

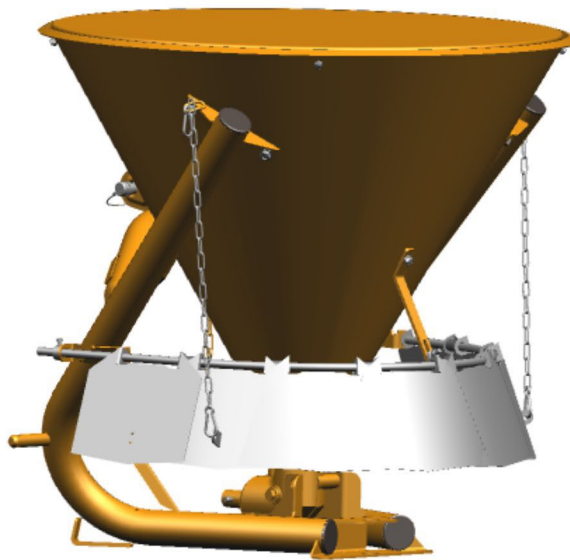
Operation Manual

AMAZONE

EK-S EK-SH

150 , 260 , 370

Mounted spreader



MG1777
BAG0022.4 07.22
Printed in Germany

**Before starting to operate,
please carefully read and ad-
here to this operation manual
and safety advice!**

en



Reading the instruction

manual and adhering to it should not appear to be inconvenient and superfluous as it is not enough to hear from others and to realise that a machine is good, to buy it and to believe that now everything should work by itself. The person concerned would not only harm himself but also make the mistake of blaming the machine for the reason of a possible failure instead of himself. In order to ensure good success one should go into the mind of a thing, make himself familiar with every part of the machine and to get acquainted with its handling. Only in this way would you be satisfied both with the machine as also with yourself. To achieve this is the purpose of this instruction manual.

Leipzig-Plagwitz 1872. Rud. Stark.

Identification data

Manufacturer:	AMAZONEN-WERKE H. DREYER SE & Co. KG
Machine serial No.:	
Type:	EK-S, EK-SH
Permissible system pressure bar:	Max. 210 bar
Year of construction:	
Factory:	
Power kW:	
Basic weight kg:	
Allowable total weight kg:	

Address of manufacturer

AMAZONEN-WERKE
H. DREYER SE & Co. KG
Postfach 51
D-49202 Hasbergen
Tel.: + 49 (0) 5405 50 1-0
Fax.: + 49 (0) 5405 501-234
E-mail: amazone@amazone.de

Spare parts ordering

Spare parts lists are freely accessible in the spare parts portal at www.amazone.de.

Please send orders to your AMAZONE dealer.

Formal remarks to this instruction manual

Document Number:	MG1777
Date of edition:	07.22

© Copyright AMAZONEN-WERKE H. DREYER SE & Co. KG, 2022

All rights reserved.

Reprint – even in extracts – requires the approval of
AMAZONEN-WERKE H. DREYER SE & Co. KG.

Preface

Preface

Dear Customer,

You decided to purchase one of our high quality machines from the comprehensive range of farm machinery produced by AMAZONEN-WERKE, H. DREYER SE & Co. KG. Thank you for your confidence.

When receiving the machine, please check immediately that no damage has been caused in transit and that all parts are present. Please check whether all parts mentioned in the delivery note including the ordered optional equipment are present. Only the immediate reportage of damage will be considered for compensation.

Before the first operation, please read and adhere to this instruction manual and the safety advice. After having thoroughly read the instruction manual you can make fullest use of the advantages of your recently purchased machine.

Please ensure that this instruction manual is made available to any operator before he or she starts to operate the machine.

Should you have any questions or problems, please consult this operating manual or contact your local service partner.

Maintenance and in regular intervals and the exchange of worn or damaged parts in time increases the life expectancy of your machine.

User's review

Dear reader,

Our instruction manuals are regularly updated. With your suggestions for improvement you will help to create an always user friendly instruction manual. Please send your suggestions by fax.

AMAZONEN-WERKE

H. DREYER SE & Co. KG

Postfach 51

D-49202 Hasbergen

Tel.: + 49 (0) 5405 50 1-0

Fax.: + 49 (0) 5405 501-234

E-mail: amazone@amazone.de

1	User advice.....	7
1.1	Purpose of the document.....	7
1.2	Information about directions in this instruction manual.....	7
1.3	Illustrations used	7
2	General safety advice	8
2.1	Obligations and liability	8
2.2	Illustration of safety advice.....	10
2.3	Organising measures	11
2.4	Safety device and guards	11
2.5	Informal safety measures.....	11
2.6	Training of the staff	12
2.7	Safety measures and normal operation	13
2.8	Danger from residual power.....	13
2.9	Maintenance and repair, remedy of faults	13
2.10	Constructional changes	13
2.10.1	Spare and wear parts and aids	14
2.11	Cleaning and disposal.....	14
2.12	Workplace of the operator.....	14
2.13	Safety symbols and other identifications on the machine.....	15
2.13.1	Positioning of warning decals and other identifications	16
2.14	Danger when not adhering to the safety advice	20
2.15	Conscious operation	20
2.16	Safety advice for the operator.....	21
2.16.1	General safety and accident prevention information	21
2.16.2	Hydraulic system.....	24
2.16.3	Electric outfit.....	25
2.16.4	Cleaning, maintenance and repairs	25
2.16.5	Operation with PTO shafts.....	26
2.16.6	Operation with the fertiliser spreader	27
3	Loading.....	28
4	Product description	29
4.1	Overview - components	29
4.2	Supply lines between tractor and machine	30
4.3	Traffic safety kit.....	30
4.4	Designated use of the machine	31
4.5	Danger zones.....	31
4.6	Safety - and guard facilities.....	32
4.7	Type plate and CE declaration.....	32
4.8	Technical data	33
4.9	Required tractor equipment	34
4.10	Details about noise level	34
5	Assembly and function	35
5.1	Shutter actuation	36
5.2	Spreading disc	37
5.3	Agitator	38
5.4	Spread width reduction for EK-S	39
5.5	PTO shaft.....	40
5.5.1	Coupling the PTO shaft.....	42
5.5.2	Uncoupling the PTO shaft.....	43
5.6	Hydraulic system connections	44
5.6.1	Coupling the hydraulic hose lines	45

Table of contents

5.6.2	Uncoupling the hydraulic hose lines.....	46
6	Commissioning	47
6.1	Checking the suitability of the tractor	48
6.1.1	Calculating the actual values for the total tractor weight, tractor axle loads and load capacities, as well as the minimum ballast	48
6.1.1.1	Data required for the calculation	49
6.1.1.2	Calculation of the required minimum ballasting at the front $G_{V \min}$ of the tractor to ensure steering capability.....	50
6.1.1.3	Calculation of the actual front axle load of the tractor $T_{V \text{ tat}}$	50
6.1.1.4	Calculation of the actual total weight of the combined tractor and machine.....	50
6.1.1.5	Calculation of the actual rear axle load of the tractor $T_{H \text{ tat}}$	50
6.1.1.6	Tractor tyre loadbearing capacity.....	50
6.1.1.7	Table.....	51
6.2	Adjusting the length of the PTO shaft to the tractor	52
6.3	Securing the tractor / machine against unintentional start-up and rolling	54
7	Coupling and uncoupling the machine	55
7.1	Hitching up	56
7.1.1	Traffic lights	57
7.2	Hitching off	57
8	Settings	58
8.1	Setting the mounting height	58
8.2	Setting the spread rate	58
8.2.1	EK-S: Spread rate check	59
8.3	EK-S: Setting the working width.....	61
9	Transport travel.....	62
10	Operation	63
10.1	Filling the spreader.....	63
10.2	Spreading operation	64
11	Fault.....	65
12	Maintenance, repair and care	66
12.1	Cleaning	66
12.2	Greasing table	67
12.3	Exchanging the spreading discs	67
12.4	Exchanging the agitator head	67
12.5	Hydraulic system	68
12.5.1	Maintenance intervals	70
12.5.2	Inspection criteria for hydraulic hose lines	70
12.5.3	Installation and removal of hydraulic hose lines	71
12.5.4	Upper and lower link pins check	72
12.6	Screw tightening torques.....	73
13	Setting chart EK-S.....	74

1 User advice

The chapter "User advice" provides information for dealing with the instruction manual.

1.1 Purpose of the document

The present instruction manual

- describes the operation and the maintenance for the machine.
- gives important hints for a safety conscious and efficient operation with the machine.
- is part of the implement and should be kept so that it is always to hand on the machine or in the towing vehicle.
- should be kept for future use.

1.2 Information about directions in this instruction manual

All information about direction in this instruction manual are to be understood in direction of travel.

1.3 Illustrations used

Operational action and react

The steps of operation to be carried out by the operational staff are described in a numbered list. Adhere to the sequence of the steps. The reactions on the individual operational step are marked with an arrow. Example:

1. Operational action step 1
→ Reaction of the machine on operational action step 1
2. Operational action step 2

Enumerations

Enumerations without indispensable sequence are described as a list with enumeration items. Example:

- Item 1
- Item 2

Position figures in illustrations

Figures in round brackets refer to position figures in illustrations. The first figure refers to the illustration, the second figure refers to the item number in the illustration.

Example (Fig. 3/6)

- Figure 3
- Item 6

2 General safety advice

This chapter contains important hints for the safety conscious operation of the machine.

2.1 Obligations and liability

Observe the advice given in this instruction manual

The knowledge of the basic safety advice and safety regulations are the pre-condition for the safety conscious dealing with the machine and its trouble free operation.

Obligation of the user

The user commits himself to have the machine only operated by persons who

- are acquainted with the basic prescriptions regarding the operational safety and accident prevention.
- have been introduced to the machine.
- have read and understood this instruction manual.

The owner commits himself

- to keep all warning signs on the machine in well readable condition.
- to replace damaged warning signs.

Obligation of the operator

Before commencing any operation all persons who are instructed to operate the machine commit themselves to

- observe the basic regulations regarding the operational safety and accident prevention,
- to read and to adhere to the chapter "Safety".
- to read and to adhere to the chapter "Warning signs and other signs on the machine" (Page 15).
- In case of queries, please contact the manufacturer.

Danger when dealing with the machine

The machine has been manufactured according to the state of the art and the certified safety regulations. Nevertheless, the operation of the machine could cause danger and adverse effects on

- body and life of the operator or third parties,
- the machine itself,
- other tangible assets.

Only use the machine

- for the purpose it has been designed for.
- in a perfect safety engineering condition.

Immediately remedy all failures affecting the safety.

Warranty and liability

As a matter of principle our "General terms of sale and delivery" prevail. These will be made available to the user on the date of conclusion of contract at the latest. Warranty and liability claims for injury to life or property are rejected when they have been put down to one or several of the following causes:

- not designed use of the machine,
- improper fitting, putting into work, operation and maintenance of the machine,
- operating the machine with defective safety facilities or incorrectly fitted or non functioning safety devices and guards,
- not adhering to the instruction manual regarding putting into work, operation and maintenance,
- arbitrary changes on the machine.
- poor monitoring of the wearing parts of the machine,
- improper repair work,
- in an emergency due to alien elements and force majeure

2.2 Illustration of safety advice

The safety advice is identified by a symbol and a warning. The warning describes the seriousness of the threatened danger. The individual symbols have the following meaning:



Danger!

Immediate imminent danger to life and health of persons (severe injuries or death).

Not adhering to this advice will cause severe damage to health with the possibility of life threatening injuries.



Warning!

Possible danger to life and health of persons.

Not adhering to these hints may cause severe adverse health effects with the possibility of life threatening injuries.



Caution!

Possible dangerous situation (slight injuries, material damage).

Not adhering to these warnings may cause slight injury or material damage.



Important!

Obligation of a particular behaviour or action for the appropriate handling of the machine.

Not adhering to these hints may cause trouble with the machine or the environment.



Hint!

Hint for use and particularly useful information.

These hints will help you to optimally make use of the function of the machine.

2.3 Organising measures

The operator must ensure the availability of the personal protective equipment, e.g.:

- safety glasses,
- safety shoes,
- protective clothing,
- skin protecting agent, etc..



Important!

The instruction manual

- **should always be kept at the place where the machine is operated.**
- **should always be available for the operator and the servicing staff.**

Regularly check all existing safety devices

2.4 Safety device and guards

Only operate the machine with all safety devices and guards fitted and properly functioning. Regularly check all safety devices and guards.

Defective safety devices

Defective or missing safety device and guards will cause dangerous situations.

2.5 Informal safety measures

Besides the safety advice in this instruction manual observe and adhere to the national, local and generally valid advice for operational safety, accident prevention and environmental care.

Please particularly observe the accident prevention prescriptions of your national authorised trade association.

2.6 Training of the staff

Only people who are trained and familiarised may operate with/on the machine. The responsibility of persons for operation and maintenance should clearly be prescribed.

A trainee may only operate the machine under the supervision of a skilled person.

Action \ Personnel	Particularly trained persons	Instructed operator	Persons with specialist training (authorised workshop)
Loading/Transport	X	X	X
Putting into operation	--	X	--
Installation, setting up	--	--	X
Operation	--	X	--
Maintenance	--	--	X
Searching for faults and remedy	X	--	X
Disposal	X	--	--

Legend:

X.. allowed --..not allowed

- 1) A person who can assume a specific task and who can carry out this task for an appropriately qualified company.
- 2) Instructed persons are those who have been instructed in their assigned tasks and in the possible risks in the case of improper behaviour, have been trained if necessary, and have been informed about the necessary protective equipment and measures.
- 3) People with specialist technical training shall be considered as a specialist. Due to their specialist training and their knowledge of the appropriate regulations, they can evaluate the work with which they have been charged and detect possible dangers.

Comment:

A qualification equivalent to specialist training can be obtained through long term activity in the appropriate field of work.



Only a specialist workshop may carry out maintenance and repair work on the machine if such work is additionally marked "Workshop work". The personnel of a specialist workshop shall possess the appropriate knowledge and suitable aids (tools, lifting and support equipment) for carrying out the maintenance and repair work on the machine in a way which is both appropriate and safe.

