: 60 %

Set time: 100 s x 60 % -> 60 s or 1 min

**(2) Motor protection switch of the cutting filter**

Make sure that the motor protection switch is set properly. Take the value to be set from the motor type plate. If the setting is too high, the motor can get overloaded, and this could lead to a motor/gear fault. For operation, the motor protection switch lever must be set to "ON". In case of an overload, the motor turns to "OFF" and the system switches to fault mode.

**(3) Current measuring relay**

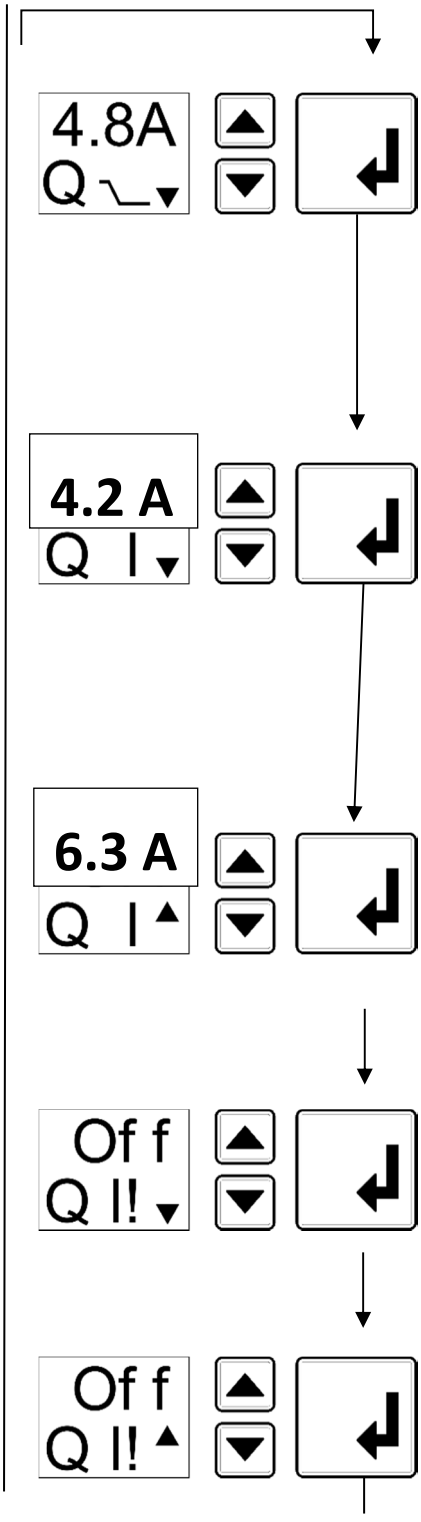
The current measuring relay monitors the power consumption of the cutting filter. An overly low power consumption may indicate too little or no medium. To set the current measuring relay, proceed as follows:

**Assembly:**

① Display – shows current values/parameters

② Arrow keys – for changing parameter values

③ SET key – click to navigate through the menu. Please note, if you press and hold (> 3s), you enter the "Set" menu. To return to the menu, press the key again for 3s. A time bar appears.




**Home**
The current power consumption of the individual phases I1 / I2 / I3 is displayed alternately during operation.

The arrow ▼ indicates a fault. This means that the cutting filter is consuming less power than the allowed limit.

The arrow ◄ indicates that no faults exist. The power consumption is higher than the allowed limit.

**Limit for insufficient power consumption (I▼)**

If the power consumption of the cutting filter falls below the set value, the cutting filter switches to fault mode.

To adjust the settings, observe the power consumption of the separator during operation. Set the value approx. 1A less than the current power consumption. However, never set it below the following value

**Limit for excess power consumption (I▲)**

If the power consumption of the cutting filter is higher than the set value, the cutting filter switches to fault mode. Do not set any higher value under any circumstance.

**Warning limit for insufficient power consumption (I!▼)**

This value must be on "OFF". If not, click and hold ▼ until "OFF" appears.

**Warning limit for excess power consumption (I!▲)**

This value must be on "OFF". If not, click and hold ▲ until "OFF" appears.

