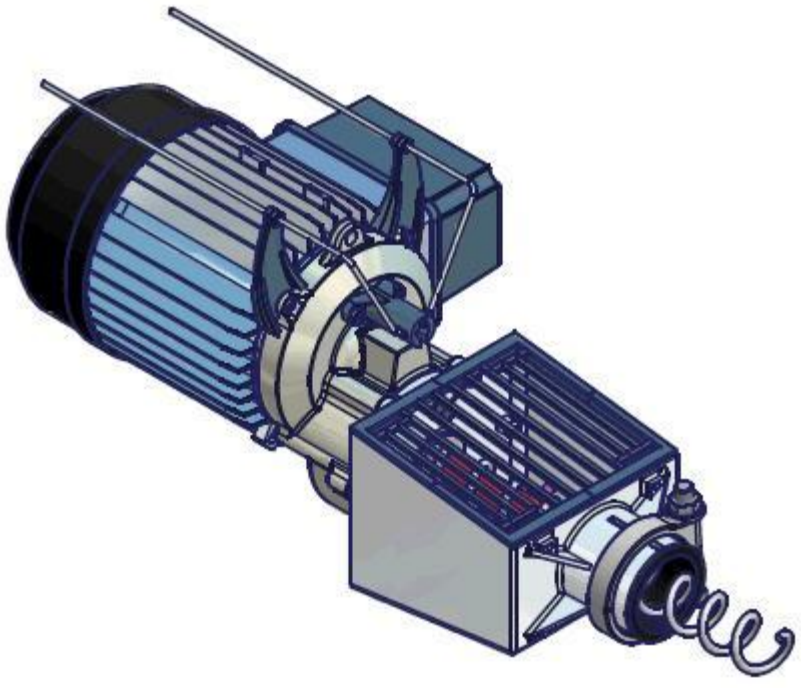
Stallkamp

OPERATING MANUAL

Drive for spiral conveyor
AFS-M1308

0.37 kW AFS-M1308 type 01/55 and
0.55 kW AFS-M1308 type 01/55
0.37 kW AFS-M1308 type 03/55
0.55 kW AFS-M1308 03/55



Document no.: 8370006 Version: June 2013

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.**

Date saved: 22.08.2014 07:48:00
Date printed 22/08/2014
BA Antrieb für Förderspirale AFS-M1308 englisch V1.doc

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1 TABLE OF CONTENTS

2 DECLARATION OF CONFORMITY PURSUANT TO MACHINERY DIRECTIVE 2006/42/EC (ORIGINAL, GERMAN VERSION)

Manufacturer: Erich Stallkamp ESTA GmbH

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Authorised representative for the composition of the technical documentation:

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Product name: Drive for spiral conveyor Model: AFS-M1308

Type: 0.37 kW (1 phase), 0.55 kW (1 phase), 0.37 kW (3 phases), 0.55 kW (3 phases)

We hereby declare that the products listed above conform to the pertinent regulations of the EC Directive:

Machinery Directive 2006/42/EC

including all amendments and conform to the pertinent regulations of the Directive on electromagnetic compatibility:

EMC Directive 2004/108/EC.

The following harmonised standards have been applied:

EN ISO 12100-1:2003, Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology

EN ISO 12100-2:2003, Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles

EN 60204-1:2007-06, Safety of machinery - Electrical equipment of machines; Part 1: General requirements

EN 61000-6-1:2007, Electromagnetic compatibility (EMC) Part 6-1: Generic standards – Immunity for commercial environments

EN 61000-6-2:2005, Electromagnetic compatibility (EMC) Part 6-2: Generic standards – Immunity for industrial environments

Dinklage, dated 22 August 2014

Erich Stallkamp, Managing Director

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 references 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 speed, 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 notes 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-"original 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 operating staff 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 plant.
- Endangerment of persons due to electrical, mechanical or other exposure.

WARNING SIGNS

Observe all notices and warning signs.

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.

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.

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 (temperature protection);
- ✓ 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 16 Maintenance and revision list).

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 AFS-M1308

6.1 General description AFS-M1308

This operating manual applies to the standard model of the Stallkamp drives for spiral conveyor.