2.7 Safety measures and normal operation

Operate the machine only with all safety devices and guards properly functioning.

Check the machine at least once a day for externally recognisable damage and for function of the safety devices and guards.

2.8 Danger from residual power

Observe the incidence of mechanic, hydraulic, pneumatic, and electric/electronic residual power on the machine.

Undertake appropriate measures when instructing the operating staff. Detailed hints are again given in the relevant chapters of this instruction manual.

2.9 Maintenance and repair, remedy of faults

Carry out all prescribed setting-, maintenance and servicing work in due time.

Secure all operating systems like compressed air and hydraulics against unintended starting.

When exchanging larger components carefully affix them to the hoisting implement.

Check slackened screw joints for firm seating. After having finished maintenance work, carefully check all safety devices for proper function.

2.10 Constructional changes

Never carry out any alterations or fittings or changes on the machine without approval of the AMAZONEN-WERKE. This also applies for welding work on bearing parts.

All fitting or alteration measures require the written approval of AMAZONEN-WERKE. Only use the conversion and optional parts approved by Messrs AMAZONEN-WERKEN so that the operating permit remains valid according to national and international regulations.

Vehicles with an official licence or implements and equipment connected with a vehicle with an official licence or permit for road traffic should be maintained in the appropriate condition.



WARNING

Risk of contusions, cuts, dragging, catching or knocks from support parts.

It is forbidden to:

- Drill holes in the frame or on the running gear.
- Increase the size of existing holes on the frame or the running gear.
- Weld support parts.

2.10.1 Spare and wear parts and aids

Immediately replace any machine parts which are not in a perfect state.

Only use AMAZONE spare and wear parts released by AMAZONEN-WERKE, so that the type approval remains valid according to the national and international regulations. The use of wear and spare parts from third parties does not guarantee that they have been constructed in a way as to meet the requirements placed on them.

AMAZONEN-WERKE shall accept no liability for damage caused by the use of unreleased spare and wear parts or aids.

2.11 Cleaning and disposal

Utilise agents and materials and dispose them in the appropriate manner particularly

- when working with greasing systems and devices and
- when cleaning with solvent agents.

2.12 Workplace of the operator

The machine may only be operated by one single person from the seat in the tractor cab.

2.13 Safety symbols and other identifications on the machine



Important!

Always keep all safety symbols on the machine clean and in well readable condition! Replace not readable safety symbols. Ask your dealer for warning signs stating the relevant order number (e.g. MD 075).

Warning signs - composition

Warning signs indicate dangerous points on the machine and warn about danger. At these points permanently existing or unexpectedly occurring danger prevail.

The warning sign consists of 2 fields:



Field 1

Gives a vivid description of the danger and is surrounded by a triangle safety symbol.

Field 2

Gives the vivid instruction to avoid these dangers.

Warning sign - Explanation

The column **Order Number and explanation** provides the description to the opposite warning sign. The description of the warning sign is always the same and states in the sequence indicated:

1. Description of danger.
For example: Danger from cutting or cutting off!
2. Consequences when not adhering to the given advice how to avoid dangers.
For example: will cause severe injury on finger or hand.
3. The advice to avoid danger.
For example: Touch machine parts only then when they have come to a full standstill.

2.13.1 Positioning of warning decals and other identifications

Warning decals

The following illustrations show the arrangement of the warning decals.

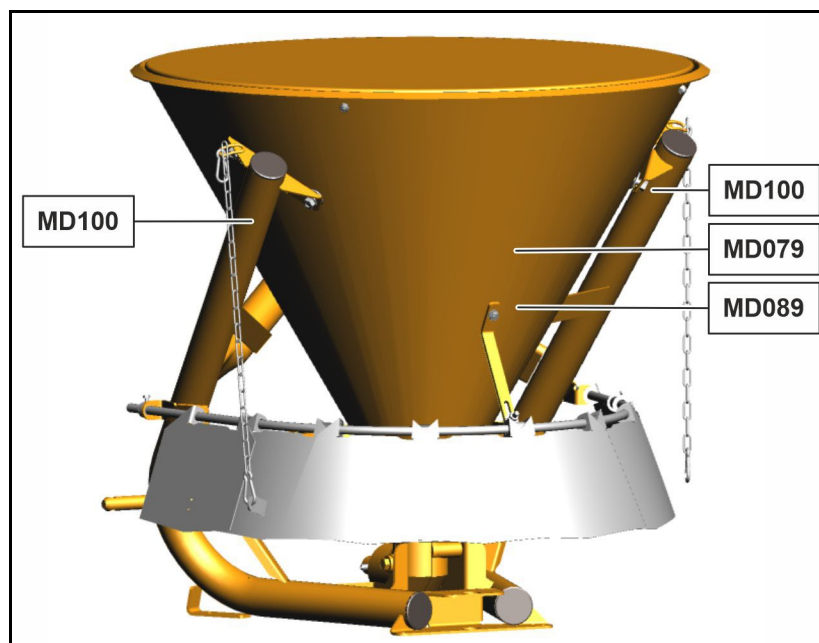


Fig. 1

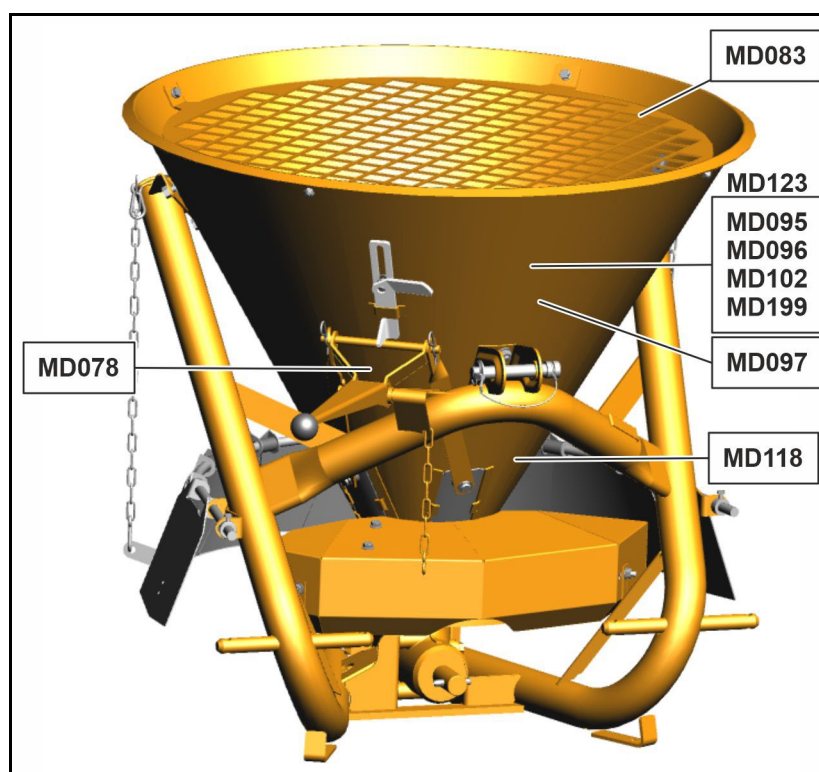


Fig. 2

Picture No. and Explanation

Safety symbols

MD 078

Risk of contusions for fingers or hands through accessible moving machine parts!

In these cases there is a danger of extremely serious injuries leading to the loss of body parts such as fingers or hands.

Never reach into the danger area when the tractor engine is running with cardan shaft / hydraulic system connected.

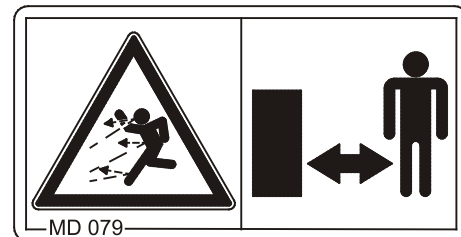


MD 079

Danger from materials or foreign objects that are thrown from or ejected by the machine at high speeds.

These dangers can cause extremely serious and potentially fatal injuries.

- Stay at a safe distance from the machine when the tractor engine is running.
- Ensure that bystanders maintain a sufficient safety distance from the danger area of the machine as long as the tractor engine is running.



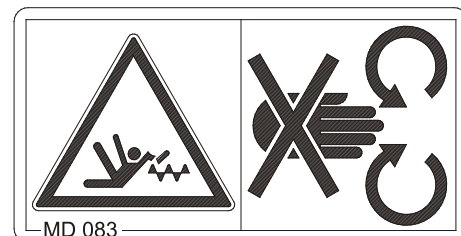
MD 083

Danger of your arm or upper torso being drawn in or caught by power driven, unprotected machine elements!

This danger can cause extremely serious injuries to the arm or upper torso.

Never open or remove protective devices from driven machinery

- as long as the tractor engine is running with the PTO shaft connected / hydraulic drive engaged or
- as long as the tractor engine can be unintentionally started with the PTO shaft connected / hydraulic drive engaged.



General safety advice

MD 089

Risk of crushing of whole body in the danger area of suspended loads/machine parts

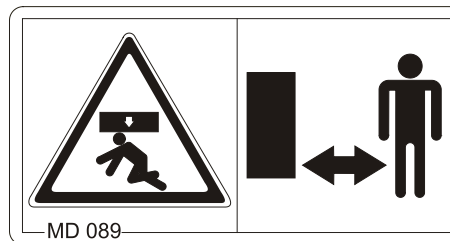
This danger can cause extremely serious and potentially fatal injuries.

The presence of persons under suspended loads/machine parts is prohibited.

Maintain a sufficient safety clearance between you and any suspended loads/machine parts.

Ensure that all personnel maintain a sufficient safety clearance from suspended loads/machine parts.

Direct persons out of the danger area of suspended loads/machine parts.



MD 095

Read and follow the operating manual and safety information before starting up the machine!



MD 096

Danger due to escaping high-pressure hydraulic fluid which can penetrate the body through the skin (danger of infection).

This danger can cause serious injuries with long-term damage.

Read and observe the information in the operating manual before carrying out repair work on the hydraulic system.

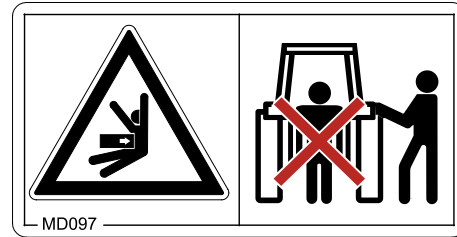


MD 097

Danger from crushing and impacts between the rear of the tractor and the machine during coupling/uncoupling.

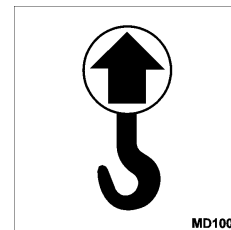
These dangers can cause extremely serious and potentially fatal injuries.

- It is prohibited to operate the tractor's 3-point hydraulic system while persons are present between the rear of the tractor and the machine.
- Only actuate the operator controls for the tractor's three-point hydraulic system
 - from the intended workstation beside the tractor.
 - if you are outside of the danger area between the tractor and the machine.



MD 100

This symbol indicates lashing points for fastening load supporting devices when loading the machine.

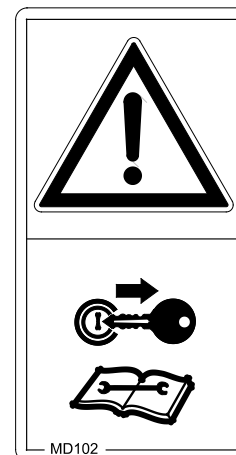


MD 102

Danger for the operator from unintentional starting and rolling during intervention in the machine, e.g. when carrying out installation work, adjustments, troubleshooting, cleaning or repairs.

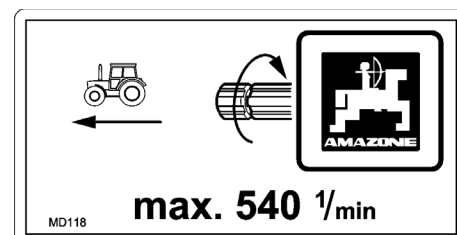
The potential dangers could result in extremely serious and possibly fatal injuries to the entire body.

- Secure the tractor and the machine against unintentional start-up and rolling before any intervention in the machine.
- Depending on the type of intervention, read and understand the information in the relevant sections of this operating manual.



MD 118

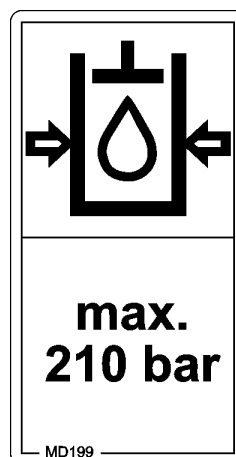
Nominal speed (540 rpm) and direction of rotation of the machine-side drive shaft.



General safety advice

MD 199

The maximum operating pressure of the hydraulic system is 210 bars.



2.14 Danger when not adhering to the safety advice

Not adhering to the safety advice

- may result in endangering persons, also the environment and also the machine itself.
- may result in the rejection of any claim for damage.

Not paying attention to the safety advice may cause the following risks:

- Danger to persons not excluded from operational areas.
- Failure of important functions within the machine.
- Failure of carrying out prescribed measures of maintenance and repair.
- Danger to persons through physical or chemical contact.
- Danger to persons, or the environment by leaking hydraulic oil.

2.15 Conscious operation

Besides the safety advice in this instruction manual additionally, the national, and generally valid operation safety and accident prevention advice of the authorised trade association are binding.

Adhere to the advice given on the warning signs to avoid danger.

When travelling on public roads observe the traffic regulations in force in your country.

2.16 Safety advice for the operator



WARNING

Risk of contusions, cuts, dragging, catching or knocks from insufficient traffic and operational safety.

Before starting up the machine and the tractor, always check their traffic and operational safety.

2.16.1 General safety and accident prevention information

- Beside these instructions, comply with the general valid national safety and accident prevention regulations.
- The warning pictograms and labels attached to the machine provide important information on safe machine operation. Compliance with this information guarantees your safety.
- Before moving off and starting up the machine, check the immediate area of the machine (children)! Ensure that you can see clearly!
- It is forbidden to ride on the machine or use it as a means of transport!
- Drive in such a way that you always have full control over the tractor with the attached machine.
In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected machine.