The following parameters are stored in the SET menu, and may only be modified by the service personnel.

| Parameter | Value |
|---|---|
| Hyst | 0.1 A |
| OnDel | 0 s |
| Del | 3 s |
| RSDel | 0 m |
| I▲ | no |
| I >>≒ | no |
| Mem ? | no |
| ↶ ? | no |
| ? | Is |
| ◘ ? | NC |

**(4) Separator operating hours**

**(5) Phase sequence relay**

**(6) Contactor relay**

**(7) Fuse**

**(8) Terminal blocks for connecting motors and sensors.**

**(9) (Reversing) contactor forward/reverse**

### 9.3.3 Fault

The red warning light illuminates in the case of a malfunction. The cutting filter cannot be used in the case of a malfunction. This malfunction may be due to the following causes.

| Fault | Resolution |
|---|---|
| Incorrect phase sequence | Use the phase inverter in the CEE connector. |
| Blocked blades | Open the cleaning flap of the housing and remove any foreign bodies stuck between the blades and blade counterparts. |
| No medium present | Check that the initial part of the suction line is inserted deep enough in the medium, so that no air is sucked in. Also check all connections and lines for leaks. |

## 9.4 Starting the cutting filter

If the cutting filter is equipped with a control system, it will start automatically when the suction pump of the separator is turned on, provided that it is connected properly.

If the cutting filter is operated without a control system, it can be started from the rotary switch on the motor protection switch.

If the cutting filter does not turn on properly, check that the cleaning flap is properly closed and that the Emergency OFF push button is not engaged.

## 9.5 Winter operation and extended periods of inactivity

At temperatures below 0°C or before extended periods of inactivity (> 2 weeks), the cutting filter should be completely cleared of liquids and fixed phases following operation. In addition, all the pumps and lines must be drained of liquids. Depending on the control, the lines and pumps may be emptied by changing the conveying direction.

# 10 MAINTENANCE OF THE CUTTING FILTER SF 300 M1708

The specified maintenance and inspection work must be performed regularly. These tasks may only be carried out by trained, qualified and authorised personnel. The operator of the device is obligated to have the manufacturer himself or a service approved by the manufacturer perform maintenance work according to the regulations of the manufacturer, including the necessary changing of oil and the repair and replacement of wearing parts. The operator is thus obligated to maintain a maintenance and revision list, which facilitates monitoring of the mandatory inspection and maintenance work (see Point 13Maintenance and revision list on page 28).

***In all the different operating states (life cycles) such as:***

- ***Normal operation***
- ***Setup***
- ***Commissioning***
- ***Troubleshooting***
- ***Repair***
- ***Maintenance***
- ***Cleaning***

***all filling and outlet openings must be closed. Operating the system in the operating states mentioned above is prohibited. Before opening the cutting filter, no voltage must be present or it must be disconnected from the power supply.***

## 10.1 Maintenance intervals

The cutting filter must be inspected for damage before every use. In particular the cable must be proven to be free of damage. In addition, the secure positioning of all screws and other fastening devices must be verified.

### 10.1.1 Recommendation: daily

#### 10.1.1.1 Emptying the filter chamber

Depending on the nature of the medium, the filter chamber of the cutting filter might fill up with foreign bodies. This gradually leads to loss of performance. Therefore, the filter chamber should be opened via the cleaning flap every day before or after operation and emptied if necessary.

**Attention:** Before opening the cleaning flap, make sure to equalise the pressure by opening the ball shut-off valve!

### 10.1.2 Recommendation: every 14 days

#### 10.1.2.1 Ball bearing lubrication

The cutting filter has a lubricating point (lubrication nipple) with an outlet controlled by the bearing. The bearing must be lubricated with a waterproof, high-performance lubricant.

**Important:**

**The lubrication must always be performed when the machine is running and to be specific:**

**1.) after medium to long operational pauses (14 days to 4 weeks) when commissioning**

**2.) after every use**

The fill level should not exceed 2-4 strokes with respect to the hand lever press.

#### 10.1.3 Recommendation: every 3 months

##### 10.1.3.1 Check the power consumption at the ammeter

Power consumption is constant during normal operation. Occasional current fluctuations are caused by the consistency of the medium being conveyed. If a constantly increased power consumption is measured, contact our sales representative.