Drive for spiral conveyor comprising:

- Single-stage spur gear transmission
- Aluminium construction
- Suitable for Ø 45 mm or 50.8 mm pipes
- Anti-perch wire
- Performance: 0.37 or 0.55 kW
- For 230/400 V, 200 V or other voltages on request
- Motor winding with thermal protection
- 1 phase or 3 phases, 50 Hz or 60 Hz
- With integrated control for:
    - sensor deactivation
    - control fuse
    - manual on/off switch

6.2 Proper use of AFS-M1308

The drive is intended for the following applications:

- conveying feed for poultry

6.3 Overload capacity of AFS-M1308

Our devices can be exposed to the following overload conditions:

- 1.5x nominal torque for 15 minutes

6.4 Protection categories of AFS-M1308

The motors are protected against coming into contact with the moving parts and the live parts as well as against the ingress of water and foreign bodies.

The protection categories of the electrical machines in accordance with DIN IEC 60034 Part 5 and DIN 40050 are identified by an abbreviation composed of the code IP (international protection) and two figures.

0-6 1st figure for degree of protection against contact and ingress of foreign bodies

0-6 2nd figure for degree of protection against ingress of water

Our motors are delivered in the following protection category:

IP 55	Complete protection from contact	Protection against hazardous dust deposits	Splashes from any direction (0.3 bar)

6.5 Technical data of AFS-M1308

Type: Drive for spiral conveyor model AFS-1-M1308 0.37 kW

- Phases: **1 phase**
- Motor power output: **0.37 kW**
- Protection category: IP55
- Insulating category: F
- Ambient temperature: Max. 40°C
- Frequency: 50 or 60 Hz
- Motor speed (rpm): 1,380 (50 Hz), 1,680 (60 Hz)
- Weight: Approx. 10 kg

Type: Drive for spiral conveyor model AFS-1-M1308 0.55 kW

- Phases: **1 phase**
- Motor power output: **0.55 kW**
- Protection category: IP55
- Insulating category: F
- Ambient temperature: Max. 40°C
- Frequency: 50 or 60 Hz
- Motor speed (rpm): 1,375 (50 Hz), 1,690 (60 Hz)
- Weight: Approx. 10 kg

Type: Drive for spiral conveyor model AFS-3-M1308 0.37 kW

- Phases: **3 phases**
- Motor power output: **0.37 kW**
- Protection category: IP55
- Insulating category: F
- Ambient temperature: Max. 40°C
- Frequency: 50 or 60 Hz
- Motor speed (rpm): 1,375 (50 Hz), 1,650 (60 Hz)
- Weight: Approx. 10 kg

Type: Drive for spiral conveyor model AFS-3-M1308 0.55 kW

- Phases: **3 phases**
- Motor power output: **0.55 kW**
- Protection category: IP55
- Insulating category: F
- Ambient temperature: Max. 40°C
- Frequency: 50 or 60 Hz
- Motor speed (rpm): 1,375 (50 Hz), 1,700 (60 Hz)
- Weight: Approx. 10 kg

6.6 Type plate of AFS-M1308

The example type plate displays the most important power and specification data for the nominal operating point:

Manufacturer: Erich Stallkamp ESTA GmbH

Motor number: 5282205

Motor type: T71B4

Number of phases: 3~ mot.

Voltage: 230 / 400 V

Current consumption: 1.85/1.07 A

Insulation class: F

Degree of protection: IP55

Operating mode: S1

Efficiency power factor: 0.77 / 0.80

Efficiency: 64.7% / 66.7%

Output speed: 307/min / 311/min

Production date: 23/05/2013

Serial no.: 232468003

As well as additional data such as bar codes and legally defined symbols such as e.g., CE, UL-CSA, CCC, etc.

7 CONSTRUCTION TYPE AFS-M1308

7.1 Motor

Threephase asynchronous motor as short circuit rotor at 50 Hz / 60 Hz.

Permanent operation or intermittent operation or S2-45 mins. The stator is insulated according to class F (155°C). The motor has been designed in such a way that in the case of nominal voltage deviations up to +/- 10% it can still attain an unchanged nominal output. With regard to the danger of overheating, +/- 10% deviations in the nominal voltage are also allowed, provided that the motor is not running at full load the whole time. The difference between the individual phases must not exceed 2%.

7.2 Monitoring device

Three series-connected temperature sensors are installed in the stator winding. These will start reacting at 150°C.