Coupling and uncoupling the machine

- The machine should only be transported and driven by a tractor which fulfils the power requirements.
- When fitting to the three-point linkage the mounting categories at the tractor and the implement must be compatible!
- By mounting implements at the front or in the rear of a tractor, do not exceed
 - the permissible tractor total weight
 - the permissible tractor axle loads
 - the permissible tyre carrying capacity of the tractor tyres
- Secure the tractor and the machine against unintended rolling away before mounting or dismounting the machine.
- Allow nobody to stand between tractor and implement while the tractor is backing up.
Any assistants may only stay at the side of the vehicle and help to direct it. Only when the vehicles have come to a full standstill they are allowed to step between them.
- Before mounting and dismounting the machine to the three-point linkage secure the control lever for the tractor hydraulics in such a position that an unintended lifting or lowering is impossible.
- When attaching or removing the machine bring any parking or storing devices into the corresponding position (standing safety)!
- Danger of squeezing and shearing when actuating the supporting device.
- Special care should be taken when coupling the machines on or



off the tractor. There exist squeezing and shearing points at the coupling points between tractor and implement.

- Standing between tractor and implement when the three point hydraulic is actuated is prohibited.
- Attach implements as advised and couple the machine in the appropriate manner to the prescribed devices.
- The release ropes for quick coupler should hang freely and in the low position must not release the quick coupling by themselves.
- Park uncoupled machines safely.

Operation of the machine

- Become acquainted with the machine controls and functions before beginning the operation. Doing this during operation would be too late.
- Wear close-fitting clothes. Wearing loose-fitting clothes would increase the danger of getting caught by the drive shafts.
- Only start the machine with all guards fitted and in serviceable condition.
- Observe the maximum payload of the mounted / trailed machine and the permissible axle and support loads of the tractor. If necessary, only travel with partly filled hopper.
- The standing of persons within the operational range of the machine is prohibited.
- Standing of persons within the pivot and swivel area of the machine is prohibited.
- On all hydraulically actuated pivoting parts exists danger of injury by bruising and trapping.
- Machine parts may only be hydraulically actuated when persons observe sufficient clearance to the machine.
- Before leaving the tractor
 - lower the machine to the ground
 - stop the tractor engine
 - remove the ignition key
- Always park the uncoupled machine safely.

Transport of the machine

- When travelling on public roads observe your legal national traffic regulations.
- Always ensure sufficient steering and braking of the tractor.
Steering and braking of the tractor are influenced by mounted or trailed machines and front or rear ballast weights.
- If necessary, use ballasts weights.
The tractor front axle load must be at least 20 % of the tractor's net weight in order to ensure a sufficient steering.
- Attach the front or rear ballast weights in the appropriate manner on the fixing points provided.
- Observe the max. payload of the mounted / trailed machine and the permissible axle and support loads of the tractor.
- The tractor must provide the prescribed brake lag for the laden combination (tractor plus mounted / trailed machine).
- Before starting to travel on public roads, check function of brakes.
- When driving round bends note the width of the mounted or trailed machine and the gyrating mass of the machine.
- Before starting to travel on public roads ensure the sufficient lateral locking of the tractor lower link arms when the machine is fixed to the three point hydraulics or the lower link arms of the tractor.
- Before starting to travel get all swivelling machine parts into transport position.
- Before starting to travel secure all swivelling machine parts in transport position against dangerous movement from their position. For this use the intended transport securing devices.
- Before starting to travel secure the lever of the three point hydraulics against unintended lifting or lowering of the mounted or trailed machine.
- Before any transport travel ensure that the required transport device is correctly fitted on the machine, as, e.g. traffic lights, warning devices, guards.
- Adapt your travelling speed to the prevailing conditions.
- Choose a lower gear when driving down hill.
- As a matter of principle switch off the single wheel braking (lock the pedal) before starting any transport travel.

2.16.2 Hydraulic system

- The hydraulic system is under a high pressure.
- Ensure that the hydraulic hose lines are connected correctly.
- When connecting the hydraulic hose lines, ensure that the hydraulic system is depressurised on both the machine and tractor sides.
- It is forbidden to block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:
 - are continuous
 - are automatically controlled
 - require a floating position or pressed position to function
- Before working on the hydraulic system
 - Lower the machine
 - Depressurise the hydraulic system
 - Shut off the tractor engine
 - Apply the parking brake
 - Remove the ignition key
- Have the hydraulic hose line checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is damaged or worn. Only use AMAZONE original hydraulic hose lines.
- The hydraulic hose lines should not be used for longer than six years, including any storage time of maximum two years. Even with proper storage and approved use, hoses and hose connections are subject to natural ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
- Never attempt to plug leaks in hydraulic hose lines using your hand or fingers.

Escaping high pressure fluid (hydraulic fluid) may pass through the skin and ingress into the body, causing serious injuries!
If you are injured by hydraulic fluid, contact a doctor immediately.
Danger of infection.
- When searching for leakage points, use suitable aids, to avoid the serious risk of infection.

2.16.3 Electric outfit

- When working on the electrical system, always disconnect the battery (negative terminal).
- Only use the prescribed fuses. Using unsuitable fuses will destroy the electrical system - risk of fire.
- Ensure that the battery is connected correctly - firstly connect the positive terminal and then connect the negative terminal. When disconnecting the battery, disconnect the negative terminal first, followed by the positive terminal.
- Always place the appropriate cover over the positive battery terminal. Accidental grounding poses the risk of an explosion.
- Risk of explosion – Avoid spark formation and naked flames in the area of the battery!
- The machine can be equipped with electronic components, the function of which may be influenced by electromagnetic interference from other units. Such interference can pose risks to people, if the following safety information is not followed.
 - If retrofitting electrical units and/or components on the machine with a connection to the on-board power supply, the user is responsible for checking whether the installation might cause faults on the vehicle electronics or other components.
 - Ensure that the retrofitted electrical and electronic components comply with the EMC directive 2014/30/EC in the appropriate version and carry the CE label.

2.16.4 Cleaning, maintenance and repairs

- Only carry out cleaning, maintenance and repair work on the machine when:
 - The drive is switched off
 - The tractor engine has come to a complete stop
 - The ignition key has been removed
 - The machine connector has been removed from the on-board computer
- Regularly check the nuts and bolts for a firm seat and retighten them as necessary.
- Secure the raise machine and/or raised machine parts against unintentional falling, before cleaning, maintaining or repairing the machine.
- When replacing work tools with blades, use suitable tools and gloves.
- Dispose of oils, greases and filters in the appropriate way.
- Disconnect the cable to the tractor generator and battery, before carrying out electrical welding work on the tractor and on attached machines.
- Spare parts must meet at least the specified technical requirements of AMAZONEN-WERKE. This is ensured through the use of AMAZONE original spare parts.

2.16.5 Operation with PTO shafts

- Only use PTO shafts which are designed for the implement by the manufacturer and which are equipped with all legally requested guards!
- Please also observe the operator's manual of the PTO shaft manufacturer.
- Guard tube and guard cone of the PTO shaft must not be damaged and the guard of the tractor- and implement universal joint shaft must be fitted and in a proper condition.
- Working with damaged guards is prohibited.
- Fit and remove the PTO shaft only when
 - the PTO shaft is stopped
 - engine is stopped
 - ignition key is removed
- Ensure correct fitting and securing of the PTO support!
- When using wide angle PTO shaft always attach the wide angle joint on to the pivot point!
- Prevent PTO guard from spinning by fixing the provided chain to a nearby static part!
- On PTO shafts always ensure the tube has sufficient overlap in transport- and operating position. (Observe instruction manual of the PTO shaft manufacturer)
- When travelling in curves mind the permissible angling and sliding length!
- Before engaging the universal joint shaft ensure
 - that no persons are within the danger area of the
 - the selected universal joint shaft speed of the tractor corresponds to the permissible drive speed of the machine.
- When the universal joint shaft is engaged, no persons are allowed
 - to stand within the area of the spinning universal joint shaft or the PTO shaft
 - to stand within the danger zone of the machine.
- Never switch on the tractor PTO while the engine is stopped!
- Always stop PTO when it is not needed or when the shaft is in an adverse position!
- Attention! Danger of injury! After switching off the PTO the mounted implement may continue to run by its dynamic masses! During this period never come too close to the implement. Begin work on the implement only after it has come to a full standstill!
- Clean and grease the universal joint shaft and the PTO driven implement only after
 - the PTO shaft have been stopped,
 - engine have been stopped,
 - ignition key pulled out.
- Deposit removed PTO shaft on the provided carrier!
- When travelling in curves mind the permissible angling and sliding length!
- When using the ground-related PTO take note that the PTO speed is related to the forward speed and that the sense of rotation reverses when backing up!

2.16.6 Operation with the fertiliser spreader

- Never stay or let anyone stay within the operation area. Danger by fertiliser particles being thrown around. Before starting to operate the spreading discs make sure that nobody is staying in the spreading zone. Do not approach rotating spreading discs
- Filling the fertiliser spreader may only be done with a stopped tractor engine, removed ignition key and closed shutters.
- Do not place any foreign objects inside the hopper!
- During the calibration test watch out for danger zones due to rotating parts of the machine!
- Never park or move the fertiliser broadcaster with filled hopper (danger of tipping over).
- If spreading on field borders, waters or roads use the border spreading device!
- Before any operation check perfect seat of fixing parts, especially for spreading disc and spreading vane fixing.

3 Loading

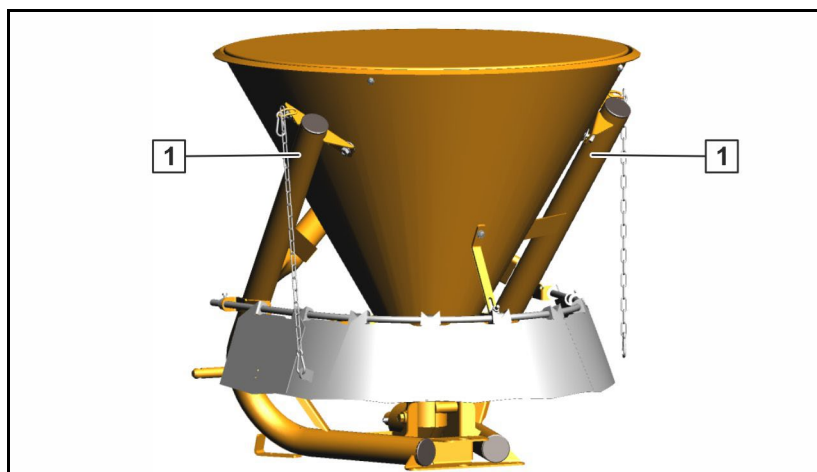


Fig. 3

Loading with a hoist crane:

Lashing points (1) for securing load supporting devices.



WARNING

Danger from crushing and / or impacts due to unintentional dropping of the raised machine!

- It is essential to use the marked lashing points for securing load supporting devices if you are loading or unloading the machine with lifting gear.
- Use load supporting devices with a load bearing capacity of at least 100 kg.
- Never enter the area below the raised machine.

4 Product description

Read this chapter when standing at the machine. In this way you will get optimally acquainted to the machine.

The machine consists of the main components:

4.1 Overview - components

- (1) Frame
- (2) Hopper cover with agitator
- (3) Shutter
- (4) Mechanical shutter actuation (option: hydraulic actuation)
- (5) Spread rate setting lever with scale
- (6) Guard screen
- (7) Splash guard
- (8) Spreading disc drive
 - o EK-S: angular gearbox
 - o EK-SH: hydraulic motor
- (9) Spreading disc
- (10) Spreading vanes
- (11) Multiple spread width reducer
- (12) Cover

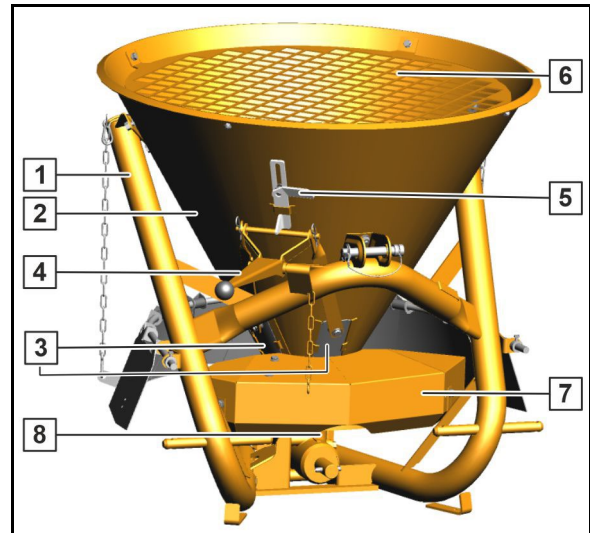


Fig. 4

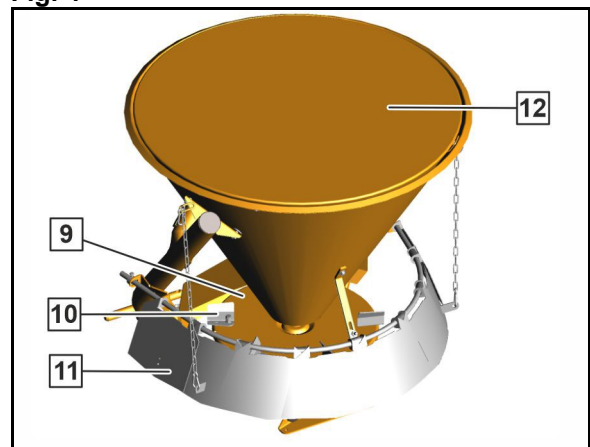


Fig. 5

4.2 Supply lines between tractor and machine

Depending on the execution:

- Hydraulic hose lines
- Electric cable for traffic light

4.3 Traffic safety kit

- (1) Rear lights, stop lights, indicators (required when the tractor indicator is hidden by the machine)
- (2) Red reflectors
- (3) warning plates



Fig. 6

4.4 Designated use of the machine

The AMAZONE EK-S

- has been designed for the usual operation in agriculture.
- the usual winter service work on roads and ways.
- applying sand on golf and sports grounds.
- The spreader is coupled on to the tractor via the upper and lower link arms and operated by one person.

