

Operating Manual

AMAZONE

ZG-TS 5500

ZG-TS 8200

Bulk Fertiliser Spreader



MG4943
BAG0102.10 03.18
Printed in Germany

**Please read this operating
manual before first commis-
sioning.
Keep it in a safe place for
future use.**

en



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 machine 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 machine 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 machine and get acquainted with how it's handled. Only in this way could you be satisfied both with the machine and with yourself. This goal is the purpose of this instruction manual.

Leipzig-Plagwitz 1872. Rud. Sark.

Identification data

Manufacturer:	AMAZONEN-WERKE H. DREYER GmbH & Co. KG
Machine Ident. No.:	
Type:	
Year of manufacture:	
Factory:	
Basic weight (kg):	
Approved total weight (kg):	
Maximum load (kg):	

Manufacturer's address

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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

Foreword

Dear Customer,

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

On receiving the machine, check to see if it was damaged during transport or if parts are missing. Using the delivery note, check that the machine 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 machine.

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

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 machine.

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 machine.
- Provides important information on safe and efficient handling of the machine.
- Is a component part of the machine and should always be kept with the machine 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

Operator control action and responses

Actions to be carried out by the operator are given as a numbered list. It is important that the sequence of steps is observed. The responses for each operator control action are given by an arrow. Example:

1. Operator control action step 1
→ Machine response to operator control action 1
2. Operator control action step 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 machine.

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 machine operation.

Obligations of the operator

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

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

The operator is obliged

- To keep all the warning symbols on the machine in a legible state.
- To replace damaged warning symbols.

Obligations of the user

Before starting work, anyone charged with working with/on the machine 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 section "Warning symbols and other labels on the machine" (page 16) of this operating manual and to follow the safety instructions represented by the warning symbols when operating the machine.
- If you still have queries, please contact the manufacturer.

General safety instructions

Risks in handling the machine

The machine 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 machine

- For the health and safety of the operator or third persons,
- For the machine,
- For other goods.

Only use the machine

- 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 machine.
- Improper installation, commissioning, operation and maintenance of the machine.
- Operation of the machine 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 design changes to the machine.
- Insufficient monitoring of machine 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 severity of the risk, and carries the following meaning:



DANGER

Indicates an immediate high risk which will result in death or serious physical injury (loss of body parts 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.



CAUTION

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 machine handling.

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



NOTE

Indicates handling tips and particularly useful information.

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

2.3 Organisational measures

The operator must provide the necessary personal protective equipment as per the information provided by the manufacturer of the crop protection agent to be used, such as:

- Chemical-resistant gloves,
- Chemical-resistant overalls,
- Water-resistant footwear,
- A face mask,
- Breathing protection,
- Safety glasses,
- Skin protection agents, etc.



The operating manual

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

Check all the available safety equipment regularly.

2.4 Safety and protection equipment

Before each commissioning of the machine, 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 Operator training

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

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

Activity \ People	Person specially trained for the activity ¹⁾	Trained operator 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 machine if such work is additionally marked "Workshop work". The personnel of a specialist workshop shall possess the appropriate knowledge and suitable aids (tools, lifting and support equipment) for carrying out the maintenance and repair work on the machine in a way which is both appropriate and safe.

2.7 Safety measures in normal operation

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

Check the machine 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 machine.

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 tightened if necessary.

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

2.10 Design changes

You may make no changes, expansions or modifications to the machine 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 auxiliary materials

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

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

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

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 Operator workstation

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

2.13 Warning symbols and other labels on the machine



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

Warning symbols - structure

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

A warning symbol consists of two fields:



Field 1

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

Field 2

is a symbol showing how to avoid the danger.

Warning symbols - explanation

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

1. A description of the danger.
For example: danger of cutting!
2. The consequence of non-compliance with risk avoidance instructions.
For example: causes serious injuries to fingers or hands.
3. Instructions for avoiding the danger.
For example: only touch machine parts when they have come to a complete standstill.

2.13.1 Positions of warning symbols and other labels

The following diagrams show the arrangement of the warning symbols on the machine.



Fig. 1

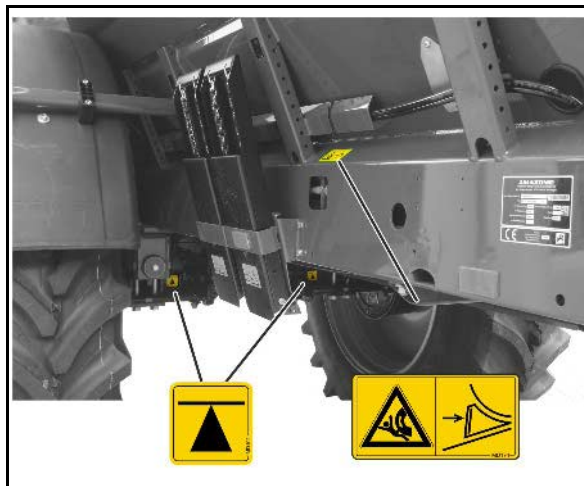


Fig. 2



Fig. 3

MD 075

Risk of fingers and hands being cut or cut off by accessible, moving parts involved in the work process.

This danger can cause extremely serious injuries and the loss of body parts.

- Never reach into the danger area when the tractor engine is running with PTO shaft / hydraulic / electronics system connected.
- Wait for all moving machine parts to come to a complete standstill before reaching into the danger area.



MD 078

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

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

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



MD 082

Risk of falling for personnel riding on treads or platforms.

This danger can cause extremely serious and potentially fatal injuries.

It is forbidden to ride on the machine or climb the machine when it is running. This also applies to machines with treads or platforms.

Make sure that nobody is riding on the machine.

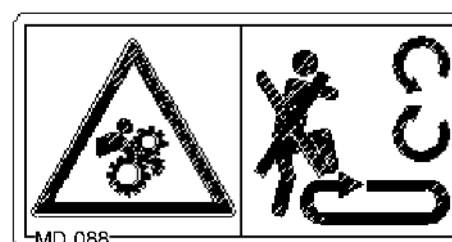


MD 088

Risk of being drawn in or caught by moving parts involved in the work process, caused by climbing on the loading platform when the machine is running.

This danger can cause extremely serious and potentially fatal injuries.

Never climb onto the loading platform when the tractor engine is running with PTO shaft / hydraulic / electronics system connected.



MD 093

Danger due to catching or entrapment due to accessible powered elements of the machine.

These dangers can cause extremely serious and potentially fatal injuries.

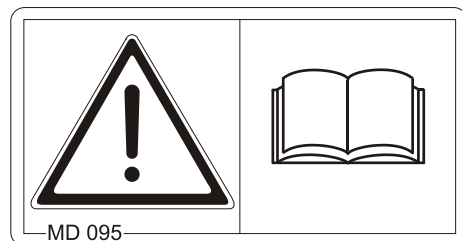
Never open or remove protective devices from driven machinery

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



MD 095

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

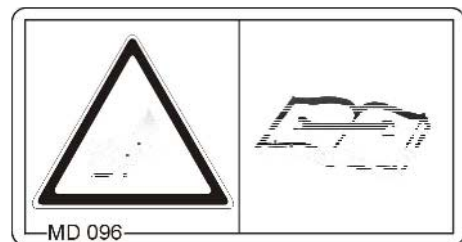


MD 096

Danger from escaping high-pressure hydraulic fluid due to leaking hydraulic hose lines.

This danger may cause serious injuries, perhaps even resulting in death, if escaping high-pressure hydraulic fluid passes through the skin and into the body.

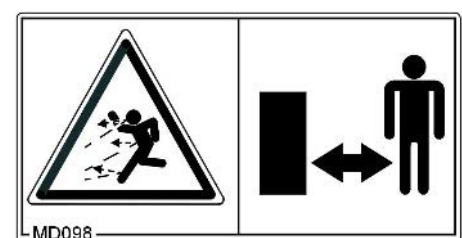
- Never attempt to plug leaks in hydraulic hose lines using your hand or fingers.
- Read and observe the information in the operating manual before carrying out maintenance and repair work on the hydraulic hose lines.
- If you are injured by hydraulic fluid, contact a doctor immediately.



MD 098

Danger from flying fertiliser particles.

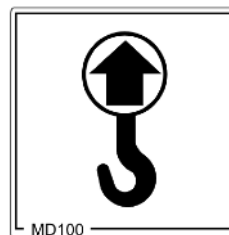
Please ensure that all personnel maintain a sufficient safety distance and stay outside the danger area.



General safety instructions

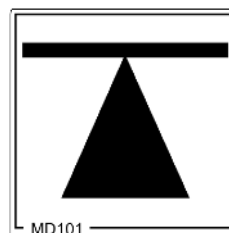
MD 100

This symbol indicates anchorage points for fastening slinging gear when loading the machine.



MD 101

This symbol indicates jacking points for lifting gear (jack).



MD 102

Danger from intervention in the machine, e.g. installation, adjusting, troubleshooting, cleaning, maintaining and repairing, due to the tractor and the machine being started unintentionally and rolling.

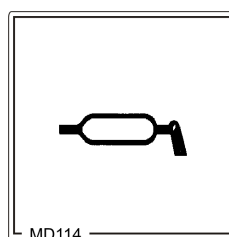
These dangers can cause extremely serious and potentially fatal injuries.

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



MD 114

This symbol indicates a lubrication point.

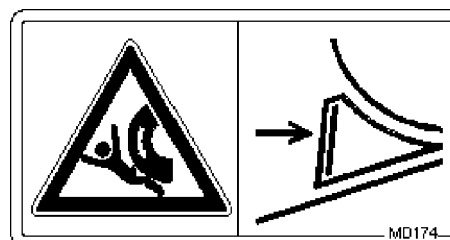


MD 174

Danger from unintended continued movement of the machine.

Causes serious, potentially fatal injuries anywhere on the body.

Secure the machine against unintended continued movement before uncoupling the machine from the tractor. To do this, use the parking brake and/or the wheel chock(s).

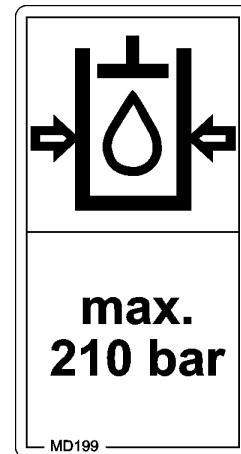


MD 175

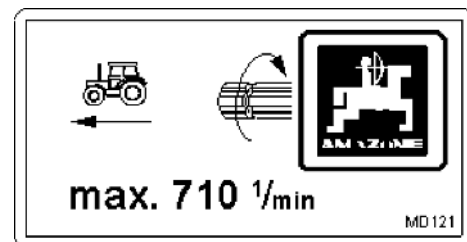
The torque of the screw connection is 510 Nm.

**MD 199**

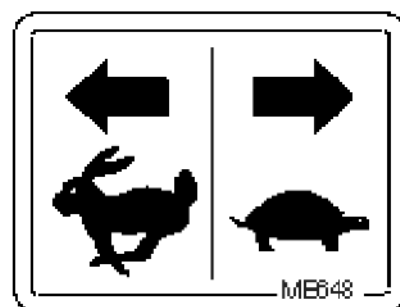
The maximum operating pressure of the hydraulic system is 210 bars.

**MD 228**

Nominal speed (750 rpm) and direction of rotation of drive shaft on implement side.

**ME648**

Fast/slow



2.14 Dangers 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 machine.
- 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 machine 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 symbols.

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

2.16 Safety information for the operator



WARNING

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

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

2.16.1 General safety and accident prevention information

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

Connecting and disconnecting the machine

- Only connect and transport the machine with tractors suitable for the task.
- When connecting machines to the tractor three-point hydraulic system, the attachment categories of the tractor and the machine must always be the same!
- Connect the machine to the prescribed equipment in accordance with the specifications.
- When coupling machines 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 machine against unintentional rolling, before coupling or uncoupling the machine.
- Do not stand between the machine and tractor to be coupled while the tractor is approaching the machine.
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 machine to or disconnecting the machine from the tractor three-point hydraulic system.
- When coupling and uncoupling machines, move the support equipment (if available) to the appropriate position (stability).



General safety instructions

- When actuating the support equipment, there is a danger of injury from contusion and cutting points!
- Be particularly careful when coupling the machine 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 machine.
- It is forbidden to stand between the tractor and the machine 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 machines are stable!

Use of the machine

- Before starting work, ensure that you understand all the equipment and actuation elements of the machine and their function. There is no time for this when the machine 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 machine, when all the safety equipment has been attached and is in the safety position!
- Comply with the maximum load of the connected machine and the approved axle and drawbar loads of the tractor. If necessary, drive only with a partially filled hopper.
- It is forbidden to stand in the working area of the machine.
- It is forbidden to stand in the turning and rotation area of the machine.
- There are contusion and cutting points at externally-actuated (e.g. hydraulic) machine points.
- Only actuate externally-actuated machine parts when you are sure that there is no-one within a sufficient distance from the machine!
- Before leaving the tractor, secure it from unintentionally starting up or rolling away.
For this:
 - Lower the machine onto the ground
 - Apply the parking brake
 - Switch off the tractor engine
 - Remove the ignition key

Machine 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 machines 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 tractor empty 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 machine and the approved axle and drawbar loads of the tractor.
- The tractor must guarantee the prescribed brake delay for the loaded vehicle combination (tractor plus connected machine).
- Check the brake power before moving off.
- When turning corners with the machine connected, take the broad load and balance weight of the machine into account.
- Before moving off, ensure sufficient side locking of the tractor lower links, when the machine is fixed to the three-point linkage or lower links of the tractor.
- Before moving off, move all the swivel machine parts to the transport position.
- Before moving off, secure all the swivel machine 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 machine.
- Check that the transport equipment, e.g. lighting, warning equipment and protective equipment, is correctly mounted on the machine.
- Before transportation, carry out a visual check that the upper and lower link bolts are firmly fixed with the linchpin 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 machine and tractor sides.
- It is forbidden to block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:
 - are continuous
 - are automatically controlled
 - require a floating position or pressed position to function
- Before working on the hydraulic system
 - Lower the machine
 - Depressurise the hydraulic system
 - Shut off the tractor engine
 - Apply the parking brake
 - Remove the ignition key
- Have the hydraulic hose line checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is damaged or worn. Only use original AMAZONE 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. If fuses are used that are too highly rated, the electrical system will be destroyed – 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. If there is accidental earth contact, there is a risk of explosion.
- Risk of explosion. Avoid sparking and naked flames in the area of the battery.
- The machine can be equipped with electronic components, the function of which may be influenced by electromagnetic interference from other units. Such interference can pose risks to people, if the following safety information is not followed.
 - If retrofitting electrical units and/or components on the machine with a connection to the on-board power supply, the user is responsible for checking whether the installation might cause faults on the vehicle electronics or other components.
 - Ensure that the retrofitted electrical and electronic components comply with the EMC directive 2014/30/EEC in the appropriate version and carry the CE mark.

2.16.4 Coupled machines

- Observe the permitted combination options of the attachment equipment on the tractor and the machine drawbar.
Only couple permitted combinations of vehicles (tractor and attached machine).
- On single axle machines, observe the maximum permitted drawbar load of the tractor on the attachment equipment.
- Ensure that the tractor has sufficient steering and braking power. Machines attached or coupled to a tractor influence the driving behaviour and steering and braking power of the tractor, in particular single axle machines with a drawbar load on the tractor.
- Only a specialist workshop may adjust the height of the drawbar on yoke bars with a drawbar load.
- Implements without brakes:
 - The top speed is limited to 25 km/h.
 - The basic weight of the tractor (not the permissible gross vehicle weight!) plus the drawbar load of the implement must be greater than the maximum axle load of the implement.



2.16.5 Brake system

- Only specialist workshops or recognised brake services can carry out adjustment and repair work on the brake system.
- Have the brake system thoroughly checked regularly.
- If there are any malfunctions, stop the tractor immediately using the brake system. Have the malfunction rectified immediately.
- Before performing any work on the brake system, park the machine safely and secure the machine against unintentional lowering or rolling (wheel chocks).
- Be particularly careful when carrying out any welding, torch cutting or drilling work in the area of the brake lines.
- Always carry out a braking test after any adjusting or repair work on the brake system.

Pneumatic braking system

- Before coupling the machine, clean any dirt from the sealing rings on the hose couplings of the supply and brake line.
- Only move off with the machine connected when the pressure gauge on the tractor shows 5.0 bar.
- Drain the air reservoir every day.
- Before driving without the machine, lock the hose couplings on the tractor.
- Hang the hose couplings of the machine supply and brake lines in the appropriate empty couplings.
- When filling up or replacing the brake fluid, use the prescribed fluid. When replacing the brake fluid, comply with the appropriate regulations.
- Do not make any changes to the specified settings on the brake valves.
- Replace the air reservoir if:
 - The air reservoir can be moved in the tensioning belts
 - The air reservoir is damaged
 - The rating plate on the air reservoir is rusty, loose or missing.

Hydraulic brake system for export machines

- Hydraulic brake systems are prohibited in Germany.
- When filling up or replacing the brake fluid, use the prescribed hydraulic fluids. When replacing the hydraulic fluids, comply with the appropriate regulations.

2.16.6 Tyres

- Repair work on tyres and wheels may only be carried out by specialists with suitable installation tools.
- Check the air pressure at regular intervals.
- Inflate tyres to the specified pressure. If the air pressure in the tyres is too high, then there is a risk of explosion.
- Park the machine in a safe place and lock the machine against unintentional lowering and rolling (parking brake, wheel chocks), before carrying out work on the tyres.
- Tighten or retighten all the fixing screws and nuts in accordance with the specifications of AMAZONEN-WERKE.

2.16.7 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 machine parts.
- For side spreading at field edges, bodies of water or roads, use side spreading devices.
- Before each use, ensure that the attachment parts are properly fitted, particularly those for attaching the spreading discs and spreading vanes.



2.16.8 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 machine 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 machine.
- 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 machine.
- Instruct people to leave the danger area of the machine 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 machine parts.

Do not approach the machine too closely during this time. You may work on the machine only after all machine parts have come to a complete stop.
- Secure the tractor and machine against unintentional starting and unintentional rolling away before you perform any cleaning, servicing or maintenance work on universal joint shaft-driven machines 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.

2.16.9 Cleaning, maintenance and repairs

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

3 Loading

Loading and unloading with a tractor



WARNING

There is a risk of accident if the tractor is unsuitable and the machine brake system is not connected to the tractor or filled.



- Couple the machine to the tractor correctly before loading the machine onto a transport vehicle or unloading it from a transport vehicle.
- You may only couple and transport the machine with a tractor for loading and unloading, if the tractor meets the necessary power requirements.

Pneumatic braking system:

- Only move off with the machine connected when the pressure gauge on the tractor shows 5.0 bar.

Loading using a lifting crane

There are 2 attachment points (Fig. 4, Fig. 5) at the front and rear of the hopper.



DANGER

If loading the machine with a lifting crane, use the marked attachment points for lifting belts.



DANGER

The minimum tensile strength of each lifting belt must be 1,000 kg!



Fig. 4



Fig. 5

4 Product description

This section:

- Provides a comprehensive overview of the machine structure.
- Provides the names of the individual modules and controls.

Read this section when actually at the machine. This helps you to understand the machine better.

4.1 Overview of subassemblies



Fig. 6

- | | |
|--|--|
| (1) Stand | (8) Deflector plate |
| (2) Fold-out ladder for ascending the hopper | (9) Spreading discs |
| (3) Frame | (10) Dosing slider |
| (4) Parking brake | (11) Fold-out ladder for maintenance of the fertiliser antechamber |
| (5) Belt conveyor | (12) Flap controller |
| (6) Hopper | (13) Hopper tip with agitator |
| (7) Swivelable hopper cover | (14) Fertiliser antechamber |



Fig. 7

- | | |
|--|------------------|
| (1) Towing eye | (4) Oil filter |
| (2) Drawbar | (5) Wheel chocks |
| (3) Cover for hydraulic block and machine computer | |

4.2 Safety and protection equipment

Fig. 8/...