ATTENTION! The temperature sensing switches, where present, must always be connected.

8 TRANSPORT AND STORAGE REGULATIONS FOR AFS-M1308

The device must be transported in a lying position. Ensure that the machine is not unable to roll.

If the device is not used for a long period of time, it must be protected against moisture and heat. The impeller should be turned from time to time (approx. every two months) to ensure that the sealing surfaces do not adhere to each another. This is absolutely essential when the device is not in use.

The device must be inspected before being recommissioned after not being used for a long period of time. It is particularly important to verify that the cable entry points and seals are not damaged in any way.

9 INSTALLATION OF AFS-M1308

9.1 Prior to commissioning: Safety instructions

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

(1) Never work alone.

(2) Pay attention to the danger of electrical accidents.

(3) Wear safety glasses and safety footwear.

(4) Keep a first-aid kit ready.

Otherwise observe the health and safety regulations as well as the prevailing governmental regulations.

9.2 Commissioning the AFS-M1308

(1) The drive must be aligned to the feed line horizontally and vertically.

(2) Commission the device motor protection switch.

The shaft turns anti-clockwise (see 10.2 Direction test).

(3) As standard, the device is protected by:
a) a microfuse in the switch box;
b) an overheating protection.

In case of an overload or of overheating, the device is switched off by a motor protection switch. If the device was switched off as a result of overheating, under no circumstances should you try to restart it by pressing the switch repeatedly.

A cooling phase of approx. half an hour must be maintained in order to avoid damage occurring to the motor winding. In some cases, it may be possible to restart the device after approx. 5 minutes, although the motor winding is still partly hot. Even in these cases, it is still important to maintain the cooling phase of approx. half an hour.

(4) The secure positioning of all screws and connections must be verified.

9.3 Cleaning the device

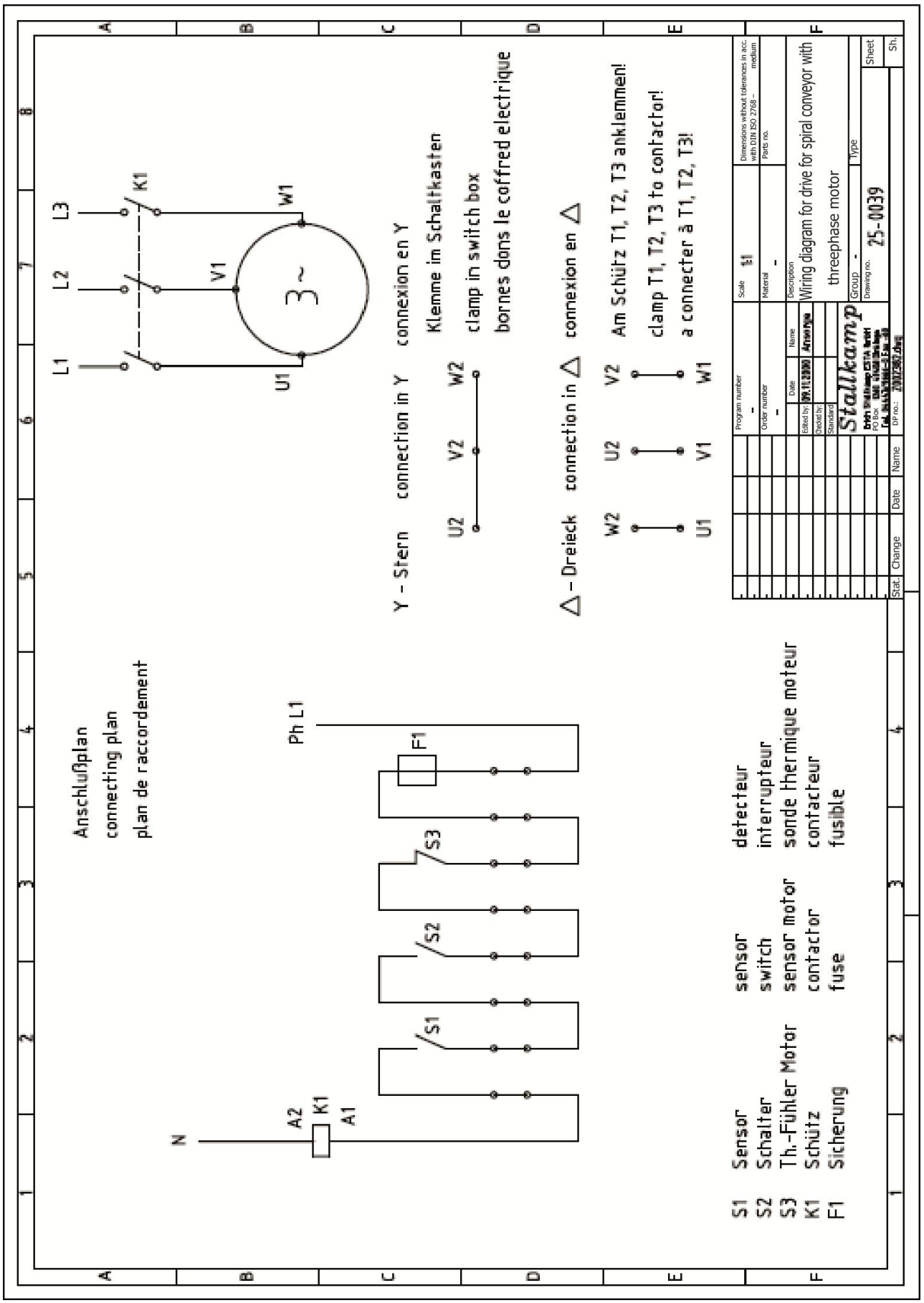
(1) Pressure washers must not be used to clean the device.