Operating on slopes is possible under the following conditions

- When operating across slopes
maximum angle of machine in the direction of travel to the left 20 %
maximum angle of machine in the direction of travel to the right 20 %
- When operating up and down hill
uphill 20 %
downhill 20 %

The declined use also includes:

- observing all hints in this instruction manual.
- adhering the service and maintenance work.
- the exclusive use of original -AMAZONE- spare parts.

Other use than that stipulated is prohibited and is no longer considered as designed use.

For damage resulting from not designed use

- the operator himself will carry the full risk,
- the manufacturer will not accept any responsibility..

4.5 Danger zones

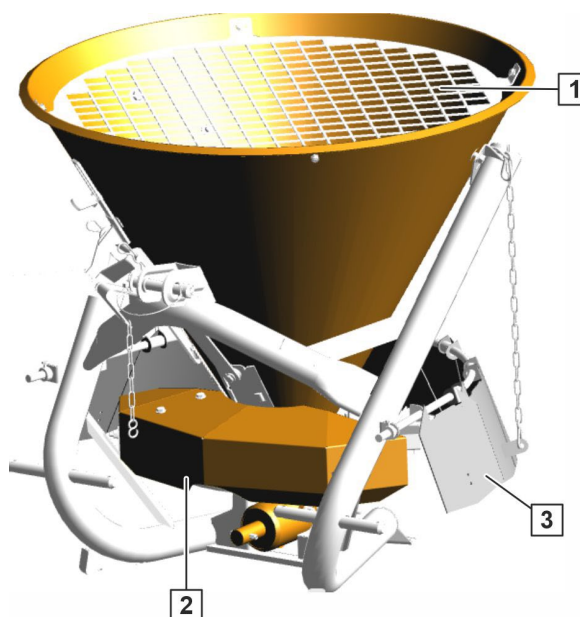
Within these zones permanently existing danger or unexpectedly arising danger exist. Safety symbols identify these danger zones. Here particular safety advices are valid. Please refer to chapter "General safety advice", page 15.

Danger zones prevail:

- between tractor and mounted sprayer, particularly when hitching on or off and when filling the hopper,
- within the operational range of moving parts
- under the lifted not secured machine and machine parts.

4.6 Safety - and guard facilities

- (1) Guard screen in the hopper
- (2) Splash guard
- (3) Multiple spread width
- PTO shaft guard



4.7 Type plate and CE declaration

The following information is specified on the rating plate and the CE mark:

- (1) Implement number
- (2) Vehicle identification number
- (3) Product
- (4) Permissible technical implement weight
- (5) Model year
- (6) Year of manufacture



Fig. 7

4.8 Technical data

Type EK-S / EK-SH	150	260	370
Hopper capacity	150 l	260 l	370 l
Payload	250 kg	300 kg	400 kg
Weight			
	EK-S	65 kg	69 kg
	EK-SH	68 kg	72 kg
Allowable total weight	318 kg	372 kg	477 kg
Filling height	860 mm	990 mm	1140 mm
Filling width	860 mm	1030 mm	1190 mm
Total length	1000 mm	1180 mm	1230 mm
Total width	950 mm	1080 mm	1230 mm
Distance centre of gravity d	280 mm	280 mm	280 mm
Mounting category	Kat 1N / Kat 1		

4.9 Required tractor equipment

In order to be able to operate the machine, the tractor must fulfil the power requirements and must be provided with the necessary electric, hydraulic and brake connections for the brake system.

Tractor engine power

EK-S 150, 260, 370	ab 12kW (16PS), 13 kW (18PS), 15 kW (20PS)
EK-SH 150, 260, 370	ab 19kW (26PS), 21 kW (28PS), 23 kW (30PS)

Electrical system

Battery voltage:	• 12 V (Volt)
Socket for lights:	• 7- pole

Hydraulics

Max. service pressure:	• 210 bar
------------------------	-----------

EK-SH

Tractor pump capacity:	• 15 – 25 l/min. at 150 bar
Hydraulic oil of the machine:	• Gear / hydraulic oil Utto SAE 80W API GL4

The hydraulic / gear oil of the machine is suitable for the combined hydraulic/gear oil circuits of all common tractor types.

Control units	• Depending on equipment, see Page 44
---------------	---------------------------------------



Important!

Check the compatibility of the hydraulic oils before coupling the machine the hydraulic system of your tractor.

4.10 Details about noise level

The tractor operator seat related emission value is 74 dB (A), measured when operating with shut tractor cab at the ear of the tractor operator.

Measuring implement: OPTAC SLM 5.

The noise level depends on the type of tractor used.

5 Assembly and function

The following chapter informs you about the assembly of the machine and the functions of the individual components.

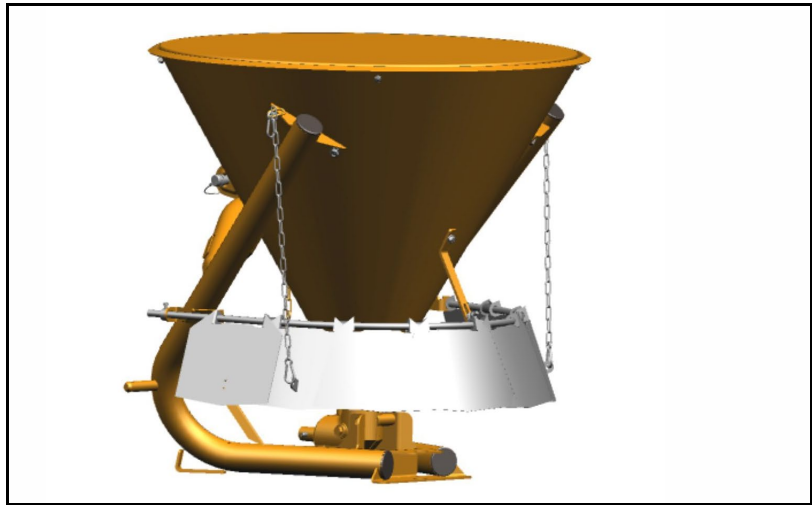


Fig. 8

The spreading material slides down the hopper wall to the outlet opening. The agitator provides an even spreading material flow on to the spreading disc.

The spreading disc rotates in clockwise direction and is provided with 6 spreading vanes.

Spreading disc drive:

- on the EK-S via PTO shaft
- on the EK-S H via hydraulic motor

The EK-S / EK-SH is designed for mounting on to the rear standard three point linkage (cat. I).

5.1 Shutter actuation

Manual or hydraulic (option) opening and closing of the outlet opening via 2 shutters.

Manual shutter actuation:

- For **closing** the outlet opening swivel the hand lever (Fig. 9/1) right to the top.
- For **opening** the outlet opening swivel the hand lever downwards (Fig. 9/1) until the stop of the spread rate adjustment.

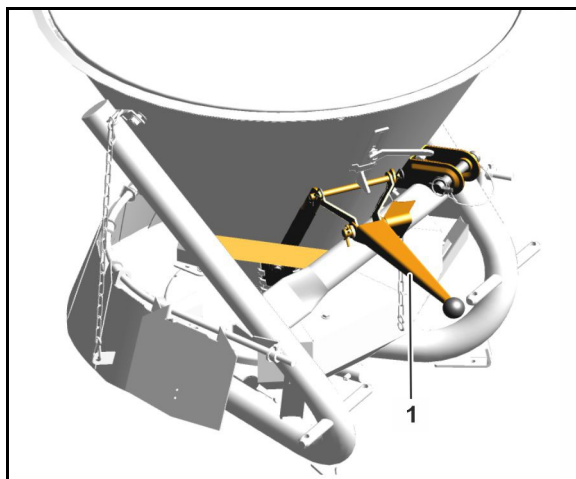


Fig. 9

Hydraulic shutter actuation:

- **Opening** of the outlet opening via tensioning spring (Fig. 10/1),
- **Shutting** of the outlet opening hydraulically via one single acting hydraulic ram (Fig. 10/2).

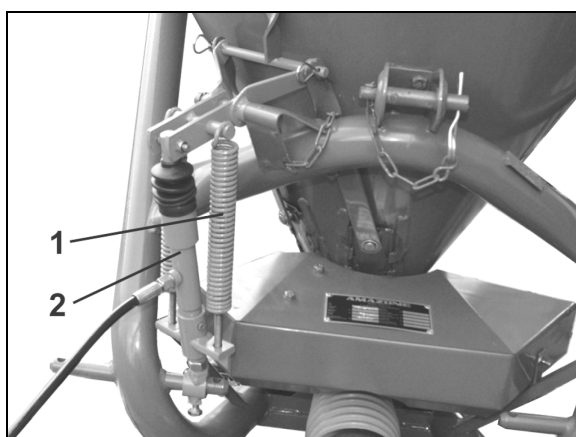


Fig. 10

Fig. 11/...

- Shutter **A**
- Shutter **B**

When spreading **fertiliser** according to the advice in the spreading chart Seite 75.

- both shutter slides are open,
- shutter slide **A** is closed,
- shutter slide **B** is closed.

If it is intended to keep one shutter slide closed during operation unhook the relevant switch rod (Fig. 11/1).

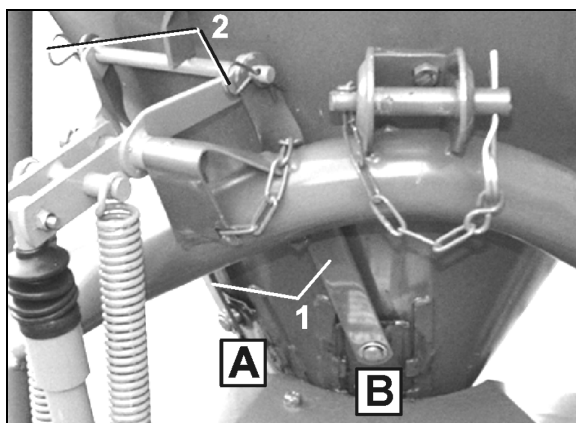


Fig. 11

1. Pull spring cotter (Fig. 11/2).
2. Pull the switch rod off the hinged pin.
3. Re-insert spring cotter.
4. Secure the position of the unhooked switch rod with the aid of the PTO shaft chain.

5.2 Spreading disc

Spreading disc with 6 spreading vanes for applying fertiliser, cereals, fine seeds, salt, sand, grit and mixtures.

The spreading vanes allow the setting in two positions (Fig. 13, Fig. 14).

In this case the spreading vane engages in position **A** or **B**.

- Position **A**: Seen in sense of rotation set in position facing to the front. bigger spread width (standard setting)
 - Position **B**: set in position facing to the back. less dust development
- Three spreading vanes with pressure spring for manual adjustment (Fig. 13/1).

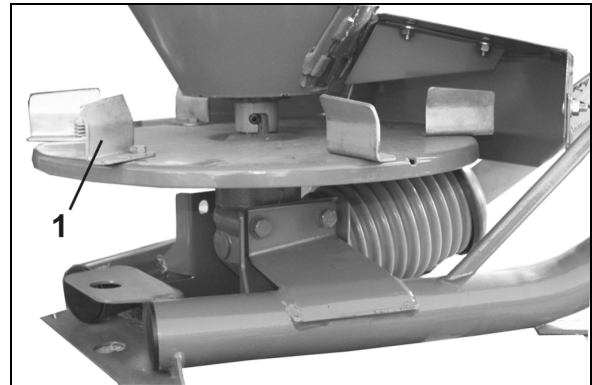


Fig. 12

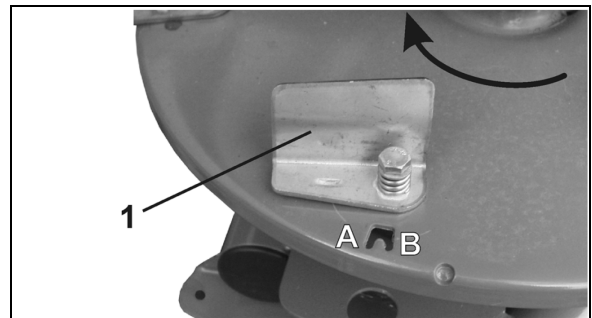


Fig. 13

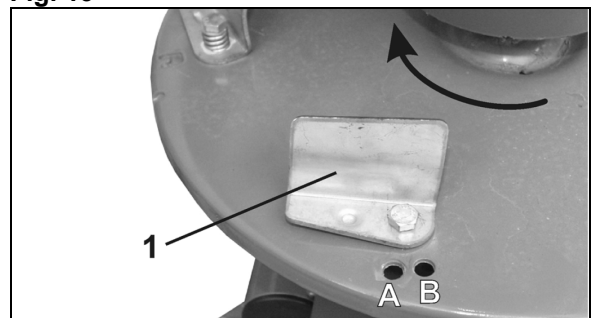


Fig. 14

1. Three spreading vanes with adjustment by loosening the screw joint (Fig. 14/1).
2. Retighten the bolts after adjustment.

Vane positions according to the fertiliser setting chart:

- I** : All spreading vanes in position A
- II** : The 3 spreading vanes with pressure spring in position B
- III** : All spreading vanes in position B

5.3 Agitator

Agitator to apply fertilizer.

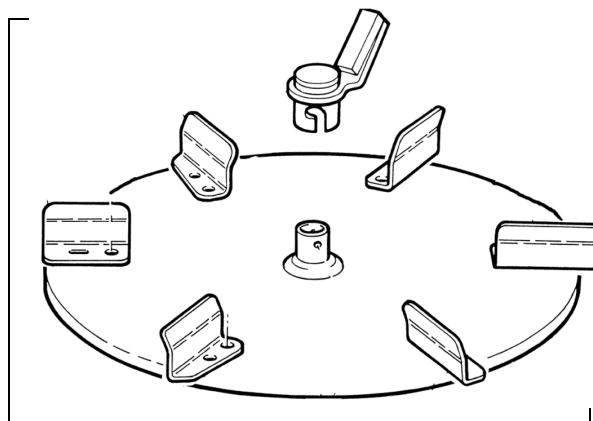


Fig. 15

Rod agitator (option) to apply

- sand, slag and salts.
- Powdery fertiliser

Fitting:

1. Bolt the guide ring (Fig. 16/1) on to the provided holes in the hopper .
2. Affix the agitator upper part (Fig. 16/2) with the aid of the holding bushing on to the agitator lower part (Fig. 16/3).
3. Use the holding bushing to affix the agitator lower part on the agitator head.

