IMPORTANT INFORMATION
REGARDING YOUR INSTRUCTION MANUAL

This instruction manual will make it easy for you to get know your separator/system, it enables you to operate the separator in accordance with it‘s capabilities.

This instruction manual includes important tips on how to operate the separator economically in accordance with your application. Following these tips will help to prevent dangers, to minimize repair costs, to reduce down times and to increase the reliability and as well as durability of the separator/system.

ATTENTION

In the event of operation of this separator-system by inexperienced personnal,

DANGER OF ACCIDENT

It is imperative that only trained personnal operates this machine and that this operating staff is well informed about the operating instructions enclosed.

The manufacturer will not be liable for any claims resulting from damages, if the original manufactured condition of the machine was altered or modified by the buyer.

C O N T E N T S

1.0	**GENERAL**

1.1	**Copyright** The copyright for these operation instructions, entrusted to the owner of the separator for his personal use, is held by ZERMA. These contain technical instructions and drawings which are not to be copied complete or in part, distributed or used for reasons of unauthorised competition or for informing others.
1.2	**Safety** The separator/system has been constructed in accordance to the general standards of technology and is fitted with safety devices to prevent accidents that could endanger the life of health or the operator. The company operating the unit is responsible for the compliance with the safety regulations. We recommend staff refreher training courses at regular intervals subsequent to initial training during commissioning.
1.3	**Inspection of goods** The goods are to be inspected upon delivery and ZERMA is to be informed of any queries with regard to missing items or transport damage. In cases of transport damage, written notification is to be given to the transport company upon delivery.

2.0	**PRODUCT DESCRIPTION**

Manufactur:	**ZERMA**
Description:	**Fines separator system**
Type:	FAS 500
Customer:	
Order no.:	
Delivery date:	

3.0	**TECHNICAL DATA FINES SEPARATOR**

3.1 **Application fines separator type FAS 500**

Fines separators are used for removing fines, fluff and light material from the granulate and are installed beneath the cyclone. Light material ie. dust, etc. is withdrawn from the granulate by a suction blower.

The separator/system has been design selected for the specific application of the user. The user is responsible for consequences resulting from incorrect operation: the product warranty will thus become invalid.

3.3 **Positioning**

As a rule, the unit is positioned under a cyclone separator but separate installation is also possible (feed via a dosing channel, screw, etc.).