- | |
|--|
| (1) Guard tube |
| (2) Spreading discs |
| (3) Chain guard for agitator shaft drive |
| (4) Hood with agitator shaft/spreading-disc drive cut-off when the rear flap is opened |

Without illustration:

- Cover for gearbox input shaft
- Warning symbol

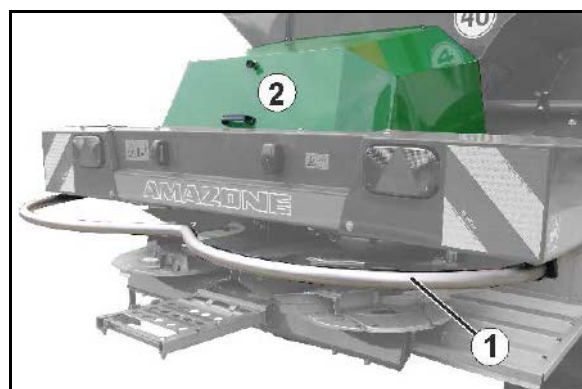


Fig. 8

4.3 Supply lines between the tractor and the machine

Supply lines in parking position:

Fig. 9/...

- (1) Hydraulic hose lines (depending on equipment)
- (2) Electric cable for lighting
- (3) Machine cable with machine connector for In-cab terminal
- (4) Brake line with coupling head for air-pressure brake
- (Not shown)
Brake line with connection to hydraulic brake

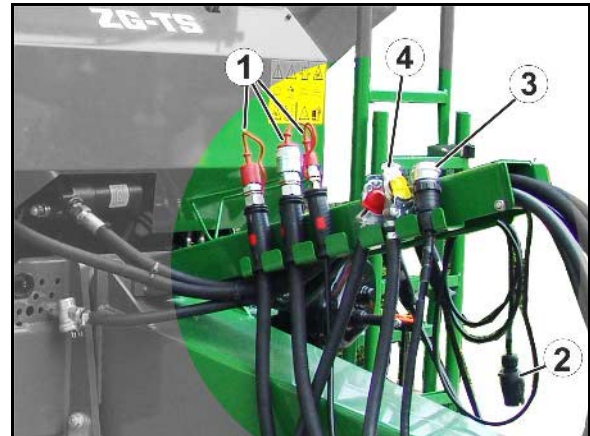


Fig. 9

4.4 Transportation equipment

Fig. 10:

- (1) 2 rear lights
- (2) 2 brake lights
- (3) 2 turn indicators (required if the indicators on the tractor are obscured)
- (4) 2 red reflectors (triangular)
- (5) 1 registration plate holder with lighting (required if the registration plate on the tractor is obscured)
- (6) Warning signs (square)

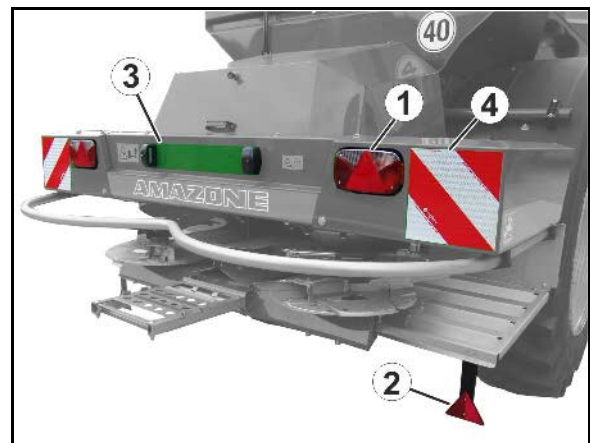


Fig. 10

Fig. 11/...

- (1) 2 x 3 reflectors, yellow (lateral view: distance of max. 3m)

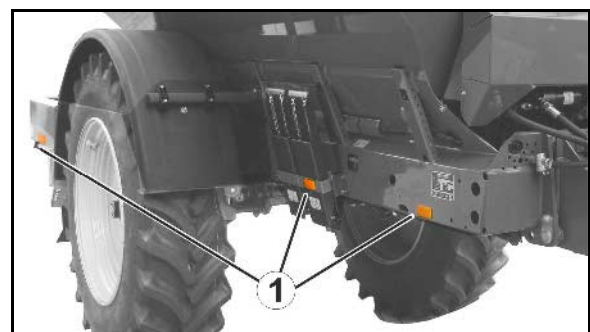


Fig. 11



Connect the lighting system via the connector to the 7-pin tractor socket.

4.5 Intended use

The machine

- Is designed exclusively for conventional agricultural applications and is suitable for spreading dry, granulated, prilled and crystalline fertiliser.
- Is coupled to a tractor depending on the drawbar via
 - Pin coupling
 - Hitch hook
 - Ball couplingand is operated by an additional person.

Sloping terrain can be navigated as follows:

- Along the contours

Direction of travel to the left	5 %
Direction of travel to the right	5 %
- 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 original AMAZONE 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.

4.6 Danger areas

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

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

Within the machine danger area, there are danger points with permanent or unexpected risks. Warning symbols 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 machine danger area:

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

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

Danger points exist:

- Between the tractor and the machine, in particular during coupling and uncoupling and when loading the seed hopper
- 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 machine
- Under raised, unsecured machines and machine parts
- While spreading, from fertiliser pellets in the area of the spread fan

4.7 Rating plate and CE mark

The following diagrams show the positions of the rating plate and the CE mark.

The rating plate shows:

- Vehicle- / machine ID no.:
- Type
- Basic weight kg
- Permissible support load kg
- Permissible rear axle load kg
- Permissible system pressure bar
- Permissible total weight kg
- Factory
- Model year
- Year of manufacture

AMAZONE			
Amazonen-Werke H. Dreyer GmbH & Co. KG Am Amazonenwerk 9-13 D-49205 Hasbergen			
Fahrz.-/Masch.-Ident-Nr.	<input type="text"/>		
Typ	<input type="text"/>		
Grundgewicht kg	<input type="text"/>	zul. Gesamtgewicht kg	<input type="text"/>
zul. Stützlast kg	<input type="text"/>	Werk	<input type="text"/>
zul. Achslast hinten kg	<input type="text"/>	Modelljahr	<input type="text"/>
zul. Systemdruck bar	<input type="text"/>		

CE	Baujahr année de fabrication year of construction Год изготовления	<input type="text"/>	
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Fig. 12

4.8 Technical data

			ZG-TS 5500		ZG-TS 8200	
Hopper size		[l]	5500		8200	
Length over-all:		[m]	6,60			
Width / height with tyres:						
Tyres	Impression depth	[mm]	Width	Height	Width	Height
380/90 R50	0		2549	2577	2549	2907
480/80 R46	0		2549	2572	2549	2902
520/70 R38	0		2516	2512	2516	2842
520/85 R42	0		2549	2574	2549	2904
520/85 R46	0		2549	2617	2549	2947
18.4/15 R38	0		2480	2530	2480	2860
Brake			Overrun brake with automatic reversing or Pneumatic brake		Pneumatic brake	
			Hydraulic brake system (for export only)			
Drive			Spreader disc speed: Standard speed 1000 rpm. Universal joint shaft speed Maximum permissible speed 710 rpm			



The vehicle widths are based on the following principles:

- Wheels with an impression depth of 0 mm.
- For negative impression depths, the vehicle width increases.
- Axle width 2000 mm.
- For 2950 mm axle width, the vehicle width is increased by 950 mm.

4.8.1 Weights basic machine and modules



The basic weight (empty weight) is calculated from the total individual weights of the modules.

		ZG-TS 5500	ZG-TS 8200
		[kg]	
Basic machine		1300	1400
Axle braked		300	
Pneumatic brake		51	
Drawbar		140	
Sieve screens		75	
Cover		80	
Wheel pair:	Tyre pressures [bar]		
• 380/90 R50, 10-hole	2,4	600	
• 480/80 R46, 10-hole	1,6	544	
• 520/70 R38, 10-hole	1,6	600	
• 520/85 R42, 10-hole LI155A8	1,6	774	
• 520/85 R42, 10-hole LI162A8	2,4	690	
• 520/85 R46, 10-hole LI158A8	1,6	730	
• 18.4/15 R38 LI167A8	2,4	600	

4.8.2 Permissible total weights and payload



The permissible total weight of the machine depends on the

- permitted drawbar load
- permitted axle load
- permitted load capacity per pair of tyres



The permissible total weight is the total of

- the permitted drawbar load and
- smaller value of
 - o permitted axle load
 - o permitted load capacity for each pair of wheels.

Please refer to the following tables for the values used for determining the permissible total weight.

Payload = permissible total weight - basic weight



DANGER

Exceeding the permitted payload is prohibited.

Risk of accident because of unstable driving conditions.

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

Permitted drawbar load

The permissible drawbar load is 2000 kg.

Permitted axle load

Travel speed in [km/h]	Axle load [kg]			
	Impression depth [mm]			
	+100 bis -1000	-125	-150	-200
50	9500	9000	8500	8000
40	10000	9500	9000	8500
25	11000	9500	9500	9000

Tyre load capacity (LI) per wheel

LI	146	148	150	152	154	155	158	160	162	165
kg	3000	3150	3350	3550	3750	3875	4250	4500	4750	5150

LI	167	169	171	173	175	177	179	181	183	185
kg	5450	5800	6150	6500	6900	7300	7750	8250	8750	9250



The maximum tyre load capacity is only achieved with correct tyre filling pressure, see table page 39.

4.9 Necessary tractor equipment

To use the machine, the tractor must fulfil the power requirements and must be equipped with the necessary electric, hydraulic and brake connections.

Tractor engine power

ZG-TS 5500	from 60 kW
ZG-TS 8200	from 75 kW

Electrical system

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

Hydraulic system

Maximum operating pressure:	• 210 bar
Tractor pump capacity:	• At least 15 l/min at 150 bar • Hydro: min. 85 l/min at 150 bar
Machine hydraulic fluid:	• HLP68 DIN 51524 The machine hydraulic fluid is suitable for the combined hydraulic/transmission fluid circuits of all standard makes of tractor.
Hydraulic control units:	Depending on equipment, see page 52

Universal joint shaft

Required speed:	• max. 750 rpm
Direction of rotation	• Clockwise, viewed from rear toward the tractor.

Brake system

Dual circuit service brake system:	• 1 hose coupling (red) for the supply line • 1 hose coupling (yellow) for the brake line
Single circuit service brake system:	• 1 service line hose coupling for the brake line
Hydraulic brake system:	• 1 hydraulic coupling, conforms to ISO 5676



The hydraulic brake system is prohibited in Germany and several other EU countries.

4.10 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

5.1 Function

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



Fig. 13

The AMAZONE ZG-TS bulk fertiliser spreader is a fertiliser spreader with hoppers from 5,200 l to 8,200 l in volume.

It is used to apply granulated fertiliser.

The product (Fig. 13/3) is transported out of the hopper (Fig. 13/2) by the belt conveyor (Fig. 13/1) by means of a flap controller (Fig. 13/4) and delivered into the fertiliser antechamber (Fig. 13/5). From there, the fertiliser is delivered to the spreading discs via the hopper tips (Fig. 13/6).

The working width is max. 48 m, depending on the spreading disc.

The ZG-TS can be equipped with different axles and brake systems:

- Brake axle with overrun brake up to 8,000 kg, up to 25 km/h
- Brake axle up to 10,000 kg
- Running axle for 8,000 kg, 25 km/h
- Solo dual-circuit pneumatic braking system
- Solo hydraulic brake system (for export only)

Equipment:

- Speed-dependent metering via electro-hydraulically controlled belt conveyor.
- Hydraulic drive for the spreading discs
- ISOBUS on-board computer
- Can be supplied with weigh cell (optional)

5.2 Air-pressure brake system

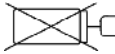


Keeping to the service interval is essential for proper functioning of the dual circuit service brake system.

Fig. 14/...

- (1) Braking force regulator
- (2) Hand lever for setting braking force manually
- (3) Setting position marking

The braking force is set in 3 stages, depending on the load status of the machine.

- Machine full → **1/1**
- Machine partially full → **1/2**
- Machine empty → **0**
- Brake released → 

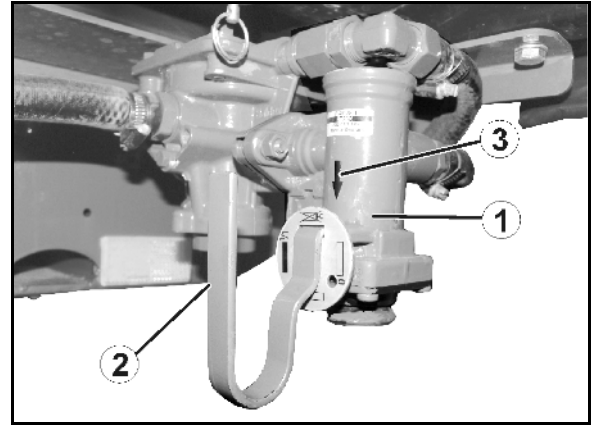


Fig. 14

Fig. 15/...

- (1) Air reservoir
- (2) Drainage valve for condensate.
- (3) Test connection

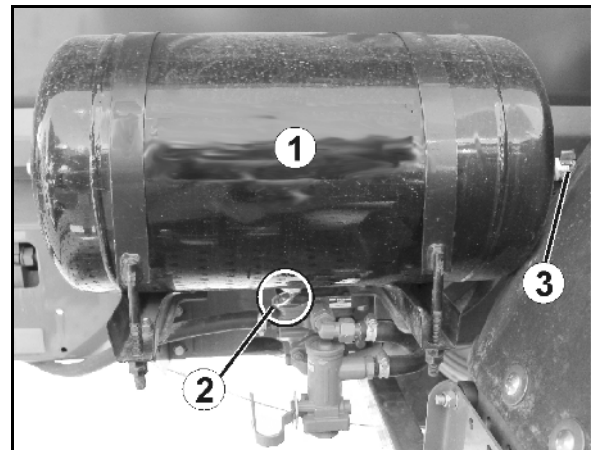


Fig. 15

- **Dual-circuit pneumatic braking system**

Fig. 16/...

- (1) Hose coupling on brake line (yellow)
- (2) Hose coupling on supply line (red)

Without illustration:

- **Single circuit pneumatic braking system**
Hose coupling (black)

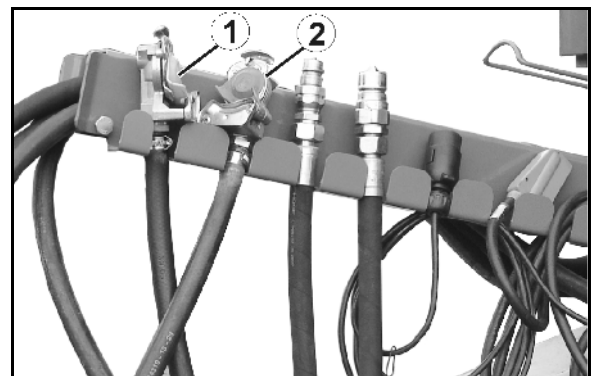


Fig. 16

5.2.1 Automatic load-dependent braking force regulator (ALB)

Only for machines with sprung suspension



WARNING

Risk of crushing, cutting, being caught or drawn in, or impact through incorrectly functioning brake system.

You must not change the adjustment measurement on the automatic load-dependent braking force regulator. The adjustment measurement must match the value given on the Haldex ALB plate.

5.2.2 Coupling the brake system



WARNING

Risk of crushing, cutting, being caught or drawn in, or impact through incorrectly functioning brake system.

- When coupling the brake and supply line, ensure that
 - The sealing rings on the hose couplings are clean
 - The sealing rings on the hose couplings seal properly
- Replace damaged sealing rings immediately
- Drain the air reservoir each day before the first use
- Only start up with the machine coupled if the pressure gauge on the tractor shows 5.0 bar



WARNING

Risk of crushing, cutting, being caught or drawn in, or impact through the accidentally rolling machine, if the service brake is released.

Dual-circuit pneumatic braking system:

- Always couple the hose coupling on the brake line (yellow) first and then the hose coupling on the supply line (red).
- The service brake on the machine is immediately released from the brake setting if the red hose coupling is coupled.

1. Open the cover on the hose coupling on the tractor.
2. Pneumatic braking system:
 - **Dual-circuit** pneumatic braking system:
 - 2.1 Fasten the brake line hose coupling (yellow) in the yellow coupling on the tractor, as specified.
 - 2.2 Fasten the supply line hose coupling (red) in the red coupling on the tractor, as specified.

→ When coupling the supply line (red), the supply pressure coming from the tractor automatically presses out the actuator button for the release valve on the trailer brake valve
 - **Single circuit** pneumatic braking system:
 - 2.1 Fasten the hose coupling (black) to the tractor, as specified.
3. Release the parking brake and/or remove the wheel chocks.

5.2.3 Uncoupling the brake system



WARNING

Risk of crushing, cutting, being caught or drawn in, or impact through the accidentally rolling machine, if the service brake is released.

Dual-circuit pneumatic braking system:

- Always uncouple the supply line hose coupling (red) first, and then the brake line hose coupling (yellow).
- The service brake of the machine only moves into the brake position when the red hose coupling has been uncoupled.
- Always keep to this order, otherwise the service brake system will be released and may set the unbraked machine in motion.



When the machine is uncoupled or pulled away from the trailer, air is vented from the trailer brake valve supply line. The trailer brake valve is automatically switched and operates the service braking system independently of the automatic, load-dependent braking force regulator.

1. Secure the machine against unintentionally rolling. To do this, use the parking brake and/or wheel chocks.
2. Pneumatic braking system
 - **Dual-circuit** pneumatic braking system:
 - 2.1 Release the supply line hose coupling (red).
 - 2.2 Release the brake line hose coupling (yellow).
 - **Single circuit** pneumatic braking system:
 - 2.1 Release the hose coupling (black).
3. Close the hose coupling covers on the tractor.

5.3 Hydraulic service brake system

To control the hydraulic service brake system, the tractor requires hydraulic braking equipment.

5.3.1 Coupling the hydraulic service brake system



Only couple clean hydraulic couplings.

1. Remove the protective caps.
2. Clean the hydraulic plug and hydraulic socket if necessary.
3. Insert the tractor's hydraulic plug into the machine's hydraulic socket.
4. Tighten the hydraulic screw union (if present) hand-tight.

5.3.2 Uncoupling the hydraulic service brake system

1. Loosen the hydraulic screw union (if present).
2. Protect the hydraulic plug and hydraulic socket against soiling using the dust protection caps.
3. Store the hydraulic hose line in the hose cabinet.

5.3.3 Emergency brake

In event of the machine being released from the tractor during travel, the emergency brake will brake the machine

Fig. 17/...

- (1) Pulling cable
- (2) Brake valve with pressure accumulator
- (3) Hand pump to relieve the brake
- (A) Brake released
- (B) Brake applied



DANGER

Before travel, set the brake to the application position.

For this purpose:

1. Secure the pulling cable to a fixed point on the tractor.
 2. Apply the tractor brake with the tractor engine running and hydraulic brake connected.
- Pressure accumulator of the emergency brake is being charged.

