Operating Manual

AMAZONE

ZA-M 1002 Special **ZA-M 1202**
ZA-M 1502 Special **ZA-M 1502**

Mounted spreader



SmartLearning

MG7737
BAG0233.6 12.25
Printed in Germany

Please read this operating manual before first commissioning. Keep it in a safe place for future use.

en_US

Reading the instruction

Manual and following it should seem to be inconvenient and superfluous as it is not enough to hear from others and to realize that a implement is good, to buy it and to believe that now everything should work by itself. The person in question would not only harm himself but also make the mistake of blaming the implement for possible failures instead of himself. In order to ensure success one should enter the mind of a thing, make himself familiar with every part of the implement and get acquainted with how it's handled. Only in this way could you be satisfied both with the implement and with yourself. This goal is the purpose of this instruction manual.

Leipzig-Plagwitz 1872. 

Identification data

Enter the implement identification data here. You will find the identification data on the rating plate.

Implement identification number:
(ten-digit) _____

Type: ZA-M 02

Year of manufacture: _____

Basic weight (kg): _____

Approved total weight (kg): _____

Maximum load (kg): _____

Manufacturer's address

AMAZONEN-WERKE

H. DREYER SE & Co. KG
Postfach 51

D-49202 Hasbergen

Tel.: + 49 (0)5405 501-0

E-mail: amazone@amazone.de

Spare part orders

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

Please send orders to your AMAZONE dealer.

Formalities of the operating manual

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Foreword

Dear Customer,

You have chosen one of the quality products from the wide product range of AMAZONEN-WERKE, H. DREYER SE & Co. KG. We thank you for your confidence in our products.

On receiving the implement, check to see if it was damaged during transport or if parts are missing. Using the delivery note, check that the implement was delivered in full including the ordered special equipment. Damage can only be rectified if problems are signalled immediately!

Before first commissioning, read and understand this operating manual, and particularly the safety information. Only after careful reading will you be able to benefit from the full scope of your newly purchased implement.

Please ensure that all the implement operators have read this operating manual before commissioning the implement.

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

Regular maintenance and timely replacement of worn or damaged parts increases the lifespan of your implement.

User evaluation

Dear Reader,

We update our operating manuals regularly. Your suggestions for improvement help us to create ever more user-friendly manuals.

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1 User Information

The User Information section provides information on use of the operating manual.

1.1 Purpose of the document

This operating manual

- Describes the operation and maintenance of the implement.
- Provides important information on safe and efficient handling of the implement.
- Is a component part of the implement and should always be kept with the implement or the traction vehicle.
- Keep it in a safe place for future use.

1.2 Locations in the operating manual

All the directions specified in the operating manual are always seen from the direction of travel.

1.3 Diagrams used

Handling instructions and reactions

Activities to be carried out by the user are given as numbered instructions. Always keep to the order of the handling instructions. The reaction to the handling instructions is given by an arrow.

Example:

1. Handling instruction 1

→ Implement reaction to handling instruction 1

2. Handling instruction 2

Lists

Lists without an essential order are shown as a list with bullets.

Example:

- Point 1
- Point 2

Number items in diagrams

Numbers in round bracket refer to items in diagrams. The first number refers to the diagram and the second number to the item in the figure.

Example: (Fig. 3/6)

- Figure 3
- Item 6

2 General safety instructions

This section contains important information on safe operation of the implement.

2.1 Obligations and liability

Comply with the instructions in the operating manual

Knowledge of the basic safety information and safety regulations is a basic requirement for safe handling and fault-free implement operation.

Obligations of the operator

The operator is obliged only to let those people work with/on the implement who

- Are aware of the basic workplace safety information and accident prevention regulations.
- Have been trained in working with/on the implement.
- Have read and understood this operating manual.

The operator is obliged

- To keep all the warning pictograms on the implement in a legible state.
- To replace damaged warning pictograms.

If you still have queries, please contact the manufacturer.

Obligations of the user

Before starting work, anyone charged with working with/on the implement is obliged

- To comply with the basic workplace safety instructions and accident prevention regulations.
- To read and follow the "General safety information" section of this operating manual.
- To read the "Warning pictograms and other signs on the implement" section of this operating manual and to follow the safety instructions of the warning pictograms when operating the implement.
- To get to know the implement.
- To read the sections of this operating manual, important for carrying out your work.

If the user discovers that a function is not working properly, then they must eliminate this fault immediately. If this is not the task of the user or if the user does not possess the appropriate technical knowledge, then they should report this fault to their superior (operator).

Risks in handling the implement

The implement has been constructed to the state-of-the art and the recognised rules of safety. However, there may be risks and restrictions which occur when operating the implement

- For the health and safety of the user or third persons,
- For the implement,
- For other goods.

Only use the implement

- For the purpose for which it was intended.
- In a perfect state of repair.

Eliminate any faults immediately which could impair safety.

Guarantee and liability

Our "General conditions of sales and delivery" are always applicable. These shall be available to the operator, at the latest on the completion of the contract. Guarantee and liability claims for damage to people or goods will be excluded if they can be traced back to one or more of the following causes:

- Improper use of the implement.
- Improper installation, commissioning, operation and maintenance of the implement.
- Operation of the implement with defective safety equipment or improperly attached or non-functioning safety equipment.
- Non-compliance with the instructions in the operating manual regarding commissioning, operation and maintenance.
- Independently-executed construction changes to the implement.
- Insufficient monitoring of implement parts which are subject to wear.
- Improperly executed repairs.
- Disasters through the impact of foreign bodies and acts of God.

2.2 Representation of safety symbols

Safety instructions are indicated by the triangular safety symbol and the highlighted signal word. The signal word (DANGER, WARNING, CAUTION) describes the gravity of the risk and has the following significance:



DANGER

Identifies an immediate danger with a high risk that may cause death or serious physical injuries (loss of limbs or long-term damage) if not avoided.

If the instructions are not followed, then this will result in immediate death or serious physical injury.



WARNING

Indicates a medium risk, which could result in death or (serious) physical injury if not avoided.

If the instructions are not followed, then this may result in death or serious physical injury.



WARNING

Indicates a low risk which could cause minor or medium level physical injury or damage to property if not avoided.



IMPORTANT

Indicates an obligation to special behaviour or an activity required for proper implement handling.

Non-compliance with these instructions can cause faults on the implement or in the environment.



NOTE

Indicates handling tips and particularly useful information.

These instructions will help you to use all the functions of your implement to the optimum.

2.3 Organisational measures

The operator must provide the necessary personal protective equipment, such as:

- Protective glasses
- Protective shoes
- Protective suit
- Skin protection agents, etc.



The operation manual

- Must always be kept at the place at which the implement is operated.
- Must always be easily accessible for the user and maintenance personnel.

Check all the available safety equipment regularly.

2.4 Safety and protection equipment

Before each commissioning of the implement, all the safety and protection equipment must be properly attached and fully functional. Check all the safety and protection equipment regularly.

Faulty safety equipment

Faulty or disassembled safety and protection equipment can lead to dangerous situations.

2.5 Informal safety measures

As well as all the safety information in this operating manual, comply with the general, national regulations pertaining to accident prevention and environmental protection.

When driving on public roads and routes, then you should comply with the statutory road traffic regulations.

2.6 User training

Only those people who have been trained and instructed may work with/on the implement. The operator must clearly specify the responsibilities of the people charged with operation, maintenance and repair work.

People being trained may only work with/on the implement under the supervision of an experienced person.

Activity \ People	Person specially trained for the activity [1]	Trained person [2]	Person with specialist training (specialist workshop) [3]
Loading/Transport	X	X	X
Commissioning	--	X	--
Set-up, tool installation	--	--	X
Operation	--	X	--
Maintenance	--	--	X
Troubleshooting and fault elimination	--	X	X
Disposal	X	--	--

Legend: X..permitted --..not permitted

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 implement 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 implement in a way which is both appropriate and safe.

2.7 Safety measures in normal operation

Only operate the implement if all the safety and protection equipment is fully functional.

Check the implement at least once a day for visible damage and check the function of the safety and protection equipment.

2.8 Danger from residual energy

Note that there may be residual mechanical, hydraulic, pneumatic and electrical/electronic energy on the implement.

Use appropriate measures to inform the operating personnel. You can find detailed information in the relevant sections of this operating manual.

2.9 Maintenance and repair work, fault elimination

Carry out prescribed setting, maintenance and inspection work in good time.

Secure all media such as compressed air and the hydraulic system against unintentional start-up.

Carefully fix and secure larger subassemblies to lifting gear when carrying out replacement work.

Regularly check that bolted connections are firmly secured and tighten if necessary.

When the maintenance work is completed, check the function of the safety devices.

2.10 Constructive changes

You may make no changes, expansions or modifications to the implement without the approval of AMAZONEN-WERKE. This is also valid when welding support parts.

Any expansion or modification work shall require the written approval of AMAZONEN-WERKE. Only use the modification and accessory parts released by AMAZONEN-WERKE, so that the type approval remains valid according to the national and international regulations.

Vehicles with an official type approval or with equipment connected to a vehicle with a valid type approval or approval for road transport according to the German road traffic regulations must be in the state specified by the approval.



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 implement 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

Handle and dispose of any materials used carefully, in particular

- When carrying out work on lubrication systems and equipment and
- When cleaning using solvents.

2.12 User workstation

The implement may only be operated by one person sitting in the driver's seat of the tractor.

2.13 Warning pictograms and other signs on the implement

Always keep all the warning pictograms of the implement clean and in a legible state. Replace illegible warning pictograms. You can obtain the warning pictograms from your dealer using the order number (e.g. MD 075).

Warning pictograms - structure

Warning pictograms indicate dangers on the implement and warn against residual dangers. At these points, there are permanent or unexpected dangers.

A warning pictogram consists of two fields:



Field 1

is a pictogram describing the danger, surrounded by triangular safety symbol.

Field 2

is a pictogram showing how to avoid the danger.

Warning pictograms - explanation

The column **Order number and explanation** provides an explanation of the neighbouring warning pictogram. The description of the warning pictograms is always the same and specifies, in the following order:

1. A description of the danger.

   For example: danger to fingers or hands from moving operating elements due to cutting or cutting off.

2. The consequence of non-compliance with the danger protection instructions.

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

3. Instructions for avoiding the danger.

   For example: never reach into the danger area when the tractor engine is running with the cardan shaft/hydraulic system connected.

   Only touch moving operating elements once they have come to a complete standstill.

2.13.1 Positions of warning pictograms and other labels

Warning pictograms

The following diagrams show the arrangement of the warning pictograms on the implement.

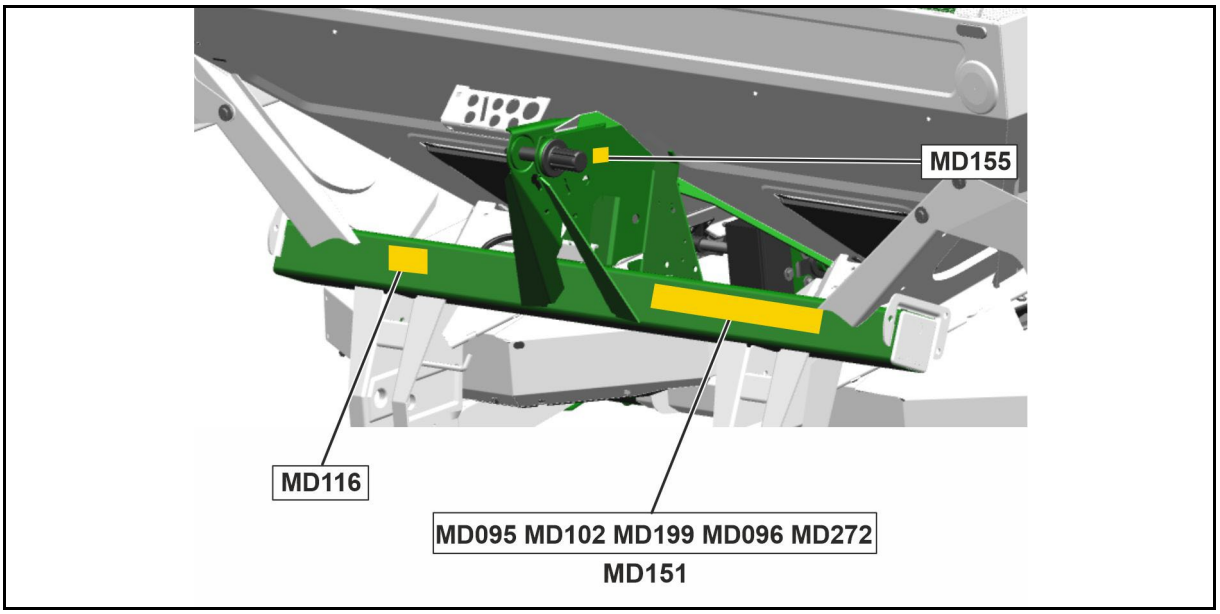


Fig. 1

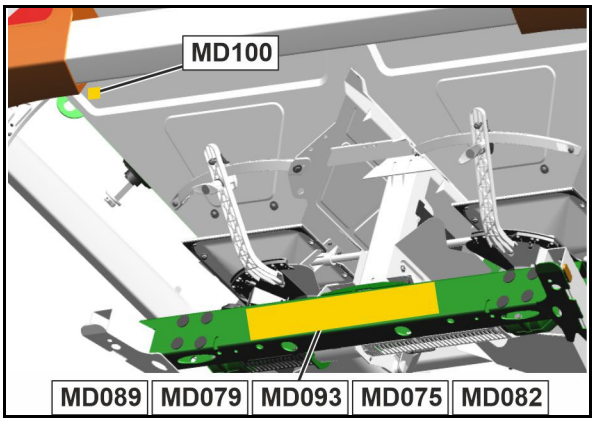


Fig. 2

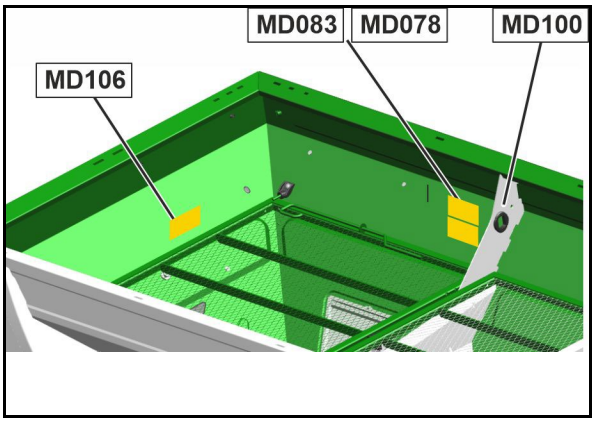


Fig. 3

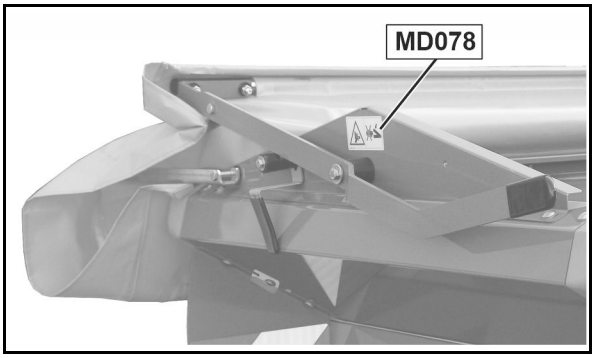


Fig. 4

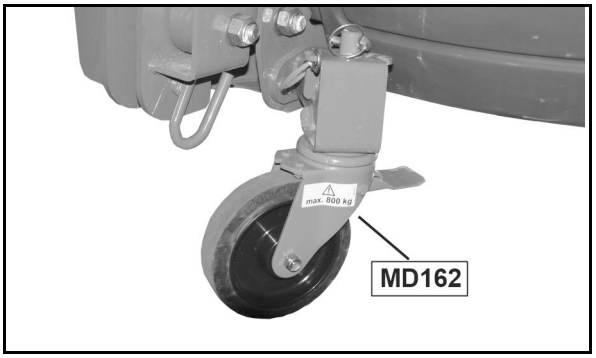


Fig. 5

Order number and explanation	Warning pictograms

MD 075

Risk of cutting injuries for fingers, hands, and arms

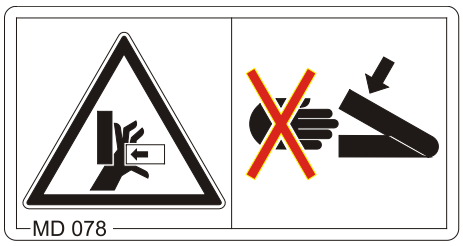
- Disconnect the power supply to the implement before approaching the danger zone.
- Wait until all moving parts have come to a standstill before reaching into the danger area.
- Ensure that no one is standing in the danger zone or in the vicinity of moving parts.



MD 078

Risk of crushing fingers or hands!

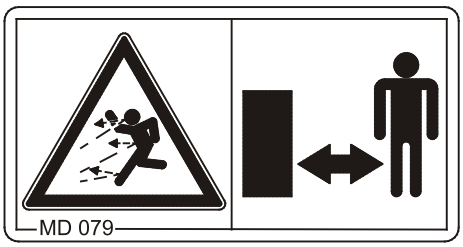
- Disconnect the power supply to the implement before approaching the danger zone.
- Wait until all moving parts have come to a standstill before reaching into the danger area.
- Ensure that no one is standing in the danger zone or in the vicinity of moving parts.



MD 079

Danger due to ejected material!

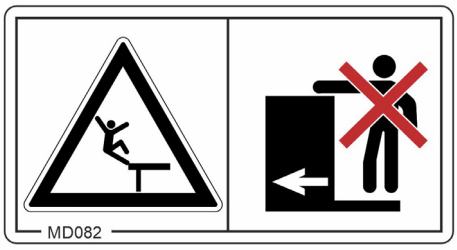
- Ensure that no one is standing in the danger zone or in the vicinity of moving parts.



MD 082

Risk of falling from stepping surfaces and platforms

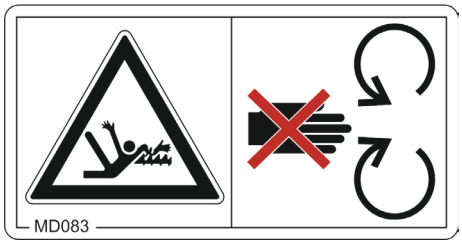
- Never allow people to ride on the implement.
- Never allow people to climb onto the moving implement.



MD083

Risk of entanglement

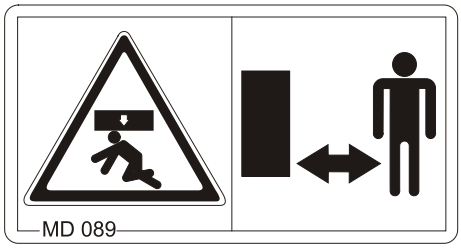
- Interrupt the power supply to the implement before approaching the danger zone.
- Wait until all moving parts have come to a standstill before reaching into the danger area.
- Ensure that no one is standing in the danger zone or in the vicinity of moving parts.



MD 089

Risk of crushing due to implement parts unintentionally lowering

- Ensure that no one is in the danger zone.



MD 093

Risk of entanglement and catching

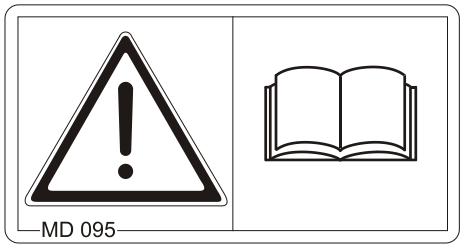
- Disconnect the power supply to the implement before approaching the danger zone.
- Wait until all moving parts have come to a standstill before reaching into the danger area.
- Ensure that no one is in the danger zone or in the vicinity of moving parts.



MD 095

Risk of accident due to failure to comply with the instructions in the operating manual

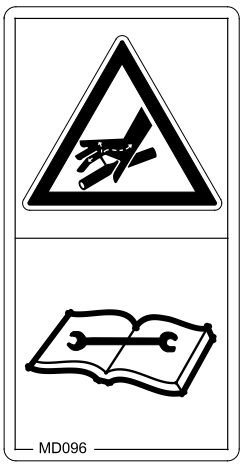
- Before working on or with the implement, read and understand the operating manual.



MD 096

Risk of infection due to hydraulic fluid escaping at high pressure

- Have the hydraulic system tested and repaired by a qualified specialist workshop only.
- Stay away from leak points in the hydraulic system.
- If you are injured by hydraulic fluid, get medical attention immediately.



MD 100

Risk of accident due to improperly attached sling gear

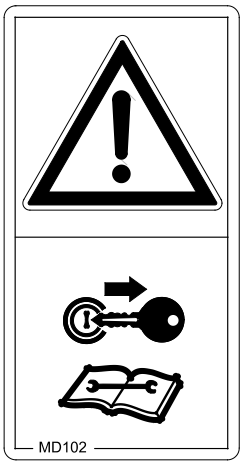
- Only attach sling gear at the marked locations.



MD 102

Danger due to unintentional starting as well as unintentional and uncontrolled movements of the implement

- Before all tasks, secure the implement against unintentional starting as well as unintentional and uncontrolled movements.

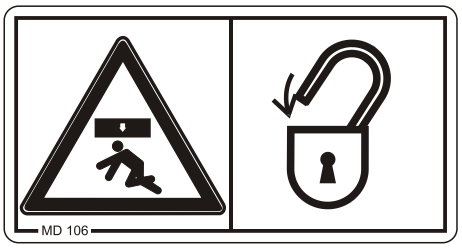


MD 106

Danger from crushing, shearing and/or impacts due to accidental movement of unsecured implement parts.

These dangers can cause extremely serious and potentially fatal injuries.

Secure moving implement parts using the safety locking device to prevent accidental movement before entering the danger area.



MD 116

Risk of implement damage due to excessively high drive speed and the wrong direction of drive shaft rotation

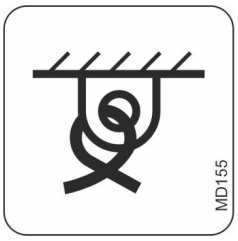
- Comply with the maximum drive speed and ensure proper direction of rotation of the implement-side drive shaft, as shown on the pictogram.



MD 155

Risk of accident and machine damage during transport due to improperly secured machine

- For implement transport, only attach the lashing straps on the marked lashing points.



MD 162

Danger due to overloaded transport roller

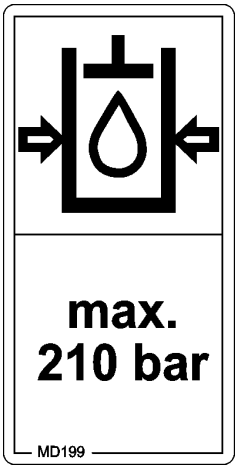
- Never exceed the maximum load capacity.



MD 199

Risk of accident due to excessive hydraulic system pressure

- Only couple the implement to tractors with a maximum tractor hydraulic pressure of 210 bar.



MD 272

Risk of crushing between tractor and implement

- Before activating the tractor hydraulic system, instruct personnel to exit the area between the tractor and the implement.
- Only activate the tractor hydraulic system from the intended workstation.



2.14 Danger if the safety information is not observed

Non-compliance with the safety information

- Can pose both a danger to people and also to the environment and implement.
- Can lead to the loss of all warranty claims.

Seen individually, non-compliance with the safety information could pose the following risks:

- Danger to people through non-secured working areas.
- Failure of important implement functions.
- Failure of prescribed methods of maintenance and repair.
- Danger to people through mechanical and chemical impacts.
- Risk to environment through leakage of hydraulic fluid.

2.15 Safety-conscious working

Besides the safety information in this operating manual, the national general workplace safety and accident prevention regulations are binding.

Comply with the accident prevention instructions on the warning pictograms.

When driving on public roads and routes, comply with the appropriate statutory road traffic regulations.

2.16 Safety information for users



WARNING

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

Before starting up the implement 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 implement provide important information on safe implement operation. Compliance with this information guarantees your safety.
- Before moving off and starting up the implement, check the immediate area of the implement (children)! Ensure that you can see clearly!
- It is forbidden to ride on the implement 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 implement.

  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 implement.

Coupling and uncoupling the implement

- Only connect and transport the implement with tractors suitable for the task.
- When connecting implements to the tractor's three-point linkage, the attachment categories of the tractor and the implement must always be the same!
- Connect the implement to the prescribed equipment in accordance with the specifications.
- When coupling implements to the front or the rear of the tractor, the following may not be exceeded:
  - The approved total tractor weight
  - The approved tractor axle loads
  - The approved load capacities of the tractor tyres
- Secure the tractor and the implement against unintentional rolling, before coupling or uncoupling the implement.
- It is forbidden for people to stand between the implement to be coupled and the tractor, whilst the tractor is moving towards the implement!

  Any helpers may only act as guides standing next to the vehicles, and may only move between the vehicles when both are at a standstill.
- Secure the operating lever of the tractor hydraulic system so that unintentional raising or lowering is impossible, before connecting the implement to or disconnecting the implement from the tractor's three-point linkage.

- When coupling and uncoupling implements, move the support equipment (if available) to the appropriate position (stability).
- When actuating the support equipment, there is a danger of injury from contusion and cutting points!
- Be particularly careful when coupling the implement to the tractor or uncoupling it from the tractor! There are contusion and cutting points in the area of the coupling point between the tractor and the implement.
- It is forbidden to stand between the tractor and the implement when actuating the three-point linkage.
- Coupled supply lines:
  - must easily give way to all movements in bends without tensioning, kinking or rubbing.
  - must not rub against other parts.
- The release ropes for quick action couplings must hang loosely and may not release themselves when lowered.
- Also ensure that uncoupled implements are stable!

Use of the implement

- Before starting work, ensure that you understand all the equipment and actuation elements of the implement and their function. There is no time for this when the implement is already in operation!
- Do not wear loose-fitting clothing! Loose clothing increases the risk over being caught by drive shafts!
- Only start-up the implement, when all the safety equipment has been attached and is in the safety position!
- Comply with the maximum load of the connected implement and the approved axle and support loads of the tractor. If necessary, drive only with a partially filled hopper.
- It is forbidden to stand in the working area of the implement.
- It is forbidden to stand in the turning and rotation area of the implement.
- There are contusion and cutting points at externally-actuated (e.g. hydraulic) implement points.
- Only actuate externally-actuated implement parts when you are sure that there is no-one within a sufficient distance from the implement!
- Before leaving the tractor, secure it from unintentionally starting up or rolling away.