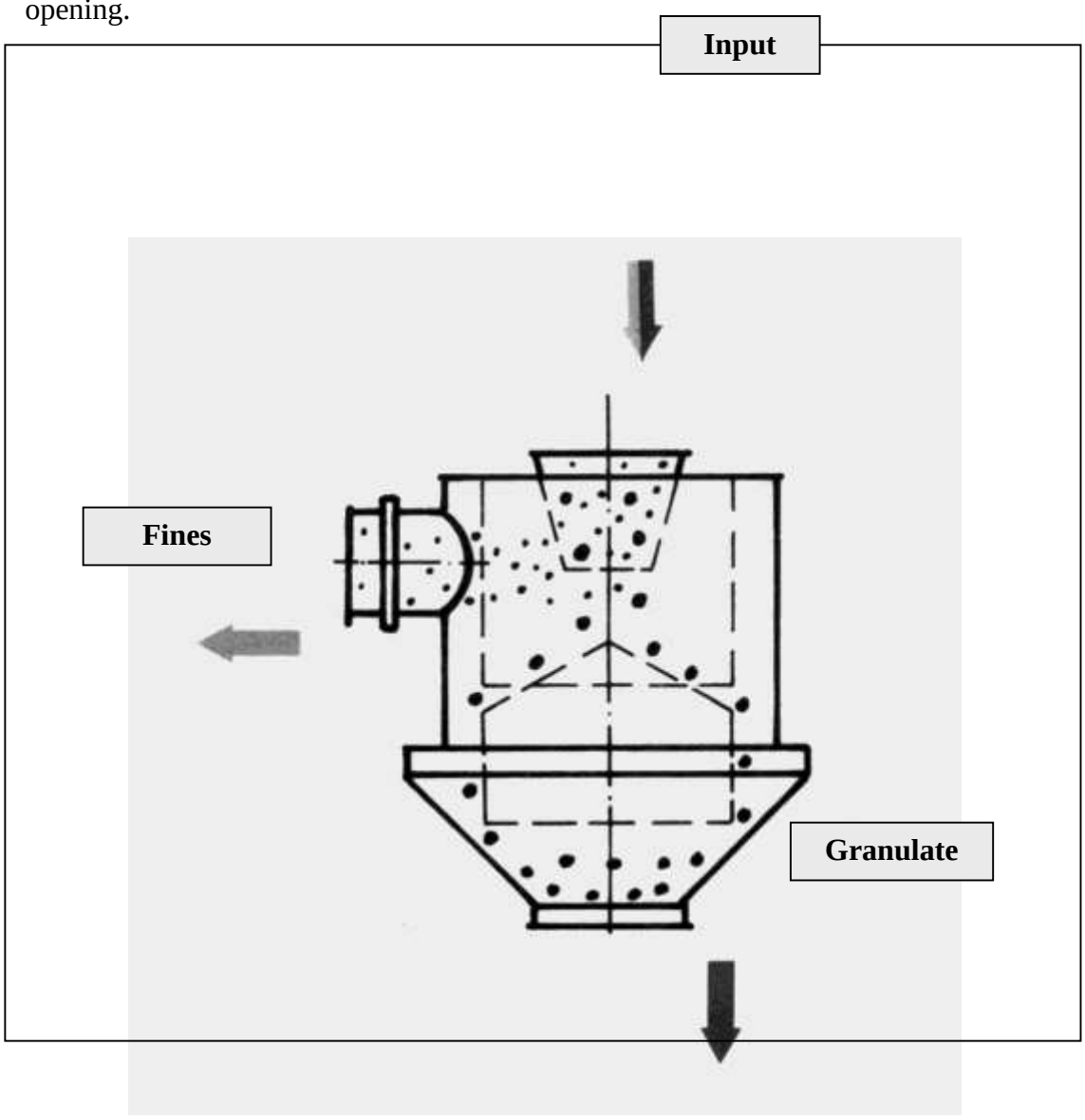
3.4 **Installation**

Installation is carried out using „ Jacobs „ tube connectors.