(2) Turn the drive off using the motor switch and secure it from being switched on again.

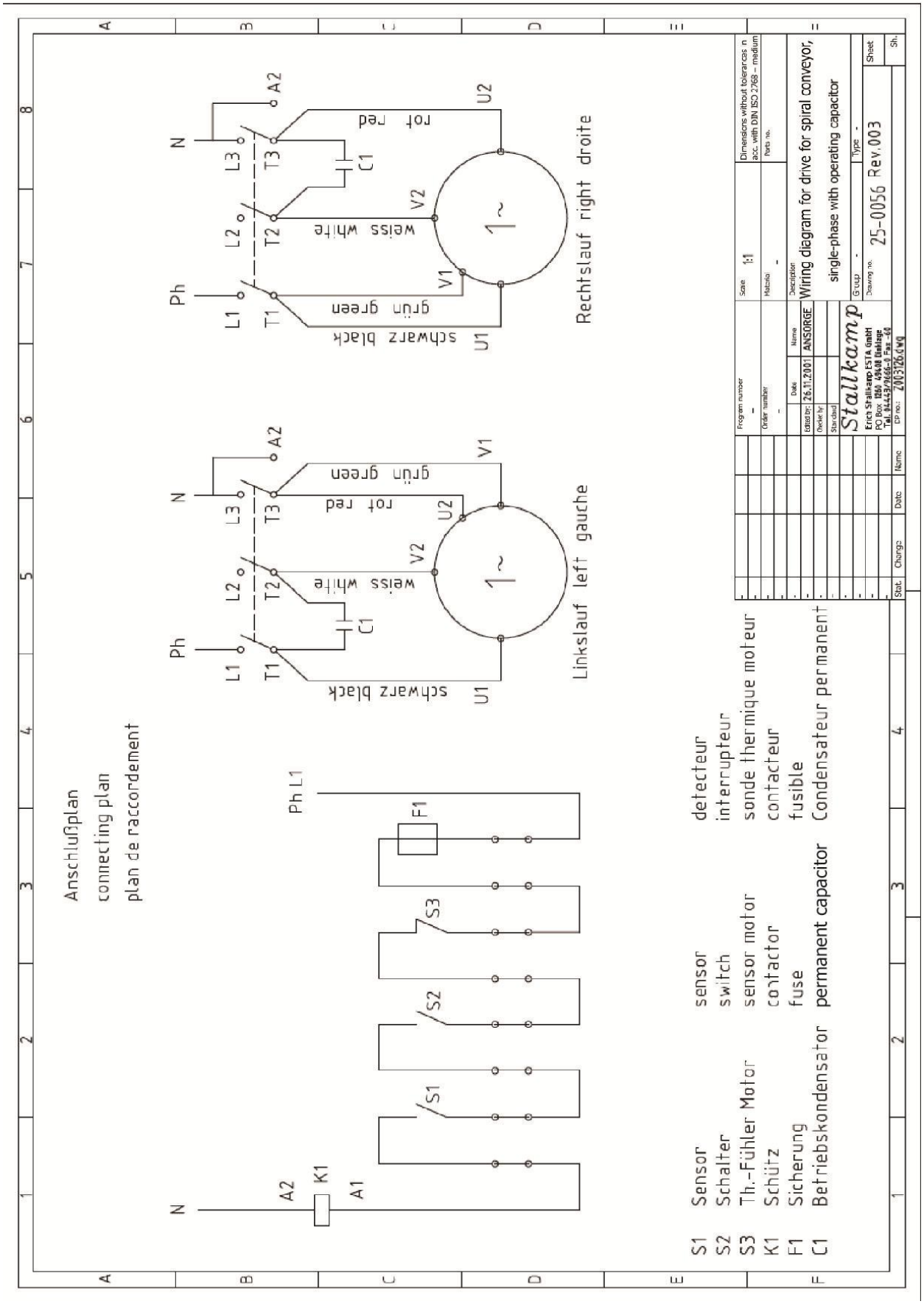
(3) Clean the drive with compressed air or a suitable tool (e.g., hand brush).