  For this:
  - Lower the implement onto the ground
  - Apply the parking brake
  - Switch off the tractor engine
  - Remove the ignition key

Implement transportation

- Comply with the national road traffic regulations when using public highways.
- Before moving off, check:
  - The correct connection of the supply lines
  - The lighting system for damage, function and cleanliness
  - The brake and hydraulic system for visible damage
  - That the parking brake is completely disengaged
  - The function of the brake system
- Ensure that the tractor has sufficient steering and braking power.

  Any implements and front/rear weights connected to the tractor influence the driving behaviour and the steering and braking power of the tractor.
- If necessary, use front weights.

  The front tractor axle must always be loaded with at least 20% of the empty tractor weight, in order to ensure sufficient steering power.
- Always fix the front or rear weights to the intended fixing points according to regulations.
- Comply with the maximum load of the connected implement and the approved axle and support loads of the tractor.
- The tractor must guarantee the prescribed brake delay for the loaded vehicle combination (tractor plus connected implement).
- Check the brake power before moving off.
- When turning corners with the implement connected, take the broad load and balance weight of the implement into account.
- Before moving off, ensure sufficient side locking of the tractor lower links, when the implement is fixed to the three-point linkage or lower links of the tractor.
- Before moving off, move all the swivel implement parts to the transport position.
- Before moving off, secure all the swivel implement parts in the transport position against risky position changes. Use the transport locks intended for this.
- Before moving off, secure the operating lever of the three-point linkage against unintentional raising or lowering of the connected implement.
- Check that the transport equipment, e.g. lighting, warning equipment and protective equipment, is correctly mounted on the implement.
- Before transportation, carry out a visual check that the upper and lower link bolts are firmly fixed with the lynch pin against unintentional release.
- Adjust your driving speed to the prevailing conditions.
- Before driving downhill, switch to a low gear.
- Before moving off, always switch off the independent wheel braking (lock the pedals).

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 implement 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 implement
  - 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 Electrical system

- 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 implement 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 implement 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/EEC in the appropriate version and carry the CE label.

2.16.4 Universal joint shaft operation

- Use only the PTO shafts prescribed by the AMAZONEN-WERKE factories, equipped with the proper safety devices.
- Also read and follow the operating manual from the PTO shaft manufacturer.
- The protective tube and PTO shaft guard must be undamaged, and the shield of the tractor and implement universal joint shaft must be attached and be in proper working condition.
- Work is prohibited while the safety devices are damaged.
- You may install or remove the PTO shaft only after you have done all of the following:
  - Switched off the universal joint shaft
  - Switched off the tractor engine
  - Applied the parking brake
  - The ignition key has been removed
- Always ensure that the universal joint shaft is installed and secured correctly.
- When using wide-angle PTO shafts, always install the wide angle joint at the pivot point between the tractor and implement.
- Secure the PTO shaft guard by attaching the chain(s) to prevent movement.
- Observe the prescribed pipe overlaps in transport and operational positions. (Read and follow the operating manual from the PTO shaft manufacturer.)

- When turning corners, observe the permitted bending and displacement of the PTO shaft.
- Before switching on the universal joint shaft, check that the selected universal joint shaft speed of the tractor matches the permitted drive rev. speed of the implement.
- Instruct people to leave the danger area of the implement before you switch on the universal joint shaft.
- While work is being carried out with the universal joint shaft, there must be no one in the area of the universal drive or PTO shaft while it is turning.
- Never switch on the universal joint shaft while the tractor engine is shut off.
- Always switch off the universal joint shaft whenever excessive bending occurs or it is not needed.
- WARNING! After the universal joint shaft is switched off, there is a danger of injury from the continued rotation of freewheeling implement parts.

  Do not approach the implement too closely during this time. You may work on the implement only after all implement parts have come to a complete stop.
- Secure the tractor and implement against unintentional starting and unintentional rolling away before you perform any cleaning, servicing or maintenance work on universal joint shaft-driven implements or PTO shafts.
- After decoupling the PTO shaft, place it on the holder provided.
- After removing the PTO shaft, attach the protective sleeve to the universal joint shaft stub.
- When using the travel-dependent universal joint shaft, note that the universal joint shaft speed depends on the drive speed, and that the direction of rotation reverses when you drive in reverse.

2.16.5 Fertiliser spreader operation

- Stay clear of the working area! Danger from flying fertiliser particles. Direct persons away from the throwing range of the fertiliser spreader. Do not walk or stand close to rotating spreading discs.
- Fill the fertiliser spreader only when the tractor engine is shut off, the ignition key is pulled and the sliders are closed.
- Do not place any foreign objects in the hopper.
- While carrying out the spread rate check, beware of danger points from rotating implement parts.
- Never unhitch a fertiliser spreader or roll it while it is full (tipping hazard).
- For boundary spreading at field edges, bodies of water or roads, use boundary spreading devices.
- Before each use, ensure that the attachment parts are properly fitted, particularly those for attaching the spreading discs and spreading vanes.

2.16.6 Cleaning, maintenance and repairs

- Only carry out cleaning, maintenance and repair work on the implement when:
  - The drive is switched off
  - The tractor engine has come to a complete stop
  - The ignition key has been removed
  - The implement 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 implement and/or raised implement parts against unintentional falling, before cleaning, maintaining or repairing the implement.
- 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 implements.
- Spare parts must meet at least the specified technical requirements of AMAZONEN-WERKE. This is ensured through the use of AMAZONE original spare parts.

3 Loading the implement

3.1 Loading the implement with a crane



Fig. 6

The implement has 2 attachment points for sling gear for lifting.

WARNING

Risk of accident due to improperly attached sling gear for lifting.

If the slings are not attached at the marked attachment points, the implement can be damaged when lifting and can endanger safety.

- Only attach the sling gear for lifting at the marked attachment points.

3.2 Lashing the implement-



Fig. 7

Depending on the equipment, the implement has either 4 lashing points for lashing straps.

WARNING

Risk of accident due to improperly attached lashing straps

If lashing straps are not attached at the marked lashing points, the implement can be damaged when lashing, and this may compromise safety.

- Attach the lashing straps only at the marked lashing points.

1. Place the implement on the transport vehicle.
2. Attach the lashing straps at the marked lashing points.
3. Lash the implement in compliance with the national regulations for securing loads.

4 Product description

4.1 Overview of subassemblies

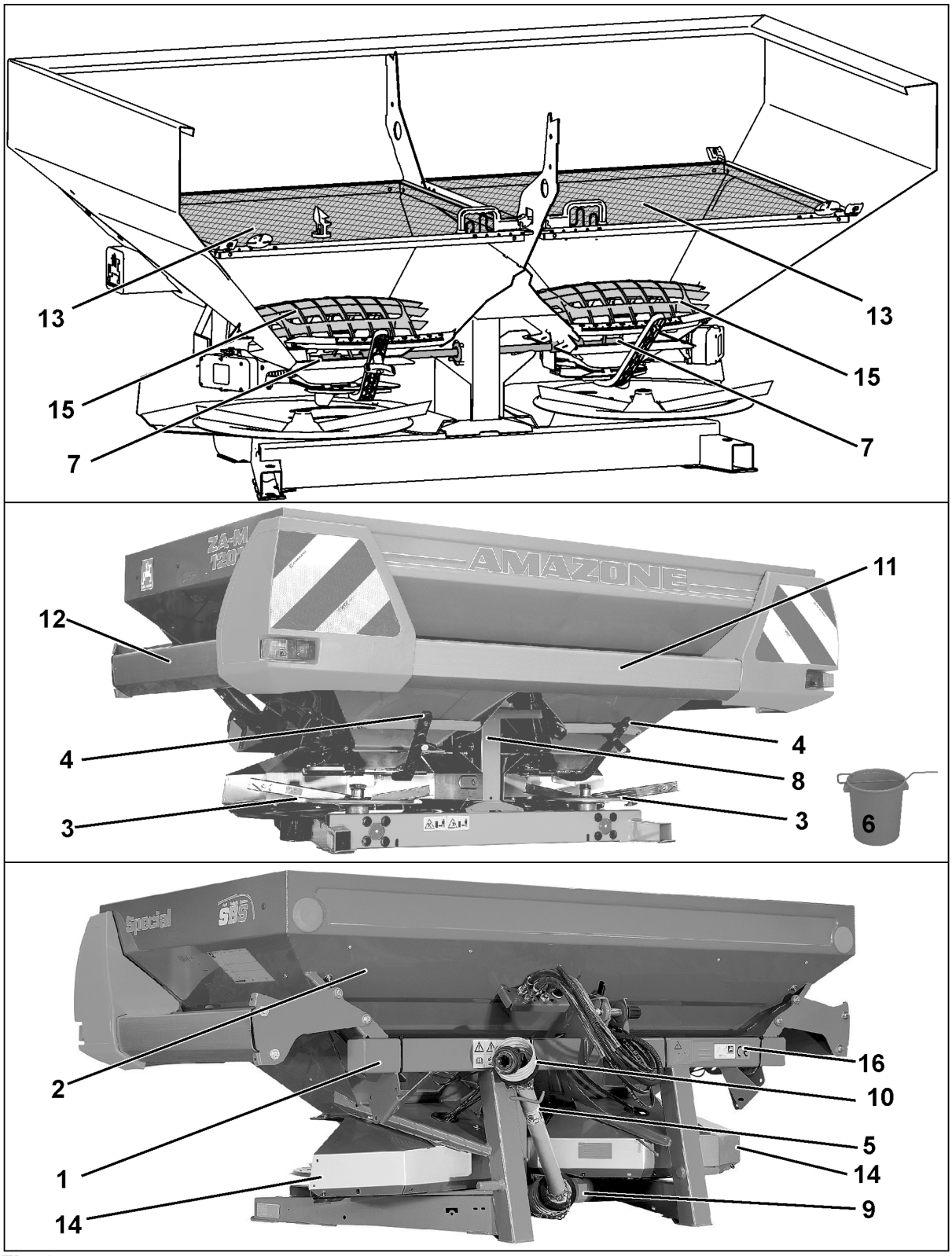


Fig. 8

(1) Frame
(2) Hopper
(3) Omnia-set spreading discs OM
(4) Setting lever for manual spread rate setting
(5) PTO shaft
(6) Collection bucket for the spread rate check
(7) Agitator shaft

4.2 Safety and protection equipment

Fig. 7/…

(8) Chain guard of agitator shaft drive to prevent contact with the running chain drive
(9) Weighing frame between the input and angular gearboxes to prevent contact with the rotating intermediate shaft
(10) PTO shaft guard to prevent contact with the rotating PTO shaft
(11) Protective planks at rear to prevent contact with the rotating spreading vanes
(12) Protective planks at side to prevent contact with the rotating spreading vanes
(13) Guard and function screen in the hopper to prevent contact with the rotating agitator spiral
(14) Upper and lower deflector plates to prevent fertiliser being thrown forward
(15) Guard screen in the lower section of the hopper to prevent contact with the rotating agitator spiral
(16) Warning pictograms

4.3 Supply lines between the tractor and the implement

Supply lines in parking position:

Fig. 8/…

(1) Hydraulic hose lines

Depending on equipment:

(2) Cable with connection for lighting
(3) Computer cable with implement connector

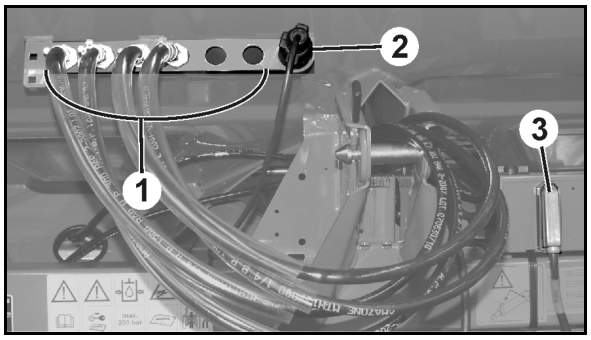


Fig. 9

4.4 Lighting and identification for road travel

The equipment may vary depending on implement type and country-specific regulations.

4.4.1 Tail light cluster and identification

(1) Warning sign
(2) Rear lights, brake lights, and turn indicators
(3) Red reflectors
(4) Yellow reflective warning foil
(5) Red reflective warning foil
(6) Identification sign for slow vehicles

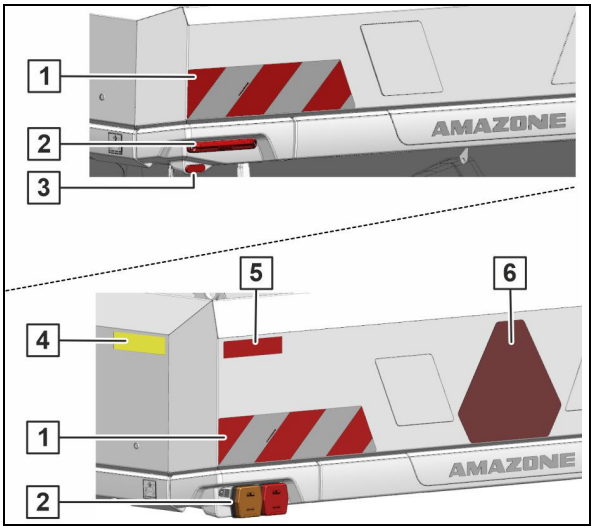


Fig. 10

4.4.2 Front lighting and identification

(1) Warning sign
(2) White reflectors
(3) Yellow reflective warning foil

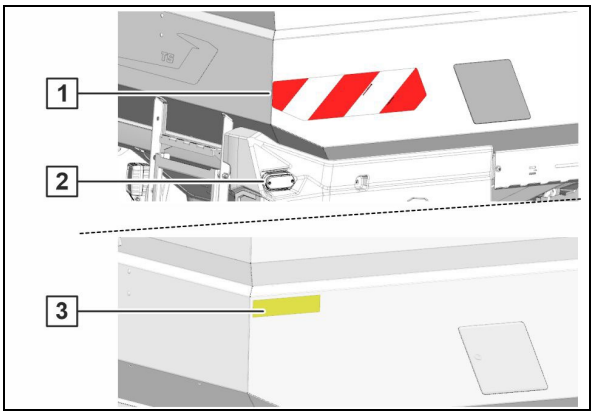


Fig. 11

4.5 Gewindepack

Depending on the implement equipment the GewindePack contains documents and other auxiliary materials.



Fig. 12

4.6 Intended use

The AMAZONE ZA-M fertiliser spreader

- is designed only for conventional use for agricultural work and is suitable for the spreading of dry, granular, prilled, and crystalline fertilisers and seed.
- is attached to the tractor's 3-point hydraulic system (Cat II) and operated by one person.
- must only be mounted on a transport frame approved by AMAZONEN-WERKE.
- must not be used in combination with a caterpillar tractor.
- Slopey terrain can be travelled as follows:
  - Along the contours

    Direction of travel to the left 15 %

    Direction of travel to the right 15 %
  - Along the gradient

    Up the slope 15 %

    Down the slope 15 %

The intended use also includes:

- Compliance with all the instructions in this operating manual.
- Execution of inspection and maintenance work.
- Exclusive use of AMAZONE original spare parts.

Other uses to those specified above are forbidden and shall be considered as improper.

For any damage resulting from improper use:

- the operator bears the sole responsibility,
- AMAZONEN-WERKE assumes no liability whatsoever.

4.7 Confirmation of the Fertilizer Directive

EN standards 13739-1 and 13739-2 define requirements imposed on boundary spreading and normal spreading. AMAZONE boundary spreading devices and boundary spreading systems meet all the requirements imposed on boundary spreading. Also all AMAZONE mineral fertilizer spreaders fully comply with the requirements resulting from the standards that are imposed on distribution accuracy for normal spreading.



4.8 Danger areas and danger points

The danger area is the area around the implement in which people can be caught:

- By work movements made by the implement and its tools
- By materials or foreign bodies thrown out of the implement
- By tools rising or falling unintentionally
- By unintentional rolling of the tractor and the implement

Within the implement danger area, there are danger points with permanent or unexpected function-related risks. Warning pictograms indicate these danger points and warn against residual dangers, which cannot be eliminated for construction reasons. Here, the special safety regulations of the appropriate section shall be valid.

No-one may stand in the implement danger area:

- as long as the tractor engine is running with a connected cardan shaft / hydraulic system.
- as long as the tractor and implement are not protected against unintentional start-up and running.

The operating person may only move the implement or switch or drive the tools from the transport position to the working position or vice-versa when there is no-one in the implement danger area.

Danger points exist:

- Between the tractor and the implement, particularly during coupling and uncoupling operations.
- In the area of moving parts:
  - Rotating spreading discs with spreading vanes
  - Rotating agitator shaft and agitator shaft drive
  - Hydraulic actuation of the sliders
  - Electric actuation of the dosing sliders
- When climbing onto the implement being driven.
- If the implement or implement parts are lifted and not secured.
- In the working range of the spreading discs when spreading work is in progress due to grains of fertiliser being thrown out.

4.9 Rating plate

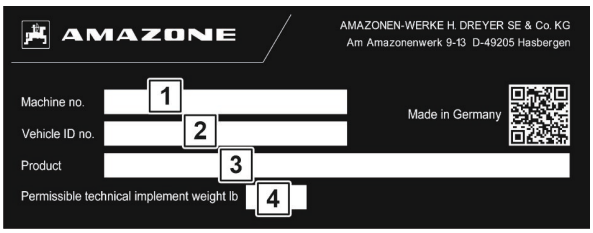
Implement rating plate

(1) Serial number

(2) Vehicle identification number

(3) Product

(4) Permissible technical implement weight



4.10 Technical data

Typ	Hopper volume	Fill level	Filling width	Total width	Total length
ZA-M 1002 Special	317 gal 1200 l	3,51 ft 1,07 m	7,05 ft 2,15 m	8,00 ft 2,44 m	4,66 ft 1,42 m
+S 500	449 gal 1700 l	3,97 ft 1,21 m	7,09 ft 2,16m	8,00 ft 2,44 m	4,66 ft 1,42 m
ZA-M 1202	317 gal 1200 l	3,51 ft 1,07 m	7,05 ft 2,15m	8,00 ft 2,44 m	4,66 ft 1,42 m
+ S 500	449 gal 1700 l	3,97 ft 1,21 m	7,09 ft 2,16 m	7,87 ft 2,4 m	4,66 ft 1,42 m
+2x S 500	581 gal 2200 l	4,43 ft 1,35 m	7,09 ft 2,16 m	8,00 ft 2,44 m	4,66 ft 1,42 m
+ L 1000	581 gal 2200 l	4,43 ft 1,35 m	9,06 ft 2,76 m	9,61 ft 2,93 m	4,66 ft 1,42 m
+ S 500 **+ L 1000**	713 gal 2700 l	4,89 ft 1,49 m	9,06 ft 2,76 m	9,61 ft 2,93 m	4,66 ft 1,42m
ZA-M 1502	396 gal 1500 l	3,74 ft 1,14 m	7,05 ft 2,15 m	8,00 ft 2,44 m	4,66 ft 1,42m
+S500	528 gal 2000 l	4,20 ft 1,28 m	7,09 ft 2,16 m	8,00 ft 2,44 m	4,66 ft 1,42 m
+2xS500	660 gal 2500 l	4,66 ft 1,42 m	7,09 ft 2,16 m	8,00 ft 2,44 m	4,66 ft 1,42m
+ L1000	660 gal 2500 l	4,66 ft 1,42 m	9,06 ft 2,76 m	9,61 ft 2,93 m	4,66 ft 1,42 m
+ S 500 **+ L 1000**	793 gal 3000 l	5,12 ft 1,56 m	9,06 ft 2,76 m	9,61 ft 2,93 m	4,66 ft 1,42 m

Typ	Hopper volume	Fill level	Filling width	Total width	Total length
ZA-M 1502 Special	396 gal 1500 l	3,74 ft 1,14 m	7,05 ft 2,15 m	8,00 ft 2,44 m	4,66 ft 1,42m
ZA-M 2202	581 gal 2200 l	4,43 ft 1,35 m	9,06 ft 2,76 m	9,61 ft 2,93 m	4,66 ft 1,42 m
ZA-M 2502	660 gal 2500 l	4,66 ft 1,42 m	9,06 ft 2,76 m	9,61 ft 2,93 m	4,66 ft 1,42 m
ZA-M 2702	713 gal 2700 l	4,89 ft 1,49 m	9,06 ft 2,76 m	9,61 ft 2,93 m	4,66 ft 1,42 m
ZA-M 3002	793 gal 3000 l	5,12 ft 1,56 m	9,06 ft 2,76 m	9,61 ft 2,93 m	4,66 ft 1,42 m

ZA-M		
Working width		33 – 118 ft / 10-36 m (depending on spreading disc and type of fertiliser)
D		2,03 ft / 0.62 m (Distance between the centre of the lower link ball and the centre of gravity of the rear implement)
Three-point attachment		Category 2
Drive	Gear ratio	PTO shaft speed : Spreading disc speed 1 : 1.33
	Spreader disc speed	Standard speed 720 rpm. Maximum permissible speed 870 rpm
	Universal joint shaft speed	Standard speed 540 rpm. Maximum permissible speed 650 rpm

4.10.1 Payload

Payload = Permissible technical implement weight - tare weight

DANGER

Exceeding the maximum permissible payload is prohibited.

Risk of accident due to unstable driving conditions!

Carefully determine the payload, and therefore the permitted filling amount for your implement. Not all filling media can be used to fill the tank completely.

- The rating plate shows the permissible technical implement weight.
- To determine the tare weight, weigh the empty implement.

4.11 Necessary tractor equipment

For proper implement operation, the tractor must fulfil the following requirements:

Tractor engine power

Hopper capacity:	
264 gal / 1200 l	from 60 kW (80 bhp) upwards
330 gal / 1500 l	from 65 kW (90 bhp) upwards
660 gal / 3000 l	from 112 kW (150 bhp) upwards

Electrical system

Battery voltage:	• 12V (Volt)
Lighting socket:	• 7-pin

Hydraulic system

Maximum operating pressure:	• 3046 psi / 210 bar
Tractor pump power:	• At least 3,96 gpm at 2176 psi // 15l/min at 150 bar
Implement hydraulic fluid:	• HLP68 DIN 51524 The implement hydraulic fluid is suitable for the combined hydraulic fluid circuits of all standard tractor brands.
Control units	• Depending on equipment, see Page 55

Universal joint shaft

Required speed:	• 540 rpm
Direction of rotation	• Clockwise, viewed from rear toward the tractor.

Three-point attachment

- The tractor's lower links must have lower link hooks.
- The tractor's upper links must have upper link hooks.

4.12 Noise production data

The workplace-related emission value (acoustic pressure level) is 74 dB(A), measured in operating condition at the ear of the tractor driver with the cabin closed.

Measuring unit: OPTAC SLM 5.

The noise level is primarily dependent on the vehicle used.

5 Structure and function

The following section provides information on the implement structure and the functions of the individual components.

5.1 Function

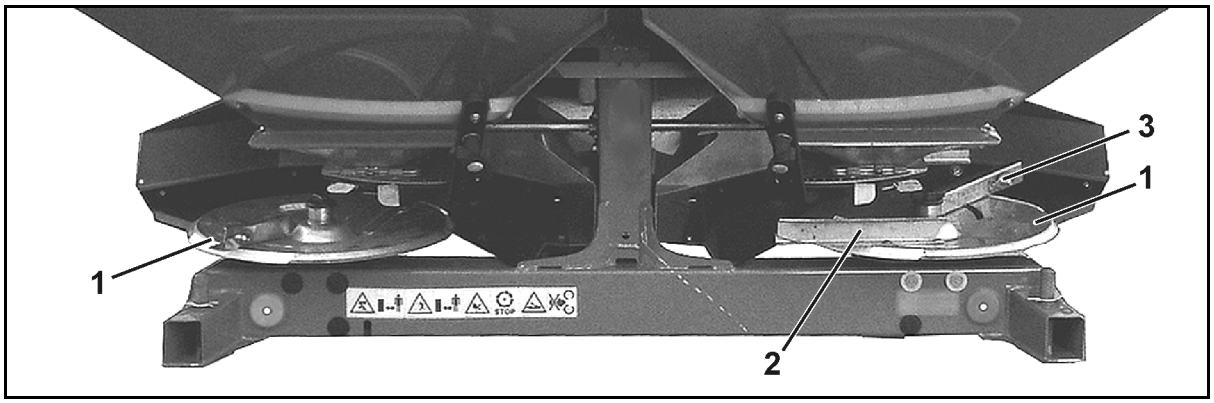


Fig. 13

The AMAZONE ZA-M fertiliser spreader is equipped with two hopper tips and replaceable spreading discs (Fig. 11/1) that are driven from the inside out in opposite directions and counter to the direction of travel, and are equipped with one short (Fig. 11/2) and one long spreading vane (Fig. 11/3).

The fertiliser is

- transferred evenly by the agitator shaft from the hopper onto the spreading discs.
- fed out along the spreading vane and discharged by the spreading discs moving at a speed of 720 rpm.

Check the spread rate before using the fertiliser spreader.

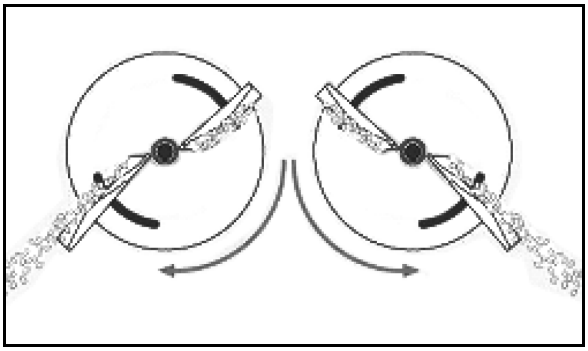


Fig. 14

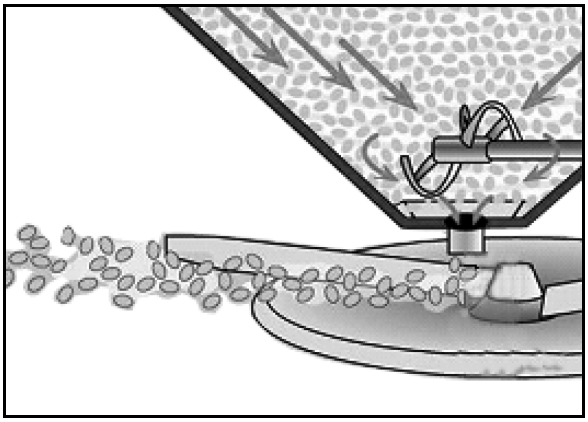


Fig. 15

5.2 Guard and function screens in the hopper (protective device)

WARNING

Danger of being caught and drawn in with driven agitator!