FAS 500

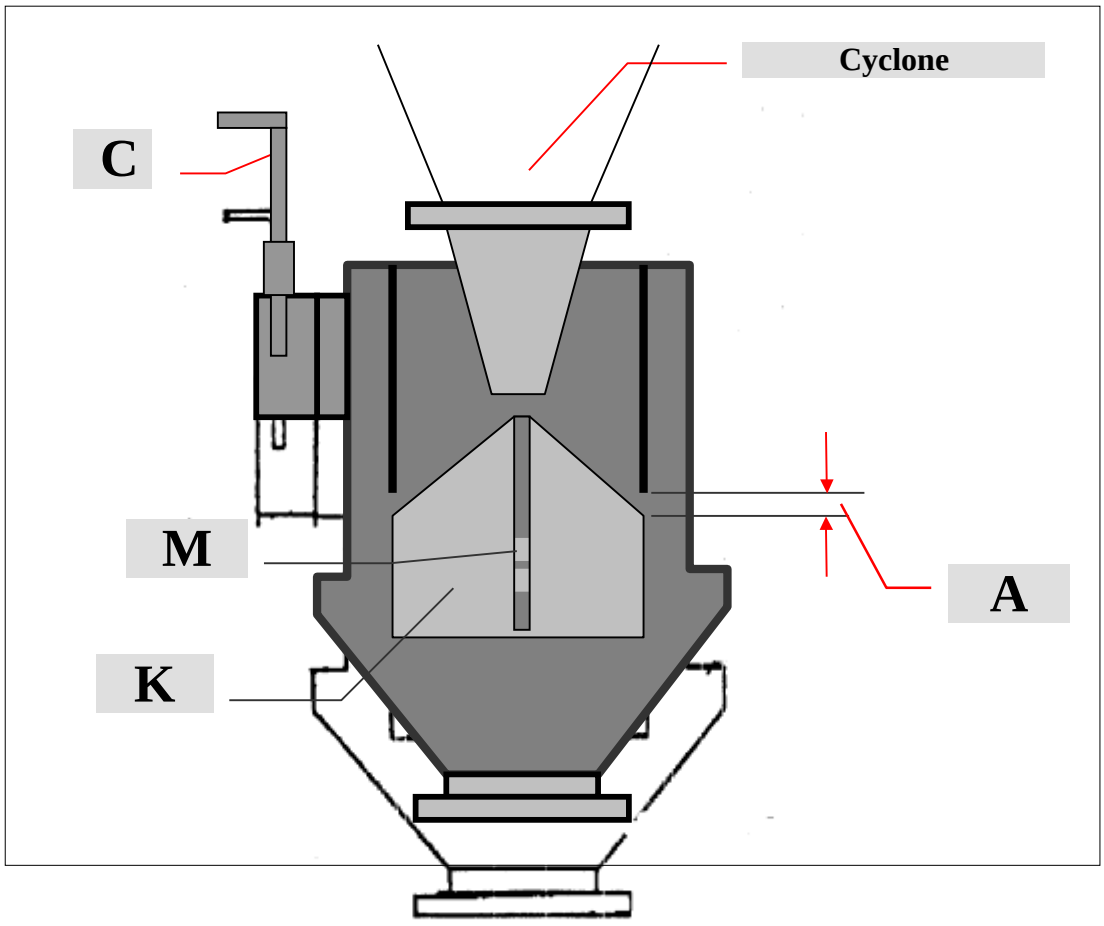
3.5 Mode of operation

The material enters the unit through a feed opening where it is distributed evenly with-in the separator by means of a cone. Material with a low specific weight is lifted by suction via an air channel fited to the outer casing and is drawn off through a suction device. Material with a higher specific weight falls vertically from the unit through a discharge opening.



3.6	**<u>Installation instruction</u>**  1. The feed material must be fed with an even flow to the unit. Irregular flow can cause bad results.  2. Feed material must be dry, loose and free from large pieces.  3. Care should be taken to ensure that the feed material is <u>not under pressure.</u> If a cyclone separator is inefficient, we recommend the installation of a Bucket-wheel-sluice prior to the fine separator. The cyclone must be adequately ventilated.  4. An even flow of material at the outlet must always be guaranteed. In cases where material is discharged into sacks, care must be taken to avoid blocking in the discharge tube (double sack nozzles without a gate are to be used).

3.7	**<u>Adjustment</u>** 1. <u>Flow adjustment</u> Set gap **„A“** to minimum, loosen nut **„M“** and turn cone **„K“** jamming can occur if this gap is too small. If the gap is too large bad results will result. 2. <u>Visual adjustment</u> Open regulator **„C“** until the required degree of separation is achieved. If the regulator is opened too far, large pieces of material will be transported along with the fines.



flow adjustment device

4.0	**TECHNICAL DATA SUCTION UNIT FOR FINES**

4.1 **Material blower fines separator**

Type MFT 20/250

Technical data:

Airflow in cbm/min.	**20**
Pressure (WS)	**250 daPa**
Drive	**2,2 kW, 2900 U/min.**
Suction opening	**Diameter 150 mm with flange**
Discharge opening	**Diameter 150 mm with flange**
Total pressure	**250 daPa at 1,2 kg/cbm at 20° C**
RpM of impellar	**ca. 2900 U/min**
Weight	**ca. 120 kg**

4.2 **Transport and installation**

1. Only hold an lift the blowers at the fix pieces which are not so fragile (like housing, socket, motor lifting ring etc.) and not at suction opening and shaft.