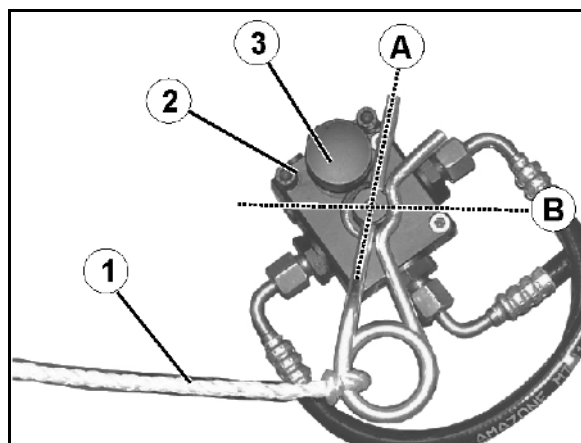


Fig. 17

**DANGER****Risk of accident through brake malfunction!**

After withdrawing the safety splint (e.g. when activating the emergency brake), it is essential to insert the safety splint into the brake valve from the same side (Fig. 17). Otherwise the brake will not function.

After reinserting the safety splint, carry out a brake test for the service brake and the emergency brake.



When the implement is uncoupled, the pressure accumulator presses hydraulic oil

- into the brake and brakes the implement,
- or
- into the hose line to the tractor and impedes the coupling of the brake line to the tractor.

In these cases, relieve pressure using the hand pump on the brake valve.

5.4 Parking brake

When the parking brake is on, it secures the uncoupled machine against unintentional rolling. The parking brake is operated by turning the crank, which in turn operates the spindle and bowden cable.

Fig. 18:

Crank; locked in idle position

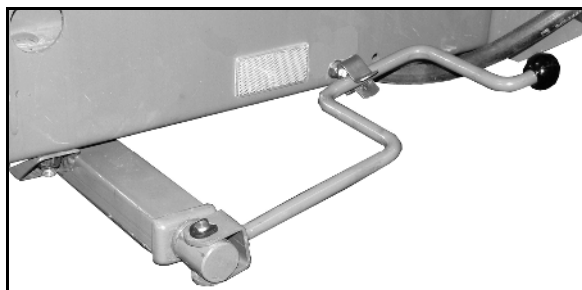


Fig. 18

Fig. 19:

Crank position for releasing / applying in the end area.

(the parking brake requires approx. 20 kg manual force to be applied).

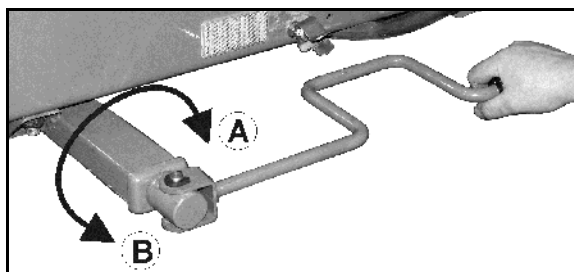


Fig. 19

Fig. 20:

Crank position for quick releasing / applying.

(A) Apply the tractor parking brake.

(B) Release parking brake.

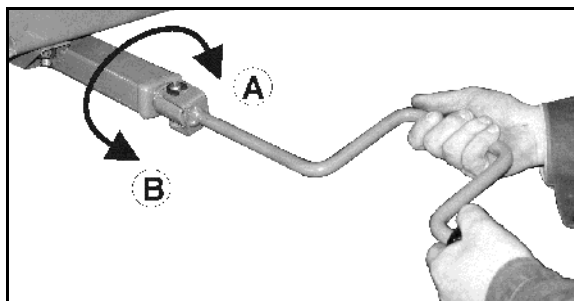


Fig. 20



- Correct the setting of the parking brake if the spindle's tension is no longer sufficient.
- Ensure that the bowden cable is not lying or rubbing against other vehicle parts.
- When the parking brake is off, the bowden cable must be slightly slack.

5.5 Overrun brake with automatic reversing

Fig. 21/...

- (1) Parking brake
 - o Off (A)
 - o On (B)
- (2) Pulling cable

When coupling the machine:

→ Fasten the parking brake pulling cable to a fixed point on the tractor.

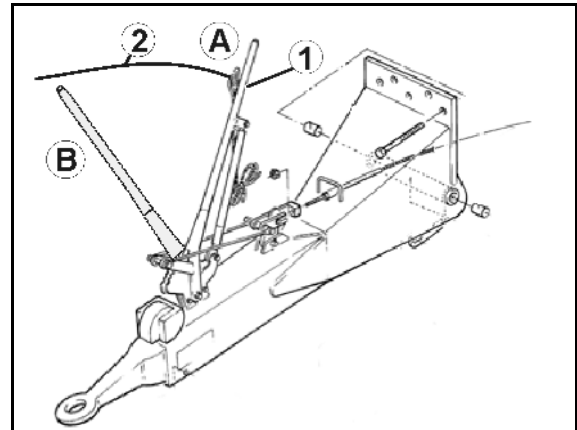


Fig. 21

5.6 Wheel chocks

Use wheel chocks to prevent the machine from rolling.

Fig. 22/...

- (1) Foldable wheel chocks
- (2) Wheel chock storage

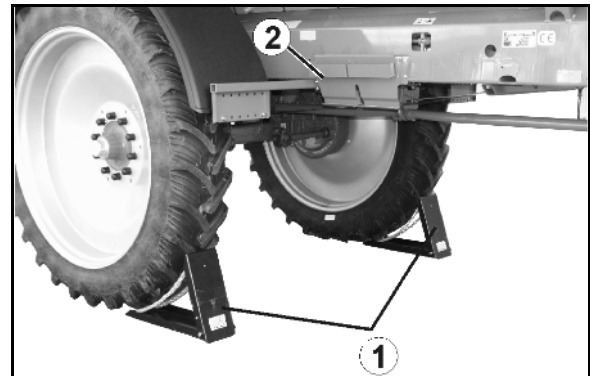


Fig. 22

Put the foldable wheel chocks into operating position by pressing the button and apply directly on the wheels before uncoupling.

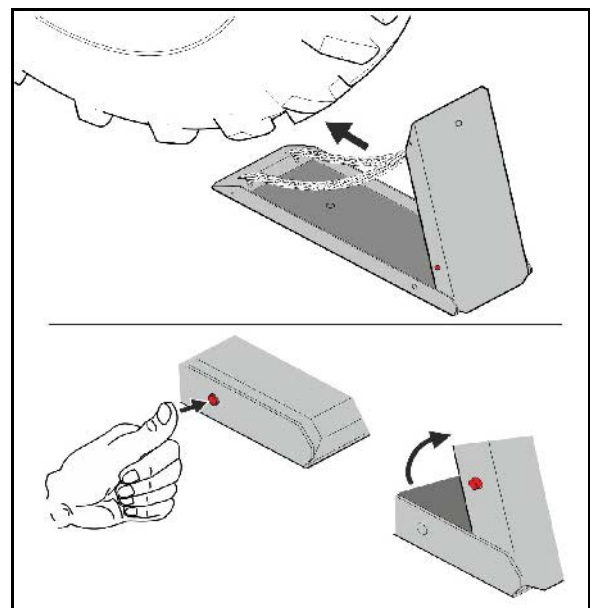


Fig. 23

5.7 Safety chain for implements without brake system

Implements without a brake system or with a single-line brake system must be equipped with a safety chain in compliance with local country regulations.

The safety chain must be correctly fixed to a suitable position on the tractor before transporting.

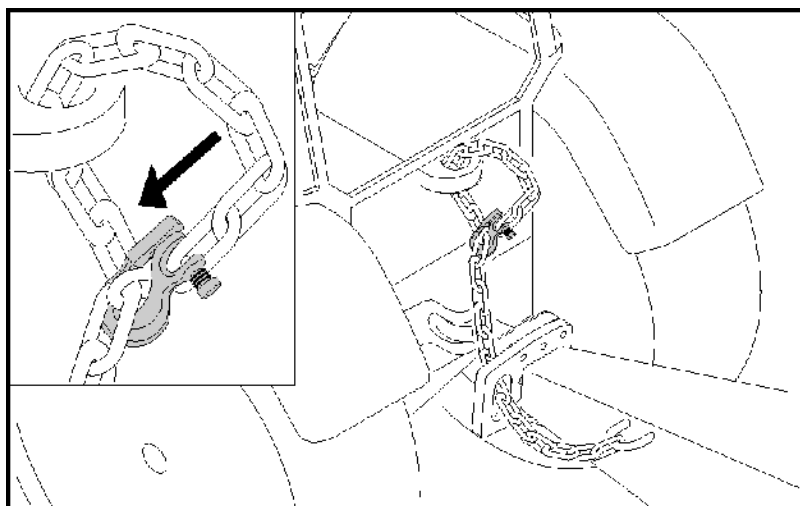


Fig. 24

5.8 Drawbars



If using automatic trailer couplings, check that the connection is secure after coupling. If using non-automatic trailer couplings, secure the coupling pin positively after inserting it.

The **ZG-TS** is equipped with a spring-suspended drawbar and is height-adjustable.

The bulk fertiliser spreader can be equipped with a:

- Straight drawbar (Fig. 25),
- Cranked hitch drawbar (Fig. 26),



- The yoke bar is fastened in the tractor pin coupling.
- The hitch drawbar is fastened in the tractor hitch hook.



If the **ZG-TS** is not standing with the frame angled level to the ground behind the tractor, after it has been coupled, the tractor coupling or towing eye on the spreader needs to be adjusted.

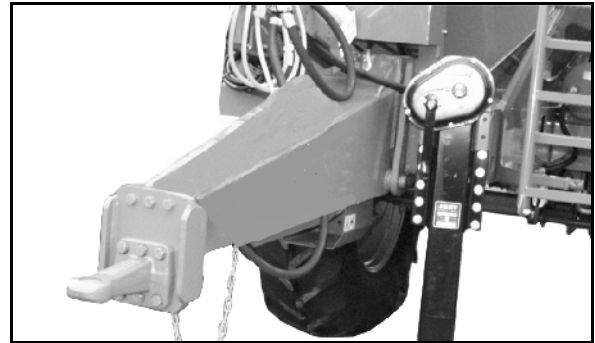


Fig. 25

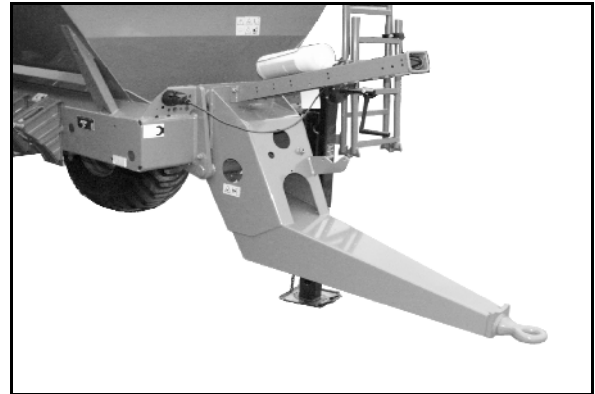
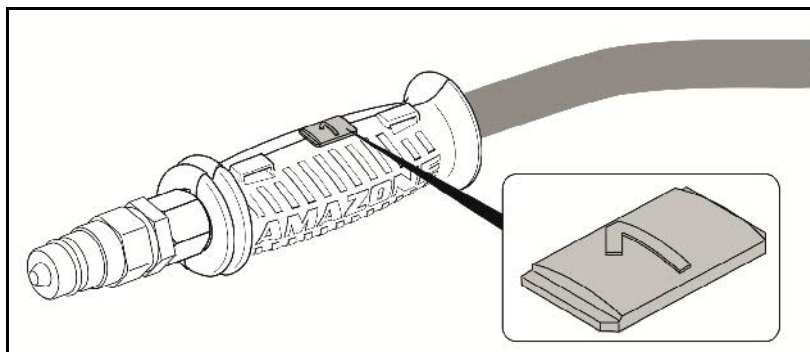


Fig. 26

5.9 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	
natural			open	Double acting	
			close		
Hydro:					
red		Permanent oil circulation		Single-acting	
red		Pressure-free return flow			
red		Load sensing control line (Where required / settings on the hydraulic block)			

Maximum permissible pressure in oil return: 8 bar

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



WARNING

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

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

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


WARNING
Danger of infection from escaping hydraulic fluid at high pressure!

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

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

5.9.1 Coupling the hydraulic hose lines

WARNING
Risk of contusions, cutting, catching, drawing in and knocks from faulty hydraulic functions when the hydraulic hose lines are connected incorrectly!

When coupling the hydraulic hose lines, observe the coloured markings on the hydraulic plugs.



- Check the compatibility of the hydraulic fluids before connecting the machine to the hydraulic system of the tractor.
Do not mix any mineral oils with biological oils.
- Observe the maximum approved hydraulic fluid pressure of 200 bars.
- Only couple clean hydraulic connectors.
- Plug the hydraulic connector(s) into the hydraulic sleeves, until the hydraulic connector(s) audibly lock.
- Check the coupling points of the hydraulic hose lines for a correct, tight seat.

1. Swivel the actuation lever on the spool valve on the tractor to float position (neutral position).
2. Clean the hydraulic connectors of the hydraulic hose lines before you couple the hydraulic hose lines to the tractor.
3. Connect the hydraulic hose line(s) to the tractor control unit(s).

5.9.2 Decoupling the hydraulic hose lines

1. Swivel the actuation lever on the tractor control unit on the tractor to float position (neutral position).
2. Unlock the hydraulic connectors from the hydraulic sockets.
3. Protect the hydraulic plug and hydraulic socket against soiling using the dust protection caps.
4. Place the hydraulic hose lines in the hose cabinet.

5.10 PTO shaft

The PTO shaft transmits power between the tractor and machine.

One-sided PTO shaft with wide angle (Fig. 27/1)

- Wide angle attached on the tractor side, standard
- Wide angle attached on implement side if TrailTron is used.

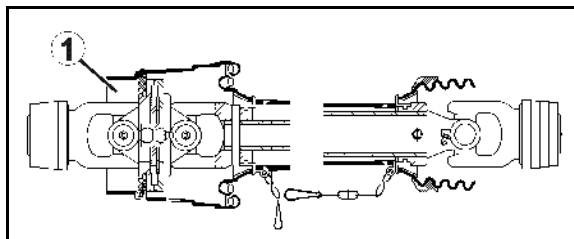


Fig. 27



WARNING

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

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



WARNING

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

Use only one of the listed permissible PTO shafts.



WARNING

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

- Never use the PTO shaft if the safety device is missing or damaged, or without correctly using the supporting chain.
- Before all use, check that
 - all PTO shaft protective devices are installed and fully functional.
 - the clearance around the PTO shaft is sufficient in all operating modes. Insufficient clearance will result in damage to the PTO shaft.
- 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 machine 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.
 - 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 machine!

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

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



- Use only the provided PTO shaft or one of the same type.
- Read and follow the operating manual provided for the PTO shaft. Correct use and maintenance of the PTO shaft prevents serious accidents.
- When coupling the PTO shaft
 - refer to the operating manual provided for the PTO shaft.
 - observe the permissible drive speed of the machine.
 - observe the correct installation length of the PTO shaft. Here, see the chapter "Adjusting the length of the PTO shaft to the tractor", page 83.
 - observe the correct installation position of the PTO shaft. The tractor symbol on the protective tube of the PTO shaft identifies the tractor-side connection of the PTO shaft.
- Always mount the overload or freewheel clutch on the machine if the PTO shaft has an overload or freewheel clutch.
- Before switching on the universal joint shaft, read and follow the safety precautions for universal joint shaft operation in the chapter entitled "Safety information for the user", page 30.



The unfavourable geometry on the tractor in association with large wheels on the ZG-TS can cause a collision between the universal joint shaft and the flange on the drawbar eye.

To remedy this, an offset drive unit is available, order no.: 935060.

5.10.1 Coupling the PTO shaft

**WARNING**

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

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

1. Drive the tractor up to the machine, leaving a clearance of approximately 25 cm between the tractor and the machine.
2. Secure the tractor against unintentional starting and rolling away, see the chapter "Securing the tractor against unintentional starting and rolling away", from page 85.
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 is 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 machine 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).

5.10.2 Uncoupling the PTO shaft

**WARNING**

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

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

**WARNING**

Danger from burns on hot components of the PTO shaft!

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



- 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 machine from the tractor. Also refer to the chapter "Uncoupling the machine", page 90.
2. Drive the tractor up to the machine, leaving a clearance of approximately 25 cm between the tractor and the machine.
3. Secure the tractor against unintentional starting and rolling away, see the chapter "Securing the tractor against unintentional starting and rolling away", from page 85.
4. Pull the latch of the PTO shaft off the universal joint shaft of the tractor. Observe the operating manual supplied with the PTO shaft when uncoupling the PTO shaft.
5. Place the PTO shaft in the holder provided.
6. Clean and lubricate the universal joint shaft if it is not going to be used for a longer period of time.

5.11 Setting chart

All common kinds of fertiliser on the market are spread in the **Amazon** spreading hall, and the setting data measured during this process are incorporated into the setting chart. The types of fertiliser listed in the setting chart were in perfect condition when the measurements were taken.



It is recommended to use the fertiliser database with the biggest fertiliser selection for all countries and the most current setting recommendations

- Through the FertiliserService application for Android and iOS mobile devices
- From the online FertiliserService

See www.amazone.de → Service → FertiliserService

Using the QR codes shown below, you can directly access the AMAZONE website to download the FertiliserService application.




iOS




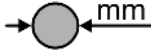
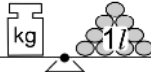
Android



Contact partners in the respective countries:

					
GB	0044 1302 755720	I	0039 (0) 39652 100	H	0036 52 475555
IRL	00353 (0) 1 8129726	DK	0045 74753112	HR	00385 32 352 352
F	0033 892680063	FIN	00358 10 768 3097	BG	00359 (0) 82 508000
B	0032 (0) 3 821 08 52	N	0047 63 94 06 57	GR	0030 22620 25915
NL	0031 316369111	S	0046 46 259200	AUS	0061 3 9369 1188
L	00352 23637200	EST	00372 50 62 246	NZ	0064 (0) 272467506
				J	0081 (0) 3 5604 7644


Identification of the fertiliser

	Name of the fertiliser
Representation of the fertiliser	<div data-bbox="662 353 813 403">  </div> <div data-bbox="906 353 1085 385"> Grain diameter </div> <div data-bbox="662 421 813 492">  </div> <div data-bbox="906 430 1053 461"> Bulk density </div> <div data-bbox="662 515 853 577"> Calibration factor </div> <div data-bbox="906 515 1417 577"> The calibration factor is used as a default value for fertiliser calibration. </div>



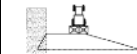
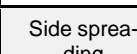

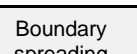

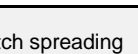




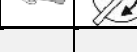

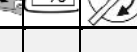






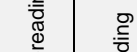
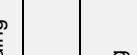
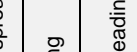








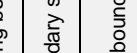
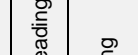
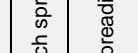




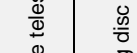
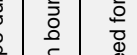


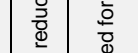



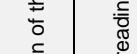

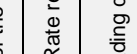
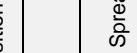
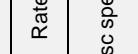
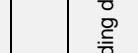



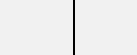
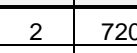
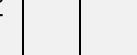
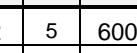

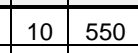



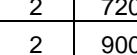
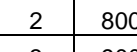
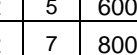
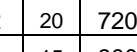
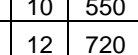
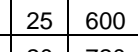



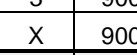
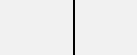
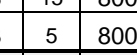
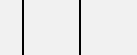
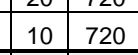





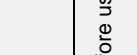

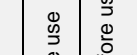
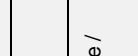
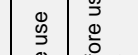




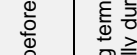

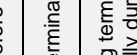
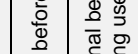
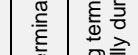





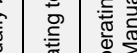
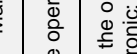
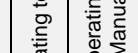
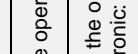



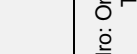

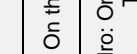
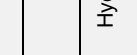
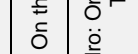
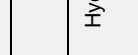



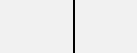
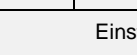
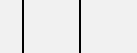
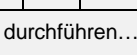
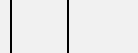
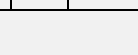












If you cannot definitively assign the fertiliser to a kind listed in the setting chart

- the AMAZONE Fertiliser Service will assist you over the telephone in assigning the fertilisers and setting recommendations.