Never open the guard and function screen while the tractor engine is running.

The foldable guard and function screens cover the entire hopper and serve

- as protection against accidental contact with the rotating agitator spiral.
- Protecting from foreign particles and fertiliser clods.

Fig. 14/...

(1) Guard and function screen
(2) Handle with guard screen lock
(3) Lock for opened guard screen

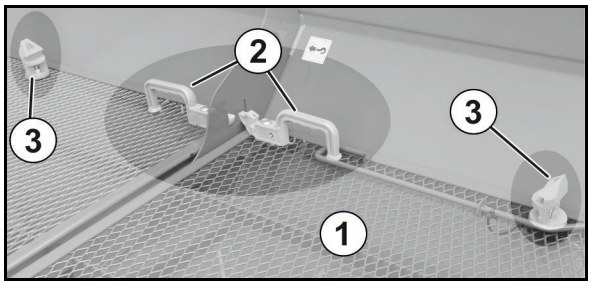


Fig. 16

For cleaning, maintenance or repair purposes, the guard screen in the hopper can be folded up using the unlocking tool.

Unlocking tool in:

Fig. 15/1: Parking position

Fig. 16/1: Unlock position for folding up the guard screen

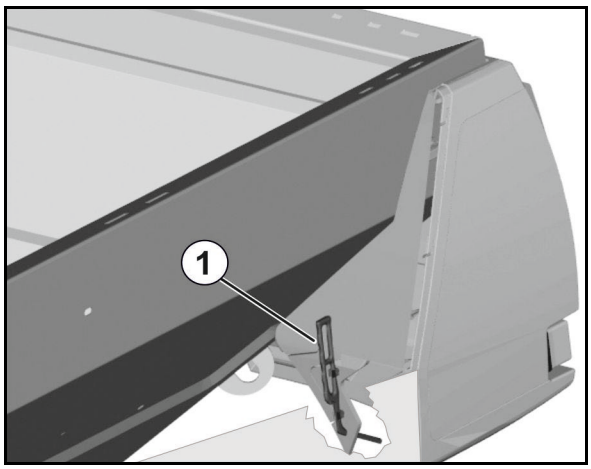


Fig. 17

Opening the guard screen:

1. Move the unlocking tool from parking position into unlock position.
2. Raise the handle and rotate the unlock tool on the handle (Fig. 16).

→ Safety guard lock unlocked.

3. Swing up guard screen until the lock on the edge of the hopper engages (Fig. 17)
4. Move the unlocking tool into parking position.

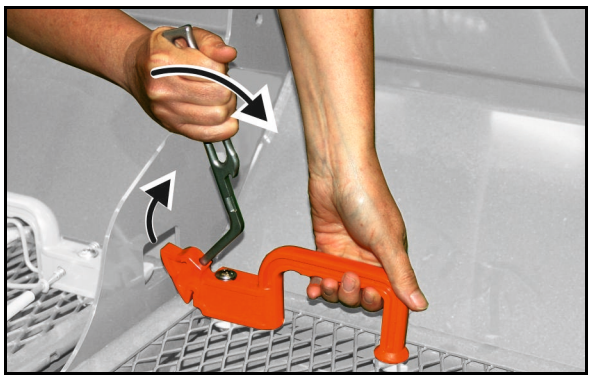


Fig. 18

- Before closing the guard screen, push down the lock (Fig. 17).
- The guard screen locks automatically once closed.

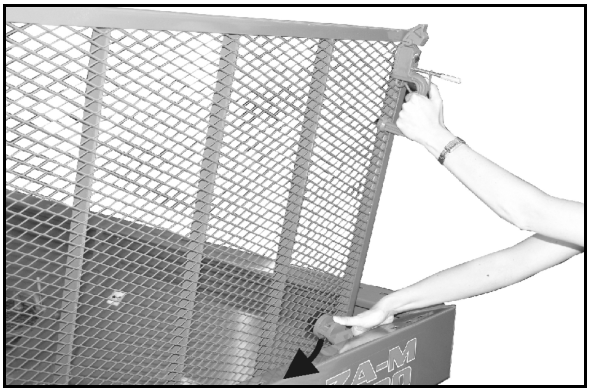


Fig. 19

5.3 Spreading discs

As seen in the direction of travel:

- Left spreading disc (Fig. 18/1) with **L** mark.
- Right spreading disc (Fig. 18/2) with **R** mark.

Spreading vane:

- Long (Fig. 18/3) - Adjustment scale with values from 35 to 55.
- Short (Fig. 18/4) - Adjustment scale with values from 5 to 28.

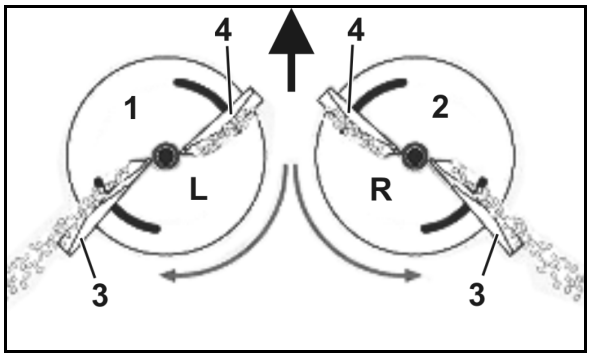


Fig. 20

The U-shaped spreading vanes are installed in such a way that the open sides point in the direction of rotation and take in the fertiliser.

The working width can be infinitely adjusted by swivelling the spreading vanes on the **OM** spreading discs (Fig. 19).

The **OM** spreading discs **10-12** can be used for working widths of 33–39 ft / 10-12 m.

The OM spreading discs **10-16** can be used for working widths of 33–52 ft / 10-16 m.

The OM spreading discs **18-24** can be used for working widths of 59–79 ft / 18-24 m.

The OM spreading discs **24-36** can be used for working widths of 79–118 ft / 24-36 m.

In the case of the ZA-M, the spreading discs and agitators are powered by the PTO shaft via the middle gearbox and angular gearbox.

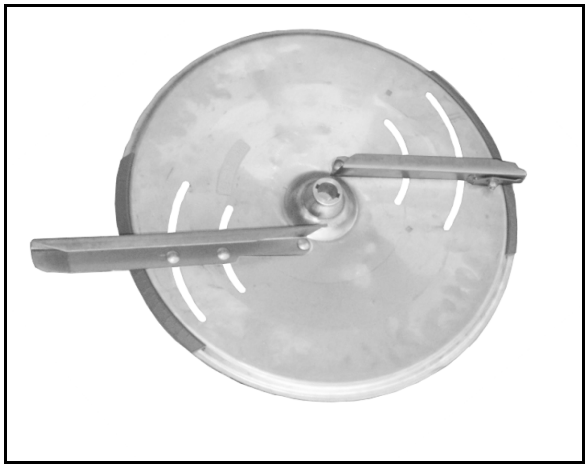


Fig. 21

Configure the settings using the information in the setting chart. You can easily check the configured working width using the mobile fertiliser test rig (optional).

5.4 Agitator

The spiral agitators (Fig. 20/1) in the hopper tips ensure uniform fertiliser flow to the spreading discs. The slow-rotating, spiral-shaped segments of the agitator carry the fertiliser evenly to the corresponding outlet opening.

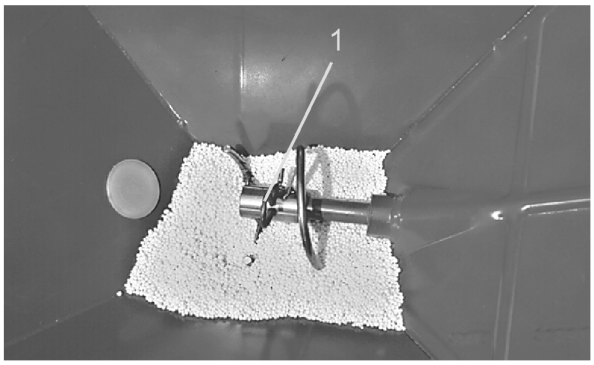


Fig. 22

5.5 Slide gate and dosing slider

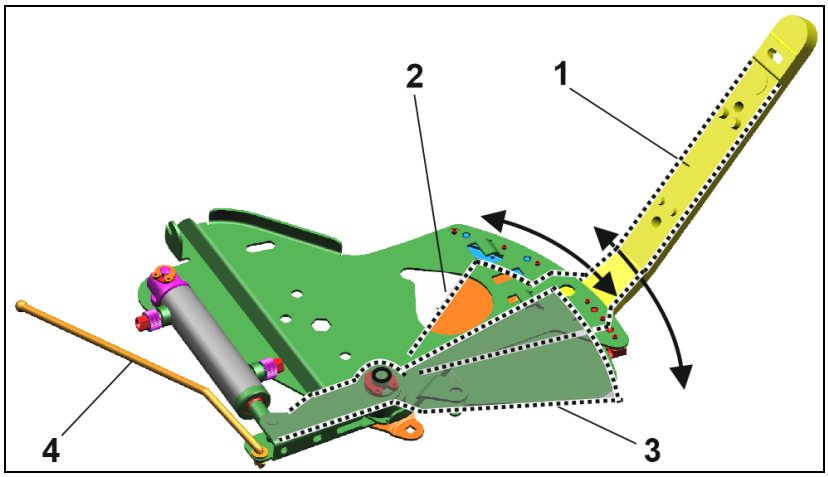


Fig. 23

Dosing slider

The spread rate setting is performed manually with the setting lever (Fig. 21/1) by adjusting different opening widths of the outlet openings (Fig. 21/2). The respectively required slider position is determined either in accordance with the **setting chart** or with the **calculating disc rule**.

As the spreading properties of the fertiliser are subject to considerable fluctuations, it is recommended that a spread rate check be carried out for the selected slider position.

Sliding shutter

The sliding shutters (Fig. 21/3) are used for opening and closing the outlet openings and can be separately hydraulically actuated.

Display of shutter position:

The slide gate is open when the slider rod is extended (Fig. 22/1, Fig. 21/4)).

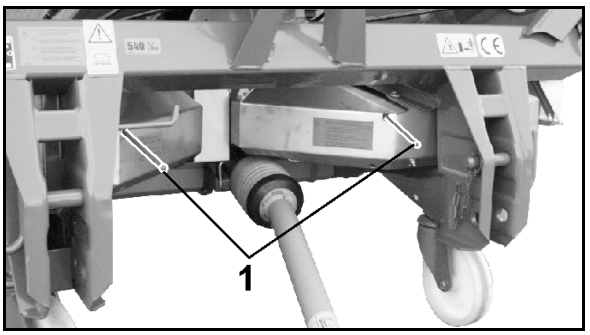


Fig. 24

5.6 Boundary, ditch and side spreading

5.6.1 Boundary spreading at half the working width

- The distance from the field boundary is the half working width.
- Both shutters are open for boundary spreading.

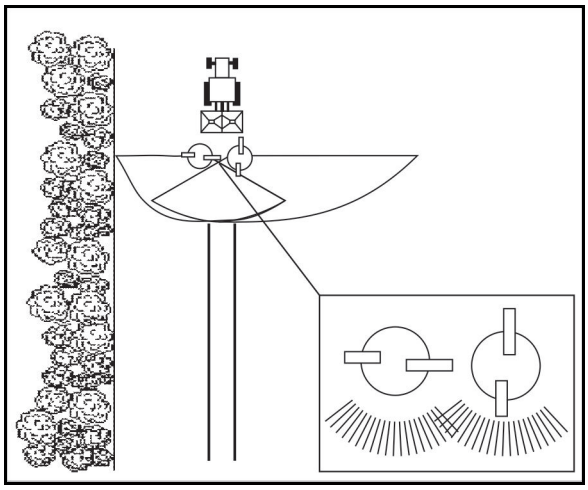


Fig. 25

Limiter M (Option)

- Hydraulic activation from the tractor.

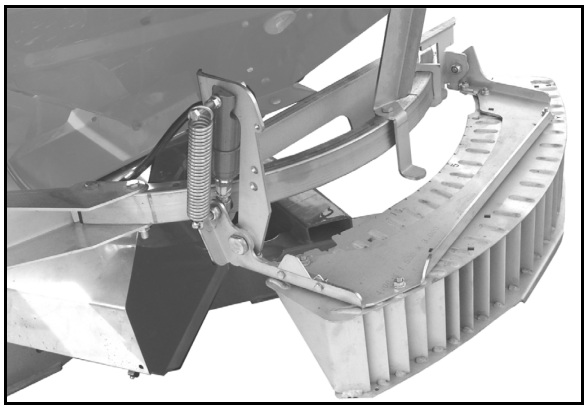


Fig. 26

Hydraulic throttle (Fig. 25):

The speed for raising the Limiter M is adjustable via the throttle rotator.

The throttle is located at the end of the hose line or on the hydraulic block with Comfort equipment.

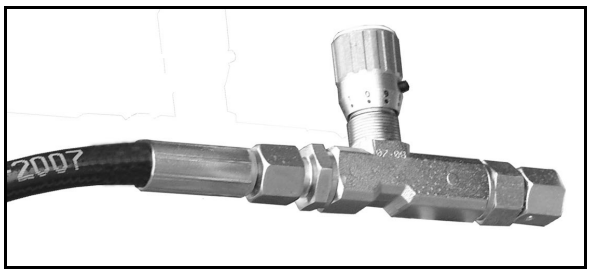


Fig. 27

Tele-Set boundary spreading discs (optional)

- Boundary spreading to the left side.

Boundary spreader disc	Distances to the field boundary
TS 5-9	16 to 30 ft 5 to 9 m
TS 10-14	33 to 46 ft 10 to 14 m
TS 15-18	49 to 59 ft 15 to 18 m

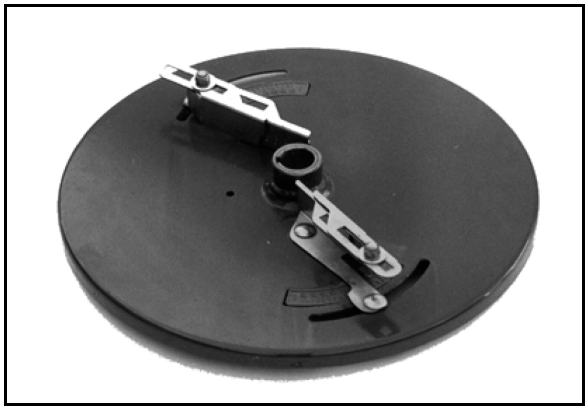


Fig. 28

5.6.2 Boundary spreading at the field boundary

- Boundary spreading when the 1st tramline is located directly at the field boundary.
- The shutter on the border side stays closed during boundary spreading.

There are no recommendations for settings.

The lateral distribution can however, be checked using the mobile test rig.

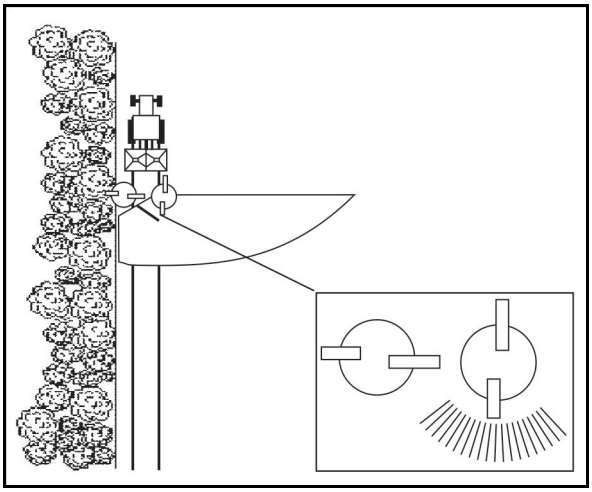


Fig. 29

Border spread deflector, left side (optional)

- Swivel the border spread deflector by hand.
- Boundary spreading to the left side.

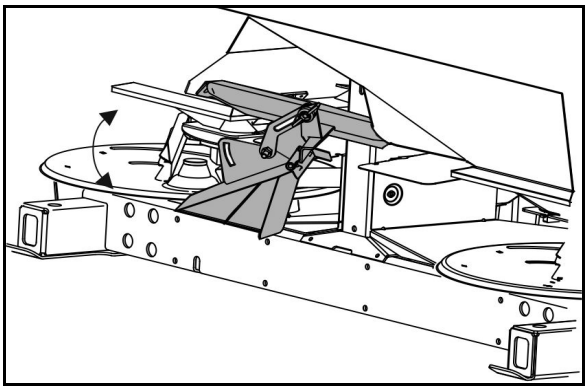


Fig. 30

5.6.3 Boundary spreading from the road, avoid spreading in the track

- For one-sided boundary spreading to the right or left from the road onto the field.
- For spreading on both sides when avoiding spreading material in the tractor track.

(1) Where applicable, mount the extension plates

(2) Park position of the extension plates

- Before use, hang in the border spread deflectors and secure using wing nuts.
- Remove the boundary spreading deflectors if they are not used.

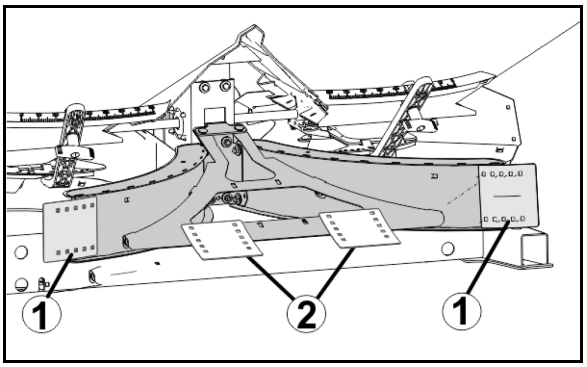


Fig. 31

5.7 PTO shaft

The PTO shaft transmits power between the tractor and implement.

Fig. 30:

- Standard PTO shaft (32 in / 810 mm)

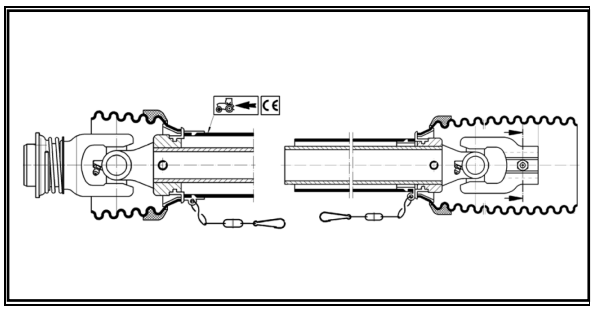


Fig. 32

Fig. 31:

- PTO shaft with friction clutch optional, 30 in / 760 mm)

  Always attach the friction clutch on the implement side.

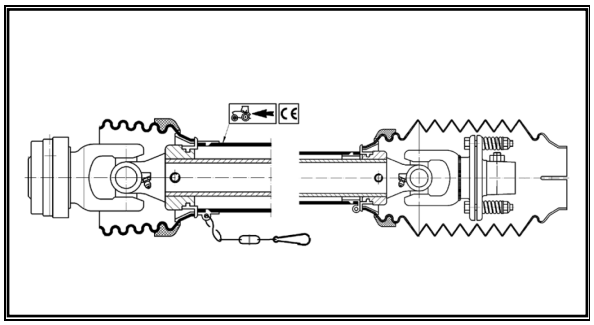


Fig. 33

Fig. 31:

-

  Telespace PTO shaft (optional, 32 in / 810 mm, telescoping)

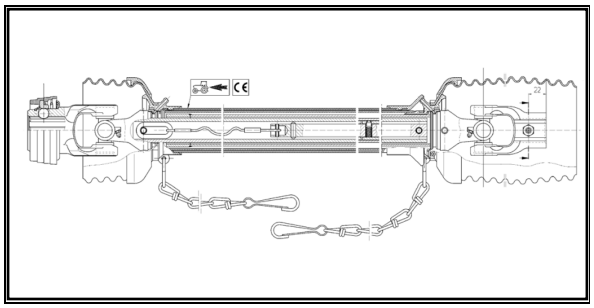


Fig. 34

Fig. 32:

- PTO shaft with "Russian shaft joint"

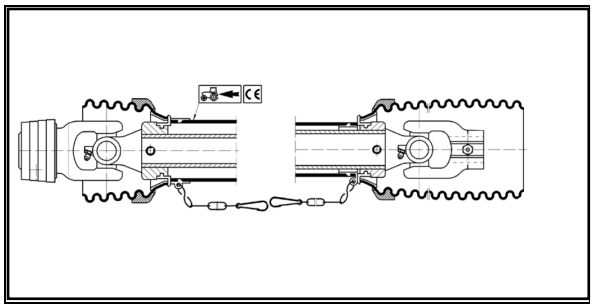


Fig. 35



WARNING

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

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



WARNING

Danger of catching or entrapment due to the unprotected gearbox 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 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
  - o all PTO shaft protective devices are installed and fully functional.
  - o the clearance around the PTO shaft is sufficient in all operating modes. Insufficient clearance will result in damage to the PTO shaft.
- Attach the supporting chains in a way that ensures sufficient swivelling range of the PTO shaft in all operating positions. Supporting chains must not become caught on implement or tractor parts.
- 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.
  - o Never use the supporting chain of the PTO shaft to suspend the uncoupled PTO shaft.



WARNING

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

Work only when the drive between the tractor and driven implement 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 implement.
- Check that the shield on the tractor or the PTO shaft guard on the implement 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 implement via the PTO shaft.



- 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 implement.
  - observe the correct installation length of the PTO shaft. Here, see the chapter "Adjusting the length of the PTO shaft to the tractor", page 71.
  - 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 implement 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 27.

5.7.1 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 implement with the tractor. This will ensure the necessary clearance for safe coupling of the PTO shaft.

1. Drive the tractor up to the implement, leaving a clearance of approximately 25 cm between the tractor and the implement.
2. Secure the tractor against unintentional starting and rolling away, see the chapter "Securing the tractor against unintentional starting and rolling away", from page 73.
3. Check whether the universal joint shaft of the tractor is switched off.
4. Clean and grease the tractor's universal joint shaft.
5. 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.
6. Secure the PTO shaft guard using the supporting chain(s) to prevent movement.
   - 6.1 Fasten the supporting chain(s) so that it as perpendicular to the PTO shaft as possible.
   - 6.2 Attach the supporting chain(s) in a way that ensures sufficient swivelling range of the PTO shaft in all operating positions.



Supporting chains must not become caught on implement or tractor parts.

7. Check that there is sufficient clearance around the PTO shaft in all operational positions. Insufficient clearance will result in damage to the PTO shaft.
8. Provide the necessary clearance (if required).

5.7.2 Uncoupling the PTO shaft

WARNING

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

First uncouple the implement 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).

- After decoupling the PTO shaft, place it on the holder provided. This protects the PTO shaft from damage and dirt.

  Never use the supporting chain of the PTO shaft to suspend the uncoupled PTO shaft.
- Clean and lubricate the universal joint shaft if it will not be used for an extended period.

1. Uncouple the implement from the tractor. Also refer to the chapter "Uncoupling the implement", page 77.
2. Drive the tractor up to the implement, leaving a clearance of approximately 25 cm between the tractor and the implement.
3. Secure the tractor against unintentional starting and rolling away, see the chapter "Securing the tractor against unintentional starting and rolling away", from page 73.
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 (Fig. 34/1).
6. Clean and lubricate the universal joint shaft if it is not going to be used for a longer period of time.

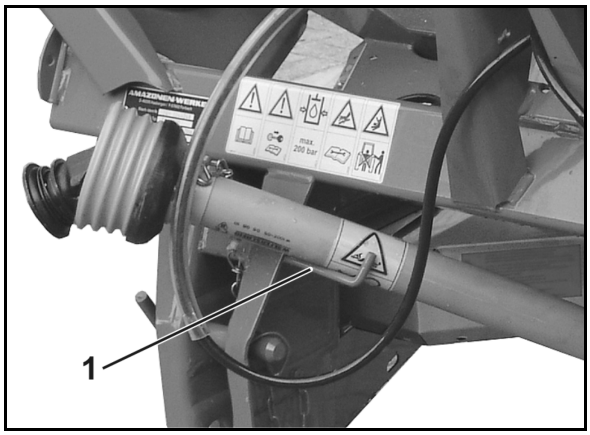


Fig. 36

5.7.3 PTO shaft with friction clutch (optional)

The PTO shaft with friction coupling is recommended in the event of frequent shearing of the shear bolt between the connection fork and gearbox flange bush and for tractors with hard-mesh universal joint shaft coupling.

Function and maintenance: Transient peak torques of approx. 295 ft-lb / 400 Nm or more—which can occur when the universal joint shaft is switched on, for example—are limited by the friction clutch. The friction clutch prevents damage to the PTO shaft and gearbox elements. Therefore, proper function of the friction clutch must be ensured at all times. Thermal distortion of the friction lining prevents the friction clutch from activating.

Installing:

1. Use an extractor to pull the flange bushing (Fig. 35/1) from the gearbox input shaft.
2. Clean the gearbox input shaft (Fig. 36/1).
3. Take the PTO shaft apart.
4. Remove the locking screw (Fig. 36/6).
5. Turn the PTO shaft guard (Fig. 36/2) into installation position (Fig. 36/7).
6. Withdraw the guard half.
7. Release the lock nut (Fig. 36/3) in the connecting fork of the friction clutch (so that the setscrew no longer protrudes beyond the lock nut), unscrew the hexagon socket setscrew (Fig. 36/4) and check that the connecting fork can be easily fitted on the gearbox shaft.
8. Push the greased connection fork onto the gearbox input shaft as far as it will go.

Make sure the feather key (Fig. 36/5) is fully covered!