2. Check whether the shaft can be easily moved and whether the blower wheel freely rotates. Afterward the pipe can be connected.

3. In case of belt drive take care of the proper tension of the belt. There is a danger that the bearings heat up too much if the axle pressure is too high because of an excessive tension of the belt. For flat belt, the tension must be approx. 1,5 - 2%, for V-belt about 2 - 4%.

4. The drive motor must allways be connected by an electrician-specialist who also controles whether tension and frequency noted on the motor type plate correspond to the network.

5. Protect every motor with an exactly adjusted motor-protection-switch (for high-speed blowers use a special delay switch).

4.3 **Starting**

1. The blower wheel have to rotate in the direction of arrow; this arrow is, on all machines, always placed on the housing so that it can easily be seen.

2. Very important:

Before starting the blower make sure that the pipe line is connected. If not (free suction an free blowing) the resistances (measured in mm WP) for whose surmounting the ventilator is provided for, are missing. This results in an increasing of the quatity to be transported and of the capacity requirements and the drive motor is overload.

There is also such an overload when resistances in the connected pipe line are less important than assumed by coosing the blower, or if an important air quantity escapes at leaky places in the pipe line.

3. Although for all ZERMA-blowers a motor reserve of about 20% is provided for, it is advisable at the first operation to measure the current consumption of the motor with an ammeter. if the current consumption exceed the value stamped on the type plate, the motor is overload. it is necessary to increase the resistances in the plant (by throttle slide or such-like) so that the current consumption decreases at least up to rated current.

4. Do not use a blower under other conditions than provided for (same quantity to be transported, same pipe line, same specific gravity of material to be conveyed, same conveying temperature etc....).

4.4 **Sound insulation**

In order to reduce sound emission, following sound damping facilities are advisable:

1. Mount the blower on oscillation damping supports (especially in case of high-speed machines).

2. Fit flexible connetction pieces between blower and pipe line f. ex.: canvas supports or rubber coupling sleeve.

4.5 **Treatment of the bearings**

Roller bearing

The first greasing of the blowers leaving our factory is enough under normal conditions for about 5000 operation hours. That means about 2 years for a daily 8-hour-operation.

After this time carely clean the bearings with benzine or benzene (but not with petroleum) and after complete drying fill them with new high-quality lubricant for roller bearings. In case of unfavorable operation (ex.: very high or low ambient temperature, changing bearing load etc.). It is recommended to grease the bearings in shorter time intervals.

By choosing the grease, observe following: grease must be free from acid, alkali, resin and water and the dripping point may not be inferior to 100°. It is very important that the roller bearings are not oiled.

In order to fill the bearings, grease very good the cavities between the rollers up to the half. A too large quantity of grease leads to an increased friction and in case of high-speed to a heating up or overheating of the bearings. moreover the grease can penetrate into the interior of motor and deteriorate the winding-insulation.

If the bearings have a greasing regulator (as it is the case for all ZERMA-blowers), it is possible to grease the roller bearings by means of a grease gun during the opertation. The grease already used is automatically separated and collected in a receiver which is emptied after greasing.

Heating up of motor

The windings of electro-motors can bear a limit temperature of

+ 100° C in case of insulation class A
+ 115° C in case of insulation class E

by a max. ambient temperature of + 40° C.

The heating is not determinated by the touch but can be very easily controled on the spot as follows: measure by means of ammeter the currents in every phase. They may not exceed the rated current noted down on the end plate. The ambient temperature must be inferior to + 40° C.

Only if the measured current data exceed the data noted on the output plate the motor can heat up more than allowed. Because of these measurements a reliable controle is possible.

Heating up of the bearings

For the bearings the limit temperature is + 85° C by a max. ambient temperature of + 40° C. If one bearing heats up at the first starting it is almost always because the felt rings, sealing the housing of the bearing, are too compact on the shaft. This is not dangerous.
The heat decreases up to the normal temperature as soon as the felt rings are run in after some operation hours.