##### 10.1.3.2 Checking the sealing elements

Check the consistency of all external seals (cleaning flap, bearing bush, etc.). Brittle or damaged seals might cause leaks and thus lead to loss of performance. If you discover any such damages, contact our sales representative.

#### 10.1.4 Recommendation: every 12 months

##### 10.1.4.1 Controlling the gearbox oil

The oil filling in the gearbox must be checked once annually. If oil is missing or contaminated with water or other media, the cutting filter must be taken out of operation immediately. In this case, the oil must be changed immediately and the shaft seals must be exchanged.

##### 10.1.4.2 Check the tightening torque of all screw connections

Every 9,000 operating hours or at least once annually, we recommend checking the secure positioning of the screw connections in the scope of maintenance work. The tightening torques for stainless steel screws in Nm for different thread sizes are shown below:

(M8 = 18 Nm, M10 = 33 Nm, M12 = 57 Nm, M16 = 135 Nm, M20 = 150 Nm)

##### 10.1.4.3 Visual inspection and cleaning of the cutting filter

Every 9,000 operating hours or at least once annually, we recommend checking the cutting filter for damage and soiling in the scope of maintenance work. Deposits, blockages and fibrous materials adhering to the opened cutting filter must be removed. The separator can be rinsed with a hose pipe but not with a pressure cleaner. Damaged components must be exchanged immediately. Please contact our sales representative.

## 10.2 Recommendation at end of service life

At the end of its service life, the device can be disposed of normally as scrap. The oils should be removed in advance and disposed of properly. The device is composed of various metals: steel, aluminium, copper and stainless steel. Dismantling it into the metal groups considerably increases returns.

# 11 NOTICES

## 11.1 Regulation of the professional association

The following accident prevention regulations of the Agricultural Professional Association can be found in Paragraph 2.8 under "Special Provisions for Pits and Canals":

**Paragraph 2.8**

**§ 1 Protection against falling in**

(1) Pits, ditches, canals, wells and other similar pits in the house and courtyard area must be protected with fences or coverings to prevent persons falling in. If these are not deeper than 100 cm, other safety precautions can suffice.

**§ 2 Openings**

(1) If removal and entry openings, etc., are opened, it must be guaranteed that persons and objects cannot fall in.

(2) Pits and canals that are customarily entered must have facilities which permit risk-free entry. The openings of these pits and canals must be dimensioned in such a way to allow the rescue of any casualties.

**§ 3 Entry**

(1) Before entry and during the presence in pits and canals, ensure that sufficient respiratory air is present and that plant facilities are reliably protected against being switched on. The handling of naked flames is not permitted.

(2) Entry for the recovery of an accident victim is only permissible if two other persons secure the entering person with a rope which is firmly anchored outside the tank.

**§ 4 Tanks and canals for animal faeces**

(1) For tanks and canals in the open air, it must be guaranteed by suitable measures that fermentation gas cannot flow into the buildings.

(2) Closed tanks in the open air must have vent openings on opposite lying sides.

(3) If tanks and canals are found in the buildings – also under slatted floors – it must be guaranteed that fermentation gases are conducted away from the buildings.

(4) If tanks and canals in the buildings are furnished with agitating, pumping and rinsing plants, facilities for the removal of fermentation gases must be present which automatically switch on when the agitator and rinsing works are operating. They may only be switched off after conclusion of the work process. The gases conducted away must not endanger persons.

(5) Canals must be designed so as to avoid any unnecessary whirling up of the faeces.

(6) Operating stations for agitating, pumping and rinsing equipment etc. must be built up over the floor.

(7) Closed rooms in which there are operating stations may not have openings to the tanks and canals.

(8) Operation instructions must be permanently attached to the operating stands.

**§ 5 Removal of animal faeces from tanks and canals**

(1) No smoking and no naked flames are allowed in the immediate proximity of removal openings during the agitating and removal of faeces.