9. Secure the PTO shaft against axial movement. Firmly tighten the setscrew with a hexagon socket wrench and lock with nut (Fig. 36/3).
10. Refit and lock the guard half and insert the PTO shaft halves into each other.
11. Secure the PTO shaft guard against rotation by attaching the chain to the implement.

Removing:

1. Release the PTO shaft guard and remove toward the rear.
2. Unscrew the lock nuts (Fig. 36/3) in the connection fork from the friction clutch. Remove the setscrew (Fig. 36/4).
3. Pry the connection forks off of the gearbox input shaft using a flat bar.

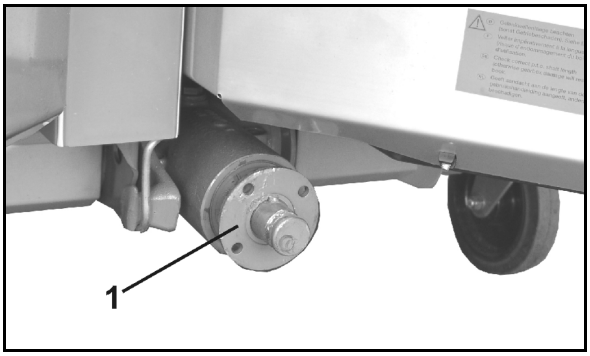


Fig. 37

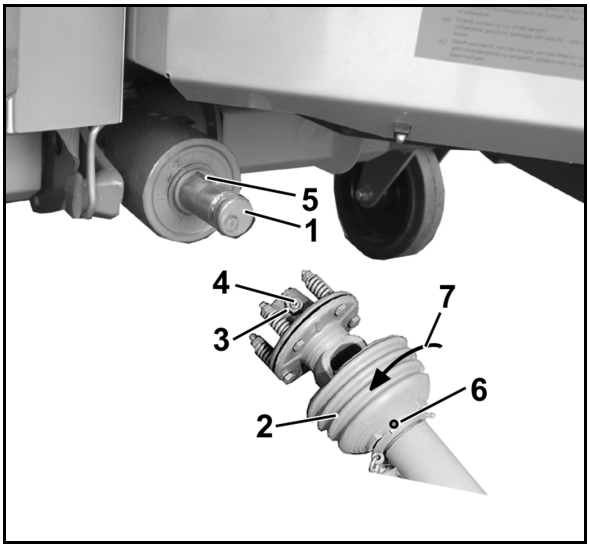
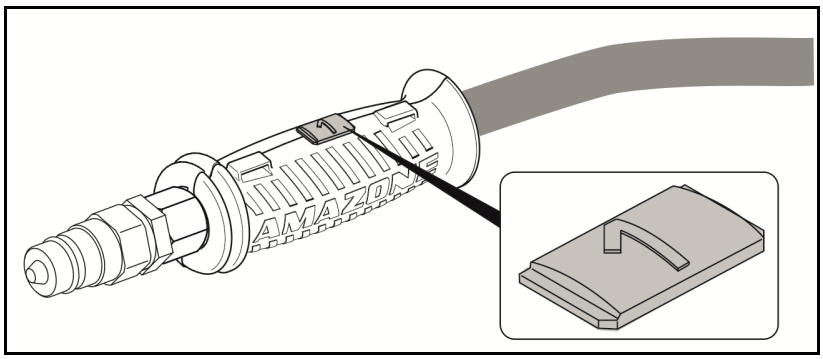


Fig. 38

5.8 Hydraulic connections

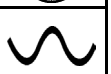
- All hydraulic hose lines are equipped with grips.

  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	1		Slide gate, left	open	Double acting	
	2			close		
Green	1		Slide gate, right	open	Double acting	
	2			close		
Blue	1		Limiter M (**optional**)	lower	Double acting	
	2			lifting		



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 implement and tractor sides.

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

5.8.1 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 55.



- Observe the maximum approved hydraulic operating pressure of 210 bar.
- Check the compatibility of the hydraulic fluids before connecting the implement 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.

5.8.2 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.

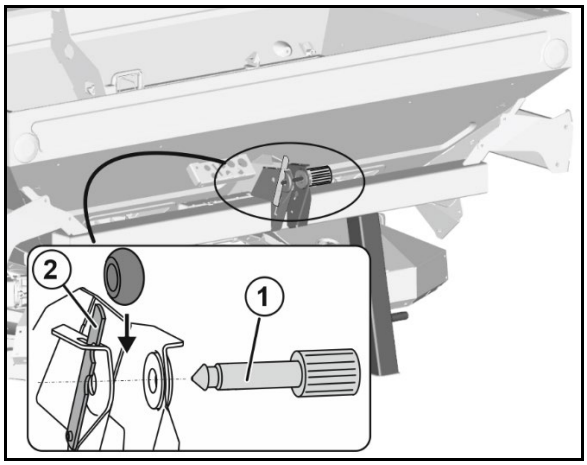
5.9 3-point attachment frame

The frame of the ZA-M is designed such that it meets the demands and dimensions of a Category III three-point hitch.

Upper coupling point

(1) Top link pin with handle

(2) Self-actuating safety catch for the upper link pins with a handle for unlocking.

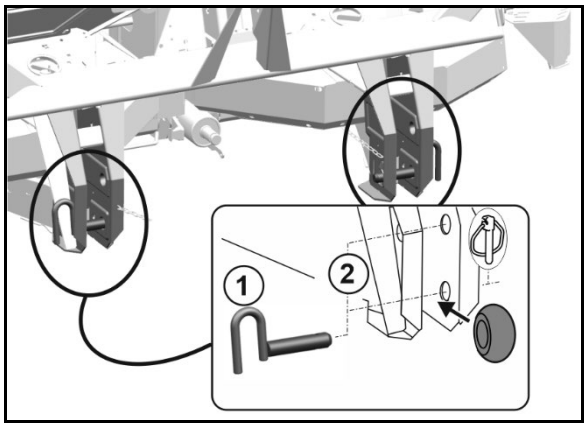


Lower coupling point ZA-M

(1) Lower link pin with handle

(2) Two lower coupling points

- Top lower coupling point
- Bottom lower coupling point



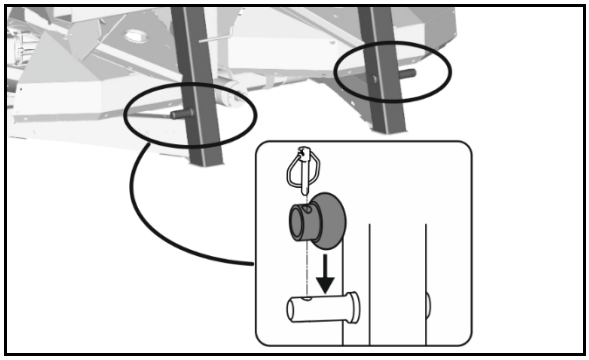
- The bottom lower coupling point can be used for late top dressing if the required mounting height cannot be reached otherwise.
- To couple the bottom lower coupling points, the implement must be equipped with the transport device, since otherwise the required clearance for the tractor lower links is not provided.

Lower coupling point ZA-M Special

WARNING

Risk of accidents if the connection between implement and tractor separates!

Lower link pin installed on one side: use ball sleeves with integrated mount for linch pins.



5.10 mySpreader app

Content of the mySpreader app:

- A selection of fertilizers with recommended settings for the fertilizer spreader
- EasyCheck for determining the lateral distribution
- EasyMix with recommended settings for mixed fertilizers
- EasyMatch for fertilizer identification



Fig. 39

With the required implement equipment, the implement can be connected to a mobile device via Bluetooth and data can be exchanged with the mySpreader app.

Selected and saved fertilizers will be stored in the mySpreader app History.

The mySpreader app can be obtained from the iOS Store or the Play Store. To do so, use the QR code or the link.

https://ama.zone/feouxwz

5.11 Fertilizer identification with EasyMatch

EasyMatch is an integrated tool for fertilizer identification in the mySpreader app.

A template is used to identify the fertilizer by means of a photo. The settings of the detected fertilizer can be transferred to the Products menu of the ISOBUS software.

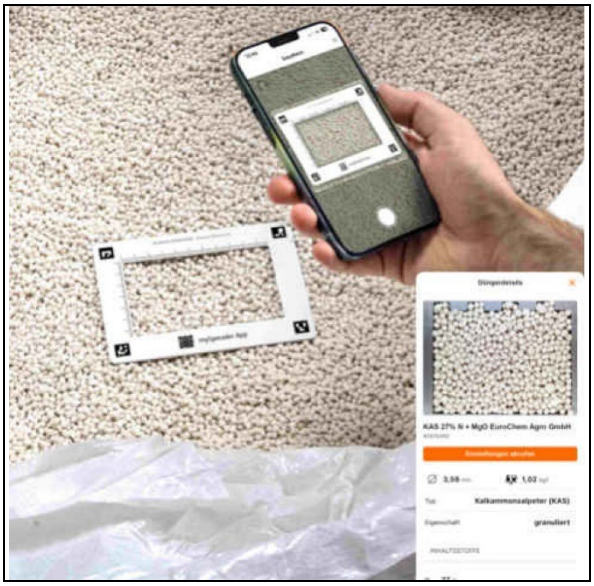


Fig. 40

5.12 EasyCheck digital mobile test rig

EasyCheck is a digital mobile test rig for easy optimization of the lateral distribution with centrifugal fertilizer spreaders.

EasyCheck includes collection mats for fertilizers. The collection mats are laid out on the field at defined positions and then fertilizer is spread on these mats by driving back and forth.

Thereafter the collection mats are photographed with the mobile device and evaluated with the mySpreader app. If necessary, a change of the settings will be recommended.

The operating manual can be accessed via the AMAZONE website (https://amazone.net) under Service & Support.

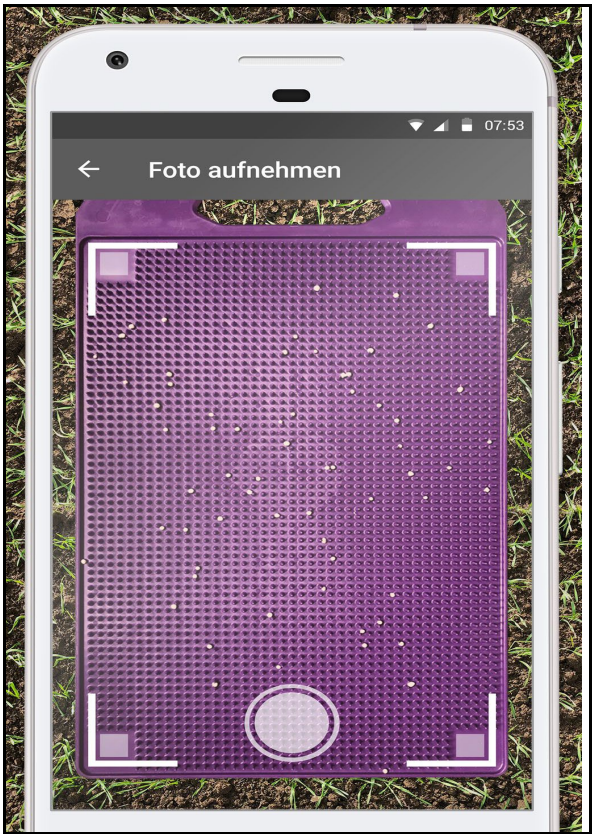


Fig. 41

5.13 Mobile test rig (optional)

The mobile test rig is used to check lateral distribution on the field.

The mobile test rig consists of collection trays for the fertilizer and a measuring cup.

The collection mats are laid out on the field at defined positions and then fertilizer is spread on these mats by driving back and forth.

Thereafter the collected fertilizer is filled into a measuring cup. The evaluation is based on the fill level in the measuring cup.

The evaluation is performed using:

- The calculation model in the mobile test rig operating manual.
- The ISOBUS software on the control terminal
- EasyCheck in the mySpreader app, see the AMAZONE website (https://amazone.net) under Service & Support

The mobile test rig operating manual can be accessed via the AMAZONE website (https://amazone.net) under Service & Support.



Fig. 42

5.14 Transport and parking device (removable, optional)

The removable transport and parking device enables easy coupling to the tractor's three-point linkage and easy manoeuvring in the yard and indoors.

To prevent the fertiliser spreader from rolling, the guide rollers are equipped with a locking system.

WARNING

Danger of injury due to the filled implement tipping.

Couple and uncouple the implement only when it is empty.

WARNING

When installing/removing the transportation device, secure the raise implement against unintended lowering.

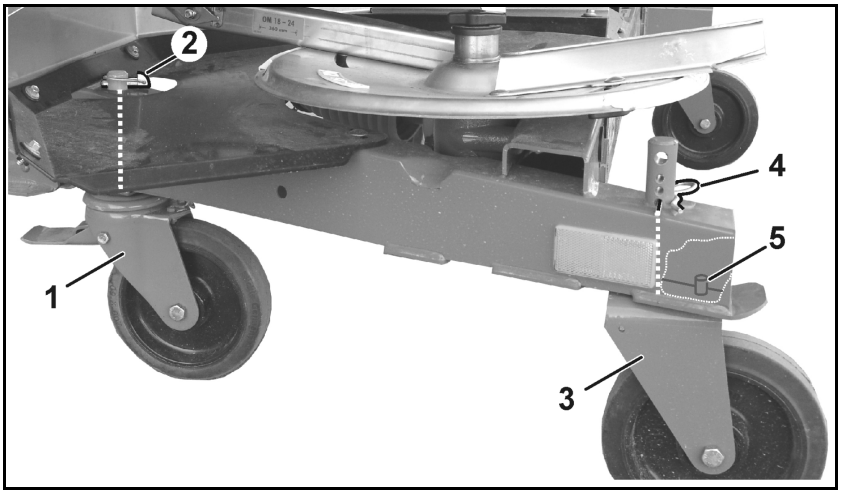


Fig. 43

Installation/removal of transportation device:

1. Couple the implement to the tractor.
2. Raise the implement with the tractor's hydraulic system.
3. Secure the implement against unintentional starting and unintentional rolling away.
4. Support the raised implement to prevent unintentional lowering.
5. Steerable brake rollers (Fig. 39/1), front
   - o Install and secure with clip pin (Fig. 39/2),

   or
   - o Remove after taking out clip pin.
6. Rigid rollers (Fig. 39/3), rear
   - o Install and secure with safety splint (Fig. 39/4) in lowest bore,

   or
   - o Remove after taking out safety splint

When installing the rigid rollers ensure that the pin (Fig. 39/5) goes through the bore of the frame, thus holding the rollers in longitudinal direction.

5.15 Swivelable hopper cover (optional)

The swivellable hopper cover ensures for dry goods to be spread, even in event of wet weather.

Manually operated swivellable hopper cover:

(1) Hand lever

(2) Locking, automatic



Fig. 44

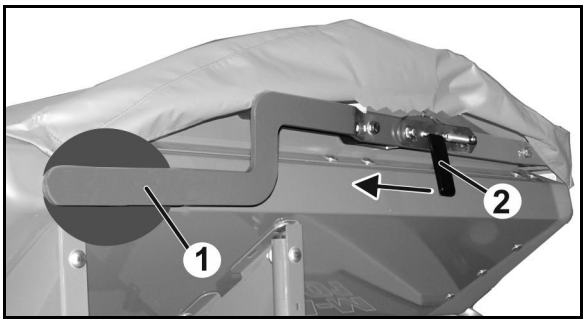


Fig. 45

5.16 Hopper extensions (optional)

A container volume of up to 3000 can be achieved by combining the extensions in different ways (see Technical data).

The implement has a ladder to make it easier to climb into the hopper when extension L1000 is used.

Fig. 42/...

(1) Hopper extension **S**

(2) Hopper extension **L**

(3) Ladder

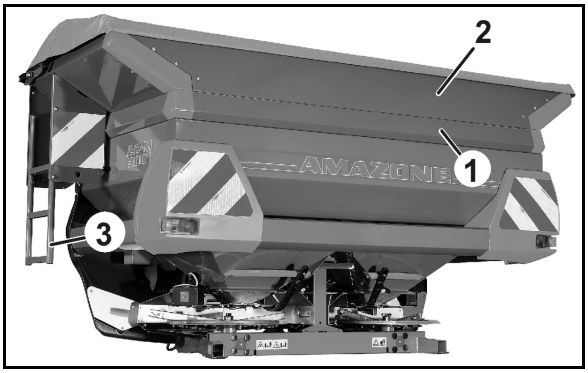


Fig. 46

5.17 Two-way control (optional)

Hose identification		
	green	Shutter right
	Yellow	Shutter left

The two-way-control is necessary for hydraulic single slider actuation with

- tractors with only a double-acting tractor control unit.

A – Ball valve closed

B – Ball valve open

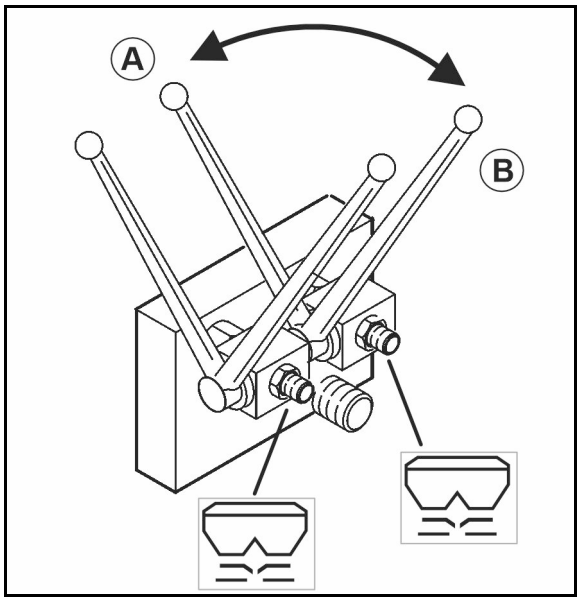


Fig. 47

Half-side spreading with two-way control

1. Keep actuating lever for slide gate of side **not** for spreading closed.
2. Open actuating lever for slide gate of side for spreading.
3. Operate tractor control unit.

→ Only one slide gate opens.

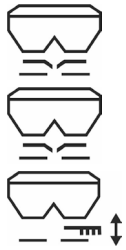
After one-sided spreading:

4. Operate tractor control unit.

→ Slide gate closes.

5. Close actuating levers.

5.18 Three-way control (optional)



Hose identification

green	Shutter right
Yellow	Shutter left
blue	Limiter

The three-way-control is necessary for hydraulic single slider actuation with

- tractors with only a double-acting tractor control unit and
- use of Limiter M.

A – Ball valve closed

B – Ball valve open

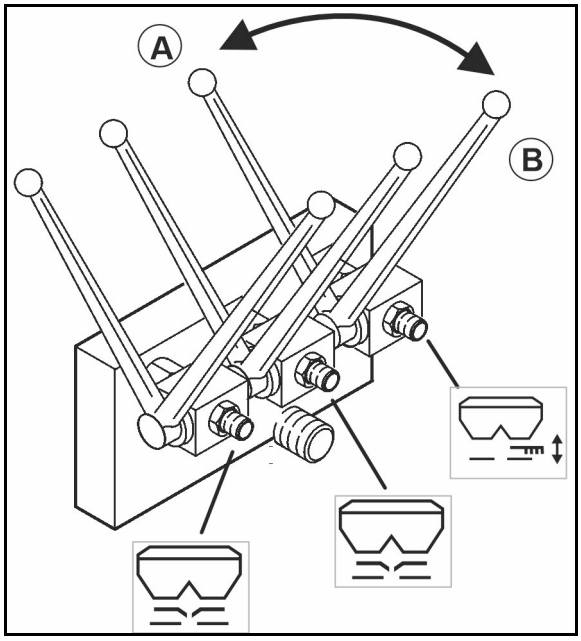


Fig. 48

Two-sided spreading with three-way control

1. Keep actuating lever for Limiter M closed.
2. Open the two actuating levers for slide gates.
3. Operate tractor control unit.

→ Open/close the sliders.

Boundary spreading with three-way control

1. Keep the two actuating levers for slide gates closed.
2. Open the actuating lever for Limiter M.
3. Operate tractor control unit.

→ Lower Limiter M.

4. Close the actuating lever for Limiter M.
5. Open the two actuating levers for slide gates.
6. Operate tractor control unit.

→ Open the slide gates.

→ **Carry out boundary spreading**.

After boundary spreading:

7. Operate tractor control unit.

→ Close the slide gates.

8. Close the two actuating levers for slide gates.
9. Open the actuating lever for Limiter M.
10. Operate tractor control unit.

→ Raise Limiter M.

11. Close actuating levers.

Half-sided spreading with three-way control

1. Keep actuating lever for slide gate of side **not** for spreading closed.
2. Close the actuating lever (Fig. 44/3) for Limiter M.
3. Open actuating lever for slide gate of side for spreading.
4. Operate tractor control unit.

→ Only one slide gate opens.

After one-sided spreading:

5. Operate tractor control unit.

→ Slide gate closes.

6. Close actuating levers.

6 Commissioning

This section contains information

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

- Before operating the implement for the first time the operator must have read and understood the operating manual.
- Observe the following chapters
  - "Obligation of the operator" on page 9.
  - "Training of personnel" on page 13.
  - "Warning pictograms and other signs on the implement" from page 16.
  - "Safety information for the operator" from page 23.

  It is important to observe these chapters in the interests of your safety.
- Only couple and transport the implement to/with a tractor which is suitable for the task.
- The tractor and implement 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.
- Check that the spreading discs are installed correctly. Viewed in direction of travel: left spreading disc "L" and right spreading disc "R".
- Check that the scales on the spreading discs are installed correctly. The scales with values from 5 to 28 are assigned to the shorter spreading vanes and the scales with values from 35 to 55 are assigned to the longer spreading vanes.

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 implement to the tractor.

  You may only connect the implement to tractors suitable for the purpose.

- Carry out a brake test to check whether the tractor achieves the required braking delay with the implement 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 implement 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 implement or drawbar load of the connected implement



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 ata required for the calculation

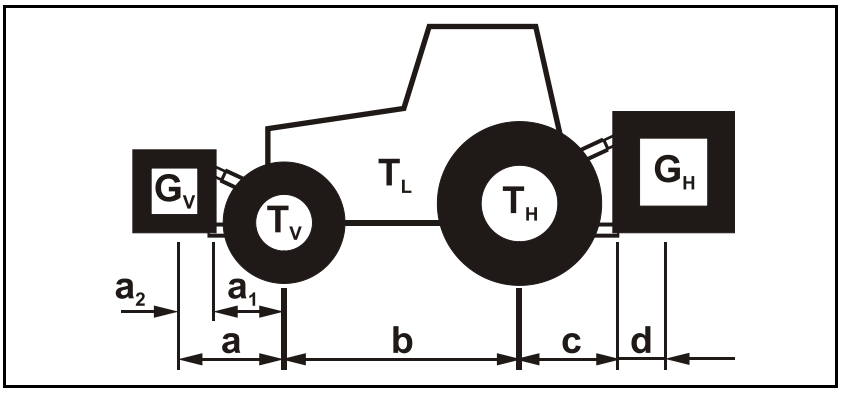


Fig. 49

T_L	lb [kg]	Base (empty) tractor weight	See tractor operator's manual or vehicle documentation
T_V	lb [kg]	Front axle load of the base tractor	
T_H	lb [kg]	Rear axle load of the base tractor	
G_H	lb [kg]	Total weight of rear-mounted implement or rear ballast	See technical data for implement or rear ballast
G_V	lb [kg]	Total weight of front-mounted implement or front ballast	See technical data for front-mounted implement or front ballast
a	ft [m]	Distance between the center of gravity of the front implement mounting or the front weight and the center of the front axle (total $a_1 + a_2$)	See technical data of tractor and front implement mounting or front weight or measure
a_1	ft [m]	Distance from the center of the front axle to the center of the lower link connection	See tractor operator's manual or measure
a_2	ft [m]	Distance between the center of the lower link connection point and the center of gravity of the front implement mount or front weight (center of gravity distance)	See technical data of front implement mounting or front weight or measure
b	ft [m]	Tractor wheel base	See tractor operator's manual or vehicle documents or measure
c	ft [m]	Distance between the center of the rear axle and the center of the lower link connection	See tractor operator's manual or vehicle documents or measure
d	ft [m]	Distance between the center of the lower link connection point and the center of gravity of the rear-mounted implement or rear ballast (center of gravity distance)	See technical data of implement

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

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

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 $T_{V\ tat}$

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

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 implement

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

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 $T_{H\ tat}$

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

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 operator's manual		Double approved load capacity (two tires)
Minimum ballast front / rear	/ lb [kg]		--		--
Total weight	lb [kg]	≤	lb [kg]		--
Front axle load	lb [kg]	≤	lb [kg]	≤	lb [kg]
Rear axle load	lb [kg]	≤	lb [kg]	≤	lb [kg]

- You can find the approved values for the total tractor weight, axle loads and load capacities in the tractor registration papers.
- The actual calculated values must be less than or equal to (≤) the permitted 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 implement 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 implement (G_V), you must use ballast weights in addition to the front-mounted implement.
  - If you do not achieve the minimum ballast at the rear ($G_{H\,min}$) from the weight of the rear-mounted implement (G_H), you must use ballast weights in addition to the rear-mounted implement.

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 implement 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 implement 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 implement when raising and lowering the implement 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 implement.



WARNING

Danger of crushing from unintentional:

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

Secure the tractor and implement from unintentional starting and unintentional rolling and secure the implement unintentional lowering before entering the danger zone between the tractor and lifted implement 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 implement is fully lifted.

1. Couple the tractor to the implement (do not connect the PTO shaft).
2. Apply the tractor's parking brake.
3. Determine the clearance height of the implement with the shortest and longest operating position for the PTO shaft.
   3.1 To do so, raise and lower the implement 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 implement, 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 implement.
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 / implement 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 implement.

- **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 implement unintentionally starting up or rolling away.**

- Secure the tractor and the implement against unintentional start-up and rolling before any intervention in the implement.
- It is forbidden to make any intervention in the implement, such as installation, adjustment, troubleshooting, cleaning and repairs
  - when the implement is running.
  - for as long as the tractor engine is running with a connected PTO shaft/hydraulic system.
  - when the ignition key is inserted in the tractor and the tractor engine with the connected turbine shaft / hydraulic system could be started unintentionally.
  - when moving parts are not blocked against unintentional movement.
  - 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 implement

When coupling and decoupling the implement, comply with the chapter "Safety information for the user", page 23.