4.6	**<u>Suction unit</u>** We offer complete solutions as follows in addition to material blower specially selected for this plant. Pipework, metal separators, filters, cyclones, rotary valves, sack filling devices, classifiers, etc.		
5.0	**INSTRUCTIONS FOR TROUBLE SHOOTING**		
	1. Feed opening of separator jammed		
		<u>possible cause</u>	**<u>Remedy</u>**
	1.1	**cone adjusted too tightly**	**increase gap**
	1.2	**running direction of unit**	**re-wire**
	1.3	**feed material too coarse**	**reduce hole size of granulator screen**
	1.4	**too many fines**	**replace cutting blades granulator - check gap**
	2. Separator blocked at outlet		
		<u>possible cause</u>	**<u>Remedy</u>**
	2.1	**insufficient separation**	**clean filter elements cyclone**
	2.2	**outlet cone too rough**	**clean**
	3. degree of separation unsatisfactory		
		<u>possible cause</u>	**<u>Remedy</u>**
	3.1	**Suction unit jammed**	**clean**
	3.2	**drive wheel of suction unit worn**	**replace**
	3.3	**cone gap too large**	**reduce**
	3.4	**suction unit output too small**	**readjust regulator**
	3.5	**cyclone separation insufficient**	**clean filter elements of cyclone**

6.0	**HOW ORDER SPARE PARTS**

	Drawings and list of spare parts are included in this manual for easy identification of spare parts. When ordering spare parts, please state the machine type and the machine serial number as well as the serial number for the spare part. This will enable us to quickly identify and supply the parts required. **OUR ADRESS:**
7.0	**ERSATZ- UND VERSCHLEIßTEILLISTE, ERSATZTEILZEICHNUNGEN spare parts list - liste des pieces de rechange - lista de piezas de recambio**
7.1	**BLOWERS TYPE MFT 20/250**

Suction group + FAS500

TYP MFT	NW1	NW2	MOTOR	L	B	H	N	M	Z	E	F	G
8/280	80	100	1,5 kW	630	300	745	335	320	390	295	600	80
18/180	150	150	1,5 kW	650	322	965	320	400	465	330	650	90
20/250	150	150	2,2 kW	650	310	755	350	330	510	300	600	110
30/300	150	150	4,0 kW	750	417	965	403	353	555	347	650	125
35/450	150	150	7,5 kW	850	479	1090	451	424	620	399	775	125
45/350	200	200	7,5 kW	790	400	990	430	400	610	360	740	150
35/600	150	150	11,0 kW	950	459	1215	498	479	700	452	900	125
55/500	200	200	11,0 kW	950	482	1150	495	510	680	455	900	148
45/800	200	200	15,0 kW	1000	590	1115	530	500	790	470	940	140
75/500	250	250	15,0 kW	1000	490	1105	530	500	790	470	900	190