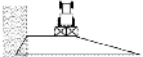


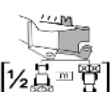
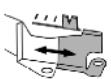
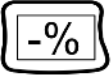
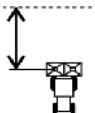
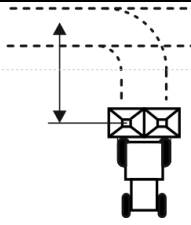

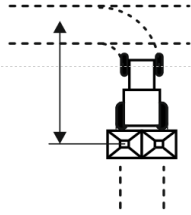

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- please consult the contact partner in your country

Settings

Manually before use		TS-2	Spreading vane unit												
On the operating terminal before use		24,0	16	600	B										
	On the operating terminal before use / Manually before use	27,0	16	600	B										
	Hydro: On the operating terminal before use / Tronic: Manually during use	30,0	16	800	B										
Manually before us		36,0	18	720	C										
	On the operating terminal before use / Tronic: Manually during use	40,0	25	800	C										
	Manually before use	48,0	36	800	D										
On the operating terminal before use		24,0	16	600	B										
	On the operating terminal before use / Tronic: Manually during use	27,0	16	600	B										
	Manually before use	30,0	16	800	B										
On the operating terminal before use		36,0	18	720	C										
	On the operating terminal before use / Tronic: Manually during use	40,0	25	800	C										
	Manually before use	48,0	36	800	D										
On the operating terminal before use		24,0	16	600	B										
	On the operating terminal before use / Tronic: Manually during use	27,0	16	600	B										
	Manually before use	30,0	16	800	B										
Einstellung durchführen...															

Symbols and units:

TS-2	Fit spreading vane units TS1, TS2 or TS3 onto the spreading disc for one working width spectrum each	
	Working width in m (metre)	
	Position of the inlet system as value in the adjustment scale or entry in the In-cab terminal	
	Spreader disc speed in rpm depending on the type of spreading	
	Side spreading	
	Boundary spreading	
	Ditch spreading	
	Select telescope A, B, C or D for boundary spreading for a half working width as boundary stand-off distance	
	Setting 1, 2 or 3 on the telescope for boundary spreading 0 - do not use the telescope for boundary spreading	
	Quantity reduction for boundary spreading / ditch spreading in % for entry in the control terminal	
X	Border spreading without switching on the boundary / ditch spreading vanes	
	Switch-on point (point at which the shutters open) when driving into the field given as distance in m. Measured from the centre of the spreading disc to the centre of the track in the headlands.	
	Switch-off point (point at which the shutters close) prior to driving into the headlands given as distance in m. Measured from the centre of the spreading disc to the centre of the track in the headlands.	
	Throwing direction (Argus)	

5.12 Spreading discs TS

Variants:

- Spreading vane unit TS1 for small working widths.
- Spreading vane unit TS2 for medium working widths.
- Spreading vane unit TS3 for large working widths.



The implement is equipped with the TS boundary spreading system.

The boundary spreading system is available in the versions AutoTS and ClickTS, and can be selected as desired for any spreading disc.

AutoTS is switched using the control terminal.

ClickTS is adjusted manually on the spreading disc.

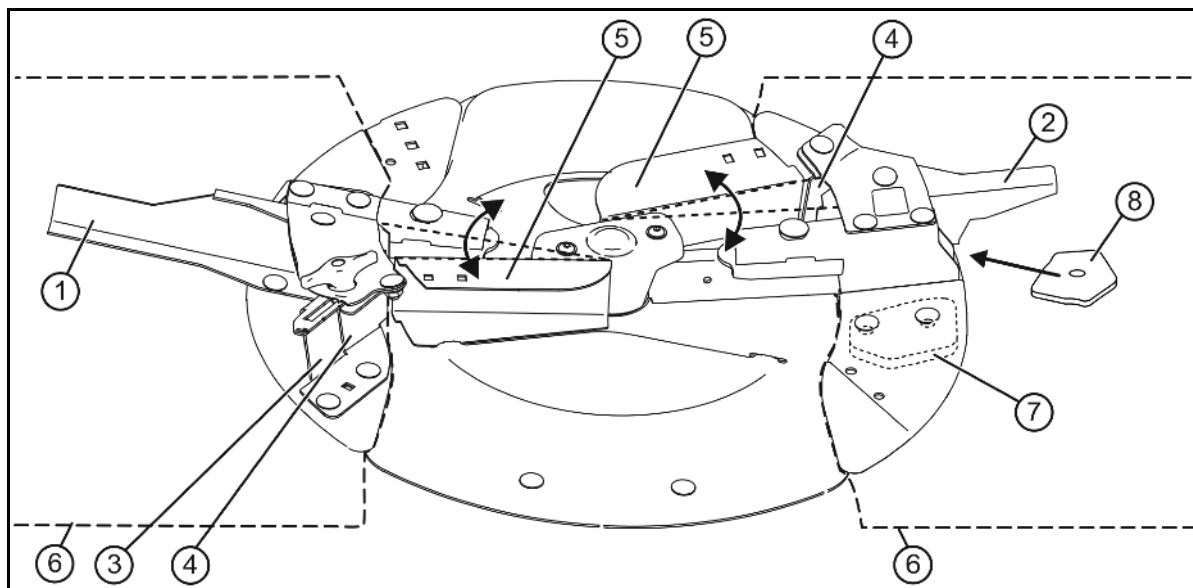


Fig. 28

- (1) Long spreading vane for normal spreading
- (2) Short spreading vane for normal spreading
- (3) Telescopic spreading vane for border spreading
- (4) Rigid spreading vane for border spreading
- (5) Swivel-mounted inner part of the spreading vane
- (6) Replaceable spreading vane unit for varying the spectrum of the working width
- (7) Standard balancing weight
- (8) Balancing weights for telescopic spreading vanes for boundary spreading D

- (1) Coloured marking of the spreading vane unit
- (2) Markings on the spreading vanes
- (3) Marking on the telescopic boundary spreading vane

Selection of the spreader units:

TS 1, TS 2, TS 3

Selection of the telescopic boundary spreading vane:

A, A+, B, C, D

Adjustment range according to the setting chart

- 1, 2, 3
- 0 - no telescope

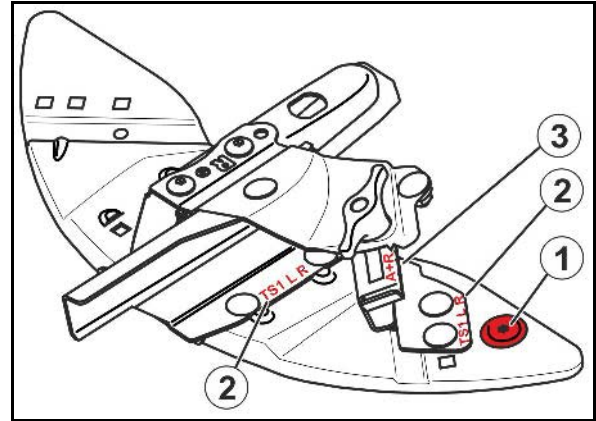


Fig. 29

Manual adjustment of the boundary spreading system with ClickTS on the spreading disc.

- (1) Hand lever
- (2) Slotted link guide
- (3) End position normal spreading (implement-side, outer) or boundary spreading (implement-side, inner)

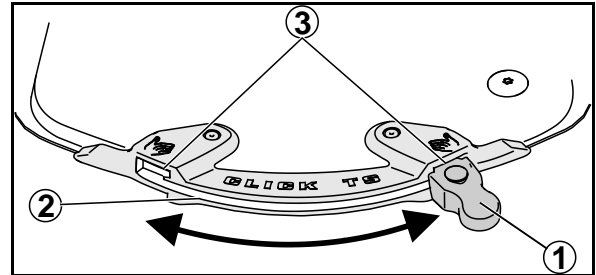


Fig. 30

5.13 Agitator

Agitators in the tips of the hopper (Fig. 31) ensure a uniform fertiliser flow to the spreading discs. The slowly rotating agitators convey the fertiliser uniformly to the respective outlet opening.

The drive is carried out electrically.



Fig. 31

5.14 Spread rate metering

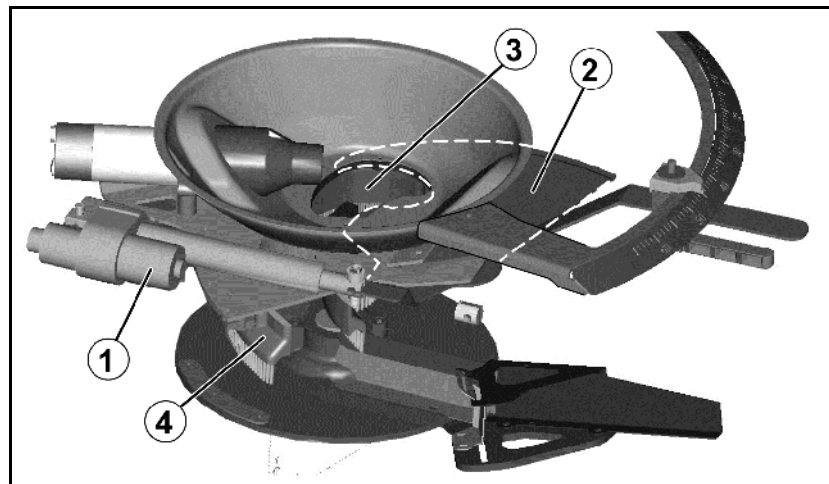


Fig. 32

- (1) Setting motor for metering
- (2) Metering shutter
- (3) Outlet opening
- (4) Brushing unit

The spread rate is set **electronically** via the control terminal.

In this case, dosing sliders operated by setting motors release a range of different diameters at the outlet openings.

The brushing unit ensures a clean delivery onto the spreading disc without fertiliser turbulence and dust.

When the metering shutter is completely shut it closes the outlet opening in the tank.



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.

5.15 Calibration kit (option)

Using the calibration kit, the operating terminal can determine the calibration factor of the fertilizer.

The calibration factor and the application rate set are used to calculate the necessary shutter position.

Refer to the software operating manual Implement control.

- (1) Calibration kit is mounted on the hopper at the rear on the left.
- (2) Hand lever
- (3) Sensor
- (4) Bucket to collect the fertilizer

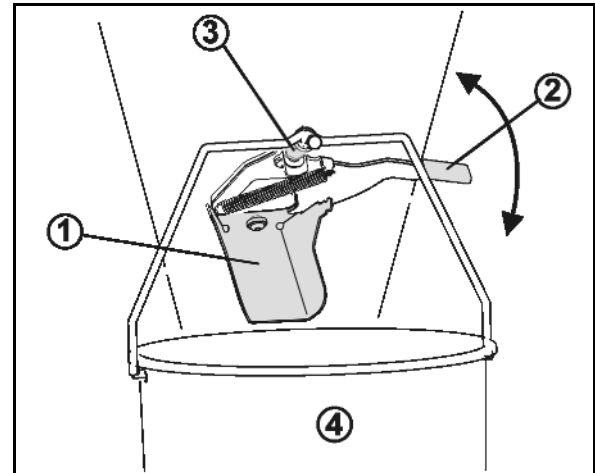


Fig. 33

5.16 Drop-point system

The drop-point system that drops the fertiliser onto the spreading disc is above the spreading discs.

The drop-point system can be attached so that it rotates under the tips of the tank.

The position of the drop point system influences the lateral distribution and must be adjusted as specified in the setting chart.

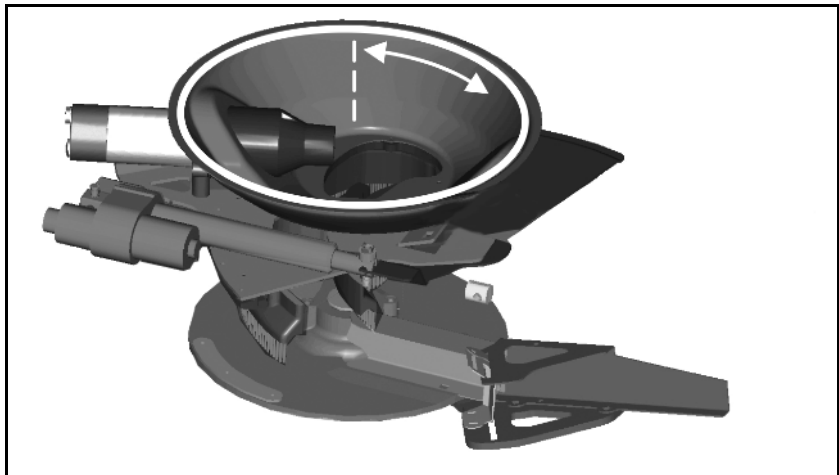


Fig. 34

Using the operating terminal, the feed system at both hopper tips can be electrically adjusted according to the setting chart.

The position of the feed system over the spreading disc depends on:

- the working width and
- the type of fertiliser.

5.17 In-cab terminal



It is absolutely imperative to pay attention to the operating manual for the In-cab terminal and the operating manual for the software for implement control!

An ISOBUS compatible operating terminal makes it easy to control, operate and monitor the machine.

The spread rate is set electronically.

5.18 Hydraulically driven conveyor belt

The spreading material from the hopper is fed on the conveyor belt via the fertiliser pre-chamber with shutter control to the spreaders.

Fig. 35/...

- (1) Conveyor belt
- (2) Shutter control

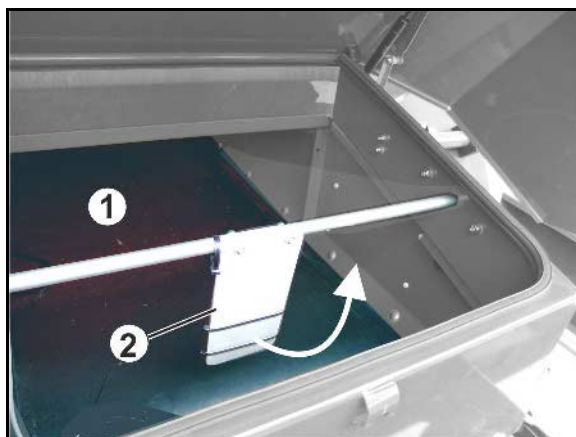


Fig. 35

The conveyor belt is driven hydraulically via a gearbox.

Fig. 36/...

- (1) Hydraulic motor
- (2) Gearbox

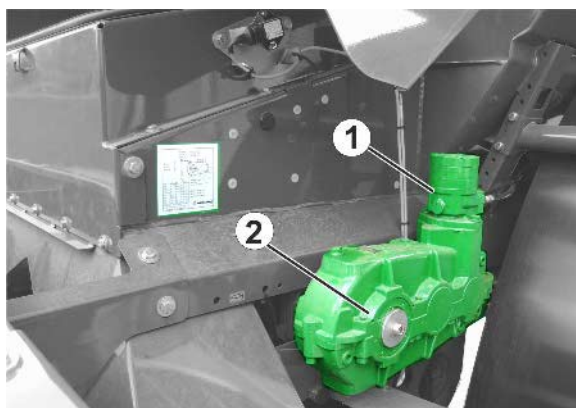


Fig. 36

5.19 Weighing technology

The machine can be equipped with a weighing device with 3 weigh cells (Fig. 37/1 and Fig. 37/2) to:

- o Determine tank capacity (fill level check)
- o Check the seed rate calibration value

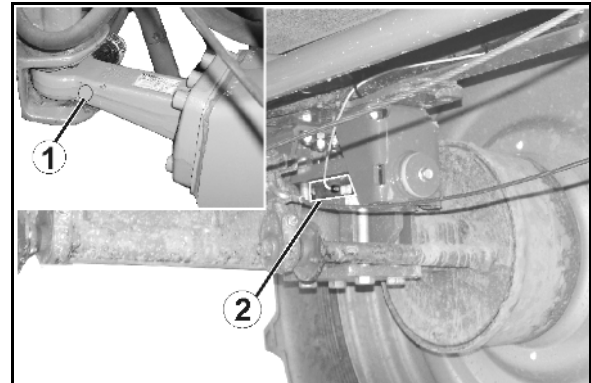


Fig. 37

5.20 Foldable ladder

The foldable ladder (Fig. 38/1) enables a user to comfortably ascend the hopper for cleaning purposes.



Warning

Keep the ladder folded in and locked when the vehicle is in motion (Fig. 38/2).

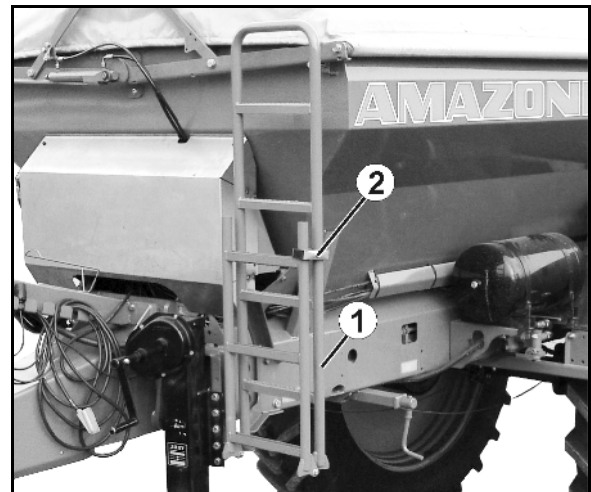


Fig. 38

5.21 Charging sieves

The foldable charging sieves (Fig. 39/1) cover the entire hopper and protect against foreign particles and fertiliser clods during filling.

The charging sieves can be trodden on in order to clean the inside of the hopper.



Fig. 39

5.22 Ascent with platform

Ascent via platform to the fertiliser antechamber with flap controller for cleaning and maintenance purposes.

- To climb up, pull out the ladder with platform and fold down the ladder (Fig. 40)
- If the ladder is no longer needed, swing it up (Fig. 41) and slide it forwards, along with the platform.



Fig. 40

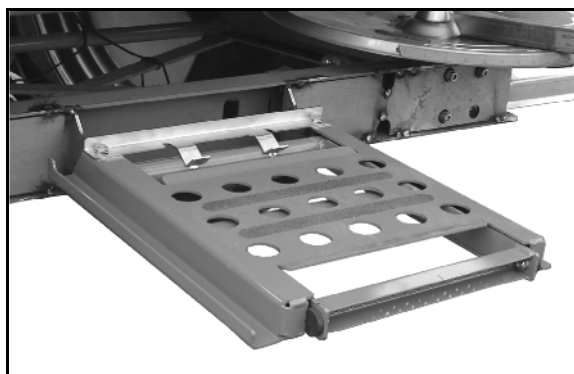
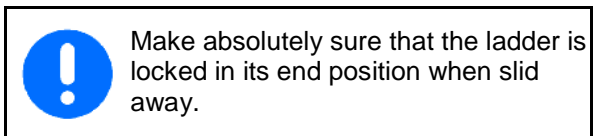


Fig. 41

5.23 Stand

Raising the stand after coupling

1. Wind up the stand (Fig. 42/1) to the limit stop using the hand crank (Fig. 42/2).
2. Pull the pins (Fig. 42/3) out of the stand.
3. Raise the stand.
4. Insert the pins in the lower hole (Fig. 42/4) and secure them.