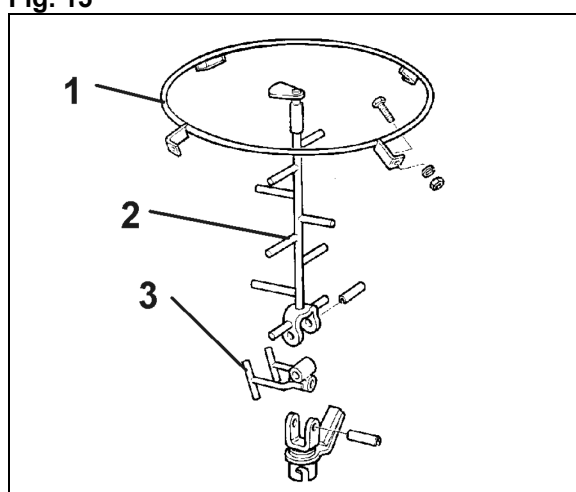


Fig. 16

Basket agitator (option) to apply grit.

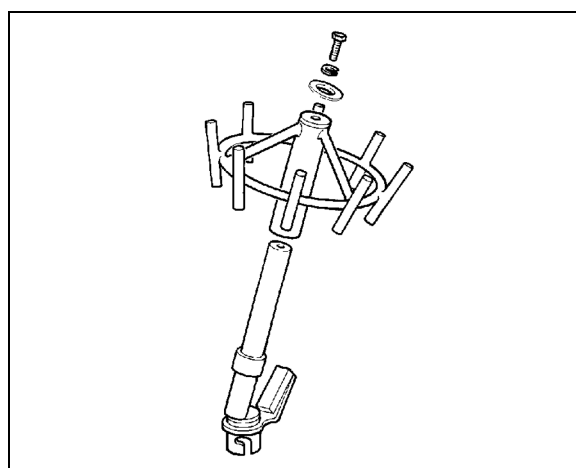


Fig. 17

5.4 Spread width reduction for EK-S

Setting of the spread width reduction via the multiple spread width reducer (Fig. 18/1).

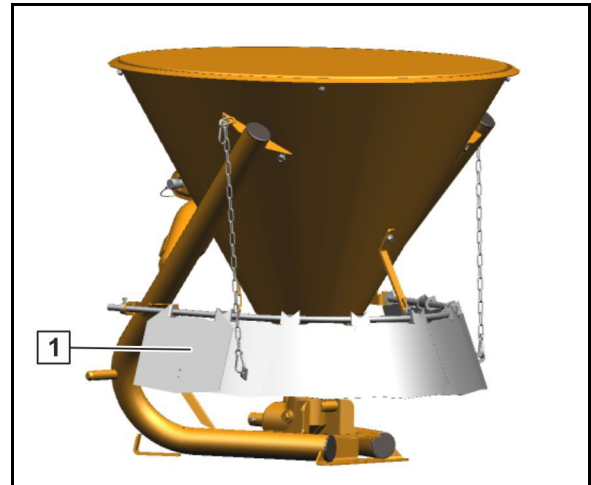


Fig. 18

5.5 PTO shaft

For machines with mechanical spreading disc drives, the drive shaft transmits the power from the tractor to the machine.

**WARNING**

Danger of crushing from tractor and machine unintentionally starting up or rolling away!

Couple or decouple the PTO shaft and tractor only when tractor and machine have been secured against both unintentional starting and unintentional rolling away.

**WARNING**

Danger of catching or entrapment due to the unprotected gear-box input shaft owing to the use of a PTO shaft with a short PTO shaft guard!

Use only one of the listed permissible PTO shafts.

**WARNING**

Danger from being entangled and drawn in by unguarded PTO shaft parts in the power transmission area between the tractor and driven machine!

Work only when the drive between the tractor and driven machine is fully guarded.

- The unguarded parts of the PTO shaft must always be guarded by a shield on the tractor and a PTO shaft guard on the machine.
- Check that the shield on the tractor or the PTO shaft guard on the machine and the safety devices and guards of the extended PTO shaft overlap by at least 50 mm. If they do not, you must not power the machine via the PTO shaft.

**WARNING****Danger of trapping and entrapment by unguarded PTO shaft or damaged safety devices!**

- Never use the PTO shaft if the safety device is missing or damaged, or without correctly using the supporting chain.
- Before all use, check that
 - all PTO shaft protective devices are installed and fully functional.
 - the clearance around the PTO shaft is sufficient in all operating modes. Insufficient clearance will result in damage to the PTO shaft.
- Have any damaged or missing parts of the PTO shaft replaced immediately with OEM parts from the PTO shaft manufacturer.
Note that only a specialist workshop may repair a PTO shaft.
- After decoupling the PTO shaft, place it on the holder provided. This protects the PTO shaft from damage and dirt.



- Use only the provided PTO shaft or one of the same type.
- Read and follow the operating manual provided for the PTO shaft. Correct use and maintenance of the PTO shaft prevents serious accidents.
- When coupling the PTO shaft
 - refer to the operating manual provided for the PTO shaft.
 - observe the permissible drive speed of the machine.
 - observe the correct installation length of the PTO shaft. Here, see the chapter "Adjusting the length of the PTO shaft to the tractor", page 52.
 - observe the correct installation position of the PTO shaft. The tractor symbol on the protective tube of the PTO shaft identifies the tractor-side connection of the PTO shaft.
- Always mount the overload or freewheel clutch on the machine if the PTO shaft has an overload or freewheel clutch.
- Before switching on the universal joint shaft, read and follow the safety precautions for universal joint shaft operation in the chapter entitled "Safety information for the user", page 26.

5.5.1 Coupling the PTO shaft



WARNING

Danger from crushing or impact if there is insufficient clearance when coupling the PTO shaft!

Couple the PTO shaft with the tractor before coupling the machine with the tractor. This will ensure the necessary clearance for safe coupling of the PTO shaft.

1.

Secure the tractor against unintentional starting and rolling away, see the chapter "Securing the tractor against unintentional starting and rolling away", from page 54.

2. Check whether the universal joint shaft of the tractor is switched off.

3. Clean and grease the tractor's universal joint shaft.

4. Fit the latch of the PTO shaft over the universal joint shaft of the tractor until the latch is heard to engage. When coupling the PTO shaft, refer to the operating manual provided for the PTO shaft and observe the permissible universal joint shaft speed of the tractor.

5. Check that there is sufficient clearance around the PTO shaft in all operational positions. Insufficient clearance will result in damage to the PTO shaft.

6. Provide the necessary clearance (if required).

5.5.2 Uncoupling the PTO shaft

**WARNING**

Danger from crushing or impact if there is insufficient clearance when uncoupling the PTO shaft!

First uncouple the machine from the tractor before uncoupling the PTO shaft from the tractor. This will ensure the necessary clearance for safe uncoupling of the PTO shaft.

**WARNING**

Danger from burns on hot components of the PTO shaft!

Do not touch components of the PTO shaft that have become hot (particularly clutches).



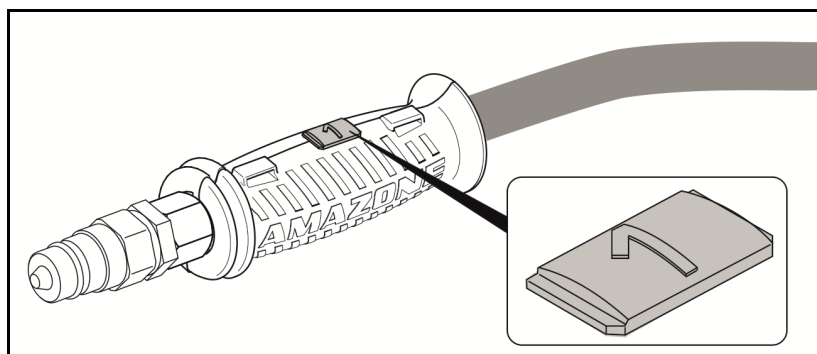
Clean and lubricate the universal joint shaft if it will not be used for an extended period.

1. Uncouple the machine from the tractor. Also refer to the chapter "Uncoupling the machine", page 57
2. Drive the tractor up to the machine, leaving a clearance of approximately 25 cm between the tractor and the machine.
3. Secure the tractor against unintentional starting and rolling away, see the chapter "Securing the tractor against unintentional starting and rolling away", from page 54.
4. Pull the latch of the PTO shaft off the universal joint shaft of the tractor. Observe the operating manual supplied with the PTO shaft when uncoupling the PTO shaft.
5. Place the PTO shaft in the holder provided.
6. Clean and lubricate the universal joint shaft if it is not going to be used for a longer period of time.

5.6 Hydraulic system connections

- All hydraulic hose lines are equipped with grips.

Coloured markings with a code number or code letter have been applied to the gripping sections in order to assign the respective hydraulic function to the pressure line of a tractor control unit!



Films are stuck on the implement for the markings that illustrate the respective hydraulic function.

- The tractor control unit must be used in different types of activation, depending on the hydraulic function.

Latched, for a permanent oil circulation	
Tentative, activate until the action is executed	
Float position, free oil flow in the control unit	

Marking		Function			Tractor control unit	
yellow			Shutter actuation	open	single acting	

Only EK-SH

Marking		Function		Tractor control unit	
red			Spreading disc drive	single acting with priority	
red		Pressure free return flow			

Maximum permissible pressure in oil return: 10 bar

Therefore do not connect the oil return to the tractor control unit, but to a pressure-free oil return flow with a large plug coupling.

**WARNING**

For the oil return, use only DN16 lines and select short return paths.

Pressurise the hydraulic system only when the free return has been correctly coupled.

Install the coupling union (supplied) on the pressure-free oil return flow.

**WARNING**

Danger of infection from escaping hydraulic fluid at high pressure!

When coupling and uncoupling the hydraulic hose lines, ensure that the hydraulic system is depressurised on both the machine and tractor sides.

If you are injured by hydraulic fluid, contact a doctor immediately.

5.6.1 Coupling the hydraulic hose lines

**WARNING**

Danger from faulty hydraulic functions in event of incorrectly connected hydraulic hose lines!

When coupling the hydraulic hose lines, observe the coloured markings on the hydraulic plugs. Here, see "Hydraulic connections", page 45.



- Observe the maximum approved hydraulic operating pressure of 210 bar.
- Check the compatibility of the hydraulic fluids before connecting the machine to the hydraulic system of your tractor.
- Do not mix any mineral oils with biological oils.
- Slide the hydraulic connector(s) into the hydraulic sleeves until they are heard to engage.
- Check the coupling points of the hydraulic hose lines for a correct, tight seat.
- Coupled hydraulic hose lines
 - must easily give way to all movements in bends without tensioning, kinking or rubbing.
 - must not rub against other parts.

1. Swivel the actuation lever on the control valve on the tractor to float position (neutral position).
2. Clean the hydraulic plug for the hydraulic hose lines before connecting them to the tractor.
3. Couple the hydraulic hose lines with the tractor control units.

5.6.2 Uncoupling the hydraulic hose lines

1. Swivel the actuation lever on the control valve on the tractor to float position (neutral position).
2. Unlock the hydraulic connectors from the hydraulic sockets.
3. Safeguard the hydraulic sockets against soiling with the dust protection caps.
4. Insert the hydraulic plug into the plug holder.

6 Commissioning

This section contains information

- on commissioning your machine.
- on checking how you may connect the machine to your tractor.



- Before operating the machine for the first time the operator must have read and understood the operating manual.
- Observe the following chapters
 - "Obligation of the operator" on page 8.
 - "Training of personnel" on page 12.
 - "Warning pictograms and other signs on the machine" from page 15.
 - "Safety information for the operator" from page 21.

It is important to observe these chapters in the interests of your safety.

- Only couple and transport the machine to/with a tractor which is suitable for the task.
- The tractor and machine must comply with the national road traffic regulations.
- The owner (operator) and the driver (user) of the vehicle are responsible for complying with the statutory road traffic regulations.

6.1 Checking the suitability of the tractor



WARNING

Danger of breaking during operation, insufficient stability and insufficient tractor steering and braking power on improper use of the tractor!

- Check the suitability of your tractor, before connecting the machine to the tractor.
You may only connect the machine to tractors suitable for the purpose.
- Carry out a brake test to check whether the tractor achieves the required braking delay with the machine connected.

Requirements for the suitability of a tractor are, in particular:

- The approved total weight
 - The approved axle loads
 - The load capacity of the installed tyres
- You can find this data on the rating plate or in the vehicle documentation and in the tractor operating manual.

The front axle of the tractor must always be subjected to at least 20% of the dead-weight of the tractor.

The tractor must achieve the brake delay specified by the tractor manufacturer, even with the machine connected.

6.1.1 Calculating the actual values for the total tractor weight, tractor axle loads and load capacities, as well as the minimum ballast



The approved total tractor weight, specified in the vehicle documentation, must be greater than the sum of the

- Empty tractor weight,
- ballast weight and
- total weight of the connected machine or drawbar load of the connected machine



This information is only valid for the Federal Republic of Germany:

If, having tried all possible alternatives, it is not possible to comply with the axle loads and / or the approved total weight, then a survey by an officially-recognised motor traffic expert can, with the approval of the tractor manufacturer, be used as a basis for the responsible authority to issue an exceptional approval according to § 70 of the German Regulations Authorising the Use of Vehicles for Road Traffic and the required approval according to § 29, paragraph 3 of the German Road Traffic Regulations.