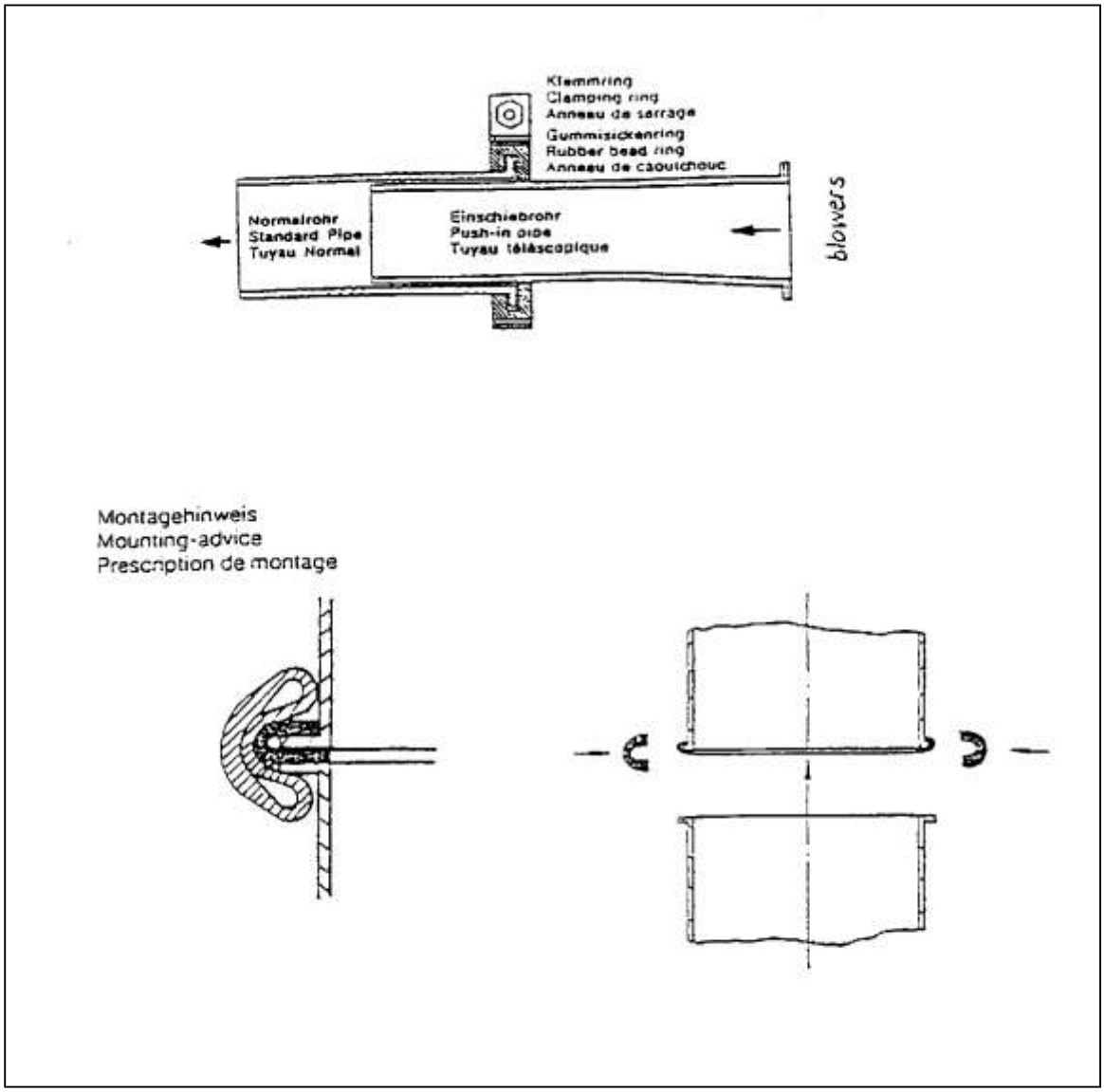
LIST OF SPARE PARTS BLOWER TYPE MFT 20/250, 50 HZ
(Ersatzteilliste Gebläse Typ MFT 20/250, 50 Hz)

Item	No.	Description	Part-No.
		Blower type MFT 20/250, 50 hz	
1	**1**	**Gebläserad, Rd 420, 50 Hz** **Blower wheel**	