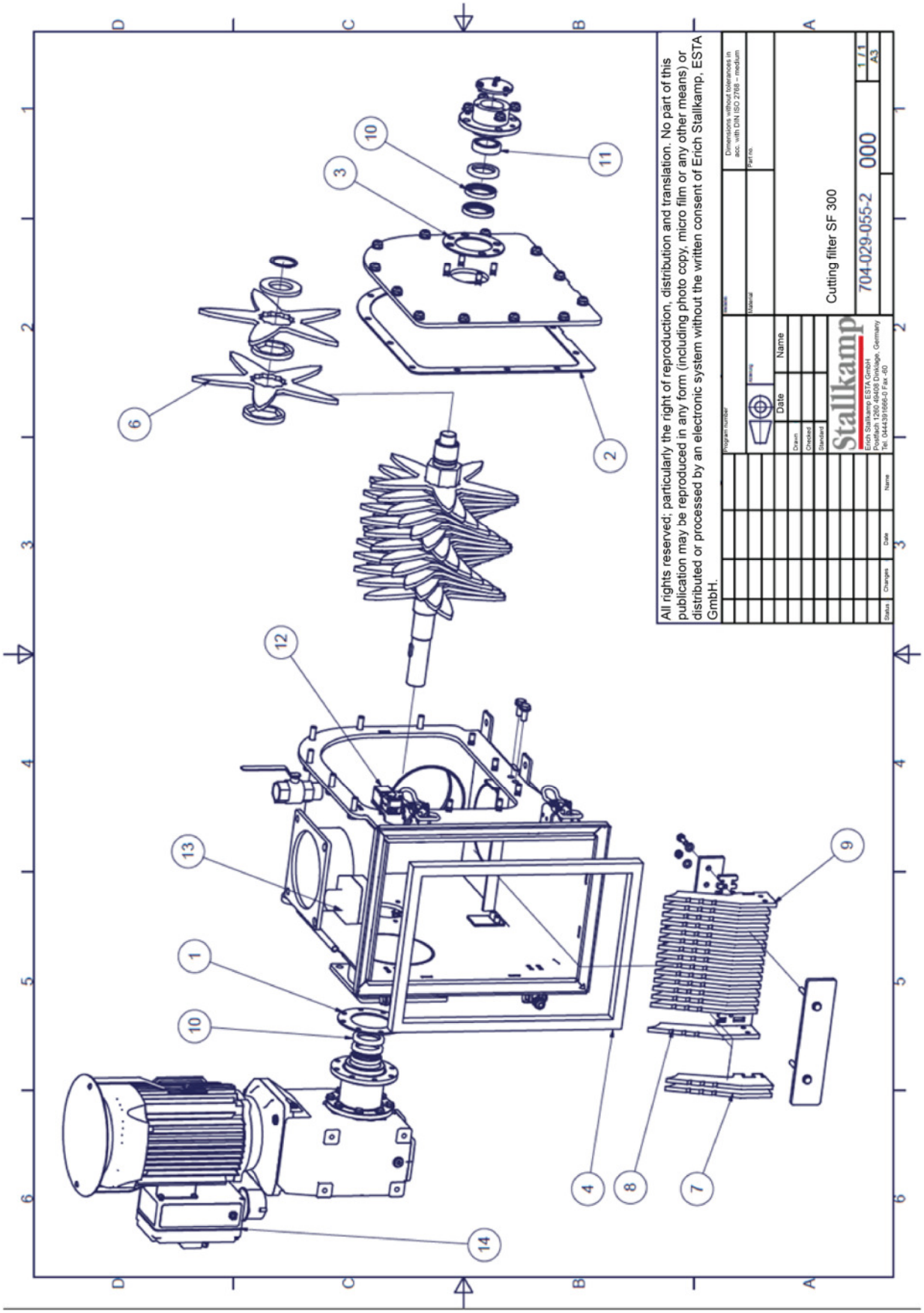
(2) In the buildings in which there are open tanks and canals, the presence of persons and animals during agitation and removal is only permissible with sufficient ventilation.

**§ 6 Warning signs**

(1) Easily visible warning signs must be attached to openings of tanks and canals which indicate the danger of the gases.

(2) Refer to the "Information Sheet with Notice, Warning, Prohibition and Rescue Signs" of the Federal Association of Agricultural Professional Associations.