6.1.1.1 Data required for the calculation

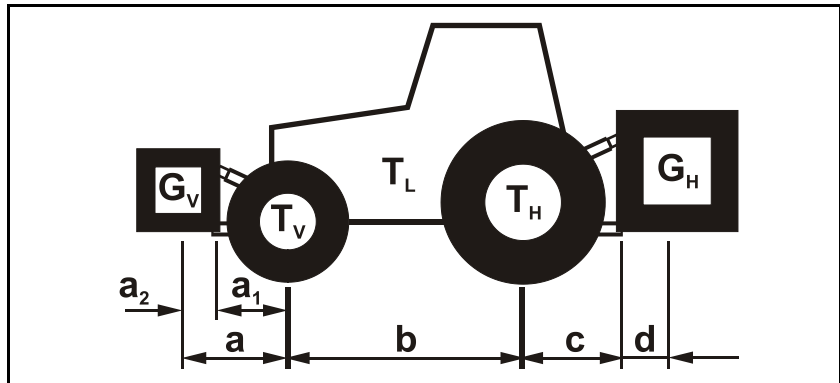


Fig. 19

T_L	[kg]	Empty tractor weight	See tractor operating manual or vehicle documentation
T_v	[kg]	Front axle load of the empty tractor	
T_H	[kg]	Rear axle load of the empty tractor	
G_H	[kg]	Total weight of rear-mounted machine or rear ballast	See technical data for machine or rear ballast
G_v	[kg]	Total weight of front-mounted machine or front ballast	See technical data for front-mounted machine or front ballast
a	[m]	Distance between the centre of gravity of the front machine mounting or the front weight and the centre of the front axle (total $a_1 + a_2$)	See technical data of tractor and front machine mounting or front weight or measurement
a_1	[m]	Distance from the centre of the front axle to the centre of the lower link connection	See tractor operating manual or measurement
a_2	[m]	Distance between the centre of the lower link connection point and the centre of gravity of the front machine mount or front weight (centre of gravity distance)	See technical data of front machine mounting or front weight or measurement
b	[m]	Tractor wheel base	See tractor operating manual or vehicle documents or measurement
c	[m]	Distance between the centre of the rear axle and the centre of the lower link connection	See tractor operating manual or vehicle documents or measurement
d	[m]	Distance between the centre of the lower link connection point and the centre of gravity of the rear-mounted machine or rear ballast (centre of gravity distance)	See technical data of machine

6.1.1.2 Calculation of the required minimum ballasting at the front $G_{V \min}$ of the tractor to ensure steering capability

$$G_{V \min} = \frac{G_H \cdot (c + d) - T_V \cdot b + 0,2 \cdot T_L \cdot b}{a + b}$$

Enter the numeric value for the calculated minimum ballast $G_{V \min}$, required on the front side of the tractor, in the table (section 6.1.1.7).

6.1.1.3 Calculation of the actual front axle load of the tractor $T_{V \text{ tat}}$

$$T_{V \text{ tat}} = \frac{G_V \cdot (a + b) + T_V \cdot b - G_H \cdot (c + d)}{b}$$

Enter the numeric value for the calculated actual front axle load and the approved tractor front axle load specified in the tractor operating manual in the table (section 6.1.1.7).

6.1.1.4 Calculation of the actual total weight of the combined tractor and machine

$$G_{\text{tat}} = G_V + T_L + G_H$$

Enter the numeric value for the calculated actual total weight and the approved total tractor weight specified in the tractor operating manual in the table (section 6.1.1.7).

6.1.1.5 Calculation of the actual rear axle load of the tractor $T_{H \text{ tat}}$

$$T_{H \text{ tat}} = G_{\text{tat}} - T_{V \text{ tat}}$$

Enter the numeric value for the calculated actual rear axle load and the approved tractor rear axle load specified in the tractor operating manual in the table (section 6.1.1.7).

6.1.1.6 Tractor tyre loadbearing capacity

Enter the double value (two tyres) of the approved load capacity (see, for example, tyre manufacturer's documentation) in the table (section 6.1.1.7).

6.1.1.7 Table

	Actual value according to calculation	Approved value according to tractor instruction manual	Double approved load capacity (two tyres)
Minimum ballast front / rear	/ kg	--	--
Total weight	kg	≤ kg	--
Front axle load	kg	≤ kg	≤ kg
Rear axle load	kg	≤ kg	≤ kg



- You can find the approved values for the total tractor weight, axle loads and load capacities in the tractor registration papers.
- The actually calculated values must be less than or equal to (≤) the permissible values!



WARNING

Risk of crushing, cutting, entrapment, drawing in and impact through insufficient stability of the tractor and insufficient tractor steering capability and braking power.

It is forbidden to couple the machine to the tractor used as the basis for calculation, if

- one of the actual, calculated values is greater than the approved value.
- there is no front weight (if required) attached to the tractor for the minimum front ballast ($G_{V \min}$).



- Ballast your tractor with weights at the front or rear if the tractor axle load is exceeded on only one axle.
- Special cases:
 - If you do not achieve the minimum ballast at the front ($G_{V \min}$) from the weight of the front-mounted machine (G_V), you must use ballast weights in addition to the front-mounted machine.
 - If you do not achieve the minimum ballast at the rear ($G_{H \min}$) from the weight of the rear-mounted machine (G_H), you must use ballast weights in addition to the rear-mounted machine.

6.2 Adjusting the length of the PTO shaft to the tractor



WARNING

Danger from damaged and/or destroyed, flying parts if the PTO shaft is upended or pulls apart while the machine coupled to the tractor is being raised/lowered because the length of the PTO shaft has not been adjusted properly.

Have the length of the PTO shaft in all operational positions checked by a specialised workshop and, if necessary, adjusted before coupling the PTO shaft to your tractor for the first time.

In this way, you prevent upending of the PTO shaft or insufficient profile overlap.



This adjustment of the PTO shaft applies only for the current tractor type. You may need to readjust the PTO shaft if you couple the machine to another tractor. Always observe the operating manual supplied with the PTO shaft when adjusting the PTO shaft.



WARNING

Danger of being caught and drawn in if the PTO shaft is installed incorrectly or if unauthorised design changes are made.

Only a specialist workshop may make design changes to the PTO shaft. When doing so, read and follow the operating manual provided.

Adjusting the length of the PTO shaft is permitted with consideration of the required minimum profile overlap.

Design changes to the PTO shaft that are not described in the PTO shaft operating manual provided are not permitted.



WARNING

Danger of being crushed between the rear of the tractor and the machine when raising and lowering the machine to determine the shortest and longest operating position of the PTO shaft.

Only actuate the operator controls for the tractor's three-point linkage

- from the intended workstation.
- if you are outside of the danger area between the tractor and the machine.



WARNING

Danger of crushing from unintentional:

- **Rolling of the tractor and the connected machine!**
- **Lowering of the lifted machine!**

Secure the tractor and machine from unintentional starting and unintentional rolling and secure the machine unintentional lowering before entering the danger zone between the tractor and lifted machine in order to adjust the PTO shaft.



The PTO shaft is at its shortest when it is horizontally. The PTO shaft is at its longest when the machine is fully lifted.

1. Couple the tractor to the machine (do not connect the PTO shaft).
2. Apply the tractor's parking brake.
3. Determine the clearance height of the machine with the shortest and longest operating position for the PTO shaft.
 - 3.1 To do so, raise and lower the machine via the tractor's three-point hydraulic system.
While doing so, actuate the manual controls for the tractor's three-point hydraulic system on the rear of the tractor, from the provided workstation.
4. Secure the machine, lifted in the measured clearance height, against unintentional lowering (for example, by supporting it or hooking it to a crane).
5. Secure the tractor from unintentional starting before entering the danger area between the tractor and machine.
6. When measuring the length and shortening the PTO shaft, read and follow the operating manual from the PTO shaft manufacturer.
7. Put the shortened halves of the PTO shaft back together.
8. Grease the universal joint shaft of the tractor and the gearbox input shaft before connecting the PTO shaft.
The tractor symbol on the protective tube of the PTO shaft identifies the tractor-side connection of the PTO shaft.

6.3 Securing the tractor / machine against unintentional start-up and rolling



WARNING

Danger of crushing, shearing, cutting, entrapment, entanglement, being drawn in, caught or struck during all interventions in the machine.

- Due to powered operating elements.
- Due to unintentional actuation of operating elements or running of hydraulic functions when the tractor engine is running.
- Due to tractor and connected machine unintentionally starting up or rolling away.
- Secure the tractor and the machine against unintentional start-up and rolling before any intervention in the machine.
- It is forbidden to make any intervention in the machine, such as installation, adjustment, troubleshooting, cleaning and repairs
 - o when the machine is running
 - o for as long as the tractor engine is running with a connected PTO shaft/hydraulic system.
 - o when the ignition key is inserted in the tractor and the tractor engine with the connected turbine shaft / hydraulic system could be started unintentionally.
 - o when moving parts are not blocked against unintentional movement.
 - o when persons (children) are on the tractor.

During this work, there is particular danger from unintended contact with driven, unsecured operating elements.

1. Shut down the tractor engine.
2. Remove the ignition key.
3. Apply the tractor's parking brake.
4. Ensure that no persons (children) are on the tractor.
5. If necessary, lock the tractor cabin.

7 Coupling and uncoupling the machine



Danger!

- Only couple and transport the machine with a tractor which has been designed for this task and fulfils the power requirements.
- When fitting the machine to the tractor three point linkage the mounting categories on the tractor and the implement must coincide.
- When coupling tractor and implement, only use the prescribed tools.
- Standing of persons between the machine to be coupled and the tractor is prohibited whilst the tractor is backing up.
- Any assistants may only stay at the side of the vehicle and help to direct it. Only when the vehicles have come to a full standstill they are allowed to step between them.
- When coupling and uncoupling implements, observe the chapter "Safety advice for the operator", page 23.



Danger!

- Be particularly careful when coupling the machine to the tractor or uncoupling it from the tractor!
- Before uncoupling secure the machine by using 2 chocks!
- Observe the max. support load of the tractor!
- Ensure that the lower link arms of the tractor three point hydraulic are equipped with stabilising rods or chains. To avoid sideways swing of the machine stabilise the lower link arms of the tractor!



The EK-S is designed for the rear three point mounting category I.



At tractors with an off centre universal joint shaft mount the spreader staggered to the side.

7.1 Hitching up

- Fix lower link of tractor on lower link pin (cat I) (Fig. 21/1) and secure by using a clip pin.
- Attach the upper link of the tractor by using the upper link pin (Fig. 21/2) to the upper coupling point of the machine and secure by using a lynch pin (Fig. 21/3).

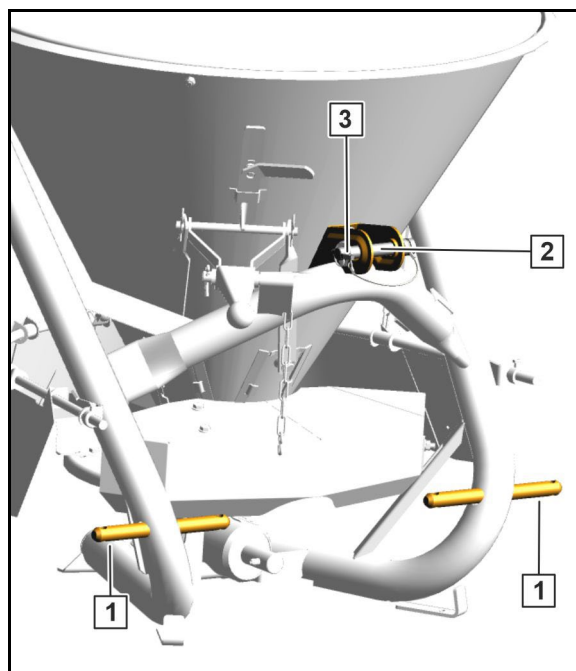


Fig. 20

7.1.1 Traffic lights

- Connect the power cable of traffic lights on tractor.

**Caution!**

Check function of indicator for direction of travel, traffic light kit and brake light!

7.2 Hitching off

- Lower the machine.



Before dismounting the spreader ensure that the coupling points (upper and lower links) are relieved.

**WARNING**

Danger of injury due to the filled implement tipping.

Couple and uncouple the implement only when it is empty.

8 Settings

8.1 Setting the mounting height

Mounting height of the laden spreader 75 cm

Measured on the spreading disc front side (a = 75) and on the back (b = 75) always from the ground surface.



Warning!

Observe the maximum PTO shaft angling!

At tractors with a very low positioned universal joint shaft the spreader only allows lifting up to a mounting height of 58 cm.

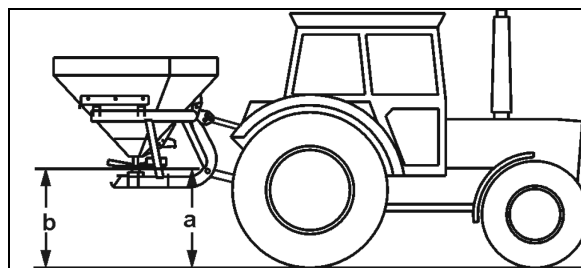


Fig. 21

8.2 Setting the spread rate

The shutter position depends on:

- The kind of spreading material (sand, salt or mixture) as well as its characteristics (granular, coarse/fine, moist, dry).
- The desired spreading width [m].
- The desired operational speed [km/h].
- The desired spread rate [g/m²].

Moving the shutter slide to the next higher figure on the scale means:

- Bigger opening diameter of the outlet opening.
- Increased spread rate.

The spread rate setting is carried according to experience values or the indications given in the setting chart.

Hint!

As the spreading properties of the spreading materials are subject to variation (e.g. moist or dry) we recommend that you determine the desired shutter position for the desired spread rate by carrying out a spread rate check.



Procedure of spread rate setting:

1. Release the setting lever (Fig. 23/1).
2. Set the shutter stop (Fig. 23/2) in such a way that the reading edge (Fig. 23/3) is in alignment with the desired value on the scale.
3. Firmly retighten the setting lever.