Lowering the stand before coupling

1. Hold the inside of the stand steady and pull the pins (Fig. 42/3) out of the stand.
2. Lower the stand.
3. Insert the pins in the upper hole and secure them.
4. Wind down the stand (Fig. 42/1) to the limit stop using the hand crank (Fig. 42/2) until the load is relieved from the yoke bar.



The stand with crank has a fast and slow gear (Fig. 43).

- Pull out manual crank – fast gear for stand.
- Push in manual crank – slow gear for stand (high loads).



After operating the crank, swivel the hand lever upwards as in Fig. 44.

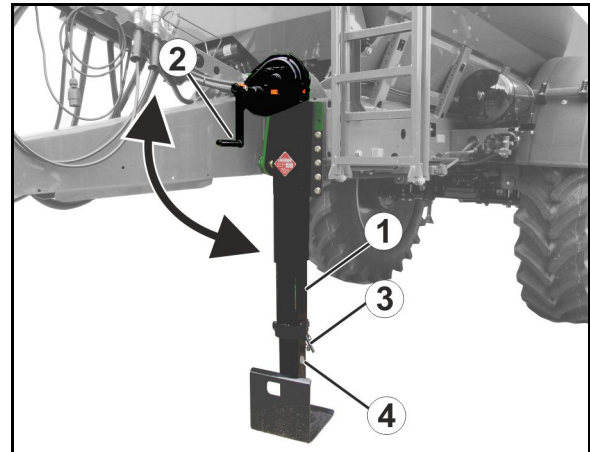


Fig. 42

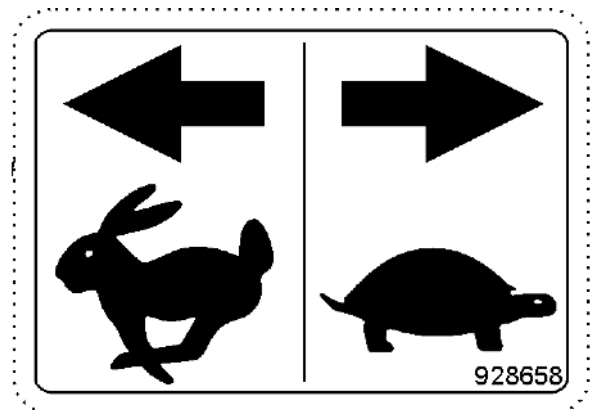


Fig. 43

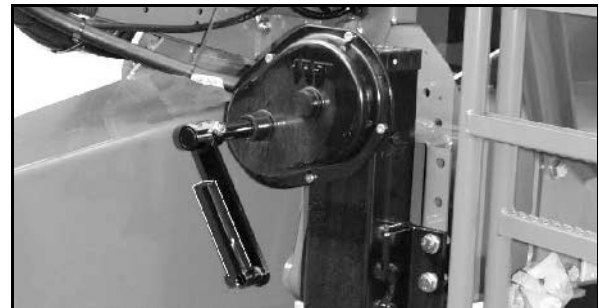


Fig. 44

5.24 Swivelable hopper cover (optional)

The swivelable hopper cover can be swivelled hydraulically or manually.



Fig. 45

5.25 Control block and machine computer

The valves of the hydraulic block are actuated via the in-cap terminal, thus ensuring all the hydraulic functions.

Depending on the equipment, the adjustable hydraulic throttles for the hydraulic swivelable hopper cover can be found on the hydraulic block.

The oil filter is equipped with a maintenance indicator and should be cleaned according to this.

Fig. 46/...(Illustration without cover plate)

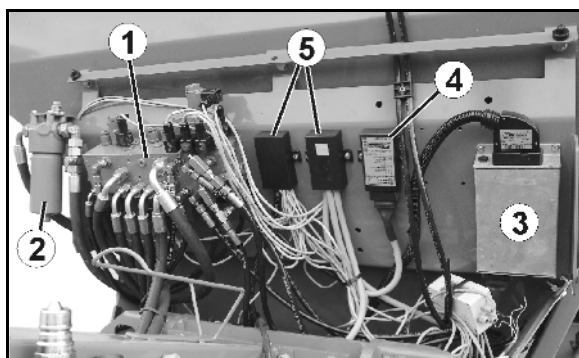


Fig. 46

- (1) Hydraulic block
- (2) Oil filter
- (3) Machine computer I
- (4) Machine computer II
- (5) Cable harness

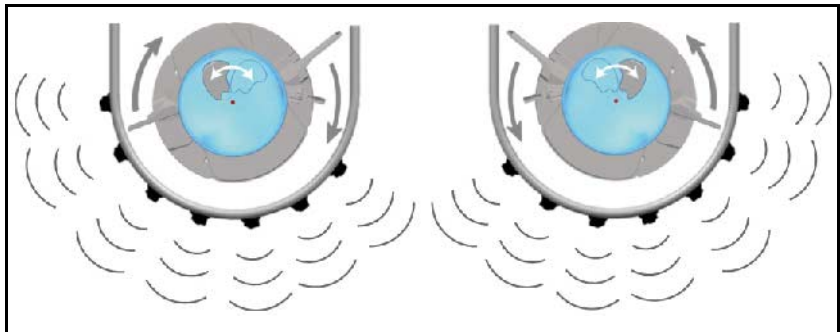
5.26 Argus Twin (optional)

Argus Twin constantly measures and regulates the throwing direction of the fertiliser spreader to optimise the lateral distribution.

The actual throwing direction is compared to the target values. If there are deviations, the position of the delivery system will be adjusted.

The target throwing direction is taken from the setting chart or determined using the mobile test rig.

The throwing direction is measured by 7 radar sensors respectively on each side of the spreader unit.



The throw direction depends on the fertiliser properties, working width, spreading vane unit and spreading disc speed.

Argus Twin compensates for irregularities in the fertiliser, fertiliser deposits on the spreading vanes, working on slopes, starting and braking processes.



Argus Twin and mobile test rig!

Check the throwing direction using the mobile test rig with the Argus Twin activated.

→ During the evaluation of the results from the mobile test rig, a corrected value is automatically saved for the throwing direction.

For unknown fertilisers, the correct throw direction can be determined with the mobile test rig. Use the throwing direction from a similar fertiliser as a basic setting.

5.26.1 WindControl (optional)

WindControl is a system developed by Prof. Dr. Karl Wild for constant and automatic compensation of wind effects on the spread pattern.

The wind effects are compensated by changing the spreading disc speed and the delivery system.

- Only in combination with ArgusTwin
- Only with hydraulic spreading disc drive
- Only for spreading vanes TS 2 and TS 3

Folding sensor

When switching on the spreading discs, the sensor is automatically folded into operating position.

When the spreading discs are switched off, the sensor is automatically folded into transport position.

- Condition: forward speed 0-3 km/h
- Folding time: approx. 20 seconds

Sensor in working position

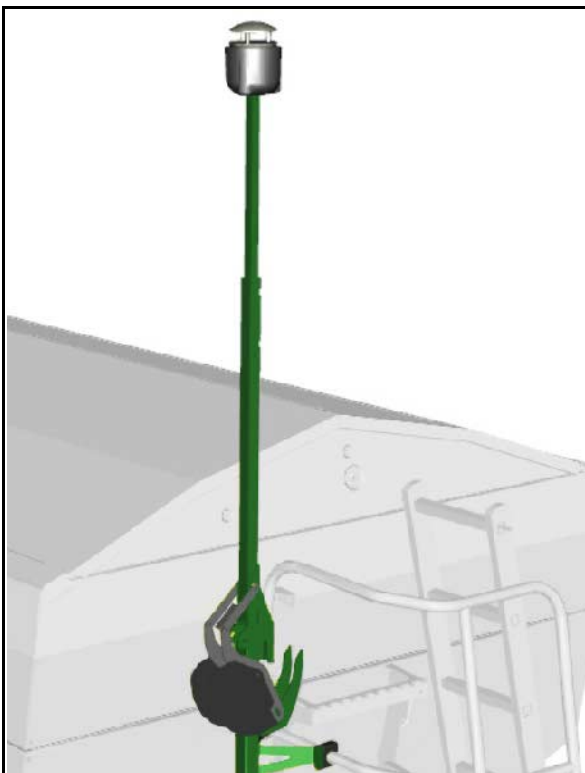


Fig. 47

Sensor in transport position

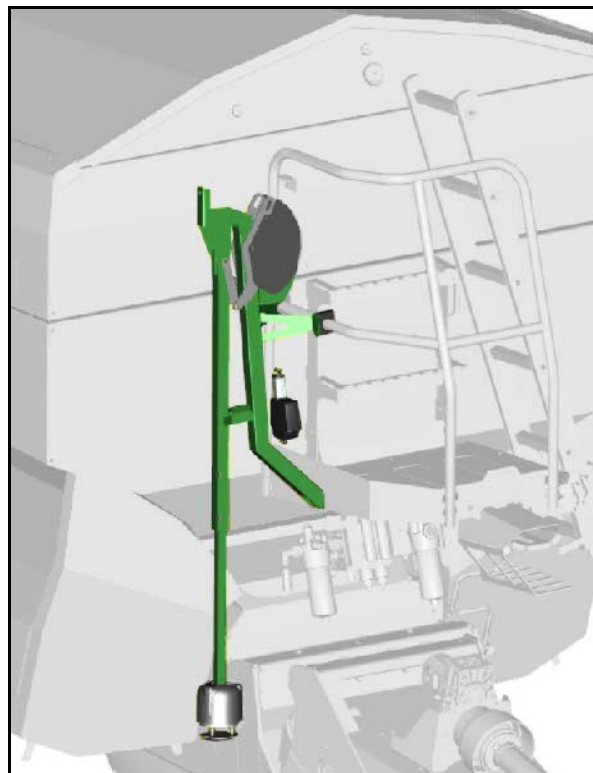


Fig. 48

Adjust play-free locking:
Check and adjust during maintenance



The sensor must be in working position 500 mm above the highest point of the machine and tractor.

The total height may not exceed 4 m.

5.26.2 EasyCheck

EasyCheck is the digital test rig to check the lateral distribution on the field.

EasyCheck consists of collection mats for fertiliser and the smartphone app to determine the fertiliser lateral distribution on the field.

The collection mats are placed at defined positions on the field and are strewn with fertiliser by driving back and forth.

Afterwards, the collection mats are photographed using the smartphone. The app checks the lateral distribution using the photos.

If necessary, changes to the settings are suggested.

Use the AMAZONE homepage to download the following:

- EasyCheck app
- EasyCheck operating manual

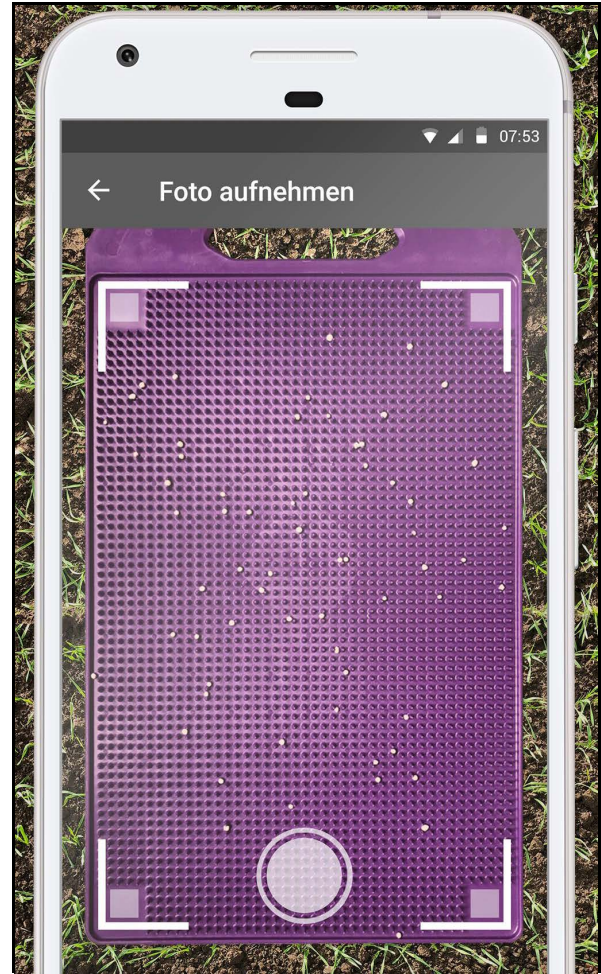


Fig. 49

5.26.3 Mobile test rig

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

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

The collection trays are placed at four defined positions on the field and are strewn with fertiliser by driving back and forth.

Afterwards, the collected fertiliser is filled into a measuring cup. The evaluation is based on the fill levels in the measuring cup.

The evaluation is performed using:

- The calculation model in the mobile test rig operating manual.
- The implement software on the control terminal
- The EasyCheck app (AMAZONE homepage)

Refer to the operating manual for the mobile test rig

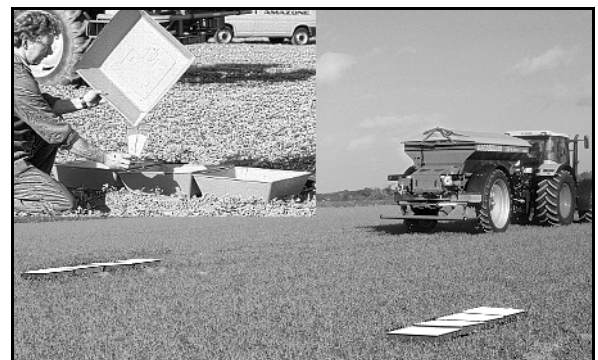


Fig. 50

6 Commissioning

This section contains information

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



- Before operating the machine for the first time the operator must have read and understood the operating manual.
- Comply with the chapter "Safety information for the operator", from Page 23 when
 - connecting and disconnecting the machine
 - transporting the machine
 - using the machine
- Only couple and transport the machine to/with a tractor which is suitable for the task.
- The tractor and machine must meet the national road traffic regulations.
- The operator and the operator shall be responsible for compliance with the statutory road traffic regulations.



WARNING

Risk of contusions, cutting, catching, drawing in and knocks in the area of hydraulically or electrically actuated components.

Do not 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 or
- are automatically locked or
- require a floating position or pressed position to function

6.1 Checking the suitability of the tractor



WARNING

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

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

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

- The approved total weight
- The approved axle loads
- The approved drawbar load at the tractor coupling point
- The load capacity of the installed tyres
- The approved trailer load must be sufficient

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 empty weight of the tractor.

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

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



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

- Tractor empty weight,
- ballast weight and
- total weight of the connected machine or drawbar load of the connected machine



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

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

6.1.1.1 Data required for the calculation

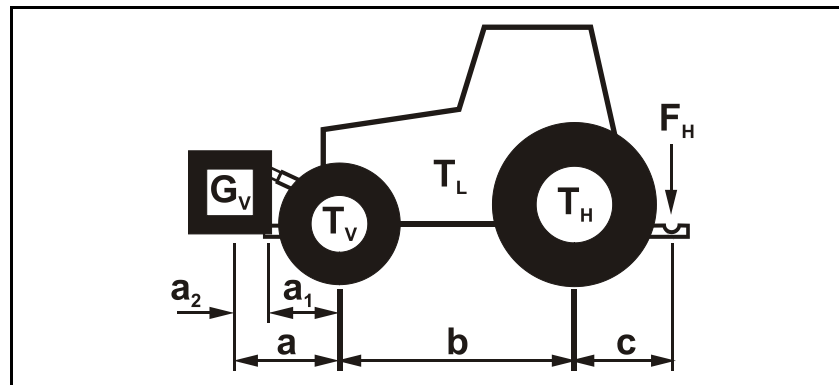


Fig. 51

T_L	[kg]	Tractor empty weight	See tractor operating manual or vehicle documentation
T_V	[kg]	Front axle load of the empty tractor	
T_H	[kg]	Rear axle load of the empty tractor	
G_V	[kg]	Front weight (if available)	See front weight in technical data, or weigh
F_H	[kg]	Maximum drawbar load	See technical data of machine
a	[m]	Distance between the centre of gravity of the front machine mounting or the front weight and the centre of the front axle (total $a_1 + a_2$)	See technical data of tractor and front machine mounting or front weight or measurement
a_1	[m]	Distance from the centre of the front axle to the centre of the lower link connection	See tractor operating manual or measurement
a_2	[m]	Distance between the centre of the lower link connection point and the centre of gravity of the front machine mount or front weight (centre of gravity distance)	See technical data of front machine mounting or front weight or measurement
b	[m]	Tractor wheel base	See tractor operating manual or vehicle documents or measurement
c	[m]	Distance between the centre of the rear axle and the centre of the lower link connection	See tractor operating manual or vehicle documents or measurement

6.1.1.2 Calculation of the required minimum ballasting at the front $G_{V \min}$ of the tractor to assure the steering functions properly

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

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

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

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

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

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

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

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

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

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

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

6.1.1.6 Tyre load 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).

Commissioning

6.1.1.7 Table

	Actual value according to calculation	Approved value according to tractor instruction manual	Double approved load capacity (two tyres)
Minimum ballast front / rear	<div style="border: 1px solid black; padding: 10px; display: inline-block;">/ kg</div>	--	--
Total weight	<div style="border: 1px solid black; padding: 10px; display: inline-block;">kg</div>	<div style="border: 1px solid black; padding: 10px; display: inline-block;">kg</div>	--
Front axle load	<div style="border: 1px solid black; padding: 10px; display: inline-block;">kg</div>	<div style="border: 1px solid black; padding: 10px; display: inline-block;">kg</div>	<div style="border: 1px solid black; padding: 10px; display: inline-block;">kg</div>
Rear axle load	<div style="border: 1px solid black; padding: 10px; display: inline-block;">kg</div>	<div style="border: 1px solid black; padding: 10px; display: inline-block;">kg</div>	<div style="border: 1px solid black; padding: 10px; display: inline-block;">kg</div>



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



WARNING

Risk of crushing, cutting, being caught or drawn in, or impact through insufficient stability and insufficient tractor steering capability and brake power.

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

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



- You must use a front weight which is equal to at least the required minimum front ballast ($G_{V \min}$).

6.1.2 Requirements for tractor operation with attached machines



WARNING

Risk of breakage of components during operation through unapproved combinations of connecting equipment.

- Ensure:
 - that the connection fitting on the tractor possesses a permissible drawbar load sufficient for the actual drawbar load.
 - that the axle loads and weights of the tractor altered by the drawbar load are within the approved limits. If necessary, weigh them.
 - that the tractor's actual static rear axle load does not exceed the permissible rear axle load.
 - that the permissible total weight of the tractor is observed
 - that the approved load capacities of the tractor tyres are not exceeded

6.1.2.1 Combination options of coupling devices

The table shows the permitted combination options of coupling devices for the tractor and implement.