(4) Only use the appliance switch in the terminal device cover in the case of small disruptions, otherwise see Point 2.

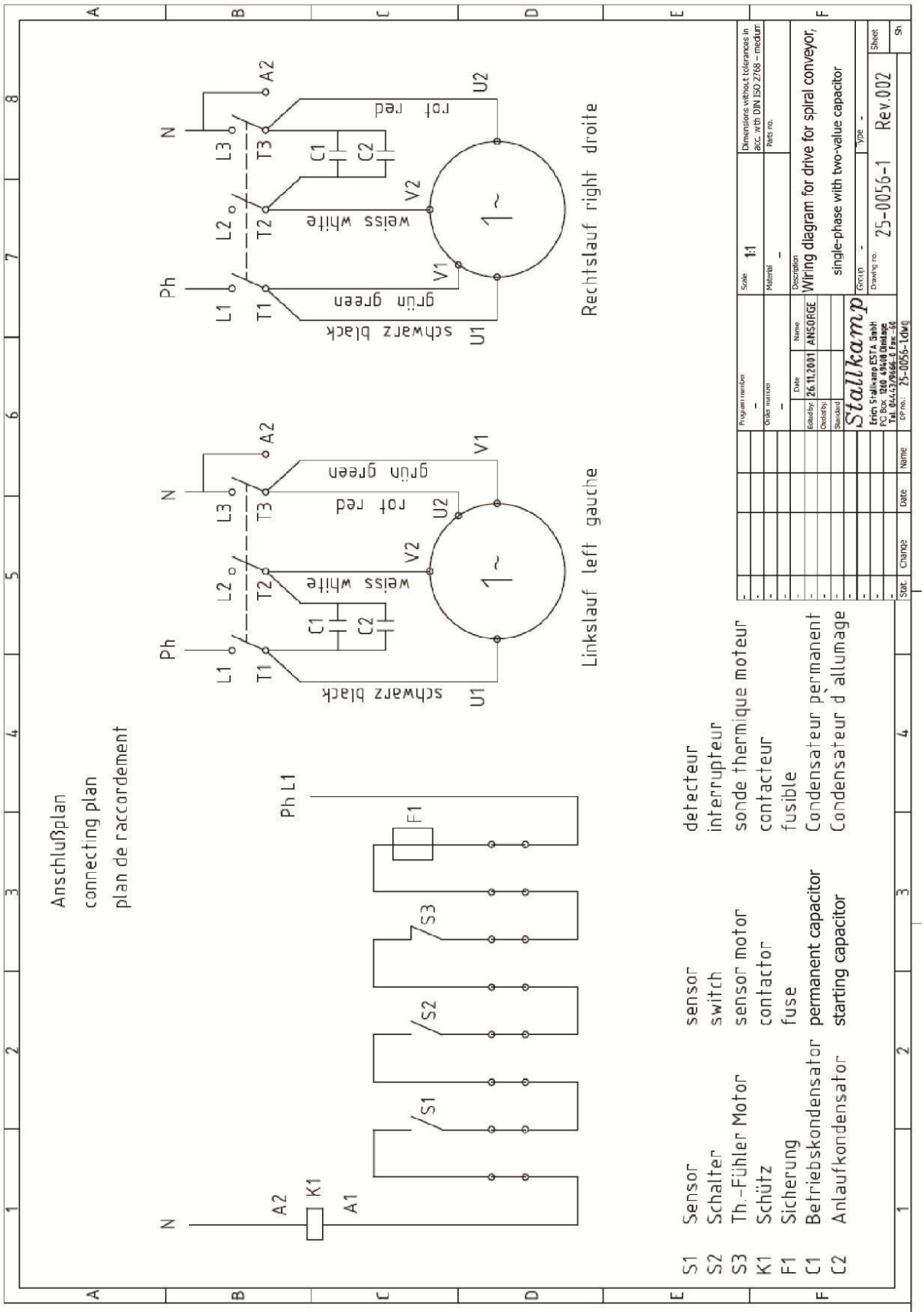
9.4 Connection plan AFS-M1308 type 03/55 and type 03/37