WARNING

Danger from crushing, catching, entanglement and / impacts caused by unintentional starting and rolling of the tractor when the tractor's PTO shaft and supply lines are coupled or decoupled!

Secure the tractor and implement against unintentional start-up and rolling, before entering the danger area between the tractor and implement when coupling or decoupling the PTO shaft. See page 73.

WARNING

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

- It is prohibited to operate the tractor's 3-point hydraulic system while persons are present between the rear of the tractor and the implement.
- 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 implement.

WARNING

Couple and uncouple the fertiliser spreader only when it is empty. Tipping hazard!

7.1 Coupling the implement



WARNING

Danger from crushing and / or impacts when coupling the implement between the tractor and the implement!

Instruct people to leave the danger area between the tractor and the implement before you approach the implement.

Any helpers may only act as guides standing next to the tractor and the implement, and may only move between the vehicles when both are at a standstill.



WARNING

Risk of crushing, catching, entrapment and impacts when the implement is unexpectedly released from the tractor!

- Use the intended equipment to connect the tractor and the implement in the proper way.
- When coupling the implement to the tractor's three-point hydraulic system, ensure that the attachment categories of the tractor and the implement are the same.

→ Be absolutely certain to upgrade the category II upper and lower link pins of the implement to category III using reducing sleeves if your tractor has a category III three-point linkage.

- Only use the upper and lower link pins provided to couple up the implement (original pins).
- Check the upper and lower link pins for visible defects whenever the implement is coupled. Replace the upper and lower link pins in the event of clearly visible wear.
- Secure the upper and lower link pins against unintentional release.
- Perform a visual inspection to ensure that the upper and lower link hooks are correctly locked before reversing the tractor.



WARNING

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

You may only connect the implement to tractors suitable for the purpose. For this, see the chapter "Checking the suitability of the tractor", page 67.

WARNING

Risk of energy supply failure between the tractor and the implement through damaged power lines!

During coupling, check the course of the power lines. The power lines

- must give slightly without tension, bending or rubbing on all movements of the connected implement.
- may not scour other parts.

1. Secure the implement to prevent it from accidentally rolling away if the implement is equipped with a transport fixture – see "Transport and parking device" chapter on page 61.
2. Always check for visible damage when coupling the implement: See the chapter "Obligation of operator" on page 9.
3. Fasten the ball sleeves over the upper link pins and fasten the lower link pins in the pivot points of the three-point attachment frame.

Be absolutely certain to upgrade the category II upper and lower link pins of the implement to category III using reducing sleeves if your tractor has a category III three-point linkage.

4. Secure the upper link pin (Fig. 46) with the spring-loaded, automatic-action retaining latch to ensure that they do not accidentally come loose.

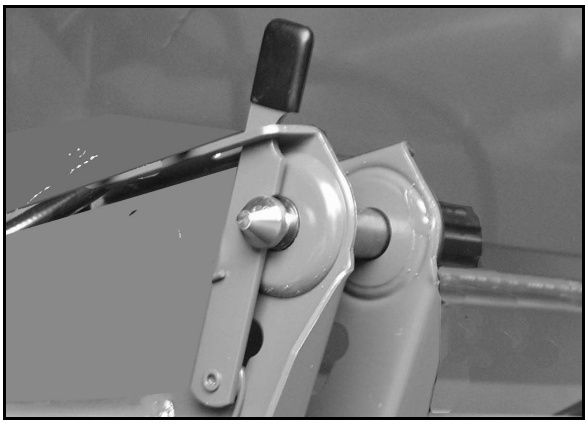


Fig. 50

5. Secure each of the lower link pins with lynch pins to ensure that they do not accidentally come loose. See the chapter "3-point attachment frame", Page 57.
6. Direct people out of the danger area between the tractor and implement before you approach the implement with the tractor.
7. First couple the PTO shaft and the supply lines to the tractor before you couple the implement with the tractor as follows:
   - 7.1 Drive the tractor up to the implement to leave a clearance of approximately 10 in / 25 cm between tractor and implement.
   - 7.2 Secure the tractor against unintentional starting and unintentional rolling away. For this, see the chapter "Securing the tractor against unintentional starting and rolling", from page 73.
   - 7.3 Check whether the universal joint shaft of the tractor is switched off.
   - 7.4 Couple the PTO shaft, see the chapter "Coupling the PTO shaft", from page 52.

7.5 Couple the hydraulic hose lines, see the chapter "Coupling the hydraulic hose lines", from page 56.

7.6 Couple the lighting system, see the chapter "Transportation equipment", page 34.

7.7 Align the lower link hooks so that they are flush with the lower attachment points of the implement.

8. Now continue to reverse the tractor up to the implement so that the lower linking points of the implement pick up the lower link hook of the tractor.
9. Raise the three-point hydraulic system of the tractor until the lower link hooks receive the ball sleeves and automatically interlock.
10. From the tractor seat, couple the upper link to the top attachment point of the three-point attachment frame using the top link hook.

→ The top link hooks lock automatically.

11. Perform a visual inspection to ensure that the upper and lower link hooks are correctly locked before reversing the tractor.

7.2 Uncoupling the implement



WARNING

Danger from crushing and / or impacts

- **due to insufficient stability and tilting of the uncoupled implement on uneven, soft ground!**
- **due to unintentional rolling of the implement parked on a transportation device!**
- Always place the uncoupled implement with empty hopper on a horizontal storage space with a solid base.
- Secure the implement against unintentional rolling when you park the implement on a transportation device. Here, see the chapter "Transportation and parking device", page 61.



WARNING

Danger of injury due to the filled implement tipping.

Couple and uncouple the implement only when it is empty.



When uncoupling the implement, there must always be enough space in front of the implement, so that you can align the tractor with the implement if necessary.

1. Always place the implement with empty hopper on a horizontal storage space with a solid base.
2. Always check for visible damage when uncoupling the implement. See the chapter "Obligation of operator" on page 9.
3. Uncouple the implement from the tractor as follows:
   - 3.1 Relieve the load from the top link.
   - 3.2 Unlock and uncouple the top link hooks from the tractor seat.
   - 3.3 Relieve the load from the lower link.
   - 3.4 Unlock and uncouple the lower link hooks from the tractor seat.
   - 3.5 Draw the tractor approxusimately 10 in / 25 cm forwards.
     → The space created between the tractor and the implement allows better access for decoupling the turbine shaft and the power lines.
   - 3.6 Secure the tractor against unintentional starting and rolling away, see the chapter "Securing the tractor against unintentional starting and rolling away", from page 73.
   - 3.7 Secure the implement to prevent it from accidentally rolling away if the implement is equipped with a transport fixture – see "Transport and parking device" chapter on page 61.
   - 3.8 Uncouple the PTO shaft, see the chapter "Uncoupling the PTO shaft", from page 53.
   - 3.9 Uncouple the hydraulic hose lines, see the chapter "Uncoupling the hydraulic hose lines", from page 56.
   - 3.10 Uncouple the lighting system, see the chapter "Transportation equipment", page 34.

8 Adjustments



When performing any adjustment work on the implement, observe the information in the following chapters

- "Warning pictograms and other labels on the implement" from page 16 and
- "Safety information for the operator" from page 23.

Observing this information is important for your safety.



WARNING

Danger of, shearing, cutting, entrapment, entanglement, being drawn in, caught or struck during all adjustment work on the implement

- **due to unintentional contact with moving operating elements (spreading vanes of rotating spreading discs).**
- **due to tractor and connected implement unintentionally starting up or rolling away.**
- Secure the tractor and the implement against unintentional start-up and rolling, before adjusting the implement. See page 73.
- Only touch moving operating elements (rotating spreading discs) when they have come to a complete standstill.



WARNING

Risk of contusions, catching and knocks during all adjustment work on the implement due to unintentional lowering of the coupled and raised implement.

Secure the tractor cabin against entry of other persons to prevent unintentional actuation of the tractor's hydraulic system.

Please note that the individual spreading properties of the spread material have a significant influence on the lateral distribution and spread rate. For this reason, the listed setting values should only be considered as a reference.

The spreading properties depend on the following factors:

- The fluctuations in the physical data (specific weight, grain size, frictional resistance, cw value, etc.) within the same type and brand
- The different properties of the spread material due to weather factors and/or storage conditions.

As a result of this, we cannot guarantee that your spreading material, even with the same name and from the same manufacturer, has the same spreading properties as the listed spreading material. The specified setting recommendations for the lateral distribution are based exclusively on the weight distribution and not on the nutrient distribution (this applies particularly for mixed fertilisers) or the active substance distribution (e.g., for slug pellets or lime). Claims for damages not caused by the centrifugal spreader itself are excluded.

8.1 Determining the settings data for the fertilizer

8.1.1 Selecting fertilizers

In the AMAZONE Spreader Application Center (SAC), setting values are determined for all commercially available fertilizers and these setting values are recorded in the fertilizer database and in the setting charts.

1. To select a fertilizer:

   Retrieve the data of the mySpreader app or

   Data of the fertilizer database can be downloaded from the online FertiliserService via the AMAZONE website (https://amazone.net) under Service & Support or

   Use the data on the printed setting chart.

2. Data will either be applied automatically in the ISOBUS software with the mySpreader app, or it is entered manually.

8.1.2 Use EasyMatch to identify unknown fertilizers

1. Open the mySpreader app on the mobile end device.
2. Use EasyMatch to select fertilizers.
3. Place a template on the fertilizer and take a photo.
4. Select the recommended fertilizer.

   The best match is shown at the top of the list.

5. Apply the fertilizer data.

8.1.3 Selecting product-specific data in the mySpreader app

Use the mySpreader app to connect the implement to a mobile device via Bluetooth and exchange product-specific data with the control terminal.

Selected and saved fertilizers will be stored in the mySpreader app History.

1. Open the mySpreader app on the end device.
2. Set up the implement to manage settings.
3. Search and select fertilizer or

   scan the QR code of the sent-in fertilizer sample or

   Create EasyMix.

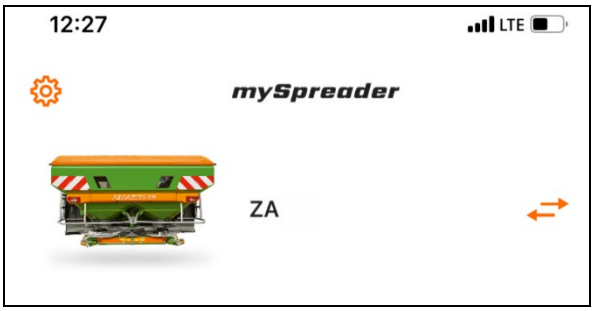


Fig. 51

4. Retrieve setting recommendations.
5. Enter the spread rate in kg/ha

→ Spreader settings will be displayed.

6. Save spreader settings.

→ Product-specific data will be transmitted to the implement.

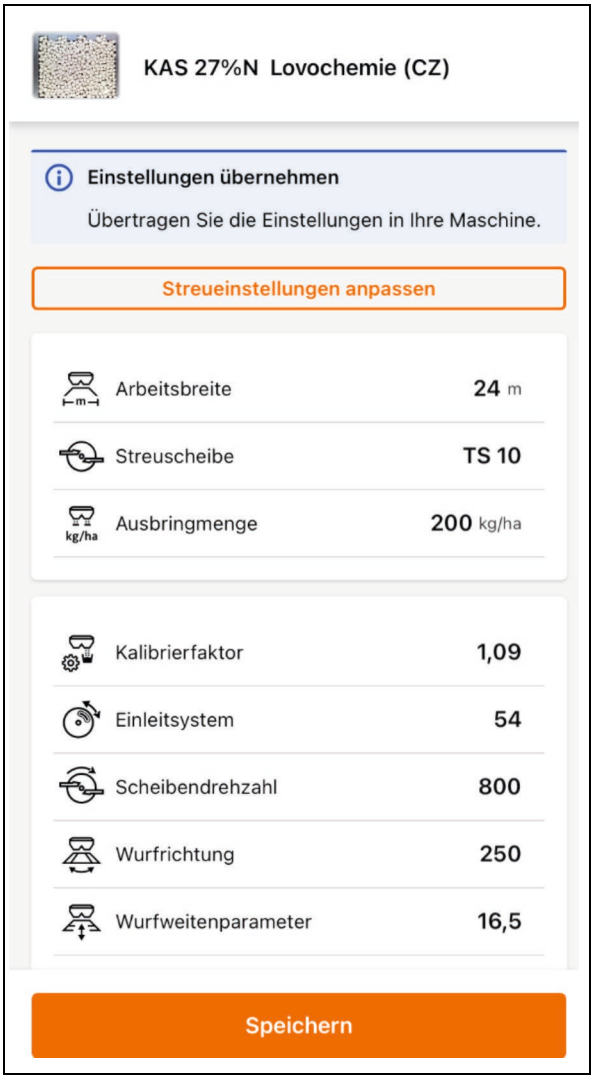


Fig. 52

8.2 Adjusting the mounting height

WARNING

Danger of crushing and / or impact for persons behind / under the fertiliser spreader due to unintentional dropping of the fertiliser spreader if the top link halves are accidentally rotated apart or tear apart!

Make sure no persons are present in the danger area behind or below the implement before adjusting the mounting height via the upper link.

Set the exact mounting height of the loaded implement on the field in accordance with the setting chart. Following the adjustment, measure the mounting height at the front and rear side of the fertiliser spreader from the surface of the ground (Fig. 47).

1. Switch off the universal joint shaft of the tractor (if necessary).
2. Wait until rotating spreading discs come to a complete standstill (if necessary) before adjusting the mounting height.
3. Direct persons away from the danger zone behind or under the implement.
4. Adjust the required mounting height on the field as per the specifications in the setting chart for the required fertiliser type (normal or late top dressing).
   - 4.1 Raise or lower the fertiliser spreader via the tractor's three-point hydraulic system until the spreading disc at the side in the centre reaches the required mounting height.
   - 4.2 Change the length of the upper link if the mounting heights a and b on the front and reverse side of the spreading discs deviate from the required mounting heights.

Standard mounting height	=	a / b = 31 in / 80 cm
Installation dimension a smaller than	=	Extend length of the top link
Installation dimension a greater than b	=	Shorten length of the top link

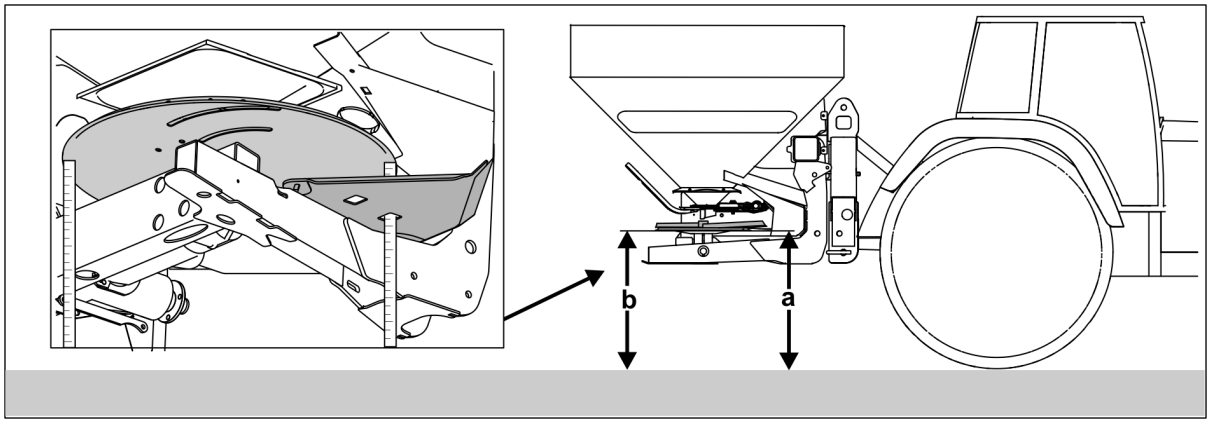


Fig. 53

The mounting heights specified here in in (cm)—usually horizontal 31/31 (80/80)—apply for normal fertilising.

For spring fertilising, if the plants have already grown to a height of 3,9-10-40 cm, one-half of the growth height should be added to the specified mounting height (e.g. 80/80). Therefore, for a growth height of 30 cm, set a mounting height of 95/95. For greater growth heights, configure the settings according to the specifications for late top-dressing. For dense crops (rapeseed), set the centrifugal broadcaster with the specified mounting height (e.g. 80/80) above the crop. If the growth height makes this impossible, configure according to the specifications for late top dressing.

8.3 Setting normal fertilising/late top dressing

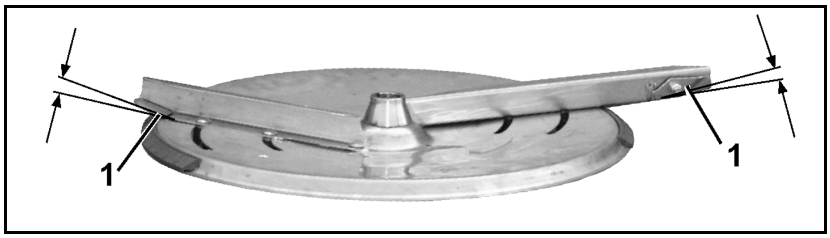


Fig. 54

The spreading discs are equipped with spreading vanes as standard and can be used to carry out not only normal fertilising but also late top dressing in cereal crops up to 3,28 ft / 1 m high.

1. Switch off the universal joint shaft of the tractor (if necessary).
2. Wait until rotating spreading discs come to a complete standstill (if necessary) before swivelling the spreading vanes.
3. Swivel the swivel blades (Fig. 48/1) of the spreading vanes to the required position for normal fertilising or late top dressing.

- Normal fertilising:

→ Swivel the swivel blades downward.

- Late top dressing:

→ Swivel the swivel blades upward

Mounting height for late top dressing:

Using the tractor's three-point linkage, set the mounting height of the spreader so that the distance between the grain tips and the spreading discs is approx.2 in / 5 cm (Fig. 49). Fasten the lower link pins in the lower link connections at the bottom if required.

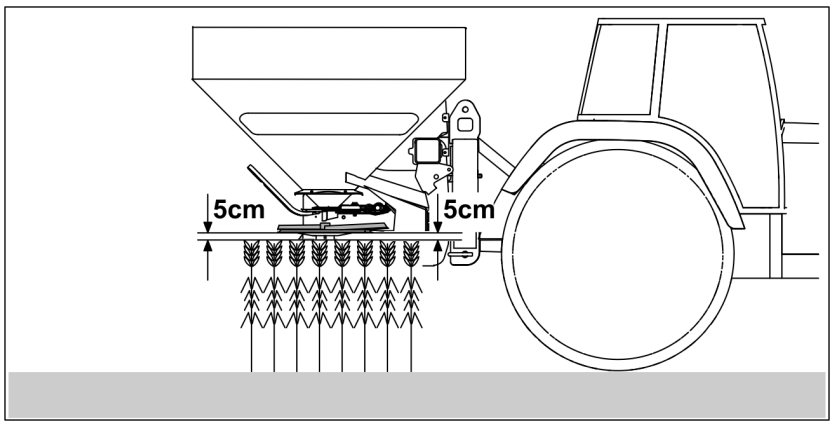


Fig. 55

8.4 Setting the spread rate

To achieve the desired **spread rate**, set the **slider position** via the two setting levers (Fig. 50/1).

Determine the required slider position either directly from the setting chart or using the calculating disc rule.

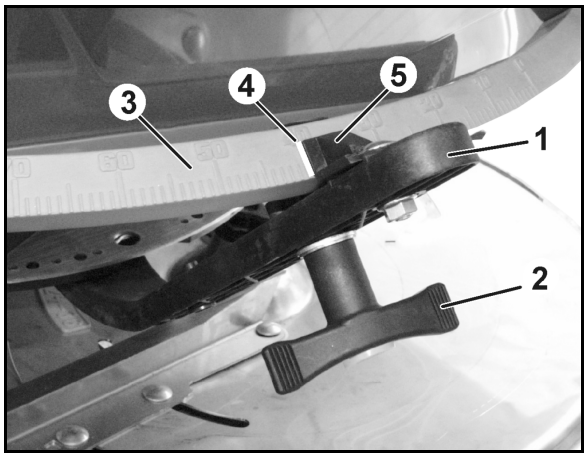


Fig. 56

The settings shown in the setting chart are only intended as guide values. The flow characteristics of the fertiliser may vary and other settings may therefore be required. Therefore, we recommend carrying out a spread rate check before spreading begins.

The slider position is determined with the calculating disc rule after a spread rate check. This takes the varying flow characteristics of the fertiliser into account when the slider position is determined.

8.4.1 Setting the slider position using the setting lever

1. Hydraulically close the slide gate.
2. Undo the butterfly nut (Fig. 51/2).
3. Look for the required slider position on the scale (Fig. 51/3).
4. Adjust the read-off edge (Fig. 51/4) of the setting lever pointer (Fig. 51/5) so that it corresponds to the scale value.
5. Retighten the wing nut (Fig. 51/2).

Select identical slider positions for the left and right sliders!

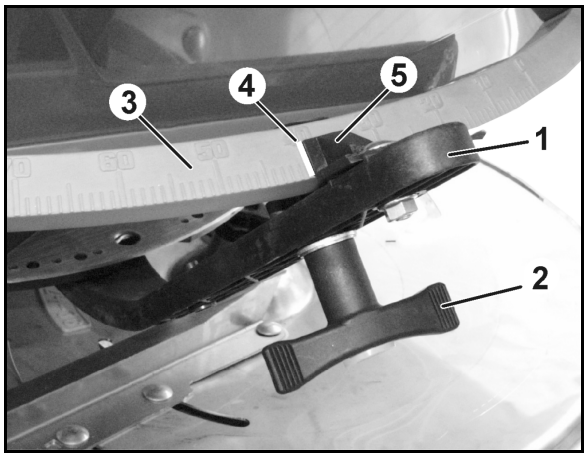


Fig. 57

8.5 Spread rate check

- A spread rate check is recommended each time the fertiliser is changed.
- The spread rate check is carried out on the left hopper side after the two spreader discs have been removed.
- Carry out the **spread rate check** (calibration test) with the universal joint shaft switched on **by travelling a calibration distance** or with the tractor **at standstill**.
  - Travelling a calibration distance is the more exact method, because the actual travelling speed of the tractor is taken into consideration.
  - If the exact travelling speed of the tractor on the field is known, the spread rate check can be carried out with the tractor at standstill.



- The multiplier for the overall quantity takes into account the spread rate check was carried out for one side.
- With greater quantities of fertiliser per hectare, halve the calibration distance and double the multiplier, because the capacity of the collection bucket is limited.
- Carry out spread rate check with approx. 200 kg hopper capacity.

8.5.1 Preparations for the spread rate check

1. Set the required slider position at the left hopper tip to achieve the desired spread rate.
2. Remove the two spreader discs.
   2.1 Unscrew the wing nut (Fig. 52/1) securing the spreader disc and remove the spreader disc from the gearbox shaft.
   2.2 Screw the thumb screw back into the gearbox shaft (to prevent fertiliser falling into the tap hole).
3. Hook the collection bucket (Fig. 52/2) using the brackets (Fig. 52/3) into the supports (Fig. 52/4 and Fig. 52/5) on the frame.

WARNING

Danger of injury from rotating spreader disc!

Before carrying out the spread rate check, remove the two spreader discs.

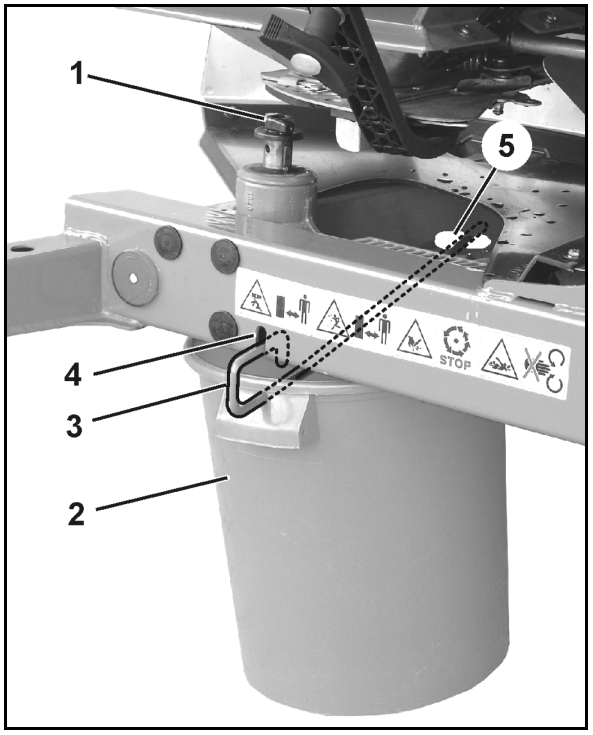


Fig. 58

Attach bracket to collection bucket (Fig. 53/1-6):

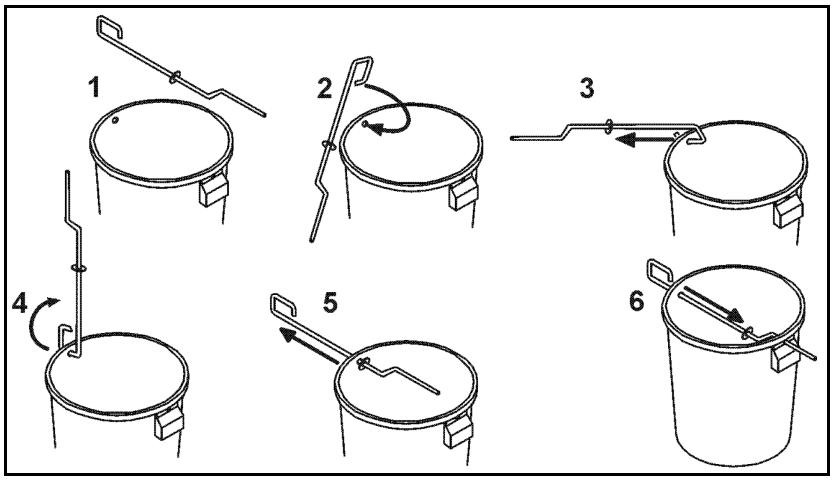


Fig. 59

8.5.2 Spread rate check by travelling a calibration distance

Example:

Working width:	**79 ft**	**24 m**
Working speed:	**6 mph**	**10 km/h**
Spread rate:	**312 lb/ac**	**350 kg/ha**
Slider position as per setting chart:	**42**	

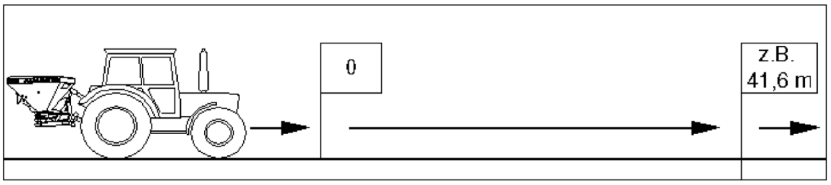
1. Refer to the following table for the working width **79 ft / 24 m**, the calibration distance **136 ft / 41.6 m** and the multiplier **20** for the spread rate conversion.