Coupling device		
Tractor	AMAZONE implement	
Upper hitch		
Pin coupling, form A, B, C A not automatically B automatic smooth pin C automatic curved pin (ISO 6489-2)	Drawbar eye	Socket \varnothing 40 mm (ISO 5692-2)
	Drawbar eye	\varnothing 40 mm (ISO 8755)
	Drawbar eye	\varnothing 50 mm, only compatible with form A (ISO 1102)
Upper / lower hitch		
Ball head coupling \varnothing 80 mm (ISO 24347)	Ball coupling	\varnothing 80 mm (ISO 24347)
Lower hitch		
Towing hooks / hitch hooks (ISO 6489-19)	Drawbar eye	Centre bore \varnothing 50 mm Eyelet \varnothing 30 mm (ISO 5692-1)
	Swivel drawbar eye	compatible only with form Y, hole \varnothing 50 mm, (ISO 5692-3)
	Drawbar eye	Centre bore \varnothing 50 mm Eyelet \varnothing 30 - 41 mm (ISO 20019)
Drawbar - Category 2 (ISO 6489-3)	Drawbar eye	Centre bore \varnothing 50 mm Eyelet \varnothing 30 mm (ISO 5692-1)
		Socket \varnothing 40 mm (ISO 5692-2)
		\varnothing 40 mm (ISO 8755)
Drawbar (ISO 6489-3)	Drawbar eye	\varnothing 50 mm (ISO 1102)
		(ISO 21244)
Drawbar / Piton-fix (ISO 6489-4)	Drawbar eye	Centre bore \varnothing 50 mm Eyelet \varnothing 30 mm (ISO 5692-1)
	Swivel drawbar eye	compatible only with form Y, hole \varnothing 50 mm (ISO 5692-3)
Yoke that cannot be rotated (ISO 6489-5)	Swivel drawbar eye	(ISO 5692-3)
Lower link hitch (ISO 730)	Lower link traverse (ISO 730)	

6.1.2.2 Compare the permissible D_C value with actual D_C value



WARNING

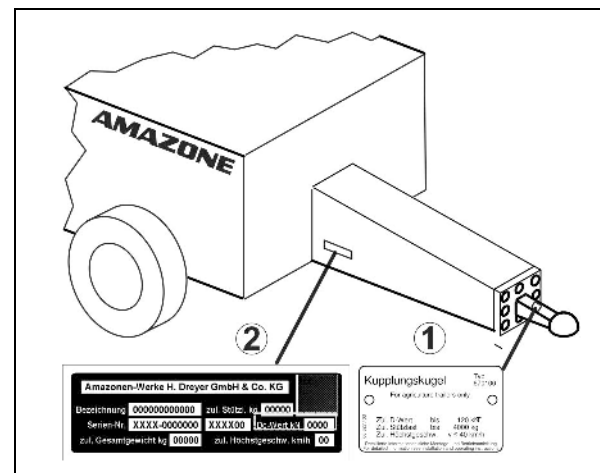
Danger from breaking the coupling devices between the tractor and the implement when the tractor is not used for its intended purpose!

1. Calculate the actual D_C value of your combination, comprising tractor and implement.
2. Compare the actual D_C value with the following permissible D_C values:
 - Coupling device of the implement
 - Drawbar of the implement
 - Coupling device of the tractor

The actual D_C value calculated for the combination must be less than or equal (\leq) to the D_C values specified.

The permissible D_C values of the implement can be found on the rating plate of the coupling device (1) and the drawbar (2).

The permissible D_C value of the tractor coupling device can be found directly on the coupling device / in the operating manual of your tractor.



actually calculated
 D_C value for the combination

	kN
--	----

specified D_C value

Coupling device on the tractor	kN
Coupling device of the implement	kN
Drawbar of the implement	kN

Calculate the actual D_C value for the combination to be coupled

The actual D_C value of a combination to be coupled is calculated as follows:

$$D_C = g \times \frac{T \times C}{T + C}$$

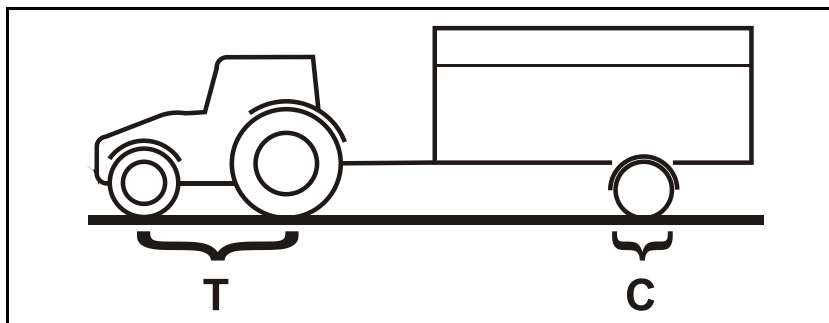


Fig. 52

T: permissible total weight of your tractor in [t] (See tractor operating manual or vehicle documentation)

C: axle load of the implement [t] loaded with the permissible mass without drawbar load (working load).

g: Gravity (9.81 m/s²)

6.1.3 Machines without their own brake system



WARNING

Risk of crushing, cutting, being caught or drawn in, or impact through the brake power of the tractor being inadequate.

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

If the machine does not possess its own brake system:

- the actual tractor weight must be greater than or equal to (\geq) the actual weight of the connected machine
In many countries, other regulations apply. In Russia, for example, the weight of the tractor must be double that of the attached machine.
- the maximum operational speed is 25 km/h

6.2 Adjusting the length of the PTO shaft to the tractor



WARNING

Danger from

- **damaged and/or destroyed, flying parts for the operator / third party if the PTO shaft is compressed or pulls apart while the machine coupled to the tractor is being raised/lowered, because the length of the PTO shaft has not been adjusted properly.**
- **being caught and drawn in if the PTO shaft is installed incorrectly or if unauthorised design changes are made.**

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

Always observe the operating manual supplied with the PTO shaft when adjusting the PTO shaft.



This adjustment of the PTO shaft applies only for the current tractor type. You may need to readjust the PTO shaft if you couple the machine to another tractor.



WARNING

Risk 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 from the manufacturer.

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

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



WARNING

Risk of crushing between the rear of the tractor and the machine when raising and lowering the machine to determine the shortest and longest operating position of the PTO shaft.

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

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



WARNING

Risk of crushing from unintentional:

- **rolling of the tractor and the connected machine.**
- **lowering of the raised machine.**

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



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

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

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



WARNING

Risk of contusions, cutting, catching, drawing in and knocks when making interventions in the machine through

- **Unintentional falling of the unsecured machine raised using the tractor's three-point linkage.**
- **Unintentional falling of raised, unsecured machine parts.**
- **Unintentional start-up and rolling of the tractor-machine combination.**
- Secure the tractor and the machine against unintentional start-up and rolling before any intervention in the machine.
- It is forbidden to make any intervention in the machine, such as installation, adjustment, troubleshooting, cleaning, maintenance and repairs
 - When the machine is running
 - For as long as the tractor engine is running with a connected turbine 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 the tractor and machine are not secured against unintentional rolling using their parking brakes and/or wheel chocks.
 - When moving parts are not blocked against unintentional movement.

When carrying out such work, there is a high risk of contact with unsecured components.

1. Lower the raised, unsecured machine / raised, unsecured parts of the machine.
- This is how to prevent unintentional falling:
2. Shut down the tractor engine.
 3. Remove the ignition key.
 4. Apply the tractor's parking brake.
 5. Secure the machine against unintentional rolling (only attached machine)
 - On flat ground using the parking brake (if available) or wheel chocks.
 - On uneven ground or slopes using the parking brake and wheel chock.

6.4 Fitting wheels

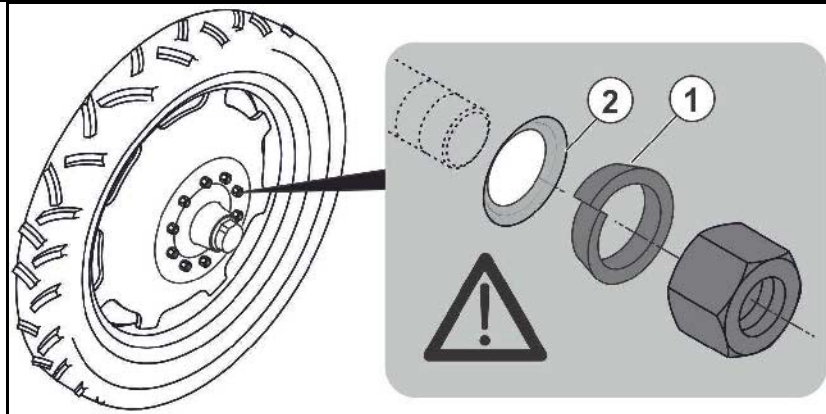


If the machine is fitted with inflatable spare tyres, running wheels must be fitted before putting into operation.



To assemble the wheels, use:

- (1) conical rings in front of the wheel nuts.
- (2) only rims with a fitting countersink for the conical ring.



WARNING

- Only one permitted set of tyres may be used, as specified in the technical data (see page 38).
- Wheel rims that are suitable for the tyres used must have a rim that has been fully welded all the way round.

1. Lift machine slightly using lifting crane.



DANGER

Use the attachment points marked for lifting belts.

See also "Loading" section, page 32.

2. Loosen wheel nuts on the inflatable spare tyres.
3. Remove inflatable spare tyres.



CAUTION

Take care when removing the inflatable spare tyres and putting the running wheels in place.

4. Place the running wheels on threaded bolts.
5. Tighten wheel nuts.



Required tightening torque for wheel nuts: 510 Nm.

6. Lower machine and remove lifting belts.
7. After 10 hours of operation, tighten the wheel nuts.

6.5 Initial operation of service brake system



Perform a brake test while the machine is empty, and again when it is loaded to test the braking behaviour of the tractor with coupled machine.

We recommend that you have a specialist workshop balance the brakes on the tractor and the machine in order to attain optimum braking and minimum wear to brake pads (see "Maintenance" section, page 132).

6.6 Adjusting the height of the machine drawbar

1. Uncouple the spreader from the tractor (Seite 91) and park it using the support.
2. Support the drawbar on a stable trestle (Fig. 50/1) and unscrew both securing screws (Fig. 50/2).
3. The spacer discs (Fig. 50/3) can be turned evenly to adjust the drawbar. The buffers (Fig. 50/4) must not be removed. They absorb any impact transferred from the tractor to the spreader.
4. Screw the drawbar tight (tightening torque 162 Nm).

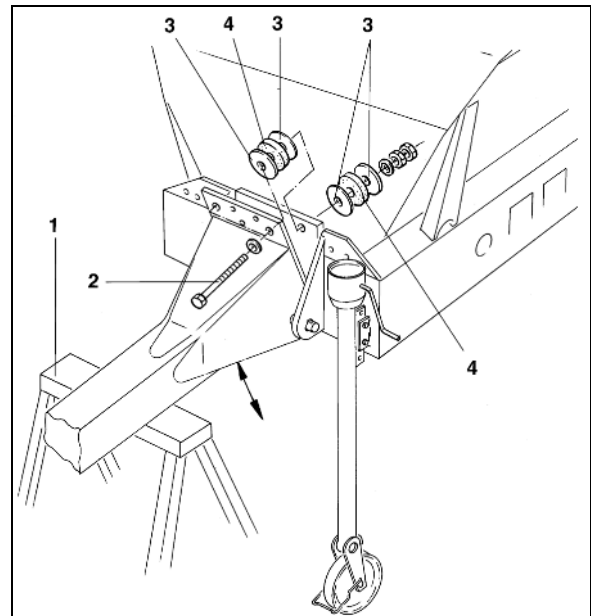


Fig. 53

6.7 Adjusting the hydraulic system with the system setting screw



The hydraulic block is located at the front right on the implement behind the cover plate.



- Be sure to match the hydraulic systems of the tractor and the implement.
- The implement hydraulic system is adjusted using the system setting screw on the hydraulic block of the implement.
- Elevated hydraulic oil temperatures are the result of incorrect adjustment of the system setting screw, caused by persistent strain on the pressure relief valve of the tractor hydraulic system.
- Adjustments may only be made in a pressureless state!
- If there are hydraulic malfunctions between the tractor and the implement during start-up, please contact your service partner.

- (1) System setting screw can be adjusted in position A and B
- (2) LS connection for the load sensing control line

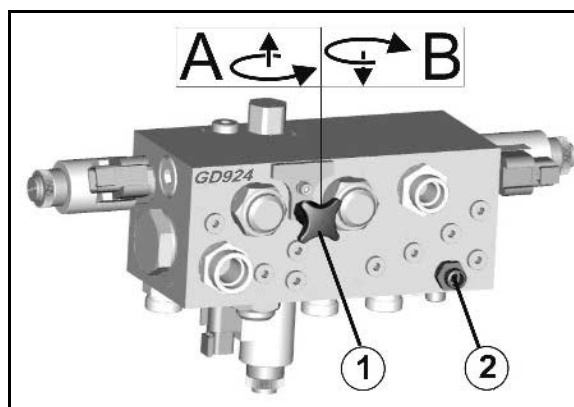


Fig. 54

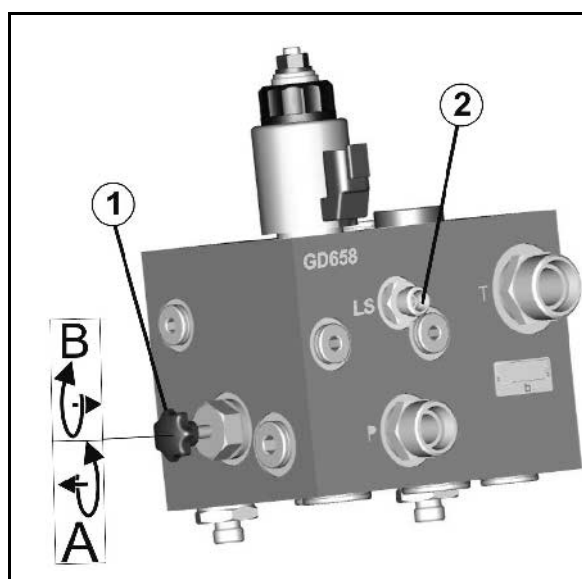


Fig. 55

Implement-side connections in compliance with ISO15657:

- (1) P – feed line, pressure line, plug standard width 20
- (2) LS – control line, plug standard width 10
- (3) T - return line, socket standard width 20

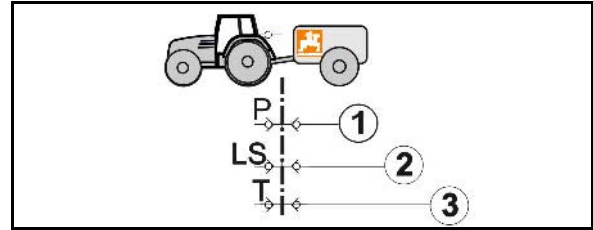


Fig. 56

- (1) Open-Center hydraulic system with constant flow pump (gear pump) or setting pump.

→ Put the system setting screw in position A.



Setting pump: Set the maximum required oil quantity on the tractor control unit. If the oil quantity is insufficient, correct functioning of the implement cannot be ensured.

- (2) Load-Sensing hydraulic system (pressure- and flow-regulated setting pump) with direct load sensing pump connection and LS setting pump.

→ Put the system setting screw in position B.

- (3) Load-Sensing hydraulic system with constant flow pump (gear pump).

→ Put the system setting screw in position B.

- (4) Closed-Center hydraulic system with pressure-regulated setting pump.

→ Put the system setting screw in position B.



Risk of overheating of the hydraulic system: the Closed-Center hydraulic system is less suitable for the operation of hydraulic motors.

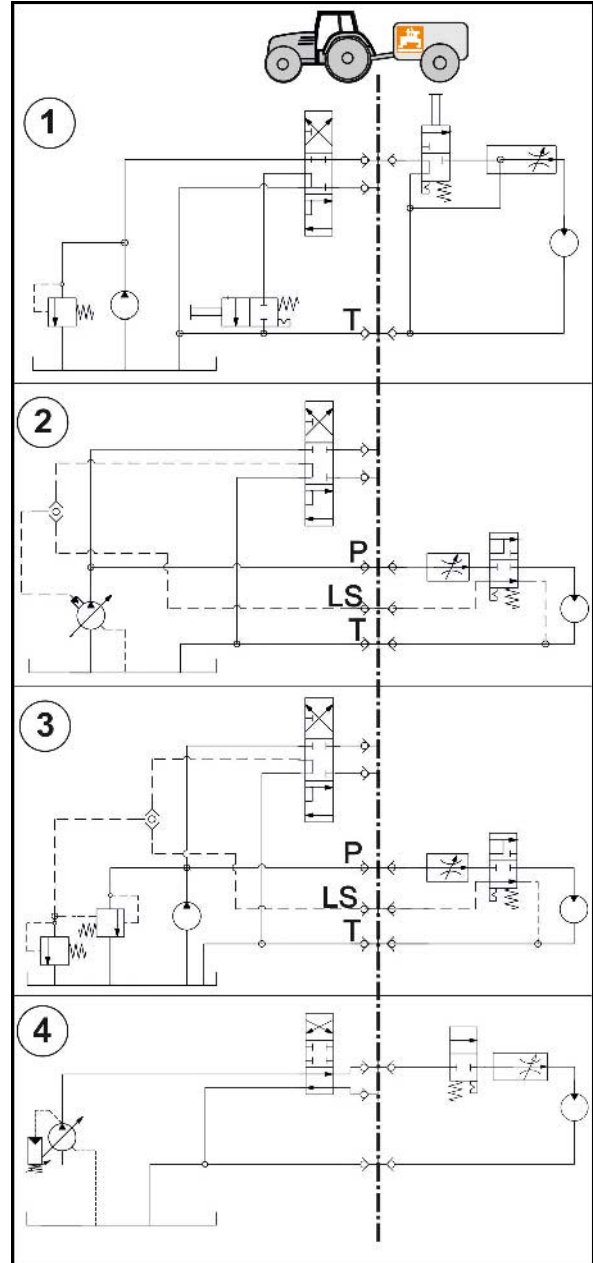


Fig. 57

7 Coupling and uncoupling the machine



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



WARNING

Risk of contusions from unintentional starting and rolling of the tractor and machine when coupling or uncoupling the machine!

Secure the tractor and machine against unintentional start-up and rolling, before entering the danger area between the tractor and machine when coupling or decoupling the machine. See also Page 85.

7.1 Coupling the machine



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 machine to tractors suitable for the purpose. For this, see the chapter "Checking the suitability of the tractor", page 75.



WARNING

Risk of contusions when coupling the machine and standing between the tractor and the machine!

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

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



WARNING

Risk of crushing, being caught or pulled in, or impact when the machine is unexpectedly released from the tractor.

Use the intended equipment to connect the tractor and the machine in the proper way.

**WARNING****Risk of energy supply failure between the tractor and the machine 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 machine.
- may not scour other parts.

1. Direct people away from the danger area between the tractor and machine before you approach the machine with the tractor.
2. Couple the supply lines first before coupling the machine with the tractor.
 - 2.1 Drive the tractor up to the machine, leaving a clearance of approximately 25 cm between tractor and machine.
 - 2.2 Secure the tractor against unintentional starting and unintentional rolling.
 - 2.3 Check whether the universal joint shaft of the tractor is switched off.
 - 2.4 Connect the supply lines to the tractor.
3. Now reverse the tractor towards the machine so that the connection fitting can be coupled.
4. Couple the connection fitting.
5. Lift the stand into transport position.
6. Hydraulic brake/overrun brake: fasten the parking brake pulling cable to the tractor.
7. Remove wheel chocks, release the parking brake.

7.2 Uncoupling the machine

**DANGER**

- Before uncoupling, always secure the machine with 2 wheel chocks.
- Before uncoupling the **ZG-TS**, make sure that uneven residue in the hopper is distributed evenly to prevent the combination from tipping.
- Risk of accident from the drawbar moving upwards.
- If the load is concentrated on one side at the rear, the bulk fertiliser spreader must not be uncoupled. As a single-axle vehicle, a load concentrated on one side at the rear leads to a risk of the bulk fertiliser spreader tipping over backwards.



WARNING

Risk of contusions, cutting, catching, drawing in and knocks through insufficient stability and possible tilting of the uncoupled machine!

Park the empty machine on a horizontal space with a hard surface.



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

1. Park the machine in a level parking area on solid ground.
2. Uncouple the machine from the tractor.
 - 2.1 Secure the machine against unintentionally rolling. See page 85.
 - 2.1 Lower the stand to the parking position.
 - 2.2 **Uncouple** the connection fitting.
 - 2.3 Draw the tractor approximately 25 cm forwards.