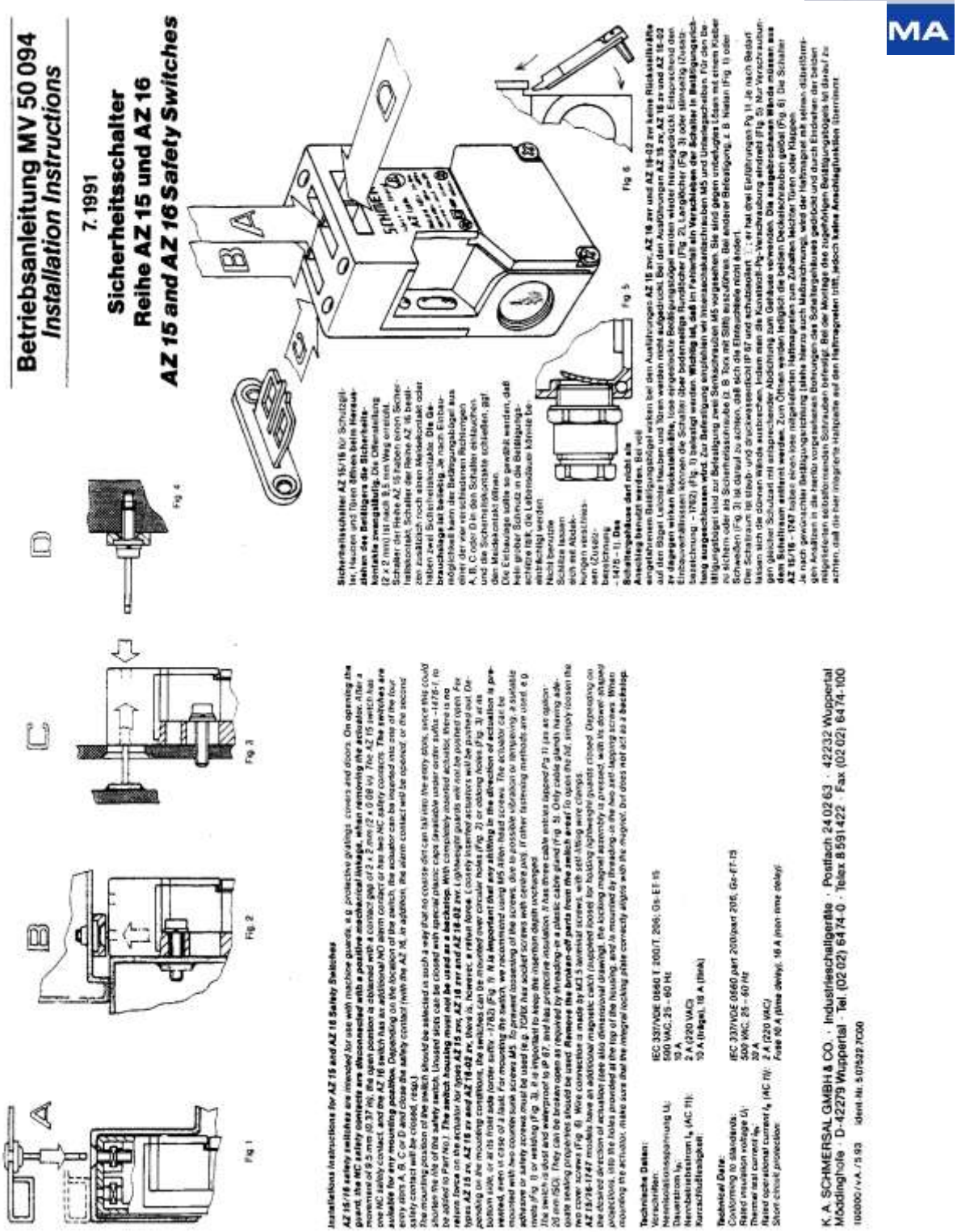
7.2

2	**1**	**Antriebsmotor** Drive motor **Leistung 2,2 kW** Power **Drehzahl 3000 UpM** Speed **Spannung 3 x 400 V** Voltage **Frequenz 50 Hz** Frequency **Bauform B5** Design **Schutzart IP 54** Protection	
3	**1**	**Sicherheitsschalter AZ 15 ZVK** **mit Brücke** Safety switch 	**00-508-020**