9.5 Connection plan AFS-M1308 type 01/55 and type 01/37 with operating capacitor



9.6 Connection plan AFS-M1308 type 01/55 and type 01/37 with two-value capacitor



10 ELECTRICAL CONNECTION OF AFS-M1308

10.1 Electrical connection and protection of the electrical motor

The electrical connection may only be carried out by a certified electrician. The VDE regulations (German Association for Electrical, Electronic & Information Technologies) must be observed. Compare the existing voltage with the specifications on the motor's manufacturer's plate and select the appropriate circuit.

The technical connection conditions of the local energy authorities must be observed during connection.

A motor protection device is a prerequisite.

The device must be properly connected to the mains supply (pay attention to serviceable protective conductors) and check whether the feed cable is properly protected. The respective power consumption of the motor in amperes is shown on the motor's type plate, see 6.6. Type plate.

ATTENTION!

The switch box must be protected from moistures at all times!

10.2 Direction test for AFS-M1308

Looking towards the driven shaft, the motor shaft turns anti-clockwise.

The direction can be tested by turning the device on and off again rapidly.

If the direction is incorrect, swap any two of the phases L1, L2 and L3 of the feeder in the switch box!

The electrical installation may only be carried out by a certified electrician.

(in accordance with the VDE regulation or national regulations)

IMPORTANT!!

The electrical cable must ***never*** be subjected to tensile loads, as this can cause damage to the unit or cause it to leak.

11 MAINTENANCE OF AFS-M1308

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 (Aral EP 85W-90) 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 16 Maintenance and revision list).

11.1 Maintenance intervals

The device must be inspected for damage before every commissioning. In addition, the secure positioning of all screws and other fastening devices must be verified.

11.1.1 Recommendation: Every 3 months

11.1.1.1 Check the power consumption at the ammeter

Power consumption is constant during normal operation.

11.1.2 Recommendation: Every 6 months in continuous operation

11.1.2.1 Check the shaft seal

The shaft seals are wearing parts and must be replaced at the latest every 4,500 operating hours when the device is in continuous operation. The shaft seals are available as a complete sub-assembly. Please contact our sales representative.

11.1.3 Recommendation: Every 6 months

11.1.3.1 Check the insulation resistance

Every 4,500 operating hours or at least once annually we recommend measuring the insulation resistance of the motor winding in the scope of maintenance work. If the insulation resistance is not attained, moisture can enter the motor. The device must not be recommissioned. Please contact our sales representative.

11.1.3.2 Check the functioning of the monitoring device

Every 4,500 operating hours or at least once annually we recommend checking the monitoring device in the scope of maintenance work. For these functional checks the device must be cooled down to ambient temperature. The electrical power cords of the monitoring devices must be disconnected in the switch box. Firstly, the temperature protection should be checked with a continuity measurement.

11.1.4 Recommendation: Every 24 months or 10,000 operating hours

11.1.4.1 Check the pinions and bearings

The oil filling in the oil chamber must be checked and changed every 24 months (Aral EP 85W-90). If oil is missing or contaminated with water or other media, the device must be taken out of operation immediately. In this case, the seals must be exchanged. The bearings must be checked for any damage.

Performing the first lubricant change ahead of schedule is advantageous. Shorter maintenance intervals should be applied in extreme operating conditions, e.g., high relative humidity, aggressive environments and considerable temperature fluctuations.