**EK-S: See setting chart
Seite 73!**

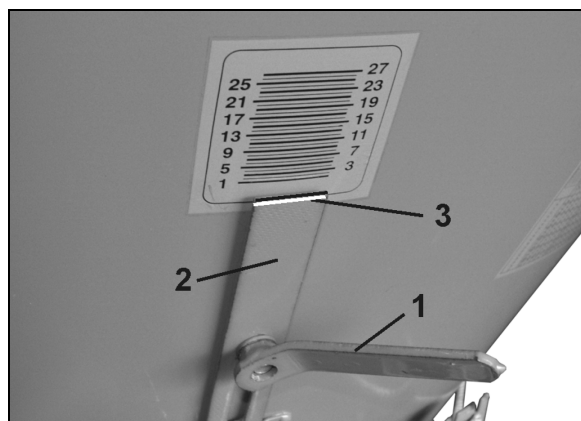


Fig. 22

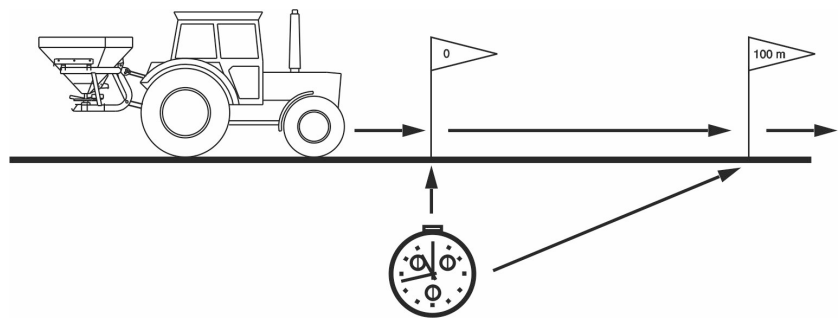
8.2.1 EK-S: Spread rate check

A spread rate check is recommended with any change of spreading material or when it changed its condition.

If the operational speed of the towing vehicle is known exactly a stationary spread rate is possible.

1. How to determine the actual speed of operation

- 1.1 Carefully measure a distance of 100 m. Mark the beginning and end of the test distance.
- 1.2 Drive test distance from beginning to end mark with the intended, constant operational speed. Determine the required time with the aid of a stopwatch.



Determination of operational speed [km/h].

$$\text{Operational speed [km/h]} = \frac{360}{\text{Timed seconds for 100m}}$$

Example: 100 m in 120 sec.

$$\frac{360}{120 \text{ sec}} = 3 \text{ km/h}$$

2. How to determine the necessary required spread rate per minute [g/min] for the desired spread rate:

$$\text{So [g/min]} = \text{St [g/m}^2\text{]} \times \text{Fl [m}^2\text{/min]}$$

So: necessary required spread rate

St: desired spread rate

Fl: Acreage output

$$\text{Fl [m}^2\text{/min]} = \text{W [m/min]} \times \text{A [m]}$$

Fl: Acreage output

W: Travelled distance

A: Working width

$$\text{W [m/min]} = \frac{\text{F [m/h]}}{60}$$

W: Travelled distance

F: Operational speed

Example:

Operational speed F: 3 km/h

Working width A: 4m

Desired spread rate St: 50 g/m²

Necessary required spread rate So: ? [g/min]

$$W = \frac{3000 \text{ [m/h]}}{60} = 50 \text{ m/min}$$

$$F = 50 \text{ m/min} \times 4\text{m} = 200 \text{ m}^2/\text{min}$$

$$So = 50 \text{ g/m}^2 \times 200 \text{ m}^2/\text{min}$$

$$So = 10000 \text{ g/min}$$

The necessary required spread rate is 10 kg/min.

3. Procedure of spread rate check

- 3.1 Place a plastic wrap underneath the spreader.
- 3.2 Lower the spreader to its lowest position.
- 3.3 Move the spread width reducer in its lowest position.
- 3.4 Start the towing vehicle's engine. With the manual gas lever constantly set the engine's rev. speed considering the universal joint shaft rev. speed (e.g. **540 min⁻¹**).
- 3.5 Switch on the universal joint shaft or the hydraulic drive.
- 3.6 Open the shutter for precisely 1 minute in the desired shutter slide position.
- 3.7 To determine the actually set spread rate [g/m²] weigh the collected amount of spreading material and compare with the determined required spread rate..



Danger!

During the spread rate check be aware of rotating implement parts and spreading material particles being thrown around.



If the actual and the desired spread rate do not coincide, re-adjust the shutter position accordingly. If necessary repeat the spread rate check.

8.3 EK-S: Setting the working width

Depending on the kind of spreading material **working widths** from **3 to 5 m** can be adjusted.

The spreading width limitation is adjusted by means of 2 chains (Fig. 24/1) on the left and right of the spreader, according to experience.

- **Lifting** the spread width reducer
→ **increase** of working width.
- **Lowering** the spread width reducer
→ **reduction** of working width.

Lock the position of the spreading width limitation by attaching the chain (Fig. 24/2).

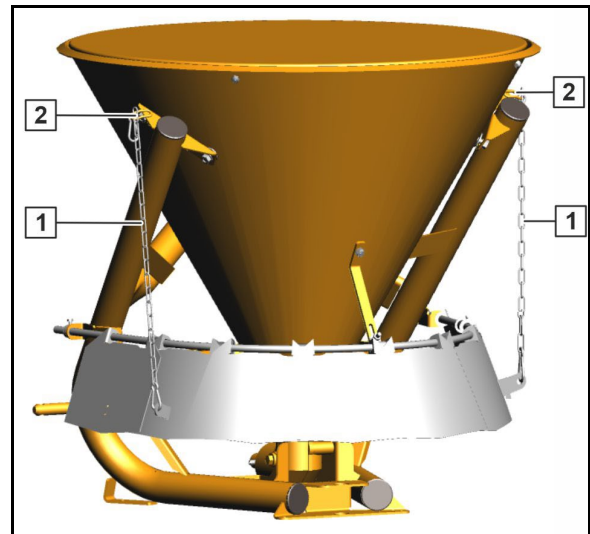


Fig. 23

9 Transport travel



Danger!

- Prior any transport travel observe the chapter "Safety advice for the operator", page 23.



Danger!

Note maximum permissible filling loads of the spreader and axle loads of the tractor; if necessary drive on public roads with only half filled hopper.

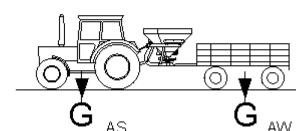
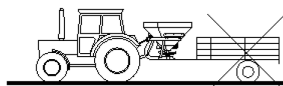
Adjustments on tractor and fertiliser spreader for transport on public road



Danger!

- When the centrifugal broadcaster is lifted for road transport, the distance between the upper edge of the rear lights and the road surface must never exceed 900 mm.
- When driving on public roads with lifted implement lock the control lever against unintended lowering!
- When lifting the fertiliser broadcaster the front axle load of the tractor is relieved by different amounts depending on the size of the tractor. Always check that the necessary front axle load of the tractor (20 % of the tractor's net weight) is maintained!

Tow hitch



$$1) V_{\max} = 25 \text{ km/h}$$

$$2) G_{AW} = \max. 1,25 \times G_{AS} ; G_{AW\max} = 5t$$

The tow hitch allows the hitching of working implements and twin axle trailers provided that:

- the operational speed of max. 25 km/h is not exceeded.
- the trailer is equipped with a run-on brake or a brake system which can be operated from the driver of the towing vehicle.
- the permissible total weight of the trailer does not exceed 1.25 times the permissible total weight of the towing vehicle, however it must not exceed 5 tons.



Warning!

The transport of single axle trailers with rear mount implements is prohibited!

10 Operation



Danger!

- When operating the machine observe the chapter "Safety advice for the operator", page 21.
- Observe the warning signs on the machine. The warning signs provide you with important hints for the safe operation of the machine. Adhering to these hints serves your safety!



Danger!

- Never reach into the rotating agitator spiral!
- Under no circumstances poke about the fertiliser with any aids into the rotating agitator spiral!
- Never ever climb onto the hopper whilst the agitator spiral is spinning!

10.1 Filling the spreader



- Before filling ensure that there are no residue or foreign particles in the hopper.
- Before filling the spreader attach the guard screen to sort out foreign particles.
- When filling the spreader ensure that there are no foreign particles in the fertiliser
- Observe the permissible payload of the spreader (please refer to technical data) and the axle loads of the tractor!



Danger!

When filling the centrifugal broadcaster always check that the necessary front axle load of the tractor (20 % of the tractor's net weight, please also refer to the instruction manual of the vehicle manufacturer) is maintained. If necessary apply front weights!



Before filling the hopper the shutters must be closed!

10.2 Spreading operation

- The machine has been coupled onto the tractor.
- The hydraulic hoses are connected.
- All settings are made.
 - Spread rate setting
 - Spreading vane position
 - Shutter slide rods for shutter slide A, B hooked or unhooked.
 - EK-S: Working width adjustment on the spread deflector

	The spreading disc rev. speed is 540 $\frac{U}{\text{min}}$, if there is no other speed given in the spread rate table! Engage the universal joint shaft at a low tractor engine speed.
	Danger! Do not approach rotating spreading discs. Danger of injury. Danger from particles being thrown around. Advice people to leave the danger area!
	If the implement is transported over longer distances with filled hopper, ensure a correct spread rate when starting the spreading operation. Maintain a constant spreading disc rev. speed and forward speed.
	Danger! Before commencing any operation with the fertiliser spreader ensure that all safeguards are present and fitted in the correct position (Seite 31).
	Prior to any operation ensure the proper condition of the fixing parts, especially the fixing of spreading discs and spreading vanes.

Headlands

Close shutter slides when turning on the headlands!

Field sides

The one-sided field side spreading is possible. To do this, release each one switch rod and deactivate shutter slide A or B, see Seite 36.

After operation

After operation

- Close shutter slide.
- Switch off the universal joint shaft.

11 Fault

Fault	Cause	Remedy
Incorrect spread rate.	Wrong drive speed of the spreading disc.	Maintain the drive speed as indicated in the setting chart.
	Setting has not been carried out according to the setting chart.	Carry out the setting according to the setting chart.
	Wrong basic shutter slide position.	Check the basic shutter slide position.
	Wrong agitator finger position.	Check agitator finger position.
Spreading disc drive stops	Expansion pin on the gearbox input is broken due to overload.	Replace expansion pin.
No material is spread after a prolonged transport travel	Condensed spreading material	Open the shutter slide completely, engage the universal joint shaft at low tractor rev. speed and briefly spread stationary. Then again adjust the desired spread rate.

Basic shutter slide position

1. Set the shutter slide stop to 17 on the scale n.
2. Open shutter slide.
3. Both outlet openings must be 37,5 mm open (Fig. 25).

Agitator finger position

Check the distance between agitator finger and hopper wall. The agitator finger should be parallel to the hopper wall with a distance of $27 + 1$ mm (Fig. 25).

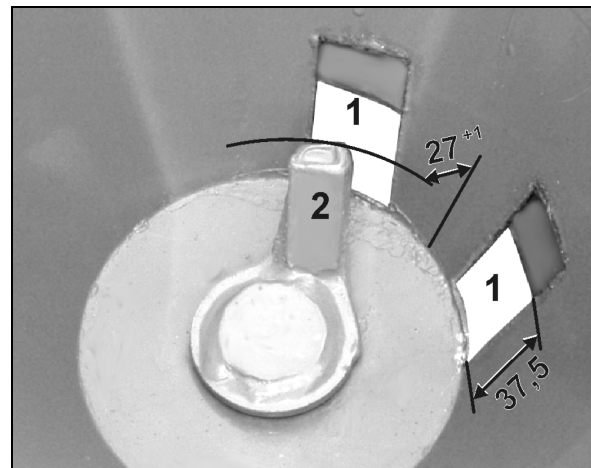


Fig. 24

Replacement of expansion pin

The provided expansion pins serve to replace broken expansion pins of the universal joint on the input shaft (overload safety).

Do not replace broken expansion pins by fitting- or heavy duty expansion pins.

For fitting only utilise the 8mm hole of the universal joint yoke. The 10mm hole should only be used to facilitate driving out the broken expansion pin.

Prior to fitting the PTO shaft grease the input shaft!

12 Maintenance, repair and care



Danger!

When carrying out any maintenance, repair and care work, observe the chapter "Safety advice for the operator", Seite 21.

Before commencing any maintenance work switch off the tractor universal joint shaft, stop the tractor engine and remove the ignition key.

12.1 Cleaning



- Monitor brake-, air and hydraulic hoses with special care.
- Never ever treat brake-, air- and hydraulic hoses with petrol, benzole, paraffin or mineral oils..
- After cleaning grease the machine, especially after cleaning with a high pressure cleaner / steam jet or fat soluble agents.
- Observe the legal prescriptions for the handling and disposal of cleaning agents.

Cleaning by using a high pressure cleaner / steam jet



- Implicitly observe the following points when using a high pressure cleaner / steam jet for cleaning:
 - Do not clean any electric parts.
 - Do not clean any chromium plated parts.
 - Never point with the cleaning jet of the cleaning nozzle of the high pressure cleaner / steam jet directly at grease or bearing points.
 - Always ensure a minimum distance between the cleaning jet of the high pressure cleaner or steam jet and the machine.
 - Observe the safety advice for operating with high pressure cleaners.



Ensure that the spreading vanes and hopper Tipp is always clean.

Remove sticking deposits.

12.2 Greasing table

- The greasing intervals for the PTO shaft are illustrated in hours in the opposite picture. Also follow the shaft manufacturer's assembly and maintenance instructions attached to the PTO shaft.
- Grease the shutter slide openings after every operation.

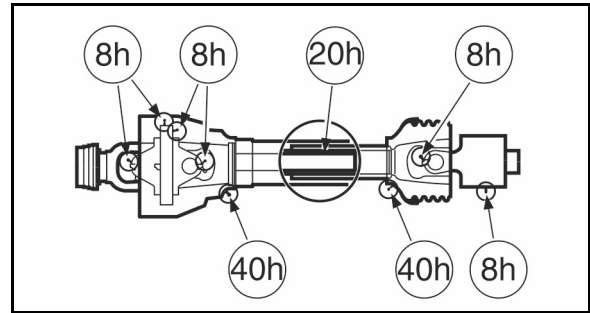


Fig. 25



Only use lithium saponified multipurpose grease with EP additives.