The space created between the tractor and the machine allows better access for decoupling the PTO shaft and the supply lines.
 - 2.4 Secure the tractor and machine against unintentional starting and unintentional rolling.
 - 2.6 Uncouple the supply lines.
 - 2.7 Fasten the supply lines in the corresponding parking sockets.
 - 2.8 Hydraulic brake: detach parking brake pulling cable from tractor.

7.2.1 Manoeuvring the uncoupled machine



DANGER

You must be particularly careful when manoeuvring the machine with the service brake system released, since only the manoeuvring vehicle is now braking the machine.

The machine must be connected to the manoeuvring vehicle before you actuate the release valve on the trailer brake valve.

The manoeuvring vehicle must be braked.



The service brake system cannot be released using the release valve if the air pressure in the air reservoir drops below 3 bar (e.g. if the release valve has been actuated multiple times or if there are leaks in the brake system).

To release the service brake

- Fill the air reservoir.
- Remove all air from the braking system at the drain valve on the air reservoir.

1. Connect the machine to the manoeuvring vehicle.
2. Brake the manoeuvring vehicle.
3. Remove the wheel chocks and release the parking brake.
4. **Pneumatic braking system** only:
 - 4.1 Press in the actuator button on the release valve as far as it will go (see page 43).
 - 4.2 The service brake system is released and the machine can be manoeuvred.
 - 4.3 Once the manoeuvring procedure is finished, pull out the actuator button on the release valve as far as it will go.
 - 4.4 The pressure from the air reservoir brakes the machine again.
5. Actuate the brakes on the manoeuvring vehicle again once you have finished manoeuvring the machine.
6. Firmly apply the parking brake again and secure the machine against rolling with wheel chocks.
7. Uncouple the machine and manoeuvring vehicle.

8 Adjustments



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

- "Warning symbols and other labels on the machine" 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 machine

- **due to unintentional contact with moving operating elements (spreading vanes of rotating spreading discs).**
- **due to tractor and connected machine unintentionally starting up or rolling away.**
- Secure the tractor and the machine against unintentional start-up and rolling, before adjusting the machine. See page 85.
- Only touch moving operating elements (rotating spreading discs) when they have come to a complete standstill.



WARNING

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

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.

All settings on the machine are made on the basis of the setting chart for the corresponding fertilizer.


-  Pay attention to the grain diameter and  bulk density.
- The calibration factor can be used as a starting value for fertilizer calibration.

1.  Pay attention to the working width.
2. **ZG-TS** Selection of spreading vane unit.
3.  Position of the delivery system (manual/on the control panel, optional).
4.  Setting of the spreader vane speed (via PTO shaft speed / on the control terminal with a hydraulic drive).
5. Setting for boundary and trench spreading, see page 100.


Excerpt from the setting chart



YaraMila® NPK 21-9-8 gran
(83008263)



















mm

3,61 mm


kg/l

1,08 kg/l

Calibration factor **0,99**

ZG-TS															
					Side spreading		Boundary spreading			Ditch spreading					
															
TS-2	24,0	16	600	B	2	720	2	5	600	2	10	550	24	-2	
	27,0	16	600	B	2	720	2	5	600	2	10	550	24	-2	
	30,0	16	800	B	2	900	2	7	800	2	12	720	29	-1	
TS-3	36,0	18	720	C	2	800	2	20	720	2	25	600	36	0	
	40,0	25	800	C	3	900	3	15	800	3	20	720	39	2	
	48,0	36	800	D	X	900	3	5	800	3	10	720	45	4	



For unknown kinds of fertiliser or a general check of the set working width, you can easily check the working width using the mobile fertiliser test rig (optional).

8.1 Setting the spread rate



See the ISOBUS-Software operating manual.

The **slider position** required for the desired **spread rate** is adjusted electronically via the two rate slides.

After entering the desired spread rate on the in-cab terminal [nominal quantity in kg/ha], the fertiliser calibration factor must be determined (spread rate check). It determines the spread rates set by the **in-cab terminal**.

8.2 Spread rate control (fertiliser calibration)



See operating manual
Implement control software ISOBUS / Chapter Calibrate Fertilizer

Spread rate control must be carried out:

- each time fertiliser is changed
- when spread rate is changed
- when working width is changed

Prior to checking the spread rate, see the setting chart for the calibration factor (as the initial basis) for the respective fertiliser, and enter it in the Fertiliser menu of the ISOBUS software.

Alternatively, the spread rate check is performed

- when starting spreading (the calibration factor is determined while spreading the first 500 kg of fertiliser).
 - Implement data menu:
Switch on the online calibration procedure.
 - Work menu: select automatic fertiliser calibration.
- before spreading, when the implement is at a standstill
 - Fertiliser menu:
Determine the calibration factor using the calibrating device or the left hopper tip with calibration chute



The fertiliser flow characteristics can change even after a brief fertiliser storage period.

Consequently, before each use, re-determine the calibration factor for the fertiliser to be spread.

The fertiliser calibration factor must always be re-determined if deviations occur between the theoretical and actual spread rate.

8.3 Setting the spreading disc speed



See the setting chart for the spreader disc speed for the respective fertiliser, and enter it in the Fertiliser menu of the ISOBUS software.

- Tronic: Correctly set and maintain the spreader disc speed via the PTO shaft.
- Hydro: The spreader disc speed is regulated automatically when switching on.



Tronic: the gearbox translates the PTO shaft speed with the transmission ratio 1:1.33 in the upper speed range (see table below).

Speed - PTO shaft [rpm]	Translation	Speed - spreading disc [rpm]
375	1 :1.33	500
415		550
450		600
540		720
600		800
675		900
750		1000

8.4 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 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.

8.4.1 Replacing the spreading discs

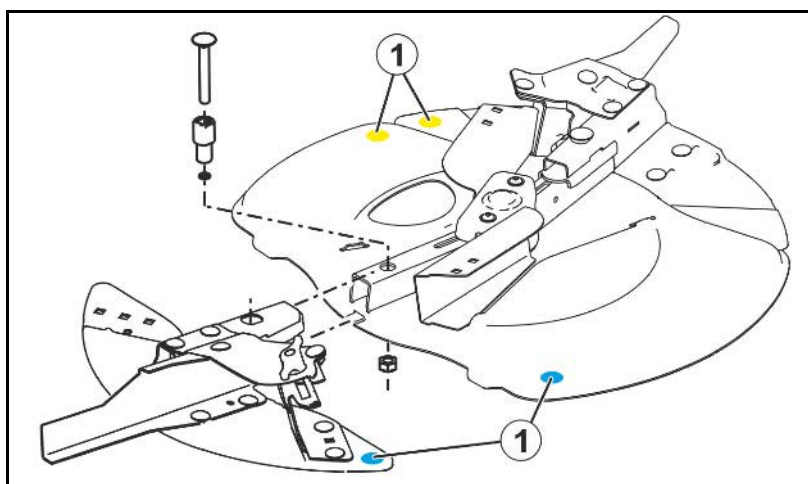


Fig. 58

1. Undo the bolt and remove the screw and the bushing.
2. Remove the spreading vane unit to the outside.
3. Insert the other spreading vane in reverse order and secure it with bolts and bushing.

See the setting chart for the designation of the spreading vane unit and enter it in the Fertiliser menu of the ISOBUS software.



Always change short and long spreading vane units on both sides.

When mounting the spreading vane units on the spreading disc, ensure that the coloured markings (1) are the same!

8.4.2 Setting the feed system



The setting of the inlet system is carried out according to the details in the setting chart automatically using an electric motor according to the entry in the in-cab terminal.



Setting the feed system to a higher value widens the working width, a smaller value reduces the working width.

8.5 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.

The setting values from the setting chart are therefore only to be considered as **reference values**, since the spreading properties of the fertiliser types can change.

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.

8.6 Boundary, ditch and side spreading

1. Boundary spreading in accordance with fertiliser ordinance (Fig. 57):

Along the field boundary there is a road, a field path or another person's lot.

Fertiliser is not permitted to fall beyond the boundaries in accordance with the fertiliser ordinance.

2. Ditch spreading in accordance with fertiliser ordinance (Fig. 58):

There is body of water or a ditch along the field boundary.

The fertiliser ordinance specifies the following:

- No fertiliser must be spread within one metre of the boundary (with use of boundary spreading devices).
- No fertiliser must be spread within three metres of the boundary (without use of boundary spreading devices).
- Erosion and wash-away (e.g. in surface waters) must be prevented.

3. Side spreading in accordance with fertiliser ordinance (

The boundary is delineated by an area in agricultural use. It is acceptable for a small amount of fertiliser to be thrown across the field boundary.

The fertiliser distribution in towards the centre of the field is still close to the nominal quantity. A small amount of fertiliser is thrown across the field boundary.

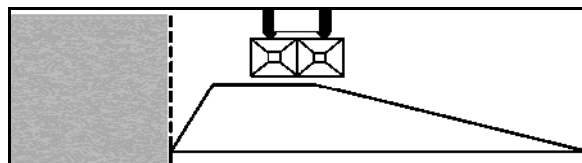


Fig. 59

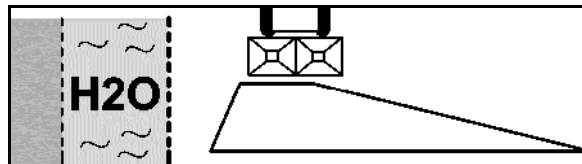


Fig. 60

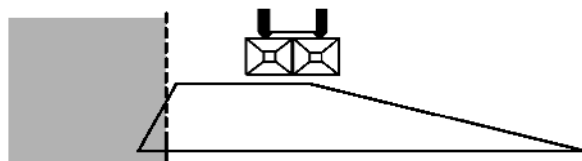

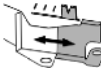


Fig. 61

8.6.1 Settings for border spreading



See the setting chart for the values for boundary spreading the appropriate fertiliser and enter them in the Fertiliser menu of the ISO-BUS software:

-  Select TS border spreading vane (A, A+, B, C, D).
-  Set TS border spreading vane (1, 2, 3)
 - 0 – do not mount a telescope
- X** – Perform border spreading with normal spreading vanes. Border spreading is not switched on with the operating terminal (without TS)
 - Do not switch ClickTS to the boundary spreading position.
- PTO shaft drive: reduce r.p.m.

On the boundary side, the quantity and spreading vane r.p.m. (Hydro) are reduced automatically.

Setting the TS border spreading vane on the long spreading vane on the right / left depends on:

- boundary clearance,
- type of fertilizer

The value to be set should be read from the setting chart.

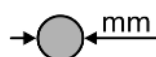


- The values in the setting table are intended as guideline values, since fertiliser condition may differ.
- The border distance on the setting chart basically represents half the working width.

Excerpt from the setting chart



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(83008263)


















3,61 mm



1,08 kg/l

Calibration factor

0,99

ZA-TS															
					Side spreading		Boundary spreading		Ditch spreading						
															
TS-2	24,0	16	600	B	2	720	2	5	600	2	10	550	24	-2	
	27,0	16	600	B	2	720	2	5	600	2	10	550	24	-2	
	30,0	16	800	B	2	900	2	7	800	2	12	720	29	-1	
TS-3	36,0	18	720	C	2	800	2	20	720	2	25	600	36	0	
	40,0	25	800	C	3	900	3	15	800	3	20	720	39	2	
	48.0	36	800	D	X	900	3	5	800	3	10	720	45	4	

Setting the Auto TS border spreading vane

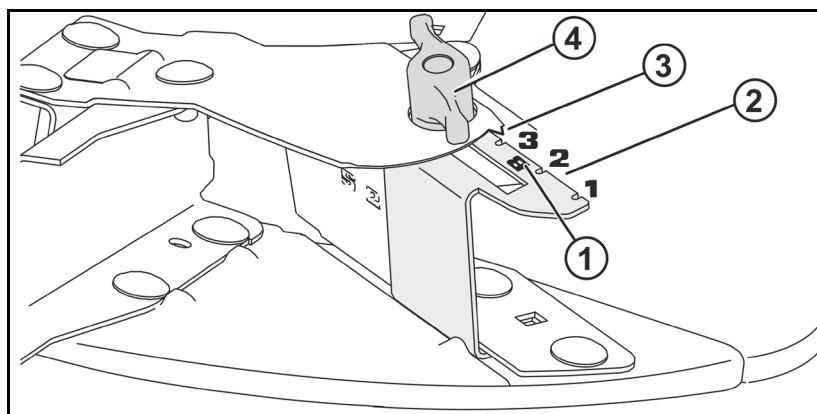


Fig. 62

(1) Telescope identification

TS1→ A, A+ / TS2→ B, D / TS3→ C, D

(2) Scale (1, 2, 3)

(3) Pointer

(4) Thumb nut

1. Undo thumb nut.
2. Read the set value from the setting chart.
3. Set the telescopic part of the border spreading vane to the required value on the scale.
4. Tighten the thumb nut.



Setting the boundary spreading vane TS

- to a higher value causes an elongation of the spreading range toward the border,
- to a smaller value causes a reduction of the spreading range toward the field.



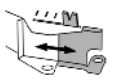
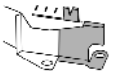

Replacing the telescope (A, A+, B, C, D) for the boundary spreading vane, see page 126.

8.6.2 Adapting the settings for boundary spreading

To optimise the boundary spreading pattern, the settings can be adapted in deviation from the setting chart.

To adapt the settings you must proceed in the following sequence.

Always make only one change at a time.

	Elongation of the spreading range toward the boundary (more fertiliser to the outside)	Delimitation of the spreading range toward the field (less fertiliser to the outside).
1. 	Telescope of the boundary spreading vane to a larger adjustment value.	Telescope of the boundary spreading vane to a smaller adjustment value.
Telescope is already set to the maximum value: 2. 	Replace telescope of the boundary spreading vane. $A \rightarrow A+ \rightarrow B \rightarrow C \rightarrow D$	Replace telescope of the boundary spreading vane. $D \rightarrow C \rightarrow B \rightarrow A+ \rightarrow A$
3. 	Increase spreading disc speed.	Reduce spreading disc speed.
For extremely large working widths: 4. X	Do not switch on Auto TS / ClickTS for boundary spreading.	

8.6.3 Switch ClickTS

1. Secure the tractor against unintentional starting and unintentional rolling away.
 2. Actuate the hand lever on the boundary side. Brace your thumbs on the console.
- For boundary spreading: swivel the hand lever to the implement-side inner end position and lock into place.
 - For normal spreading: swivel the hand lever to the implement-side outer end position and lock into place.

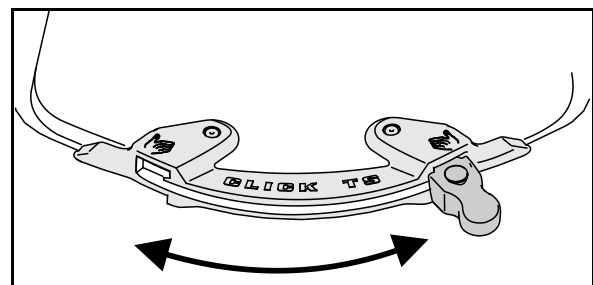




Fig. 63



Before beginning boundary spreading with ClickTS, the corresponding boundary spreading function must be called up on the control terminal. This adjusts the spreading disc speed (Hydro) and the spread rate for the boundary spreading method.

8.7 Switch-on point and switch-off point

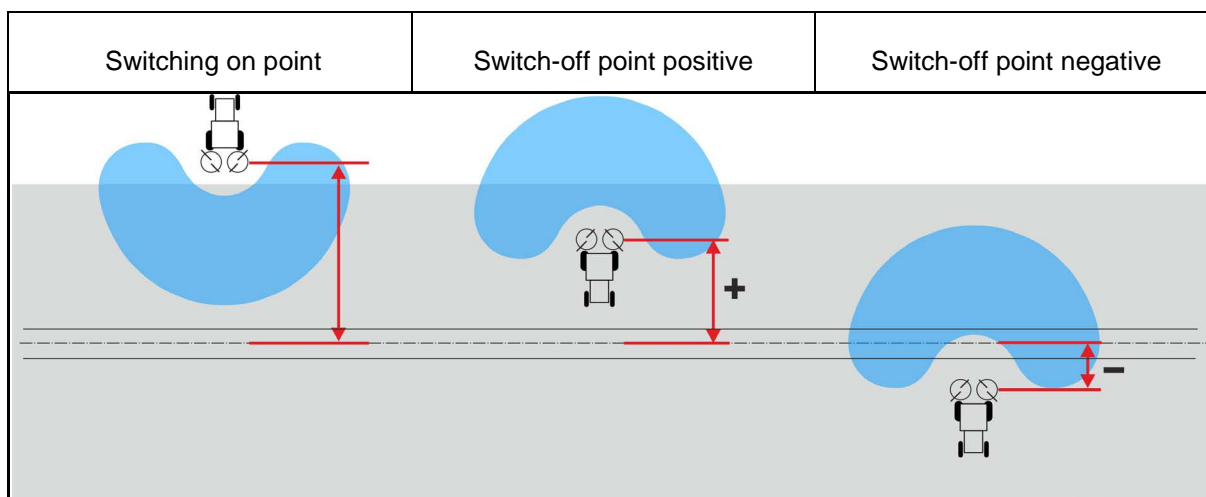
- 
 The switch-on point is the position for opening the shutters when moving out of the headlands at which the best possible fertiliser distribution is achieved.
- 
 The switch-off point is the position for closing the shutters when moving onto the headlands at which the best possible fertiliser distribution is achieved..

The switch-on point and switch-off point are measured from the centre of the headlands to the centre of the spreading disc.

See the setting chart for the switch-on point and switch-off point and enter it in the Fertiliser menu of the ISOBUS software.

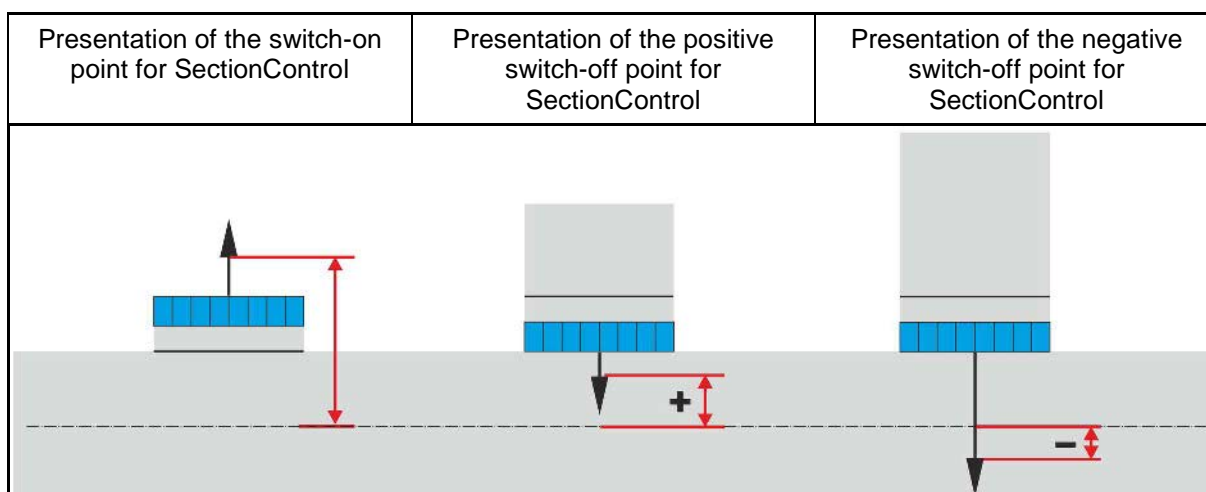
Implements without SectionControl:

- Open shutters at the switch-on point.
- Close shutters, at the switch-off point.