Determining the calibration distance for working widths not specified in the table

Working width [ft]	Required calibration distance [ft]	Application area [ac]	Multiplier for determining overall spread rate
30	182	1/99	40
33	164	1/99	40
39	136	1/99	40
49	109	1/99	40
52	103	1/99	40
59	91	1/99	40
66	82	1/99	40
69	78	1/99	40
79	136	1/49	20
89	121	1/49	20
92	117	1/49	20
98	109	1/49	20
105	103	1/49	20
118	91	1/49	20

Working width [m]	Required calibration distance [m]	Application area [ha]	Multiplier for determining overall spread rate
9.00	55.50	1/40	40
10.00	50.00	1/40	40
12.00	41.60	1/40	40
15.00	33.30	1/40	40
16.00	31.25	1/40	40
18.00	27.75	1/40	40
20.00	25.00	1/40	40
21.00	23.80	1/40	40
24.00	41.60	1/20	20
27.00	37.00	1/20	20
28.00	35.70	1/20	20
30.00	33.30	1/20	20
32.00	31.25	1/20	20
36.00	27.75	1/20	20

Table 1



2. On the field, measure the exact calibration distance. Mark the start and end points of the calibration distance.
3. Adjust the slider position **42**.
4. Set the universal joint shaft speed to **540 rpm** (unless otherwise specified for the working width adjustment in the setting chart).
5. Travel the exact calibration distance from start to end point under field conditions, i.e.
   - 5.1 approx. half-filled hopper
   - 5.2 specified constant working speed **6 mph [10 km/h]** and
   - 5.3 the universal joint shaft speed required for the working width.
6. Open the left slider exactly at the calibration distance start point and close it at the end point.
7. Weigh the quantity of fertiliser collected lb [kg], e.g. 39 lb [**17.5** kg].
8. Calculate the actual spread rate lb/ac [kg/ha] setting based on the quantity of fertiliser collected lb/ac [kg/ha].

$\text{Spread rate} = \frac{\text{Quantity of fertiliser collected [39 lb] x multiplier 20}}{\text{2,47 ac}} = 312 \text{ lb/ac}$
$\text{Spread rate} = \frac{\text{Quantity of fertiliser collected [17.5 kg] x multiplier 20}}{\text{ha}} = 350 \text{ kg/ha}$

If the actual quantity of fertiliser applied and the desired spread rate do not correspond, adjust the slider position accordingly. Repeat the spread rate check as necessary.

After determining the exact slider position for the left hopper side, set the right setting lever to the same slider position.

8.5.2.1 Determining the required calibration distance for working widths not specified in the table

Working widths up to 69 ft [21 m] - multiplier 40

$\text{Necessary calibration distance for desired working width ft [m]} = \frac{500}{\text{Working width ft [m]}}$

Working widths from 79 ft [24 m] - multiplier 20

$\text{Necessary calibration distance for desired working width ft [m]} = \frac{1000}{\text{Working width ft [m]}}$

8.5.3 Spread rate check during tractor standstill

Example:

Working width:	**79 ft**	**24 m**
Working speed:	**6 mph**	**10 km/h**
Spread rate:	**312 lb/ac**	**350 kg/ha**
Slider position as per setting chart:	**42**	

1. Refer to the following table for the required working width of **79 ft / 24 m** and working speed of 6 mph /**10** km/h, the time of **14.98** sec required to complete the required calibration distance of **136 ft / 41.6** m and the multiplier **20** to perform the spread rate conversion.

Convert times for working widths and working speeds not listed in the table.

Working width [ft]	Required calibration distance [ft]	Multiplier for determining overall spread rate	Required time [sec] to complete the calibration distance at the working speed [mph]		
			5	6	8
30	182	40	24.97	19.98	16.65
33	164	40	22.5	18	15
39	136	40	18.72	14.98	12.48
49	109	40	14.98	11.99	9.99
52	103	40	14.06	11.25	9.37
59	91	40	12.49	9.99	8.32
66	82	40	11.25	9	7.5
69	78	40	10.71	8.57	7.14
79	136	20	18.72	14.98	12.48
89	121	20	16.65	13.32	11.1
92	117	20	16.06	12.85	10.71
98	109	20	14.98	11.99	9.99
105	103	20	14.06	11.25	9.37
118	91	20	12.49	9.99	8.32

Working width [m]	Required calibration distance [m]	Multiplier for determining overall spread rate	Required time [sec] to complete the calibration distance at the working speed [km/h]		
			8	10	12
9.00	55.50	40	24.97	19.98	16.65
10.00	50.00	40	22.5	18	15
12.00	41.60	40	18.72	14.98	12.48
15.00	33.30	40	14.98	11.99	9.99
16.00	31.25	40	14.06	11.25	9.37
18.00	27.75	40	12.49	9.99	8.32
20.00	25.00	40	11.25	9	7.5
21.00	23.80	40	10.71	8.57	7.14
24.00	41.60	20	18.72	14.98	12.48
27.00	37.00	20	16.65	13.32	11.1
28.00	35.70	20	16.06	12.85	10.71
30.00	33.30	20	14.98	11.99	9.99
32.00	31.25	20	14.06	11.25	9.37
36.00	27.75	20	12.49	9.99	8.32

Table 2

2. Adjust the slider position **42.**
3. Set the universal joint shaft speed to **540 rpm** (unless otherwise specified for the working width adjustment in the setting chart).
4. Open the slider on the left for exactly **14.98** sec.
5. Weigh the quantity of fertiliser collected [kg], e.g. 39 lb [**17.5** kg].
6. Calculate the actual spread rate lb/ac [kg/ha] setting based on the quantity of fertiliser collected lb/ac [kg/ha].

$$\text{Spread rate} = \frac{\text{Quantity of fertiliser collected [39 lb] x multiplier 20}}{\text{ac}} = 312 \text{ lb/ac}$$

$$\text{Spread rate} = \frac{\text{Quantity of fertiliser collected [17.5kg] x multiplier 20}}{\text{ha}} = 350 \text{ kg/ha}$$

If the actual quantity of fertiliser applied and the desired spread rate do not correspond, adjust the slider position accordingly. Repeat the spread rate check as necessary.

7. After determining the exact slider position for the left hopper side, set the right setting lever to the same slider position.

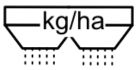
Determining the required measuring time for working widths (calibration distances) and/or working speeds not specified in the table

$$\text{Measuring time [sec.] required for desired working width} = \frac{\text{Calibration distance ft [m]}}{\text{Working speed mph [km/h]}} \times 3.6$$

8.6 Determining the slider position using a calculating disc rule

The calculating disc rule makes it possible to determine the correct slider position after the spread rate check on the basis of the quantity of fertiliser collected.

The calculating disc rule is made up of:

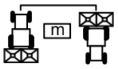
- 

The outer white scale showing the spread rates [kg/ha].
- 

The inner white scale showing the quantity of fertiliser collected during the spread rate check [kg].
- 
The central coloured scale showing the slider positions.

- The table for determining the required calibration distance [m]

  with

  - working width,

  - required calibration distance,

  1/2 

  - Working widths where only half of the fertilizing quantity is considered for the calculation.

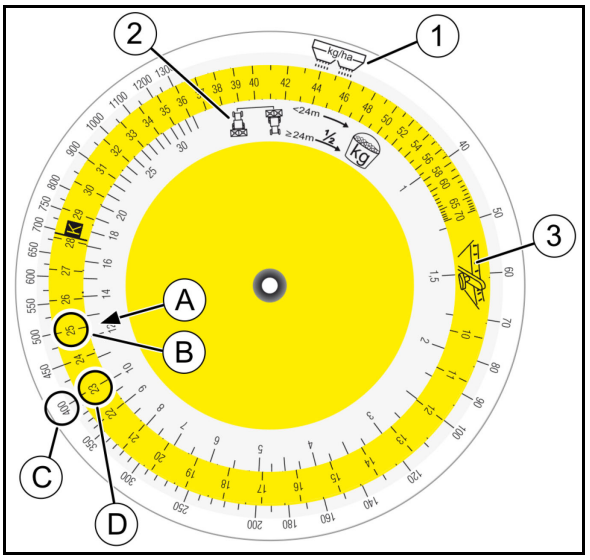


Fig. 60

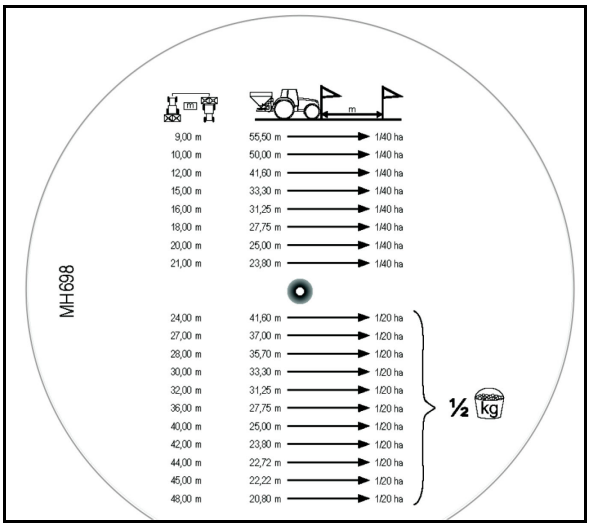


Fig. 61

The following application areas apply for the spread rate check

- 1/99 lb/ac [1/40 ha]for working widths up to 75 ft [23 m].
- 1/49 lb/ac [1/20 ha] for working widths greater than 79 ft [24 m].

With working widths above 79 ft [24 m], halve the collected fertiliser quantity (e.g. 56 lb = 56 lb/2 = 28 lb) (e.g. 25 kg = 25 kg/2 = 12.5 kg) and determine the slider position on the basis of this figure.

1. Carry out the spread rate check
2. Use a calculating disc rule.
   On the scale (Fig. 54/2) for collected quantity lb [kg], look for the value (A) and align with the selected slider position (B) of the coloured scale (Fig. 54/3).
3. Look for the desired spread rate (C) and read off the required slider position (D).
4. Set the slider position.

It is recommended to carry out another spread rate check with this slider position.

8.7 Determining the slider position using the calibration kit (optional)

- When determining the fertiliser calibration factor, both shutters for the outlet openings remain closed and the PTO shaft is switched off.
- The lateral calibration device is not suitable for slug pellets and fine seeds.

When determining the shutter position using the calibration device, use the calculator disc supplied with the special equipment! (Position "K" can be found on the middle coloured scale.)

WARNING

Finger cutting points on the slider of the calibration kit.

Working width:	**59 ft**	**18 m**
Spread rate:	**357 lb/ac**	**400 kg/ha**
Working speed:	**6 mph**	**10 km/h**
Slider position:	**?**	

1. Hook the collection bucket (Fig. 58/1) with the bracket (Fig. 58/2) on to the outlet chute (Fig. 58/3). Engage the collection bucket in the clamping device (Fig. 58/4 and Fig. 56/1).
2. Open the lateral slider (Fig. 58/5) of the discharge chute fully for approx. 5 sec. with the rope (Fig. 58/6) – this ensures a uniform flow of fertiliser. Afterwards, pour back the collected fertiliser into the spreader.
3. Obtain the required calibration distance of **91 ft [27.75** m] for an application area of 1/99 ac [**1/40** ha] and required working width of 59 ft [**18** m] on the reverse side of the calculating disc rule.
4. On the field, measure the exact calibration distance. Mark the start and end points of the calibration distance.

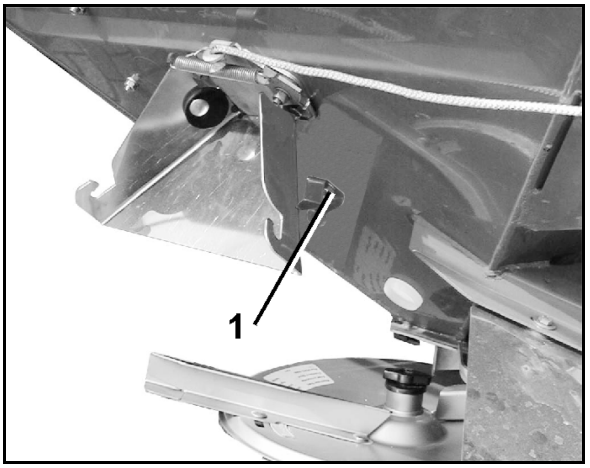


Fig. 62

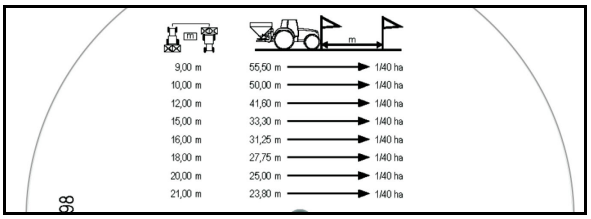


Fig. 63

5. Travel the exact calibration distance from the start to the end point under field conditions, i.e. with the specified constant working speed 6 mph [**10 km/h]** and universal joint shaft speed **540 rpm** (unless otherwise specified in the working width setting in the setting chart). Here, fully open the lateral slider of the discharge chute from the tractor by means of a rope exactly at the calibration distance start point (pull to the stop) and close at the end point.
6. Weigh the quantity of fertiliser collected, e.g. 39 lb [**17.5** kg].

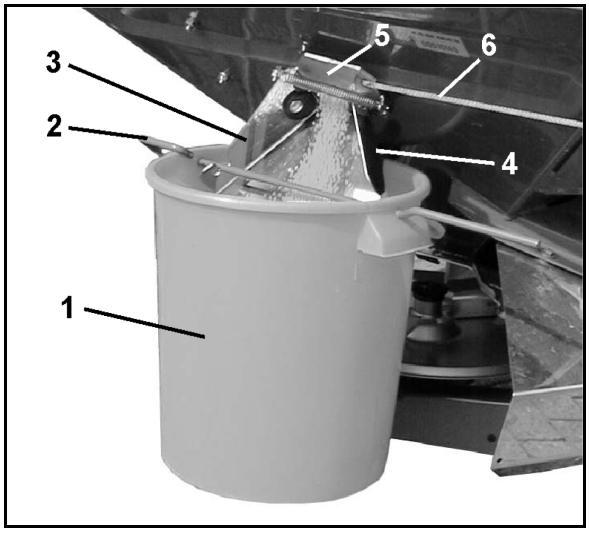


Fig. 64

With working widths above 79 ft [24 m], halve the collected fertiliser quantity (e.g. 56 lb = 56 lb/2 = 28 lb) (e.g. 25 kg = 25 kg/2 = 12.5 kg) and determine the slider position on the basis of this figure.

7. Take the calculating disc rule for the calibration kit. On the scale (Fig. 59/2) for collected quantity lb [kg], look for value 17.5 (A) and align with position **K** of coloured scale (Fig. 59/3).
8. Look up the required spread rate (400 kg/ha) (B) on the scale for the spread rate (Fig. 59/1) and read off the slider position **23** (C).
9. Set the setting lever for spread rate setting to scale value **23**.

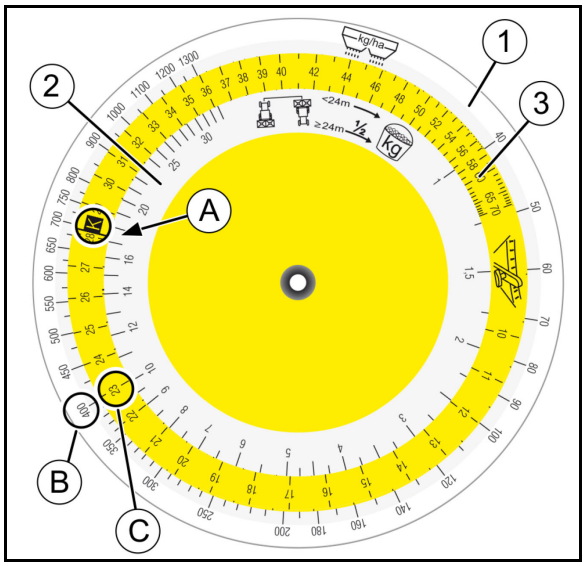


Fig. 65

8.8 Setting the working width

- There are different spreading disc pairs for the various working widths.
- The existing tramline system (distance between the tramlines) determines the selection of the required spreading disc pair.
- The working widths are adjustable within the working ranges of the respective Omnia Set (OM) spreading disc pairs (however, there may be deviations for the spreading of urea).
- The type of fertiliser and desired working width determine the setting of the pivotable spreading vanes.

  The specific spreading properties of a fertiliser influence its throwing range. The pivotable spreading vanes allow the adjustment of these specific spreading properties of a fertiliser, so that the respective fertiliser can be spread over the desired working width.

Working width		Spreading disc pair
33–39 ft	10 – 12 m	OM 10 – 12
33–52 ft	10 - 16 m	OM 10 – 16
59–79 ft	18 - 24 m	OM 18 – 24
79–118 ft	24 - 36 m	OM 24 – 36

The primary factors that affect the spreading properties are:

- Granule size
- Bulk density
- Surface condition
- Humidity

We therefore recommend the use of a well granulated fertiliser by a renowned manufacturer and also checking of the working width setting using the mobile fertiliser test rig.

WARNING

Danger of ejection of parts of the quick-release screw connection in event of incorrect tightening of the wing nut after the working depth is set!

After setting the working depth, always check whether you have manually retightened the wing nut of the quick-release screw connection.

8.8.1 Replacing the spreading discs

1. Remove the wing nut (Fig. 60/1).
2. Rotate the spreading disc so that the 8 mm dia. disc hole is aligned with the centre of the implement.
3. Remove the spreading disc from the gear-box shaft.
4. For easier assembly, apply assembly paste (KA059) on the output shaft of the angle gear.
5. Fit another spreading disc.
6. Secure the spreading disc by tightening the wing nut.

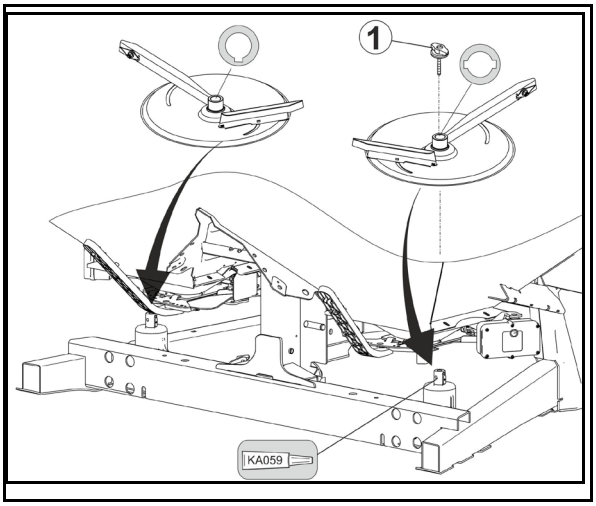


Fig. 66

- When fitting the spreading discs, do not confuse "left" and "right".
  - Right spreading disc with engraved **R**
  - Left spreading disc with engraved **L**
- The right gearbox shaft has a lock pin. Always install the right spreading disc with two grooves here.

8.8.2 Adjusting the spreading vane positions

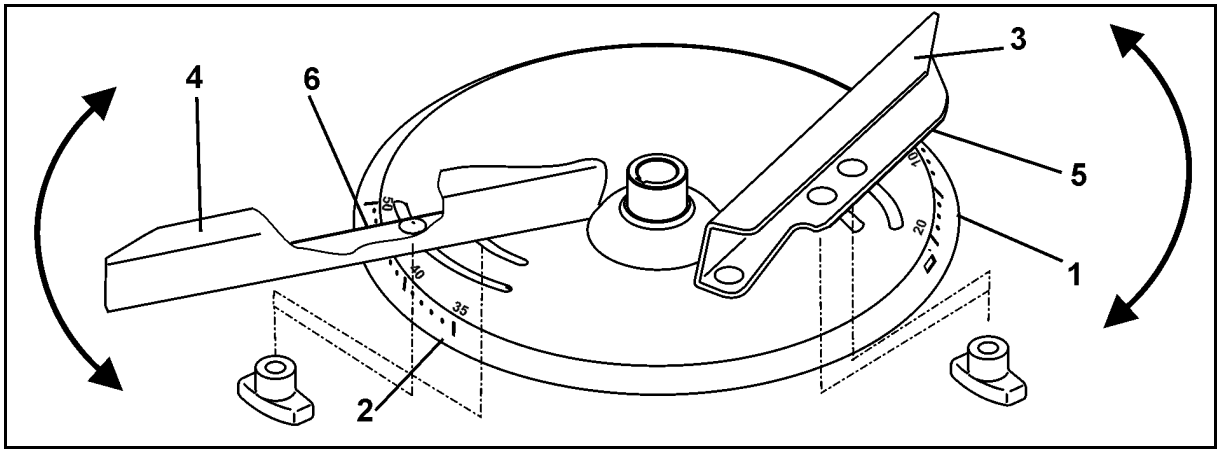


Fig. 67

The spreading vane position depends on:

- the working width and
- the type of fertiliser.

Two different scales, designed so as to make it impossible to confuse them, are arranged on each spreading disc for precision setting of the individual spreading vane positions (Fig. 61/1 and Fig. 61/2).

- The shorter spreading vanes (Fig. 61/3) are assigned the scale (Fig. 61/1) with values from 5 to 28; the longer spreading vanes (Fig. 61/4) are assigned the scale (Fig. 61/2) with the values from 35 to 55.
  - For the short spreading vane (Fig. 61/3), read off the set value on the read-off edge (Fig. 61/5).
  - For the long spreading vane (Fig. 61/4), read off the set value on the read-off edge (Fig. 61/6).
- Swivelling the spreading vanes to a higher scale value (Fig. 61/1 or Fig. 61/2) increases the working width.
- The shorter spreading vanes primarily distribute the fertiliser in the centre of the spread pattern, while the longer vanes primarily distribute it to the outer area.

Adjust the spreading vanes as follows:

1. Switch off the tractor's universal joint shaft.
2. Secure the tractor against unintentional starting and rolling away, see the chapter "Securing the tractor against unintentional starting and rolling away", from page 73.
3. Wait until rotating spreading discs come to a complete standstill before adjusting the working width.
4. Set the desired working width by swivelling the short and long spreading vanes in one after the other.
   - 4.1 Turn the spreading disc so that the respective wing nut under the spreading disc can be released without problem.
   - 4.2 Release the respective wing nut.
   - 4.3 Refer to the setting chart for the short and long spreading vanes.
   - 4.4 Swivel the respective spreading vane so that you can read off the required setting on the scale on the read-off edge.
   - 4.5 Firmly retighten the respective wing nut by hand (without a tool).

8.9 Checking the working width and lateral distribution

The working width is influenced by the respective spreading properties of the fertiliser.

The most important influential factors on the spreading properties are known to be

- the grain size,
- the bulk density,
- the surface properties and
- the moisture.

Check the working width and lateral distribution and optimise the fertiliser spreader settings by using:

- a mobile test rig
- EasyCheck

→ See separate operating manual



Specifications for checking the working width and lateral distribution:

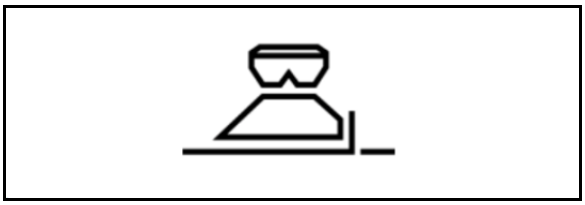
- as little wind as possible (wind speeds < 3 m/s).
- never perform a spreading test with side winds. If necessary, adjust the orientation of the spreading test for the wind direction.

8.10 Boundary, ditch and side spreading

1. **Boundary spreading:**

On the field boundary, there is a road, a field path or a field that belongs to someone else.

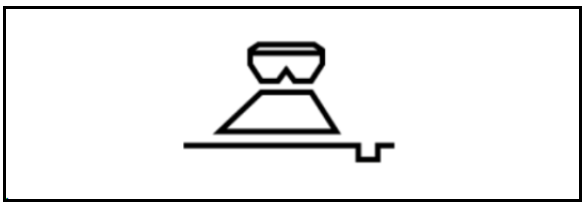
Only minimal quantities of fertilizer fall across the boundary.



2. **Ditch spreading:**

On the field boundary there is a body of water or a ditch.

Fertilizer must not fall closer than one meter before the boundary



3. **Border spreading:**

The adjacent field is an area used for agricultural purposes.

Minimal amounts of fertilizer fall across the boundary.

The fertilizer rate on the field edge is close to the target rate.



Boundary spreading and ditch spreading:

To prevent over-fertilising in the inside of the field, the spread rate at the boundary must be reduced. There is a slight under-fertilising in front of the field boundary.

Reduce the boundary-side shutter position by the scale intervals specified in the setting chart.