12.3 Exchanging the spreading discs

1. EK-S: Remove spread width reducer .
2. Remove the bolts (Fig. 27/1) and exchange the spreading vanes.
3. Firmly retighten the bolts.



Danger!

Exchange the spreading vanes if breakages by wear are noticed.

Danger of injury from flinging broken off spreading vane parts!

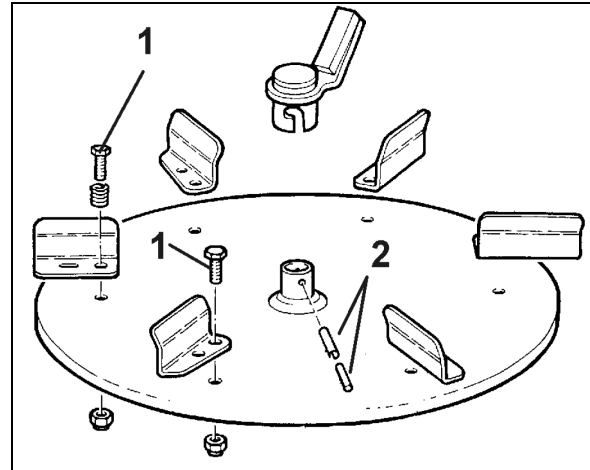


Fig. 26

12.4 Exchanging the agitator head

1. Remove the expansion pin (Fig. 27/2) from the agitator head.
2. Pull off the agitator head in upward direction.
3. Insert new agitator head.
4. Secure the agitator head and the spreading disc with two expansion pins.



Check distance between agitator finger and hopper wall. The agitator finger should be positioned parallel to the hopper wall with a spacing of $27 + 1$ mm (Fig. 25).

Ensure that the agitator head does not drag along the hopper bottom. If necessary slightly press the hopper bottom downwards.

12.5 Hydraulic system



WARNING

Danger due to escaping high-pressure hydraulic fluid which can penetrate the body through the skin (danger of infection).

- Only a specialist workshop may carry out work on the hydraulic system.
- The hydraulic system is under high pressure. Depressurise the hydraulic system before carrying out work on the hydraulic system.
- When searching for leak points, always use suitable aids.
- Never attempt to plug leaks in hydraulic hose lines using your hand or fingers.

Escaping high pressure fluid (hydraulic fluid) may pass through the skin and ingress into the body, causing serious injuries!

If you are injured by hydraulic fluid, contact a doctor immediately. Risk of infection!



WARNING

Danger of unintentional contact with hydraulic fluid!

Please take the following first-aid measures:

- Following inhalation:
 - No special action required.
- Following contact with the skin:
 - Wash off with plenty of soap and water.
- Following contact with the eyes:
 - Rinse eyes for several minutes under running water, holding the eyelid open.
- Following ingestion:
 - Seek medical assistance.



- When connecting the hydraulic hose lines to the tractor's hydraulic system, ensure that the hydraulic system is depressurised on both the tractor and the machine.
- Ensure that the hydraulic hose lines are connected correctly.
- Regularly check all the hydraulic hose lines and couplings for damage and impurities.
- Have the hydraulic hose line checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is damaged or worn. Only use AMAZONE original hydraulic hose lines.
- The hydraulic hose lines should not be used for longer than six years, including any storage time of maximum two years. Even with proper storage and approved use, hoses and hose connections are subject to natural ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
- Dispose of old oil in the correct way. If you have problems with disposal, contact your oil supplier.
- Keep hydraulic fluid out of the reach of children!
- Ensure that no hydraulic fluid enters the soil or waterways.

Labelling of hydraulic hose lines

The assembly labelling provides the following information:

Fig. 70/...

- (1) Manufacturer's marking on the hydraulic hose line (A1HF)
- (2) Date of manufacturer of the hydraulic hose line
(04 / 02 = Yes / Month = February 2004)
- (3) Maximum approved operating pressure
(210 BAR).

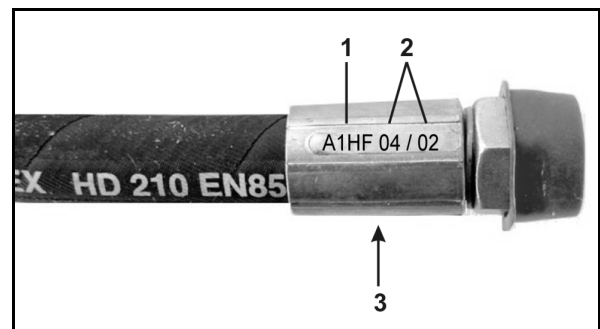


Fig. 27

12.5.1 Maintenance intervals

After the first 10 operating hours, and then every 50 operating hours

1. Check all the components of the hydraulic system for tightness.
2. If necessary, tighten screw unions.

Before each start-up:

1. Check hydraulic hose lines for visible damage.
2. Eliminate any scouring points on hydraulic hose lines and pipes.
3. Immediately replace worn or damaged hydraulic hose lines and pipes.

12.5.2 Inspection criteria for hydraulic hose lines



For your own safety, comply with the following inspection criteria!

Replace hydraulic hose lines if the respective hydraulic hose line fulfils at least one of the following criteria:

- Damage to the outer layer up to the ply (e.g. scouring points, cuts, cracks).
 - Brittleness of the outer layer (crack formation of the hose material).
 - Deformations which do not match the natural shape of the hose or the hose line. Both in a depressurised and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
 - Leak points.
 - Damage or deformation of the hose assembly (sealing function restricted); minor surface damage is not a reason for replacement.
 - Movement of the hose out of the assembly.
 - Corrosion of assembly, reducing the function and tightness.
 - Installation requirements not complied with.
 - Life span of 6 years has been exceeded.
- The date of manufacture of the hydraulic hose line on the assembly is decisive for determining these six years. If the date of manufacture on the assembly is "2004", then the hose should not be used beyond February 2010. See also "Labelling of hydraulic hose lines", page Fig. 70

12.5.3 Installation and removal of hydraulic hose lines



When installing and removing hydraulic hose lines, always observe the following information:

- Only use AMAZONE original hydraulic hose lines.
- Ensure cleanliness.
- Always install the hydraulic hose lines to ensure the following in all operational positions
 - There is no tension, apart from the hose's own weight.
 - There is no possibility of jolting on short lengths.
 - Outer mechanical influences on the hydraulic hose lines are avoided.

Use appropriate arrangements and fixings to prevent abrasion of the hydraulic hose lines by components or from rubbing against one another. If necessary, secure hydraulic hose lines using protective covers. Cover sharp-edged components.

 - The approved bending radii may not be exceeded.
- When connecting a hydraulic hose line to moving parts, the hose length must be appropriate so that the smallest approved bending radius is not undershot over the whole area of movement and/or the hydraulic hose line is not overtensioned.
- Fix the hydraulic hose lines at the specified fixing points. There, avoid hose clips, which impair the natural movement and length changes of the hose.
- The coating of hydraulic hose lines is not permitted.

12.5.4 Upper and lower link pins check



DANGER!

Risk of contusions, catching, and knocks when the implement unexpectedly releases from the tractor!

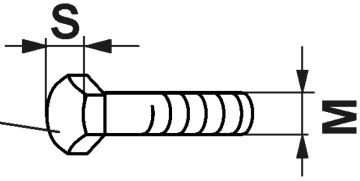
Replace damaged top link pins and lower link pins immediately for road traffic safety reasons.

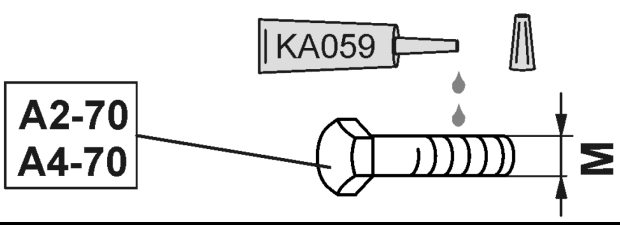
Test criteria for top link pins and lower link pins:

- Visual check for cracks
- Visual check for fractures
- Visual check for permanent deformations
- Visual check and measurements for wear. The permissible wear is 2 mm.
- Visual check for wear on the ball sleeves
- If applicable: check the fastening bolts for tightness

If a wear criterion is met, replace the top link pin or lower link pin.

12.6 Screw tightening torques

8.8 10.9 12.9 				
M	S	8.8	10.9	12.9
M 8	13	25	35	41
M 8x1		27	38	41
M 10	16 (17)	49	69	83
M 10x1		52	73	88
M 12	18 (19)	86	120	145
M 12x1,5		90	125	150
M 14	22	135	190	230
M 14x1,5		150	210	250
M 16	24	210	300	355
M 16x1,5		225	315	380
M 18	27	290	405	485
M 18x1,5		325	460	550
M 20	30	410	580	690
M 20x1,5		460	640	770
M 22	32	550	780	930
M 22x1,5		610	860	1050
M 24	36	710	1000	1200
M 24x2		780	1100	1300
M 27	41	1050	1500	1800
M 27x2		1150	1600	1950
M 30	46	1450	2000	2400
M 30x2		1600	2250	2700

A2-70 A4-70 												
M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
 Nm	2,4	4,9	8,4	20,6	40,7	70,5	112	174	242	342	470	589



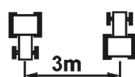
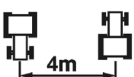
Coated bolts have different tightening torques.

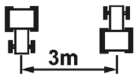
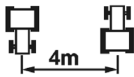
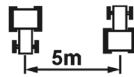
Observe the specific data for tightening torques in the maintenance section.

13 Setting chart EK-S

Shutter slide positions for spread rates [g/m²] and working widths at

- a spreading disc drive speed of: 540 min⁻¹,
- Use of the rod agitator

Salt: 1,34 kg/l																		
shutter position																		
	km/h						km/h						km/h					
	1	6	8	10	12	14	1	6	8	10	12	14	1	6	8	10	12	14
8	100	17	13	10	8	7	75	13	9	8	6	5	60	10	8	6	5	4
9	240	40	30	24	20	17	180	30	23	18	15	13	144	24	18	14	12	10
10	380	63	48	38	32	27	285	48	36	29	24	20	228	38	29	23	19	16
11	430	72	54	43	36	31	323	54	40	32	27	23	258	43	32	26	22	18
12	700	117	88	70	58	50	525	88	66	53	44	38	420	70	53	42	35	30
13	880	147	110	88	73	63	660	110	83	66	55	47	528	88	66	53	44	38
14	1040	173	130	104	87	74	780	130	98	78	65	56	624	104	78	62	52	45
15	1200	200	150	120	100	86	900	150	113	90	75	64	720	120	90	72	60	51
16	1360	227	170	136	113	97	1020	170	128	102	85	73	816	136	102	82	68	58
17	1540	257	193	154	128	110	1155	193	144	116	96	83	924	154	116	92	77	66
18	1700	283	213	170	142	121	1275	213	159	128	106	91	1020	170	128	102	85	73
19	1860	310	233	186	155	133	1395	233	174	140	116	100	1116	186	140	112	93	80
20	2020	337	253	202	168	144	1515	253	189	152	126	108	1212	202	152	121	101	87
21	2200	367	275	220	183	157	1650	275	206	165	138	118	1320	220	165	132	110	94
22	2340	390	293	234	195	167	1755	293	219	176	146	125	1404	234	176	140	117	100
23	2520	420	315	252	210	180	1890	315	236	189	158	135	1512	252	189	151	126	108
24	2680	447	335	268	223	191	2010	335	251	201	168	144	1608	268	201	161	135	115
25	2860	477	358	286	238	204	2145	358	268	215	179	153	1716	286	215	172	143	123
26	3000	500	375	300	250	214	2250	375	281	225	188	161	1800	300	225	180	150	129
27	3200	533	400	320	267	229	2400	400	300	240	200	171	1920	320	240	192	160	137

Sand-salt (10:1): 1,30 kg/l Sand-grit (4:1): 1,40 kg/l																		
Shutter position																		
	km/h						km/h						km/h					
	1	6	8	10	12	14	1	6	8	10	12	14	1	6	8	10	12	14
9	16	3	2	1	1	1	12	2	2	1	1	1	10	2	1	1	1	1
10	80	13	10	8	7	6	60	10	8	6	5	4	48	8	6	5	4	3
11	120	20	15	12	10	9	90	15	11	9	8	6	72	12	9	7	6	5
12	180	30	23	18	15	13	435	23	17	14	11	10	108	18	14	11	9	7
13	300	50	38	30	25	21	225	38	28	23	19	16	180	30	23	18	15	13
14	440	73	55	44	37	31	330	55	41	33	28	24	264	44	33	26	22	19
15	580	97	73	58	48	41	135	73	54	44	36	31	348	58	44	35	29	25
16	740	123	93	74	62	53	555	93	89	56	46	40	444	74	56	44	37	31
17	900	150	113	90	75	64	675	113	84	68	56	48	540	90	68	54	45	39
18	680	113	85	68	57	49	540	85	63	51	43	36	408	68	51	41	34	29
19	1240	207	155	124	103	89	930	155	116	93	78	66	744	124	93	74	62	53
20	1400	233	175	140	117	100	1050	175	131	105	88	75	840	140	105	84	70	60
21	1540	257	193	154	128	110	1155	193	144	116	96	83	924	154	116	92	77	66
22	1700	283	213	170	142	121	1275	213	159	128	106	91	1020	170	128	102	85	73
23	1880	313	235	188	157	134	1410	235	176	141	118	101	1128	188	141	113	94	81
24	2040	340	255	204	170	146	1530	255	191	153	128	109	1224	204	153	122	102	87
25	2200	367	275	220	183	157	1650	275	206	165	138	118	1320	220	165	132	110	94
26	2340	390	293	234	195	167	1755	293	219	176	146	125	1404	234	176	140	117	100
27	2500	417	313	250	208	179	1875	313	234	188	156	134	1500	250	188	150	125	107



AMAZONEN-WERKE

H. DREYER SE & Co. KG

Postfach 51
D-49202 Hasbergen-Gaste
Germany

Tel.: + 49 (0) 5405 501-0
e-mail: amazone@amazone.de
<http://www.amazone.de>