7.3	**LIST OF SPARE PARTS** **Suction device – pipe connection**



8.0	SAFETY SWITCHES - BLOWER (1)



Betriebsanleitung MV 50 094
Installation Instructions

7.1991

Sicherheitsschalter
Reihe AZ 15 und AZ 16
AZ 15 and AZ 16 Safety Switches

Fig 1 Fig 2 Fig 3 Fig 4 Fig 5 Fig 6

Installations Instructions for AZ 15 and AZ 16 Safety Switches

AZ 15/16 safety switches are intended for use with machine guards, e.g. protective gratings, covers and doors. On opening the guard, the NC safety contacts are disconnected with a positive mechanical linkage, when removing the actuator. After a movement of 9.5 mm (0.37 in), the open position is obtained with a contact gap of 2 x 2 mm (2 x 0.08 in). The AZ 15 switch has one NC safety contact, and the AZ 16 switch has six additional NO alarm contact or has two NC safety contacts. **The switches are suitable for any mounting position.** Depending on the location of the switch, the actuator can be inserted into one of the four entry slots A, B, C or D and close the safety contact (with the AZ 16, an additional, the alarm contact will be opened, or the second safety contact will be closed, resp.)

The mounting position of the switch should be selected in such a way that no coarse dirt can fall into the entry slots, since this could shorten the life of the safety switch. Unused slots can be closed with special plastic caps (available under order suffix -1476-), to be added to Part No.). **The switch housing must not be used as a backstop.** With completely inserted actuator, there is no **release force on the actuator for types AZ 15 zvr, AZ 16 zvr and AZ 16-02 zvr.** Lightweight guards will not be pushed open. For types **AZ 15 zvr and AZ 16-02 zvr,** there is, however, a **retain force.** (Loosely inserted actuators will be pushed out). Depending on the mounting conditions, the switches can be mounted over circular holes (Fig. 2) or oblong holes (Fig. 3) at the bottom side, or at the front side (order suffix -1783) (Fig. 1). **It is important that any shifting in the direction of actuation is prevented,** even in case of a fault. For mounting the switch, we recommend using M5 Allen-head screws. The actuator can be mounted with two countersunk screws M5. To prevent loosening of the screws, due to possible vibration or tampering, a suitable adhesive or safety screws must be used (e.g. TORX flat socket screws with centre pin). If other fastening methods are used, e.g. rivets (Fig. 1) or welding (Fig. 3), it is important to keep the insertion depth unchanged.

The switch is dust and waterproof to IP 67, and has protective insulation. It has three cable entries tapped Pg 11 (as an option: 20 mm ISO). They can be broken open as required by threading in a plastic cable gland (Fig. 5). Only cable glands having adequate sealing properties should be used. **Remove the broken-off parts from the switch area!** To open the lid, simply loosen the two cover screws (Fig. 6). Wire connection is made by M3.5 terminal screws, with self-lifting wire clamps.

AZ 15/16-1747 models have an additional magnetic switch (supplied loose) for locking lightweight guards closed. Depending on the desired direction of actuation (see also dimensional drawing), the locking magnet assembly is pressed, with its dowel pinned projections, into the holes provided at the top of the housing, and is mounted by threading in the two self-tapping screws. When mounting the actuator, make sure that the integral locking plate correctly aligns with the magnet, but does not act as a **backstop.**

Technische Daten:

Vorschriften:	IEC 337/VDE 0660 T 200/T 206; Gr EF 15
Nennisolationsspannung U_i:	500 VAC; 25 - 60 Hz
Dauerstrom I_{th}:	10 A
Nennbetriebsstrom I_e (AC 15):	2 A (230 VAC)
Kurzschlußfestigkeit:	10 A (träge), 16 A (flink)

Technical Data:

Conforming to standards:	IEC 337/VDE 0660 part 200/part 206; Gr EF 15
Rated insulation voltage U_i:	500 VAC; 25 - 60 Hz
Thermal test current I_{th}:	10 A
Rated operational current I_e (AC 15):	2 A (230 VAC)
Short circuit protection:	Fuse 10 A (time delay), 16 A (non time delay)

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8.0	**SAFETY SWITCHES - BLOWER (2)**

Suction group + FAS500