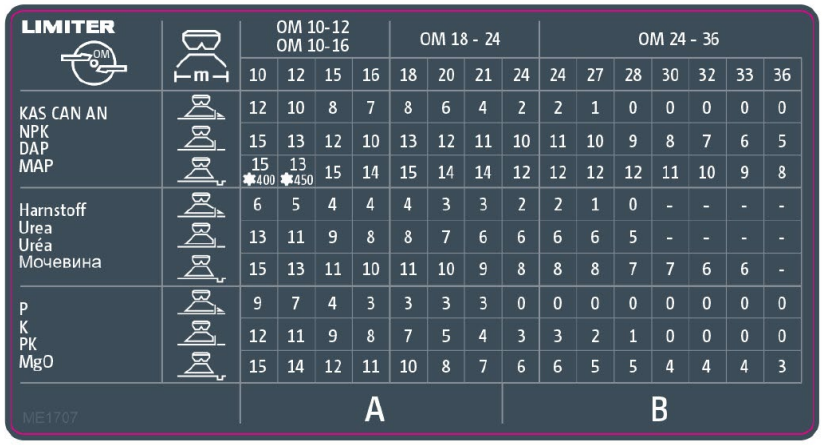
8.10.1 Boundary spreading with Limiter M

The setting of the Limiter M depends on

- Boundary distance
- Type of fertiliser,
- Type of boundary spreading

Read the value to be set from the setting chart.

Stickers on the implement

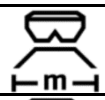


LIMITER

		OM 10-12 OM 10-16				OM 18 - 24				OM 24 - 36						
	m	10	12	15	16	18	20	21	24	24	27	28	30	32	33	36
KAS CAN AN NPK DAP MAP		12	10	8	7	8	6	4	2	2	1	0	0	0	0	0
		15	13	12	10	13	12	11	10	11	10	9	8	7	6	5
		15 *400	13 *450	15	14	15	14	14	12	12	12	12	11	10	9	8
Harnstoff Urea Uréa Мочевина		6	5	4	4	4	3	3	2	2	1	0	-	-	-	-
		13	11	9	8	8	7	6	6	6	6	5	-	-	-	-
		15	13	11	10	11	10	9	8	8	8	7	7	6	6	-
P K PK MgO		9	7	4	3	3	3	3	0	0	0	0	0	0	0	0
		12	11	9	8	7	5	4	3	3	2	1	0	0	0	0
		15	14	12	11	10	8	7	6	6	5	5	4	4	4	3
						A				B						

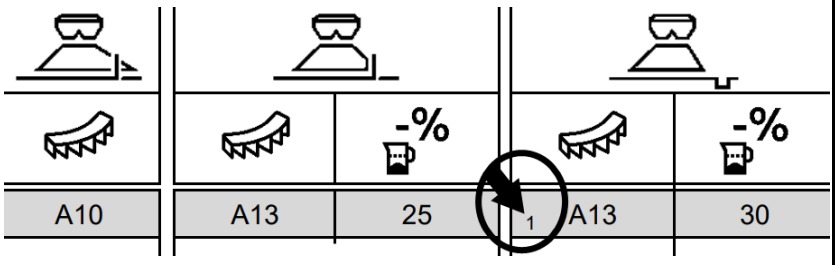
ME1707

Fig. 68

	Working width
	Border spreading
	Boundary spreading
	Ditch spreading
 **A8**	A - Mounting position for working widths up to 21 m B - Mounting position for working widths above 22 m Number – Setting value on the boundary spread deflector
	Number of graduations on the boundary-side scale for the rate reduction



If necessary, perform boundary spreading at reduced spreading disk speed / PTO shaft speed. See sticker or setting chart



PTO shaft speed 450 rpm = spreading disk speed 600 rpm

To set the numerical values, move the multi-disk block on the guide bar.

1. To do this, release the clamping lever (Fig. 63/1).

If the turning range of the clamping lever handle is not sufficient, lift the handle, turn back and lower again.

2. Move the multi-disk block on the guide bar (Fig. 64/1) far enough that the pointer (Fig. 64/2) is positioned at the value from the setting chart that must be set.
3. Refasten the clamping lever.

If the desired value cannot be set, mount the multi-disk block using the fastening bolts (3) in the 2nd bolt-on position (A or B).

High numerical value → Minimal boundary distance

Low numerical value → Greater boundary distance

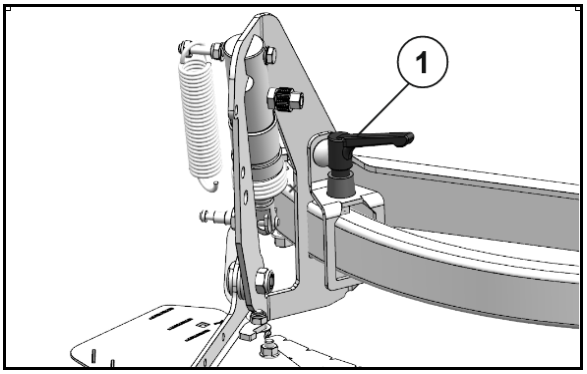


Fig. 69

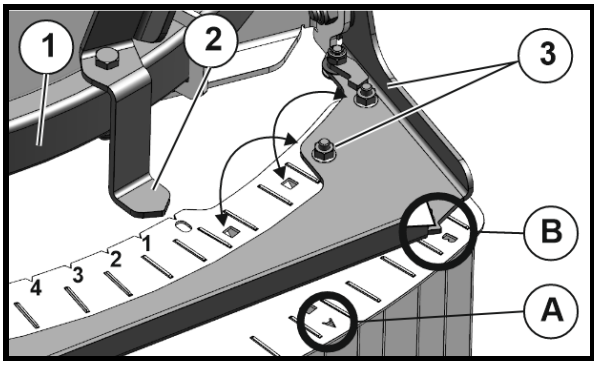


Fig. 70

For **late top dressing**, the multi-disk block is brought into a half-height working position (Fig. 65).

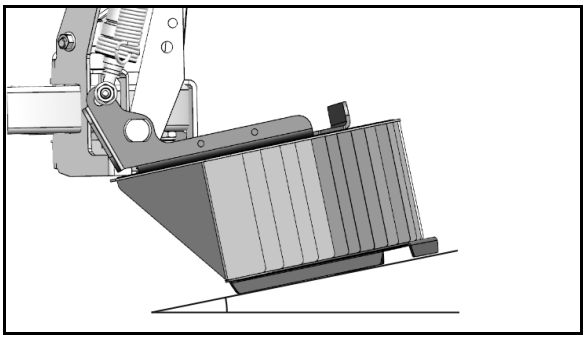


Fig. 71

On the top side of the multi-disk block, there is an adjustment bar (Fig. 66/1) on the left edge and on the right edge.

1. Unscrew the nuts on the adjustment bar.
2. Lift the multi-disk block by hand.
3. Move the adjusting bar to the stop and firmly tighten the bar.
4. Lower the multi-disk block.

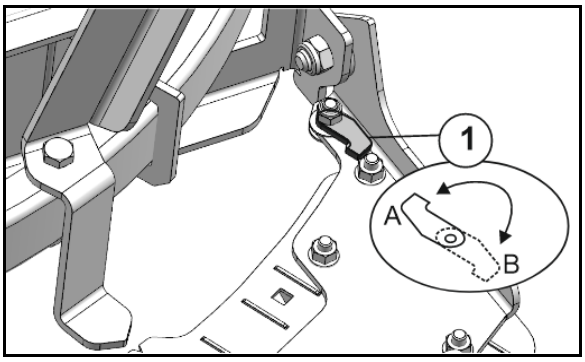


Fig. 72

- A – Late top dressing
- B – normal spreading

8.10.2 Boundary spreading with the Tele-Set boundary spreading disc

For border spreading, boundary spreading or ditch spreading, replace the left OM spreading disc with the corresponding Tele-Set spreading disc.

The Tele-Set boundary spreading disc produces a spreading pattern, the edge of which sharply tapers away towards the field edge.

The throwing range of the fertiliser spreader in relation to the "field edge" can be adjusted using the swivelling telescoping vanes.

Fasten the Tele-Set boundary spreading disc or the Omnia-Set spreading disc to the side of the implement (Fig. 67/1) when not in use.

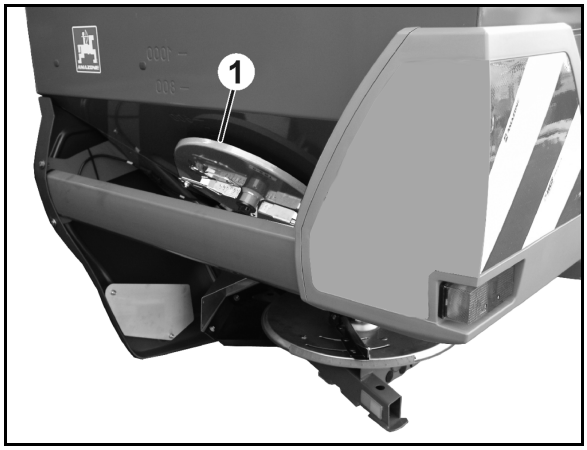


Fig. 73

Setting the boundary spreading disc in accordance with the fertiliser ordinance

The boundary spreading disks

- TS 5 – 9
- TS 10 – 14
- TS 15 – 18

are set via the telescoping vanes (1) in accordance with the setting chart depending on the type of fertiliser to be spread and the distance of the first tramline from the field edge:

Boundary margin		Boundary spreading disc
16 – 30 ft	5 - 9 m	TS 5 – 9
33 - 46 ft	10 - 14 m	TS 10 – 14
49 - 59 ft	15 - 18 m	TS 15 – 18

1. Loosen the bolts on the outer part of the vane.
2. Telescope the read-off edge (1) of the outer part of the vane to the letter and fasten the outer part of the vane.
3. Loosen the bolts on the inner part of the vane.
4. Swivel the vane tip (2) to the scale value and fasten the vane.
5. Carry out the setting for vane I and II.

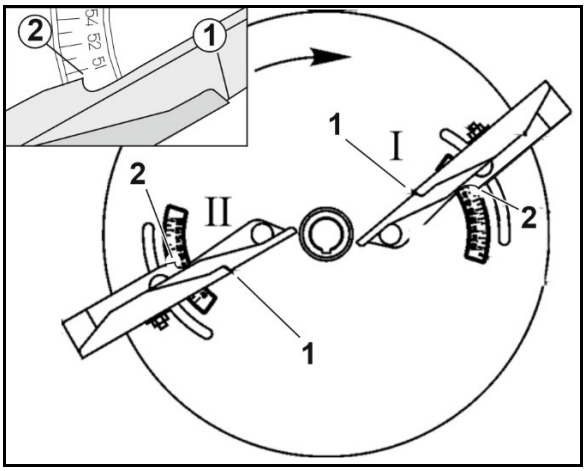


Fig. 74

- Telescope the outer part of the vane to a higher letter:

→ Larger throw distance, flatter spreading flank.

- Swivel the spreading vane to a higher numerical value:

→ Larger throw distance, steeper spreading flank.

8.10.3 Special situations during boundary spreading (where the distance between the centre of the tramline and field edge does not correspond to half the working width)

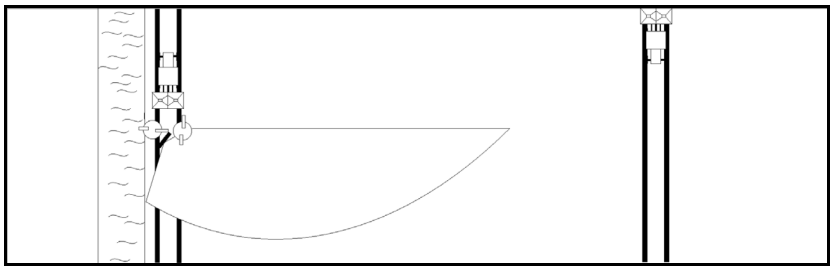


Fig. 75

Example

Distance between tramlines:	**79 ft / 24 m** (corresponds to working width of 79 ft [24 m])
Distance between first tramline and the left field edge:	**26 ft / 8 m** (corresponds to working width of 52 ft [16 m])
Type of fertiliser	**YARA calcium ammonia nitrate 27% N + 4% MgO granular**
Forward speed	**6 mph [10 km/h]**
Desired spread rate:	**312 lb/ac [350 kg/ha]**

Slider position:

- Manual shutter setting

Determine the slider position for the required spread rate using the setting chart - taking different working widths into account.

right (79 ft [24 m] working width): = **42 - 312 lb/ac [350 kg/ha]**

left (52 ft [16 m] working width): = **35,5 - 312 lb/ac [350 kg/ha]**

- Electrical shutter setting

Calculate the percentage reduction in the spread rate - taking the different working widths into account.

Set the boundary-side quantity reduction at the on-board computer.

right (24 m working width): = **100%**

left (52 ft [16 m] working width): = **100% x** 52 ft [16 m] **/** 79 ft [24 m] **= 66 %**

Vane position

right OM 24-36 from setting chart: = 79 ft [24 m] working width: **14/40**

left TS 5-9 from setting chart: = 26 ft [8 m] distance from the first tramline to the field edge: **F 49/ F 51**

9 Transportation



- Comply with the chapter "Safety information for the user", from page 25 when moving.
- Before moving off, check:
  - The correct connection of the supply lines
  - The lighting system for damage, function and cleanliness
  - The hydraulic system for visible defects



WARNING

Risk of contusions, cutting, catching, drawing in and knocks through unintentional releasing of the coupled implement!

Carry out a visual check that the upper and lower link pins are firmly secured against unintentional release.



WARNING

Risk of contusions, cuts, dragging, catching or knocks from tipping and insufficient stability.

- Drive in such a way that you always have full control over the tractor with the attached implement.

  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 implement.
- Before transportation, fasten the side locking of the tractor lower link, so that the connected or coupled implement cannot swing back and forth.



WARNING

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

Comply with the maximum load of the connected implement and the approved axle and support loads of the tractor. If necessary, drive only with a partially filled hopper.



WARNING

Risk of falling from the implement if riding against regulations!

It is forbidden to ride on the implement and/or climb the running implement.



- During road transport, only lift the centrifugal broadcaster until the top edge of the reflector is no more than 1500 mm above the road surface.
- Secure the implement against unintentional lowering before driving on the road!

10 Use of the implement

When using the implement, observe the information in the following sections:

- "Warning pictograms and other signs on the implement"
- "Safety information for the user", on page 23 ff.

Observing this information is important for your safety.

WARNING

Danger from ejected objects (fertiliser particles, foreign bodies, e.g. small stones) in the direction of the tractor without the intended protective equipment (deflector plates)!

Only ever start up the implement when the protective equipment (deflector plates) is fully installed.

WARNING

Danger from catching, entanglement, pulling in or entrapment during implement operation due to accessible powered elements of the implement.

- Only start up the implement, when all the safety equipment has been attached and is in the closed position.
- It is forbidden to open the safety equipment
  - when the implement is running
  - for as long as the tractor engine is running with a connected PTO shaft/hydraulic system.
  - when the ignition key is inserted in the tractor and the tractor engine with the connected turbine shaft / hydraulic system could be started unintentionally.

WARNING

Danger from ejected, damaged components caused by impermissibly high drive speeds of the tractor universal joint shaft!

Observe the approved implement drive speed before switching on the tractor universal joint shaft.



WARNING

Danger from being entangled and drawn in and danger from foreign objects being caught and thrown in the danger area of the driven PTO shaft!

- Whenever the implement is used, first check to ensure that the safety devices and guards of the PTO shaft are fully intact and functional.

  Have damaged safety devices and guards of the PTO shaft replaced immediately by a specialised workshop.
- Check that the PTO shaft guard is secured against rotation by the supporting chain.
- Maintain a sufficient safety clearance between you and the driven PTO shaft.
- Direct people out of the danger area of the driven PTO shaft.
- Shut down the tractor engine immediately in case of danger.



WARNING

Risk of contusions, cutting, catching, drawing in and knocks through unintentional releasing of the coupled implement!

Before each use of the implement, carry out a visual check that the upper and lower link pins are firmly secured against unintentional release.



WARNING

Danger of catching or entanglement and drawing in or entrapment of loose clothing by moving elements (rotating spreading discs)!

Do not wear loose-fitting clothing. Tight clothing reduces the risk of unintentional catching or entanglement and drawing in or entrapment by moving elements.



- For new implements, after 3-4 full hopper loads, check that the screws are tight and retighten if necessary.
- Use only fertiliser with the proper grain size, of the kinds listed in the setting chart. If you do not have accurate knowledge of the fertiliser, check the fertiliser lateral distribution for the set working width using the mobile fertiliser test rig.
- When spreading mixed fertilisers, note the following:
  - Each variety may have different flight characteristics.
  - The individual varieties may separate.
- After ever use, remove any fertiliser clinging to the spreading vanes.

10.1 Filling the centrifugal broadcaster



WARNING

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

Comply with the maximum load of the connected implement and the approved axle and support loads of the tractor. If necessary, drive only with a partially filled hopper.



- Remove residues or foreign bodies from the hopper before filling with fertiliser.
- Always fill the hopper with the guard and function screen closed. Only a closed guard and function screen prevents clumps of fertiliser and/or foreign bodies getting into the hopper and blocking the agitator.
- Observe the permitted payload of the spreader (see technical data, Page 39) and axle loads of the tractor.
- Only fill the hopper when the sliders are closed.
- It is essential to observe the safety instructions from the fertiliser manufacturer. Use appropriate protective clothing as necessary.



WARNING

Tipping hazard!

- **Never fill a fertiliser spreader unless it is hitched to the tractor.**
- **Never unhitch a fertiliser spreader or roll it (using a transport system) while it is full.**

10.2 Spreading operation

- The spreading vanes and swivel blades are made of especially hard-wearing stainless steel. However, the spreading vanes and swivel blades are wearing parts.
- The type of fertiliser, times of use and spread rates influence the service life of spreading vanes and swivel blades.
- Several spreading materials such as kieserite, Excello granules and magnesium sulphate may cause higher levels of wear on the spreading vanes. We supply spreading vanes with higher resistance to wear for these spreading materials (optional).
- The technical condition of the spreading vanes and swivel blades is essential for uniform lateral distribution of the fertiliser on the field (i.e. forming strips).

WARNING

Danger of ejection of parts of the spreading vanes / swivel blades, caused by worn spreading vanes / swivel blades!

Every day, at the start and end of spreading work, check all spreading vanes and swivel blades for visible damage/defects. Refer to the criteria for the replacement of wearing parts in the chapter "Replacing spreading vanes and swivel blades", page 125.

WARNING

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

- Make sure that uninvolved persons are kept well clear of the danger area of the implement in the following situations:
  - Before you switch on the power for the spreading discs.
  - Before you open the slide gate.
  - While the tractor engine is running.
- When spreading fertiliser at field edges in residential areas / along roads, take care not to endanger persons or damage objects. Maintain a sufficient safety distance and use the appropriate devices for boundary spreading and/or reduce the drive speed of the spreading discs.

WARNING

Risk of contusions, cutting, catching, drawing in and knocks through insufficient stability and tipping of the tractor and/or the connected implement.

Drive in such a way that you always have full control over the tractor with the attached implement.

In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the driver and the connected implement.



WARNING

Danger from breaking age during operation when the overload clutch of the PTO shaft engages (if installed)!

Switch off the universal joint shaft of the tractor immediately if the overload clutch of the PTO shaft engages.

This avoids damaging the overload clutch.



WARNING

Danger from failure of the PTO shaft in case of excessive bending of the driven PTO shaft!

Observe the permitted bending of the driven PTO shaft when lifting the implement. Excessive bending of the driven PTO shaft causes increased, premature wear to or immediate destruction of the PTO shaft.

Switch off the universal joint shaft of the tractor immediately if the lifted implement makes a lot of noise while running.



WARNING

Danger of being entangled and drawn in event of contact with the driven agitator when climbing onto the implement!

- Never climb on the implement when the tractor engine is running.
- Secure the tractor and the implement against unintentional start-up and rolling before climbing onto the implement.

- The fertiliser spreader is coupled to the tractor and the hydraulic hoses are connected.
- The settings have been configured.

1. Couple the universal joint shaft at a low tractor engine speed.



- **Tractor control unit** *yellow*, *green;* Never open the two slide gates until the required universal joint shaft speed has been reached.
- Set the universal joint shaft speed to 540 rpm unless indicated otherwise in the setting chart.
- Maintain a constant spreading disc speed.
- While spreading, always observe the selected operational speeds indicated on the setting chart.

2. Open the slide gates hydraulically and drive to the spreading area.
3. For boundary spreading: lower the Limiter hydraulically.
4. When you have finished spreading:
   - 4.1 Close the sliders.
   - 4.2 Uncouple the universal joint shaft at a low tractor engine speed.

- After long transport with a full hopper, ensure that the yield is correct before spreading begins.

- If, despite an identical shutter position, you determine that the two hopper tips are not emptying uniformly, check the basic setting of the sliders.
- The service life of the spreading vanes depends on the kinds of fertiliser used, the operating times and the spread rates.

10.2.1 Recommendation for working in headlands

Correctly laid tramlines correctly is the prerequisite for accurate work at field boundaries or edges. As a rule, when using the **boundary spreading device Limiter** or **boundary spreading disc,** the first tramline (Fig. 70/T1) must always be set up at a distance of half a tramline from the field edge.

Complete the first tramline in each field as follows

- clockwise (Limiter mounted on the left)
- anticlockwise (Limiter mounted on the right)

Once this lap of the field has been completed, shut down the Limiter (fold up).

On account of spreading towards the rear, for accurate distribution on headlands the following must be noted:

Open and close the sliders for forward (tramlines T1, T2, etc.) and return trips (tramlines T3, etc.) at different distances to the field edge.

- Open the slide gate after entering the tramline at point P1 (Fig. 71), when the spreader discs are at distance X from the tramline of the headland.
  - X = 1 working width with working widths > 59 ft / 18m.
  - X = 1.5 working widths with working widths < 59 ft / 18m.
- Close the slide gate before leaving the tramline at point P2 (Fig. 71), when the spreader discs are located at the level of the first tramline of the headland.

Using the method just described prevents fertiliser loss and over or under-fertilising and thus is an environmentally friendly way of working.

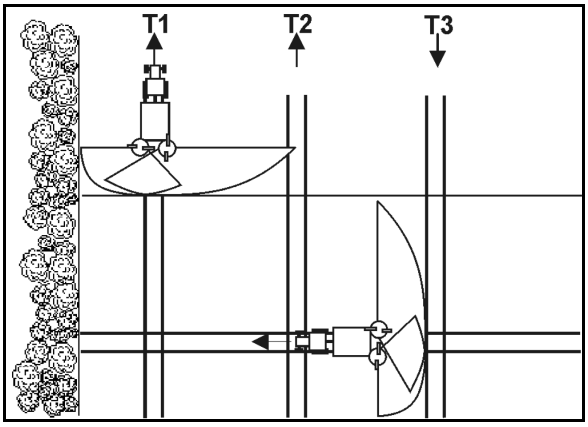


Fig. 76

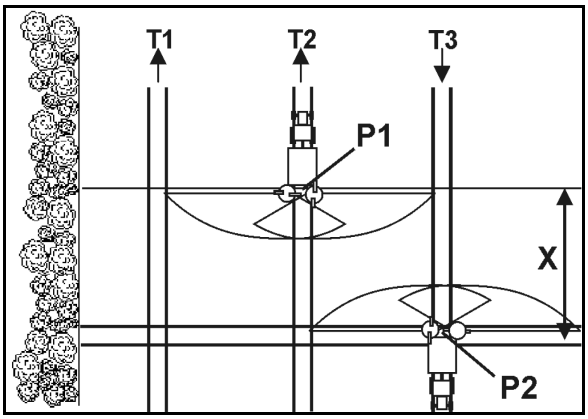


Fig. 77

10.3 Complete discharging



WARNING

Danger of being caught and drawn in with driven agitator!

- Never open the guard and function screen while the tractor engine is running.
- Never insert any objects through the guard and function screen while the tractor engine is running.

1. Switch off the agitator shaft drive.
2. Secure the tractor and implement against unintentional starting and rolling away, see page 73.
3. Remove the spreader discs and screw the thumb nuts back on the gearbox, see page 97.
4. Place a hopper under each hopper tip.
5. Open the dosing shutter fully.
6. Open the shutter hydraulically.

→ Residual fertiliser is discharged.

→ Wash out any remaining fertiliser with a water jet.

7. Reinstall the spreader discs after the residue has been drained.

10.4 Notes for spreading slug pellets (e.g. Mesurol)



CAUTION

After the special spread rate check, the implement is suitable for the application of slug pellets.



Before spreading slug pellets:

- Use the hopper cover.
- Perform visual inspection of the metering devices.
- Check the metering devices for leaks.



WARNING

When filling the spreader, avoid breathing in product dust and direct skin contact (wear protective gloves). After the application, thoroughly wash your hands and all affected areas of your skin with soap and water.



DANGER

Some slug pellets can harm children and pets. Ensure that they are stored in an area that is inaccessible to both children and pets. Always refer to the directions for use from the slug pellet manufacturer.

For additional information on handling slug pellets, refer to the manufacturer's instructions and the general safety precautions for handling crop protection agents.

- When spreading slug pellets, ensure that the outlet opening are always covered with product and make sure to always drive at a constant speed. A residue of a pprox. 1,5 lb/ 0.7 kg for each hopper tip remains, which is impossible to spread according to the intended use of the fertiliser. To empty the spreader, open the slider and catch the flow of product (using a tarp, for example).
- For the spreader settings, refer to the separate setting chart for green manure seed, grain and slug pellets (optional). This information can serve as guide numbers only. Carry out a spread rate check before use.



Due to the low spread rate, it is recommended that the necessary calibration distance is increased by at least three times. The multiplier for the spread rate conversion reduces in this case to a third of the specified value (e.g. for 9 m working width: multiplier 40 : 3 = 13.3).

- Slug pellets must **not** be mixed with fertiliser or other materials in an attempt to operate the spreader in a different setting range.

11 Faults



WARNING

Risk of contusions, shearing, cutting, catching, entanglement drawing in and knocks through

- **Unintentional falling of the implement raised using the tractor's three-point linkage.**
- **Unintentional falling of raised, unsecured implement parts.**
- **Unintentional start-up and rolling of the tractor-implement combination.**

Secure the tractor and the implement against unintentional start-up and rolling, before eliminating faults on the implement. See page 73.

Wait for the implement to stop before entering the implement danger area.

11.1 Eliminating agitator malfunctions



WARNING

Danger from crushing, shearing and/or impact through unintentional closing of the open, unsecured guard and function screen!

Secure the open guard and function screen so that it cannot move accidentally before carrying out work in this area. See page 43.