Following maintenance, ensure that the gearbox cover and the cover seal are affixed in place correctly. The ventilation cover on the electrical motor must be free from dirt and should be inspected regularly. In addition, the terminal box must be attached to the motor without any damage and the connection cable must be securely in the strain relief of the bush.

11.1.5 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.

12 PROVISIONS OF THE PROFESSIONAL ASSOCIATION

The current version of the provisions of the professional association must be observed!

13 SPARE PARTS LIST FOR AFS-M1308 TYPE 0.37 AND 0.55 KW

Drawing no.: 01-0574P

Position	Number	Description	Parts no.
1	1	Motor housing with coil package	**See motor number**
2	1	Gearbox housing	5150502
3	1	Pinion	**See motor number**
4	1	Auger box	5150503
5	1	Ventilation cover	**See motor number**
6	1	Perch wire	5130057
7	1	Fan blade	**See motor number**
8	1	Wire holder 1	5330049
9	2	Wire holder 2	5330048
10	1	Driven shaft	**See motor number**
11	2	Protective screen	**See motor number**
12	1	Flue pipe clamp	5130061
13	1	Terminal box cover	**See motor number**
14	1	Seal for terminal box	5150507
15	1	Cover for terminal box	**See motor number**
16	4	Filister sheet metal screw for terminal box cover	**See motor number**
17	1	Ventilation screws	5330040
18	1	Reducer sleeve	5330045
19	1	T-head bolt M6x35	5240035
20	1	Hexagon head nut M6	5230007
21	2	Fitted washer A bearing DIN 988	5250083
22	1	Supporting washer Ø 19 mm	7370256
23	1	Radial shaft seal ring for motor 28x47x7 type A	5190072
24	1	Radial shaft seal ring for auger box 20x42x7 type A	5190086
25	1	Angular ball bearing for auger box	**See motor number**
26	1	Thrust ball bearing A bearing	5180094
27	1	Fitting key for driven gear DIN 6885 B	5250053
28	2	Fastening ring DIN 471	5250028
29	1	Thrust ball bearing for gearbox	**See motor number**
30	2	Filister head screw M5x14	5220104
31	4	Filister screw for auger box / gearbox M5x25	5210091
32	2	Filister head screw for auger box / gearbox M5x25	5210092
33	4	Filister head screw for motor / gearbox M5x20	5210121
34	1	Sheet metal screw with collar 3.5x9.5	5220100
35	1	Capacitor	**See motor number**
36	1	Operating capacitor	**See motor number**
37	1	Capacitor support	**See motor number**
38	1	Cover increment	**See motor number**
39	1	Gear oil Aral EP 85 W-90	0.05 litre
40	1	Connection plans	**See motor number**
41	1	V-Ring, seal for B bearing 14 mm	5190140
42	1	Thrust ball bearing B bearing	**See motor number**
43	1	Paper seal for motor / gearbox housing	**See motor number**
44	1	Paper seal for gearbox housing / auger box	**See motor number**
45	1	Cable screw connection M12x1.5	5310201
46	1	Cable screw connection M16x1.5	5310185
47	1	Bronze counternut M16x1.5	5310187
48	1	Cable screw connection M20x1.5	5310162
49	1	Small contactor	**See motor number**
50	1	Terminal rail	**See motor number**
51	1	Terminal strip with control fuse	**See motor number**
52	1	Holder for terminal strip	7370240
53	1	Appliance switch	5310178
54	1	Set of cables with receptacle	5310215
55	1	Sensor AFS – 01	5340057
56	1	Connector with 3-terminal block	5310402
57	1	Black sealing cap	5310179

14 COMPLAINTS FORM FOR AFS-M1308

Stallkamp	Complaints form	Page 23 of 1
		Rev.: 0
		Date of revision: -

In order to allow problem-free processing of your complaint, please start by providing the

motor number: _____

You can find this on the type plate of your drive:

Please enter the spare parts here using the list above.