# 12 LIST OF SPARE AND WEARING PARTS OF THE CUTTING FILTER SF 300 M1708



| Pos. | Description | Piece | Item No. | Type |
|---|---|---|---|---|
| 1 | Flange sleeve seal | 1 | 5190246 | NBR 70 |
| 2 | Cover seal | 1 | 5190245 | NBR 70 |
| 3 | Bearing bush seal | 1 | 5190247 | NBR 70 |
| 4 | Door seal | 1 | 5480890 | NBR/SBR 50 |
| 5 | Rubber flange seal 4-6" | 4 | 5500074 | 180x180 |
| 6 | Blade double-sided | 16 | 7090934 | |
| 7 | Blade counterpart | 15 | 7090932 | |
| 8 | Welded assembly Blade counterpart | 1 | 6090556 | |
| 9 | Blade counterpart 300 ZB | 1 | 6090559 | |
| 10 | Radial shaft seal ring | 6 | 5190004 | 45x60x7 |
| 11 | Thrust ball bearing | 1 | 5180014 | 6006 |
| 12 | Safety switch | 1 | 5310701 | |
| 13 | Emergency OFF push button | 1 | 5310419 | |
| 14 | Motor protection switch | 1 | 5310017 | UC 400 V / 50 Hz with 16 A CE connector |

## 12.1 Notices

Replacement is self-explanatory for most spare parts listed above. The more complex replacement work is briefly explained below.
In order to replace the complete assembly of the blade counterpart (Item 9), you have to remove the two screws on the bottom right and the other two on the bottom left side of the housing that hold the blade counterparts in place. The complete blade counterpart can then be pulled out through the opening of the cleaning flap. If you only want to replace individual blade counterparts (Item 7), you can now loosen all screws of the assembly and remove the blade counterparts one by one. To carry out these works, it is not necessary to remove the housing cover.
It should only be removed if the cover seal (Item 2) or the blades (Item 6) are going to be replaced. In order to replace the blades, you have to also remove the retaining ring and the spacer from the shaft. The blades and the spacers can then be pulled out by hand. However, you have to at least pull out the blade counterpart assembly before doing so.
In order to replace the flange sleeve seal (Item 1) or the radial shaft seal rings (Item 10), you have to disassemble the drive with the flange sleeve.

## 13 MAINTENANCE AND REVISION LIST OF THE CUTTING FILTER SF 300 M1708

Each person must properly enter all maintenance and revision work in the list and confirm it with his or her own signature and that of the person responsible.

This list must be submitted to the supervisory bodies of the professional association, the TÜV and the manufacturer on request.

| Maintenance/revision on device with the machine no. | Notes | Date | Signature of installer | Signature of person respon-sible |
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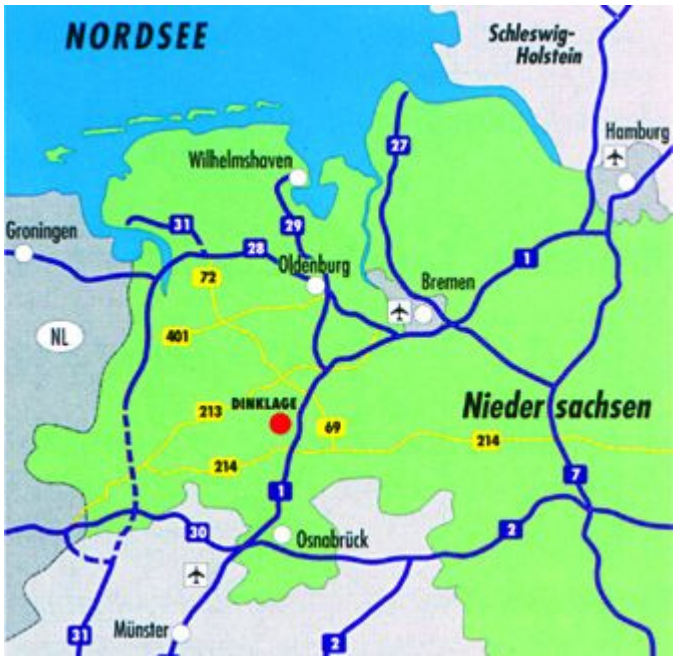


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