11.2 Faults, causes and remedies

Fault	Cause	Remedy
Fertiliser lateral distribution not uniform	Fertiliser deposits on the spreading discs and the spreading vanes.	Clean the spreading discs and the spreading vanes.
	Sliders do not open all the way.	
Too much fertiliser in the tractor track	Prescribed spreading disc speed is **not** reached.	Increase tractor engine speed.
	Spreading vanes and outlets defective or worn.	Check the spreading vanes and outlets. Replaced defective or worn parts immediately.
	The spreading properties of your fertiliser differ from those of the one we tested when creating the setting chart.	Contact the AMAZONE Fertiliser Service. ☎ +49 5405 501111
Too much fertiliser in the overlap area	Prescribed spreading disc speed is exceeded.	Reduce tractor engine speed.
	The spreading properties of your fertiliser differ from those of the one we tested when creating the setting chart.	Contact the AMAZONE Fertiliser Service. ☎ +49 5405 501 - 111
Both hopper tips do not empty uniformly at the identical slider position	Bridging of fertiliser.	Eliminate cause of bridging.
	R-clip in the spiral agitator has shorn off due to overloading.	Replace R-clip See page 123.
	Basic settings of the sliders differ	Check basic settings of the sliders See page 131.

12 Cleaning, maintenance and repairs



WARNING

Risk of contusions, shearing, cutting, catching, entanglement drawing in and knocks through

- **Unintentional falling of the implement raised using the tractor's three-point linkage.**
- **Unintentional falling of raised, unsecured implement parts.**
- **Unintentional start-up and rolling of the tractor-implement combination.**

Secure the tractor and implement against unintentional start-up and rolling, before carrying out cleaning, maintenance or repair work on the implement when coupling or decoupling the implement. See also page 73.



WARNING

Risk of contusions, cutting, catching, drawing in and knocks through unprotected danger points!

- Mount protective equipment, which you removed when cleaning, maintaining and repairing the implement.
- Replace defective protective equipment with new equipment.



WARNING

Danger from crushing, shearing and/or impact through unintentional closing of the open, unsecured guard and function screen!

Secure the open guard and function screen so that it cannot move accidentally before carrying out work in this area. See page 43.

12.1 Cleaning

- Pay particular attention to the brake, air and hydraulic hose lines.
- Never treat brake, air and hydraulic hose lines with benzene, benzole, petroleum or mineral oils.
- After cleaning, grease the implement, in particular after cleaning with a high pressure cleaner / steam jet or liposoluble agents.
- Observe the statutory requirement for the handling and removal of cleaning agents.

Cleaning with a high pressure cleaner / steam jet

- Always observe the following points when using a high pressure cleaner / steam jet for cleaning:
  - Do not clean any electrical components.
  - Do not clean any chromed components.
  - Never aim the cleaning jet of the cleaning nozzle of the high pressure cleaner/steam jet directly at lubrication points, bearings, rating plates, warning signs, and stickers.
  - Always maintain a minimum jet distance of 300mm between the high pressure cleaning or steam jet cleaning nozzle and the implement.
  - The set pressure of the high-pressure cleaner/steam jet must not exceed 1740 psi / 120 bar.
  - Comply with safety regulations when working with high pressure cleaners.

- Clean implement with regular water jet (oiled implements only at washbays with oil separators).
- Give particular attention to cleaning discharge openings and sliders.
- Remove fertiliser deposits from the spreading discs and the spreading vanes.
- When the implement is dry, apply a coat of anti-rust compound. (Use only biodegradable compounds).
- Stow the implement with the sliders **opened**.
- Clean the spreading discs very carefully and protect from corrosion.

Stainless steel components can also corrode when they come into contact with the spreading material, however, this does not affect their function.

12.2 Lubrication instructions

Lubricants

For lubrication, use a lithium saponified, multipurpose grease with EP additives:

Company	Lubricant designation
ARAL	Aralub HL2
FINA	Marson L2
ESSO	Beacon 2
SHELL	Retinax A

12.2.1 Lubricating the PTO shaft

For winter operation, grease the protective tubes to prevent them from freezing.

Also observe the installation and service instructions from the PTO shaft manufacturer, which are fastened to the PTO shaft.

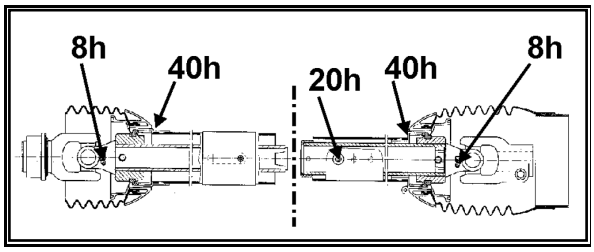


Fig. 78

12.3 Maintenance plan – Overview

- Carry out maintenance work when the first interval is reached.
- The times, continuous services or maintenance intervals of any third party documentation shall have priority.

Daily

Component	Maintenance work	See page	Specialist workshop
Spreading vanes	• Condition check	**125**	

Weekly / Every 50 operating hours

Component	Maintenance work	See page	Specialist workshop
Hydraulic system	• Condition check	**127**	**X**
Agitator	• Visual check with the guard screen closed: check whether the spring cotter pin is at hand in the agitator.	**123**	

Every six months / 200 operational hours

Component	Maintenance work	See page	Specialist workshop
PTO shaft with friction clutch	• Ventilate friction clutch	**124**	**X**

As required

Component	Maintenance work	See page	Specialist workshop
Spreading vanes	• Replace	**125**	
Basic setting of sliders	• Check	**131**	**X**
Electric traffic light kit	• Check and replace if necessary	**132**	

12.4 Shear-off safety device for PTO shafts and agitator shaft drives

The separately packaged **screws** M8 x 30 A2-70 are **replacement shear bolts** (Fig. 73/4) for fastening the universal joint fork of the PTO shaft to the flange of the gearbox input shaft. Always use grease when fastening the PTO shaft to the gearbox input shaft.

Order number: 1362100 + DE537

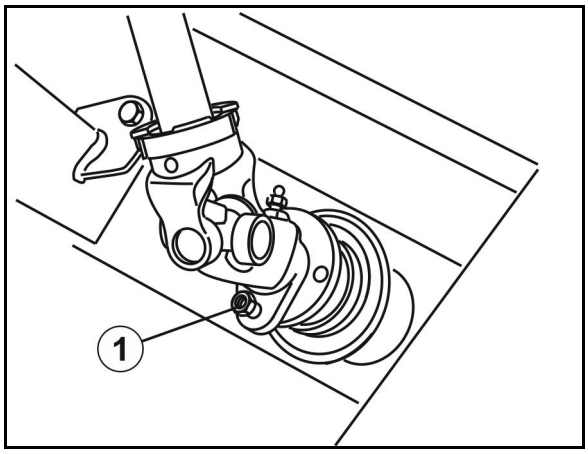


Fig. 79

The agitator shaft is protected against shearing by safety splints.

Fit safety splints only as shown (Fig. 74).

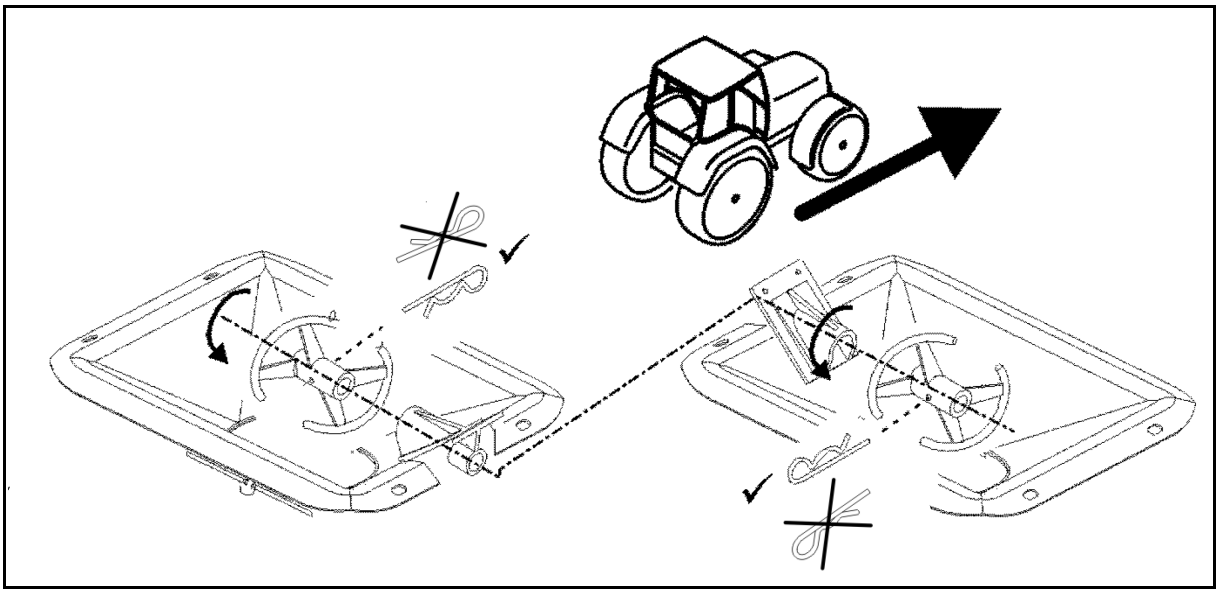


Fig. 80

12.5 Ventilate the friction clutch

After long periods of disuse and before using it for the first time, "ventilate" the friction clutch as follows:

1. Remove the friction clutch from the gearbox input shaft.
2. Relieve the springs (Fig. 75/1) by unscrewing the nuts (Fig. 75/2).
3. Crank the clutch by hand. This will eliminate distortion caused by rust or moisture between the friction surfaces.
4. Tighten the nuts until the pressure springs have the specified installation length of **a = 26.5 mm**.
5. Push the friction clutch onto the gearbox input shaft and fasten it in place. The friction clutch is now ready to be used again.

High humidity, large amounts of dirt or cleaning the implement with high-pressure cleaners increase the likelihood of thermal distortion of the friction linings.

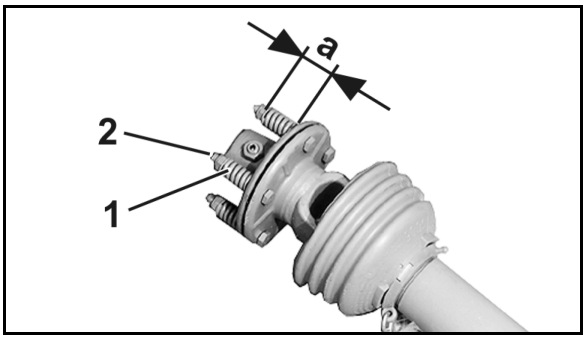


Fig. 81

12.6 Input and angular gearbox

The input and angular gearbox are maintenance-free under normal operating conditions. The gearbox is delivered from the factory with sufficient gear oil. It is usually not necessary to top up the oil. However, obvious evidence such as new oil stains on the implement's parking space or on implement parts and/or loud noises indicate an oil leak from the gearbox. Determine and eliminate the cause and top up the oil.

Oil filling quantity:

Input gearbox: **0,11 gal [0.4 l] SAE 90 gear oil**

Angular gearbox: **0,04 gal [0.15 l] SAE 90 gear oil in each case**

12.7 Replacing the spreading vanes and swivel vanes

- The technical condition of the spreading vanes, including their swivel blades, is essential for uniform lateral distribution of the fertiliser on the field (i.e. forming strips).
- The spreading vanes are made of especially wear-resistant stainless steel. Nevertheless, we remind you that the spreading vanes and their swivel vanes are wear parts.

Replace the spreading vanes and / or swivel blades as soon as holes from abrasion are visible.

12.7.1 Replacing the spreading vanes

WARNING

Danger of ejection of spreading vanes caused by the unintentional release of fixing bolts and quick-release screw connections!

- When replacing the spreading vanes, it is essential to replace used self-locking nuts of the fixing bolts with new ones. A used self-locking nut no longer has the required clamping force to produce a secure screw connection.
- Ensure that the open side of the disc spring is toward the spreading disc before tightening the wing nut. Only in this position can the disc spring pretension and secure the quick-release screw connection.

It is essential to ensure that the spreading vanes are installed correctly! The open side of the U-shaped spreading vane must be facing the direction of rotation.

When exchanging the spreading vanes and swivel blades, use the assembly paste provided. This is the only way to ensure that the specified tightening torque is sufficient.

(1) Self-locking nut
(2) Washer
(3) Fixing bolt
(4) Quick-release screw connection
(5) Plate spring

1. Release and remove the fixing bolt.
2. Release and remove the quick-release screw connection.
3. Replace the spreading vane.
4. Replace the used self-locking nuts of the fixing bolts with new ones.
5. Apply the assembly paste (KA059) to the screw threads.
6. Secure each spreading vane with a fixing bolt, washer and an unused self-locking nut so that they can move on the spreading disc.
7. Tighten the self-locking nut with a tool to the extent that you can still just swivel the spreading vane by hand.
8. Install the respective quick-release bolted connection, consisting of a round-headed screw, plate spring and wing nut. Ensure that the open side of the spring plate is pointing towards the spreading disc.

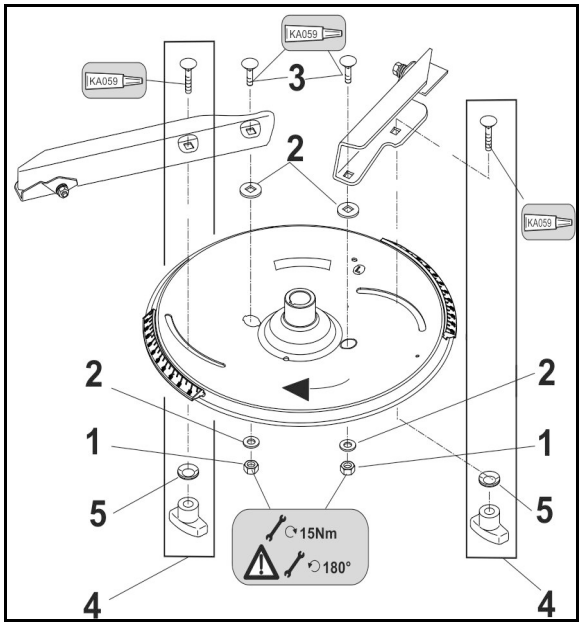


Fig. 82

9. Swivel the read-off edge of each spreading vane until it reaches the setting required for the desired working width.
10. Firmly tighten the respective wing nut of the quick-release screw connection by hand (without using a tool).

12.7.2 Replacing the swivel vanes

WARNING

Danger of ejection of swivel blades of spreading vanes caused by the unintentional release of screw connections!

When replacing the spreading blades, it is essential to replace used self-locking nuts of the screw connections with new ones. A used self-locking nut no longer has the required clamping force to produce a secure screw connection.

When exchanging the spreading vanes and swivel blades, use the assembly paste provided. This is the only way to ensure that the specified tightening torque is sufficient.

(1) Self-locking nut
(2) Plate spring
(3) Fixing bolt
(4) Plastic disc

1. Release the self-locking nut.
2. Remove the self-locking nuts, disc springs and swivel blades from the fixing bolts.
3. Ensure that the plastic disc remains on the fixing pin Ensure that the plastic disc remains on the fixing pin.
4. Apply the assembly paste (KA059) to the screw threads.
5. Mount the new swivel blade.
   - 5.1 Push the new swivel blade on to the fixing bolt.
   - 5.2 Push the plate springs alternately (do not stack) on the fixing pins.
   - 5.3 Secure the plastic disc, swivel blade and plate springs with an unused self-locking nut on the spreading vane so that they can be moved.
   - 5.4 Tighten the self-locking nut with a tool so that the swivel blade can still just be swivelled by hand but cannot swing upwards automatically.

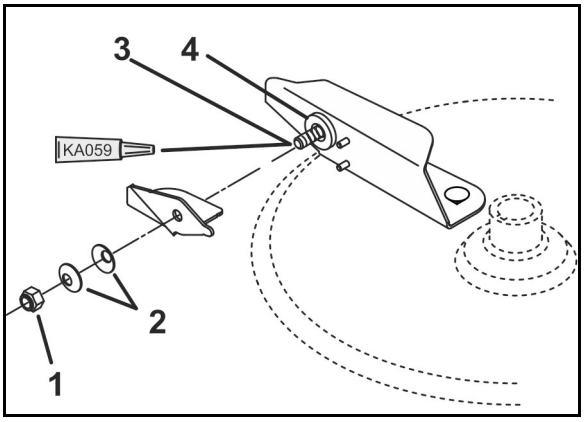


Fig. 83

12.8 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:
  - o No special action required.
- Following contact with the skin:
  - o Wash off with plenty of soap and water.
- Following contact with the eyes:
  - o Rinse eyes for several minutes under running water, holding the eyelid open.
- Following ingestion:
  - o 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 implement.
- 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.

12.8.1 Labelling of hydraulic hose lines

The assembly labelling provides the following information:

Fig. 78/...

(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).

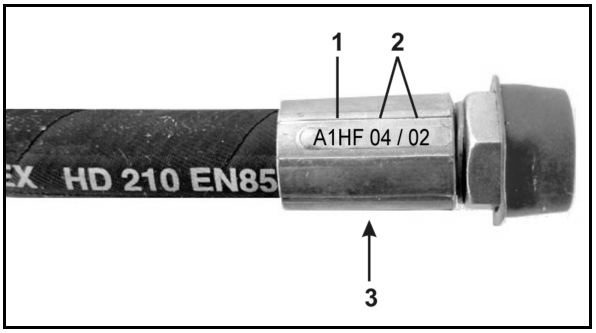


Fig. 84

12.8.2 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.

12.8.3 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

12.8.4 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.

12.9 Checking basic position of sliders

The cross-section of the outlet opening (Fig. 79/1) in slider position "8" exposed by the sliders is set at the factor with a plug gauge (pin dia.12 mm)(Fig. 79/2).

This setting serves as slider basic setting.

If, despite an identical slider position, you determine that the two hopper tips are not emptying uniformly, check the basic setting of the sliders as follows.

WARNING

Do not reach into the outlet opening while operating the slider! Danger of crushing!

1. Hydraulically open the slide gate.
2. Open the dosing slider with the setting lever (Fig. 80/1).
3. Insert a pin of **dia. 12 mm** (shaft of a 12 mm drill) into the opening.
4. Swivel the setting lever on the scale (Fig. 80/3) until it stops at the pin.
5. Secure the setting lever with the rotary handle (Fig. 80/2).
6. Release the hexagon screw (Fig. 80/6). Align the pointer (Fig. 80/5) to **"8"** on the scale and secure with the hexagon screw. Read-off edge of the pointer is (Fig. 80/4).
7. Remove the pin.

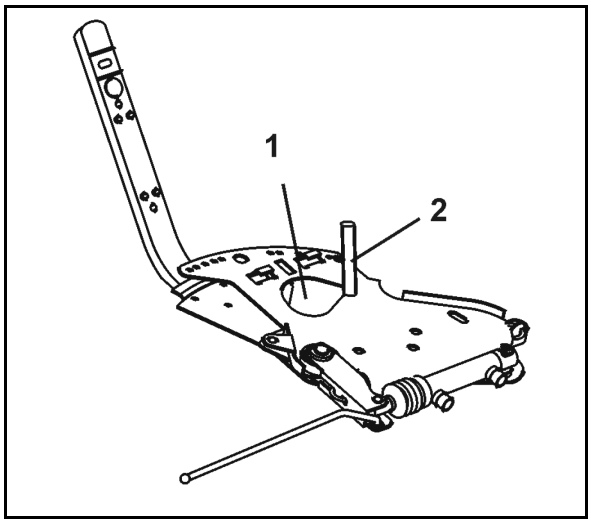


Fig. 85

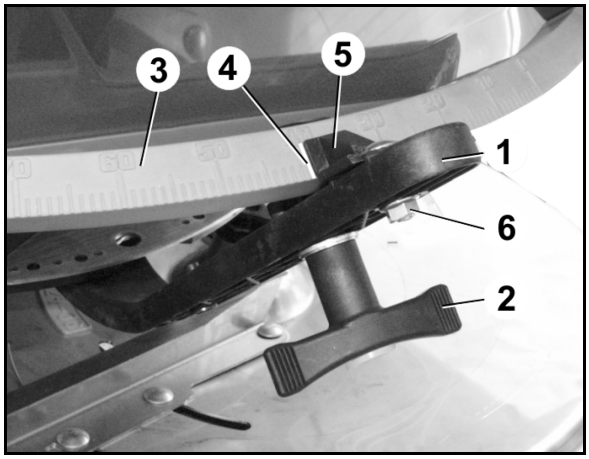


Fig. 86

12.10 Removing the PTO shaft

1. Release the PTO shaft guard and remove toward the rear.
1. Remove the grease nipple (Fig. 81/1) in the connection fork (Fig. 81/2) of the PTO shaft.
2. Remove the shear bolt (Fig. 81/4) between the fork flange (Fig. 81/3) of the PTO shaft and the flange of the gearbox input shaft.
3. Pry the connection fork off of the gearbox input shaft using a flat bar.

While prying the connection forks off of the gearbox input shaft, repeatedly turn the PTO shaft.

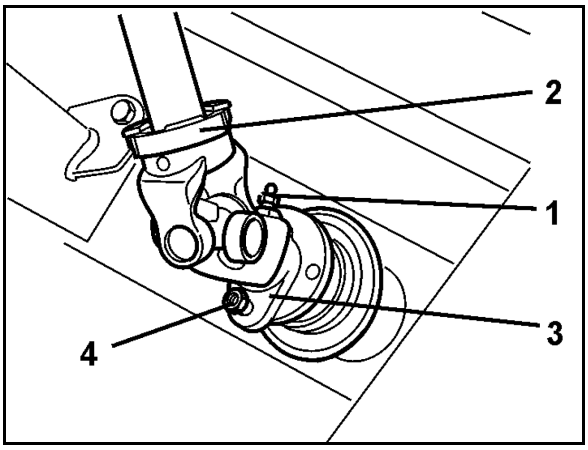


Fig. 87

12.11 Electric lighting system

WARNING

Replace defective bulbs immediately so that you do not pose a hazard to other motorists and cyclists!

Replacement of light bulbs:

1. Unscrew the sight glass.
2. Remove the defective bulb.
3. Insert the replacement bulb (ensure that the voltage and wattage are correct).
4. Insert and screw on the sight glass.

12.12 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 0,08 in [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.

12.13 Hydraulic diagram

(1) (6)Connection for control unit

(7) Shut-off unit

(8) Throttle for Limiter M

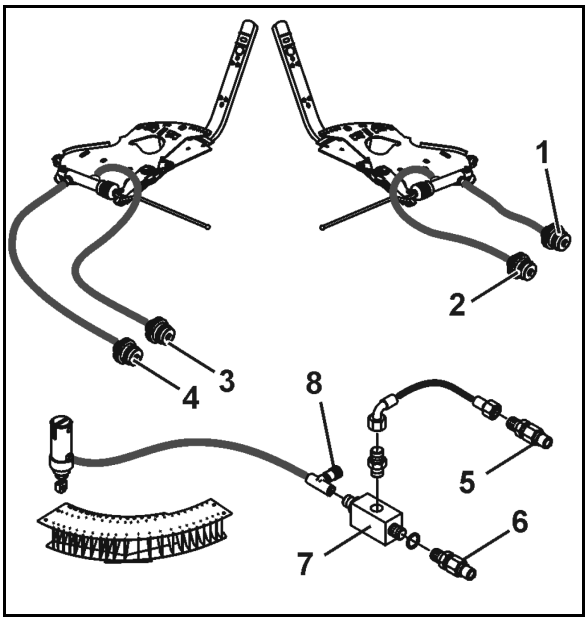
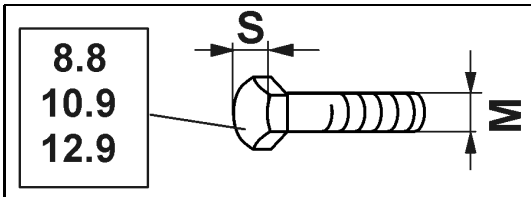
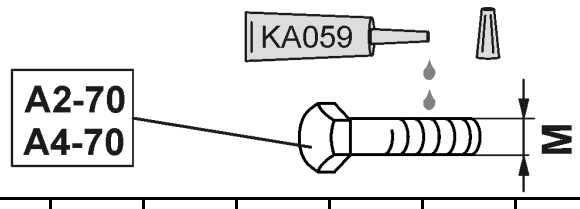


Fig. 88

12.14 Bolt tightening torques



M	S	ft lb [Nm] 8.8	10.9	12.9
M 8	13	18.5 [25]	25.8 [35]	30.2 [41]
M 8x1		19.9 [27]	28 [38]	30.2 [41]
M 10	16 (15,17)	36 [49]	51 [69]	61 [83]
M 10x1		38 [52]	54 [73]	65 [88]
M 12	18 (19)	63 [86]	89 [120]	107 [145]
M 12x1,5		66 [90]	92 [125]	111 [150]
M 14	22 (21)	100 [135]	140 [190]	170 [230]
M 14x1,5		111 [150]	155 [210]	184 [250]
M 16	24	155 [210]	221 [300]	262 [355]
M 16x1,5		166 [225]	232 [315]	280 [380]
M 18	27	214 [290]	299 [405]	358 [485]
M 18x1,5		240 [325]	339 [460]	406 [550]
M 20	30	302 [410]	428 [580]	509 [690]
M 20x1,5		339 [460]	472 [640]	568 [770]
M 22	32	406 [550]	575 [780]	686 [930]
M 22x1,5		450 [610]	634 [860]	774 [1050]
M 24	36	524 [710]	738 [1000]	885 [1200]
M 24x2		575 [780]	811 [1100]	959 [1300]
M 27	41	774 [1050]	1106 [1500]	1328 [1800]
M 27x2		848 [1150]	1180 [1600]	1438 [1950]
M 30	46	1070 [1450]	1475 [2000]	1770 [2400]
M 30x2		1180 [1600]	1660 [2250]	1991 [2700]



M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
ft lbs / Nm	1.8 [2.4]	3.6 [4.9]	6,2 [8,4]	15.2 [20,6]	30 [40,7]	52 [70,5]	83 [112]	128 [174]	178 [242]	252 [342]	347 [470]	434 [589]

Coated bolts have different tightening torques.

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

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