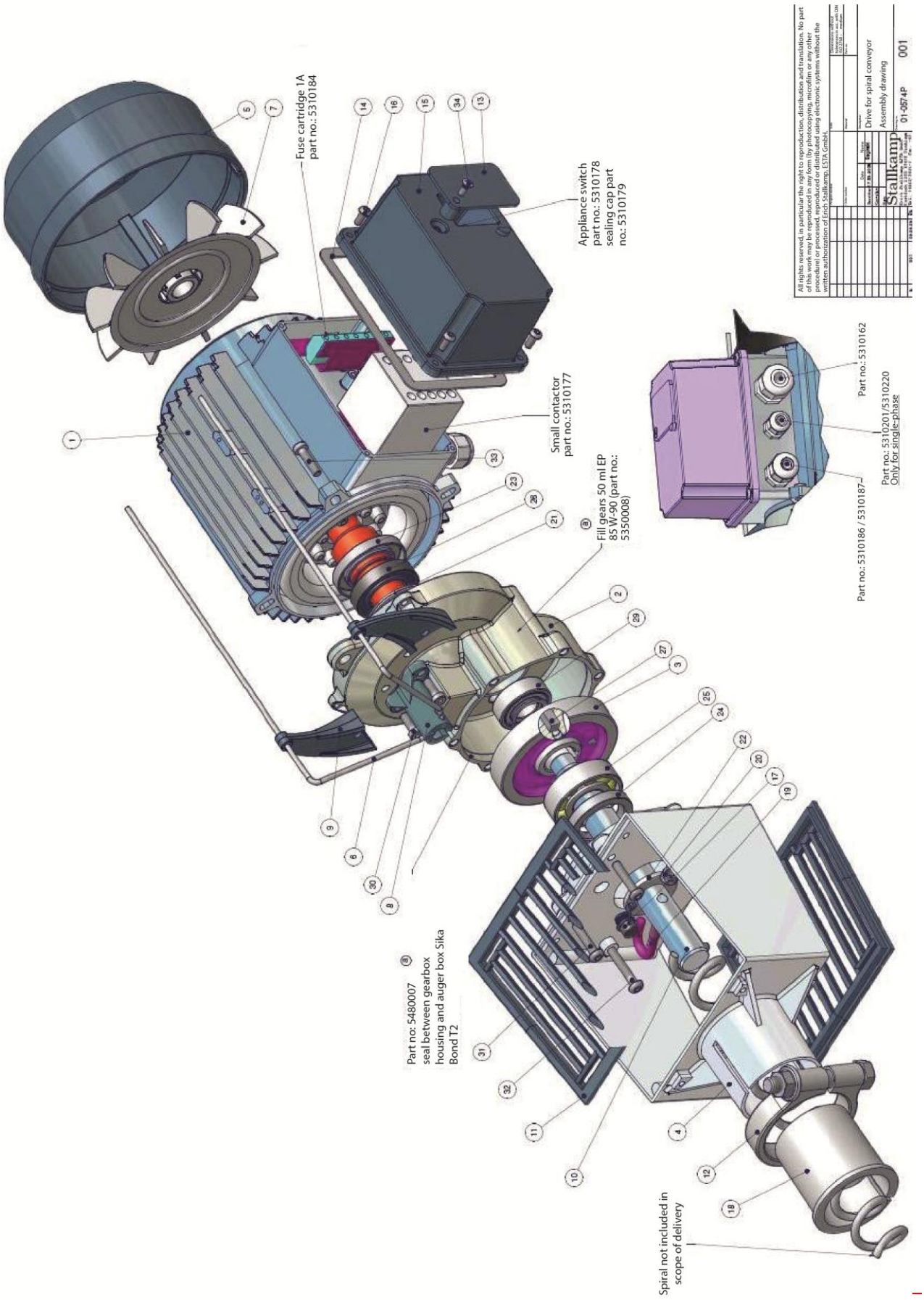
Position	Number	Description	Parts no.

Once you have filled in the form, please return it to:

Motorservice@Stallkamp.de

Date/signature:_____

15 ASSEMBLY DRAWING OF AFS-M1308



16 MAINTENANCE AND REVISION LIST AFS-M1308

Each person must correctly 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 responsible

Maintenance / revision on device with the machine no.	Notes	Date	Signature of installer	Signature of person responsible

You can find us here

Stallkamp

Dinklage lies in the heart of Oldenburg Minster Country.

From the exit (A1) Lohne Dinklage No. 65, direction Dinklage, towards Dinklage Vechta, then industrial area West.

- Pump technology
- Agitating technology
- Stainless steel tanks

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