If direct moving into the tramline of the headlands is desired, it may be necessary to increase the value for the switch-off point. However this is not positive for fertiliser distribution on the headlands.

Switch-on point and switch-off point for SectionControl



Adjusting the switch-off point for the driving style

The selection of the switch-off point depends on the driving style on the headlands.

- Distribution-optimised driving style

With the distribution-optimised driving style, it is not possible to turn into the headland tramline in many cases, as, in particular with small/negative switch-off points, the shutters close too late.

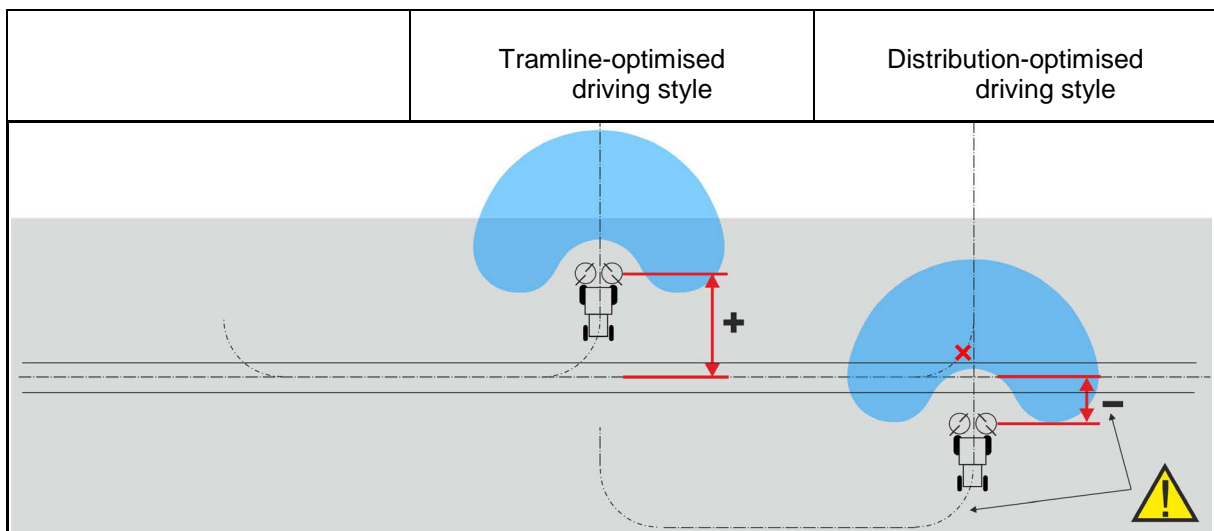
→ Read the switch-off point from the setting chart.

- Tramline-optimised driving style

- With the tramline-optimised driving style, the switch-off point must be big enough so that the shutters close in due time before driving into the headland tramline.

However, this is not positive for fertiliser distribution on the headlands.

→ Switch-off point: at least 7 m.



9 Transportation



- Comply with the chapter "Safety information for the operator", 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 brake and hydraulic system for visible damage
 - That the parking brake is released completely.
 - The function of the brake system.



WARNING

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact when making interventions in the machine, through unintentional machine movements.

- Secure the machine against unintentional movements before starting transportation.



WARNING

Danger of injury for persons standing in the vicinity of the machine due to unintentional start-up of the implement!

Switch-off the control terminal before road transport.



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



WARNING

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

These risks pose serious injuries or death.

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

**WARNING****Risk of falling from the machine if riding against regulations!**

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

Instruct people to leave the loading site before approaching the machine.

**CAUTION**

- Comply with the chapter "Safety information for the operator", from page 25 when moving.
- Transportation is prohibited with a locked tractor control unit. As a general rule, put the tractor control unit on the tractor into neutral for transportation.
- Use transport locking for locking the raised ladder to prevent it from folding down again accidentally.



- Close the slider for road travel.
- Close the swivelable hopper cover.

10 Use of the machine



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

- "Warning symbols and other labels on the machine" from page 16 and
- "Safety information for the operator", on page 23 ff.

Observing this information is important for your safety.



WARNING

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

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

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



WARNING

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

- **Unintentional start-up and rolling of the tractor-machine combination.**

Secure the tractor and the machine against unintentional start-up and rolling, before eliminating faults on the machine. See page 85.

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



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.



Some products, such as Excello granulate and magnesium sulphate, cause increased wear to the spreading vanes (optional spreading vanes with enhanced wear resistance are available).

When spreading mixed fertilisers, note the following:

- Each variety may have different flight characteristics.
- The individual varieties may separate.

The recommended settings specified for lateral distribution pertain solely to weight distribution, not to nutrient distribution.



- For new machines, 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 the type of fertiliser is not known exactly, check the working width using the mobile fertiliser test rig.
- The technical condition of the spreading vanes, including their swivel vanes, is essential for uniform lateral distribution of the fertiliser on the field (i.e. forming strips).
- After every use, remove any fertiliser clinging to the spreading vanes.

10.1 Filling the machine

**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 machine and the approved axle and drawbar loads of the tractor. If necessary, drive only with a partially filled hopper.

**WARNING**

Couple the bulk fertiliser spreader to the tractor before loading.



- Remove residues or foreign bodies from the hopper before filling with fertiliser.
- Make sure that the charging sieve is always closed before you fill the hopper. Only a closed charging sieve prevents clumps of fertiliser and/or foreign bodies getting into the hopper and blocking the agitator.
- Let the floor belt run for a short period to reduce friction.
- It is essential to observe the safety instructions from the fertiliser manufacturer. Use appropriate protective clothing as necessary.

10.2 Spreading operation



- The spreading vanes are made of especially hard-wearing stainless steel. However, the spreading vanes are wearing parts.
- The type of fertiliser, times of use and spread rates influence the service life of spreading vanes.
- The technical condition of the spreading vanes 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, caused by worn spreading vanes!

Every day, at the start and end of spreading work, check all spreading vanes for visible damage/defects. Refer to the criteria for the replacement of wearing parts in the chapter, page 126.



WARNING

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

- Make sure that uninvolved persons are kept well clear of the danger area of the machine in the following situations:
 - Before you switch on the power for the spreading discs.
 - While the tractor engine is running.
- When spreading at the edge of fields in residential areas / near roads, make sure you do not endanger anybody or damage anything. Keep an adequate safety distance or use suitable devices for boundary spreading and / or reduce the drive rev. 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 machine.

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

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



The machine is operated using the operating terminal.

- Refer to operating manual Implement Control Software ISOBUS.
- Refer to the operating manual for the operating terminal.

- The fertilizer spreader is connected to the tractor.
- The supply lines are connected.
- The operating terminal is connected.
- The settings have been made.

1. Hydro: Operate the tractor control unit and secure the hydraulic oil supply.

or

Decouple the PTO shaft at low tractor engine speed.



- Do not open the shutter until you have reached the specified spreader disc speed!
- Maintain a constant spreading disc speed.
- Always carry out a spread rate check or turn on the online calibration at the beginning of the spreading process.



Observe the point for switching on and off in the setting chart!

The point for switching on and off is specified as distance in metres from the spreading disc centre to the centre of the track in the headlands in the setting chart.



- Switching on point when driving into the field.



- Switching off point when driving into the headlands.

2. Moving to, and when the switching on point is reached, open the shutter.
3. At the switching off point before reaching the headlands, close the shutter.
4. For border spreading: Switch on Auto TS / ClickTS.
5. After finishing spreading.
 - 5.1 Close shutter.
 - 5.2 Disengage spreader disc drive.



To ensure low-vibration running of the spreading discs, balancing weights are installed on the spreading disc. A certain degree of vibrations caused by the manufacturing tolerances and resonances cannot be avoided. The spreading discs are balanced at the centre position (Position 2) of the telescope for the boundary spreading vanes. In Positions 1 and 3 of the respective telescopes, there may be vibrations caused by technical reasons!

The vibrations do not affect the service life of the implement.

Check for the presence of balancing weights when using spreading disc TS 3 with telescope D, see page 126.



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



- The service life of the spreading vanes depends on the kinds of fertiliser used, the operating times and the spread rates.

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

Pay attention to the following particularities for application of slug pellets.

- Select fine special spreading material on the control terminal.
 - Spreading of slug pellets must be executed at constant forward speed because speed-proportional quantity regulation is not active.
 - Calibration of slug pellets is executed on the left hopper tip with the calibration chute.
 - Automatic refilling of the pre-chamber using the floor belt is not active.
- Pay attention to the emptying of the pre-chamber and run the floor belt manually through the control terminal if necessary.



Before spreading fine special spreading material, check the scraper position on the floor belt so that no spreading material can escape through the crack.



CAUTION

When filling the spreader, avoid inhaling product dust and direct skin contact (wear protective gloves). After use, thoroughly clean hands and all affected parts of the skin with water and soap.



DANGER

Slug pellets in some cases can be very dangerous for children and pets. Store in a place that is inaccessible to children and pets. Always comply with the instructions for use provided by the agent manufacturer!

Concerning the handling of slug pellets, in all other aspects we refer you to the instructions provided by the manufacturer of the agent and to the general precautionary measures for handling agricultural pesticides.

- When spreading slug pellets, ensure that the outlet openings are always covered with the spreading material, and that the implement runs at constant spreading disc speed. A residual quantity of substance 0.7 kg per hopper tip cannot be properly applied. To empty the spreader, open the shutters and collect the spreading material that trickles out (e.g. on a tarpaulin).
- Slug pellets must **not** be mixed with fertiliser or other substances in order to work with the spreader in a different adjustment range.

10.4 Complete discharging



DANGER

Risk of injury from rotating spreader discs.

Do not drive spreader discs to remove any residue.



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 object through the protection grating and function screen when the agitator is running.

1. Secure the tractor against unintentional start-up and unintentional rolling.
2. Turn the spreader disc by hand so that the hole in the spreader disc is pointing inwards, directly under the opening on the hopper.
3. On the operating terminal:
 - 3.1 Open shutter.
 - 3.2 Switch agitator on.
4. Finish emptying process once hopper is empty.

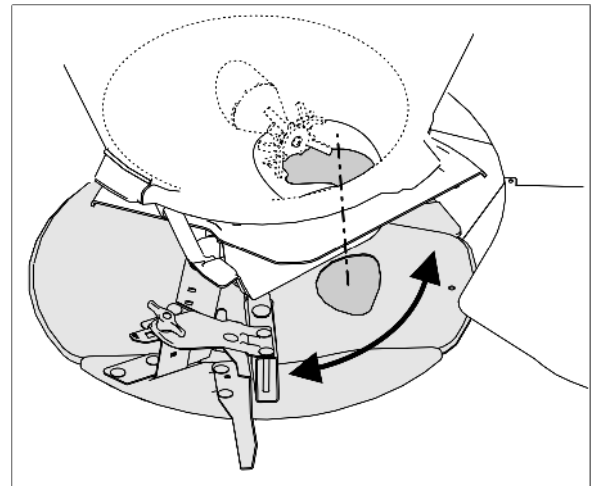


Fig. 64



Keep the hood of the fertiliser pre-chamber closed. Otherwise the agitator will switch off and prevent emptying.



Machines with a mechanical spreading disc drive:

Empty the residue on the left and right sides separately.

11 Faults



WARNING

Danger of crushing, shearing, cutting, being drawn in and/or caught if the tractor/machine combination is started and/or rolls unintentionally.

Secure the tractor and the machine against unintentional start-up and rolling, before eliminating faults on the machine. See page 85.

Wait for the machine to stop before entering the machine 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.

11.2 Faults in electronics

Close the shutter manually



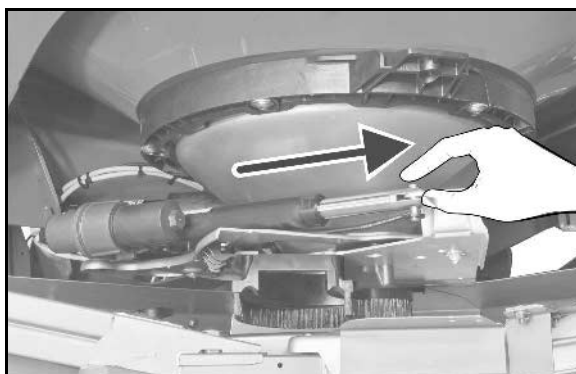
The manual closing of the shutter prevents the fertilizer from running out accidentally if the electrics do not react due to a fault.

1. De-energize the electrics.
2. Secure the tractor against unintentional start-up and unintentional rolling.
3. Pull out the actuator of the piston rod manually.

→ Shutter closes.

Adjustment force required: 150 N

4. Switch the operating terminal back on and check the functions.



11.3 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.
	The spreading properties of your fertiliser differ from those of the one we tested when creating the setting chart.	Contact the AMAZONE Fertiliser Service. ☎ 05405-501 111
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. ☎ 05405-501 111
Too much fertiliser in the overlap area	Prescribed spreading disc speed is exceeded.	Reduce tractor engine speed.
Floor belt does not convey fertiliser	Oil pressure too low.	Increase the oil pressure from the tractor.
Swivelable hopper cover does not open/opens too fast	Throttle not adjusted correctly.	Adjust throttle.
No hydraulic functions	Fluid supply at the tractor is not switched on.	Switch on fluid supply at the tractor.
	Power supply to valve block interrupted.	Check cable, plug and contacts.
	Oil filter contaminated.	Replace/clean oil filter. (Seite 143).
	Solenoid valve dirty	Rinse solenoid valve (sivulla 143).
Overheating of the tractor hydraulic fluid	System converting bolt on the hydraulic block is incorrectly set	Adjust the system converting bolt correctly on the hydraulic block
	Fluid quantity not reduced enough on the tractor control unit.	Reduce the fluid quantity on the tractor control unit.

12 Cleaning, maintenance and repairs



WARNING

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact through

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

Secure the tractor and machine against unintentional start-up and rolling, before carrying out cleaning, maintenance or repair work on the machine when coupling or decoupling the machine. See also page 85.



WARNING

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact through unprotected danger points

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



DANGER

- When carrying out maintenance and repair, observe the safety instructions (see page 31).
- You may only carry out maintenance or repair work under moving machine parts that are in a raised position if such parts are secured with suitable, positive-fit locking devices against accidental lowering.



- Regular and proper maintenance will keep the machine in good condition for a long time, and will prevent early signs of wear. Regular and proper maintenance is a requirement of our warranty conditions.
- Use only genuine **AMAZONE** spare parts (see "Spare and wear parts and auxiliary materials" section, page 15).
- Only use genuine **AMAZONE** replacement hoses, and hose clamps made of V2A for assembly.
- Testing and maintenance operations require specialist knowledge. This is not provided in this operating manual.
- Observe environmental protection measures when carrying out cleaning and maintenance work.



- Observe legal requirements when disposing of lubricants, e.g. oils and grease. These legal requirements also affect parts that come into contact with these lubricants.
- Do not exceed a greasing pressure of 400 bar when greasing with high pressure grease guns.
- The following are prohibited:
 - drilling the running gear.
 - drilling through existing holes on the transport frame.
 - welding load-bearing components.
- Protective measures are necessary, such as covering lines or extending lines in particularly critical locations
 - during welding, drilling and grinding work.
 - when working with cut-off wheels near plastic wires and electric wires.
- Clean the machine thoroughly with water before carrying out repair work.
- Carry out repair work on the machine with the pump switched off.
- Thorough cleaning must be carried out before repair work can be carried out inside the spray liquid tank. Keep out of the spray liquid tank.
- Disconnect the machine cable and power supply from the on-board computer when carrying out any cleaning or maintenance work. This applies especially to welding on the machine.

12.1 Cleaning



- Monitor brake, air and hydraulic hose lines particularly carefully.
- Never treat brake, air and hydraulic hose lines with benzene, benzole, petroleum or mineral oils.
- After cleaning, grease the machine, in particular after cleaning with a pressure washer / steam jet or liposoluble agents.
- Observe the statutory requirement for the handling and removal of cleaning agents.

Cleaning with a pressure washer / steam jet



- Always observe the following points when using a pressure washer / steam jet for cleaning:
 - Do not clean any electrical components.
 - Do not clean any chromed components.
 - Never aim the cleaning jet from the nozzle of the pressure washer / steam jet directly on lubrication and bearing points.
 - Always maintain a minimum jet distance of 300 mm between the high pressure cleaning or steam jet cleaning nozzle and the machine.
 - Comply with safety regulations when working with pressure washers.

- Clean machine 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 machine is dry, apply a coat of anti-rust compound. (Use only biodegradable compounds).
- Park the machine with the slide gates **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 point overview



Lubricate all the lubricating nipples (keep the seals clean).

Lubricate / grease the machine at the specified intervals (operating hours h).

The lubrication points on the machine are indicated with the film (Fig. 63).

Carefully clean the lubrication points and grease gun before greasing, so that no dirt enters the bearing. Completely press out the soiled grease in the bearings and replace it with new grease.

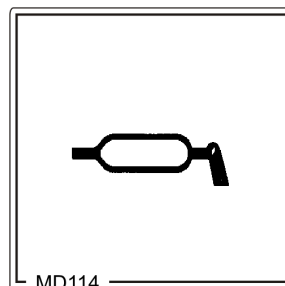


Fig. 65

Lubricants



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

Company	Lubricant designation	
	Normal use conditions	Extreme use conditions
ARAL	Aralub HL 2	Aralub HLP 2
FINA	Marson L2	Marson EPL-2
ESSO	Beacon 2	Beacon EP 2
SHELL	Retinax A	Tetinax AM

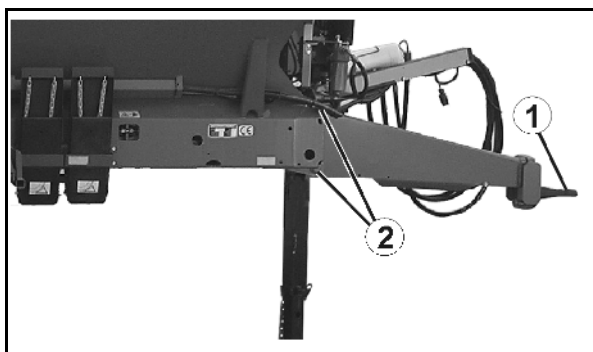


Fig. 66

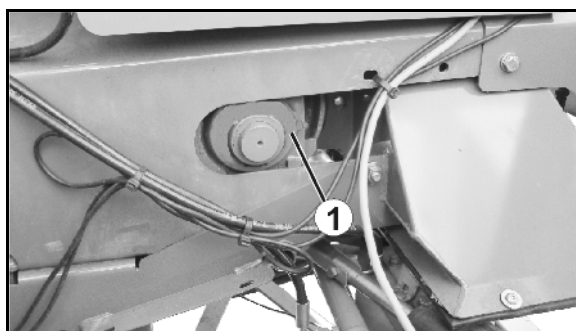


Fig. 67

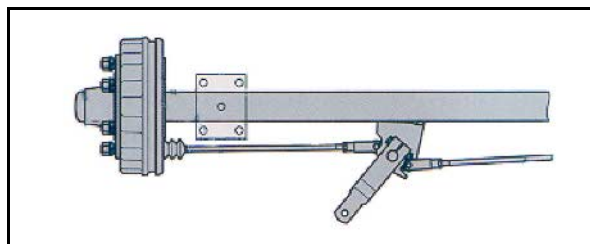


Fig. 68

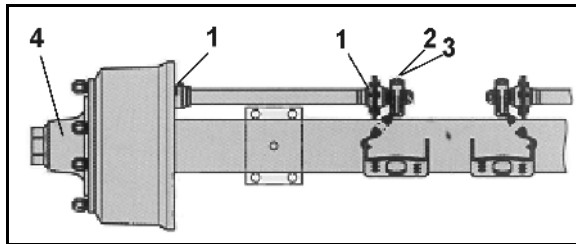


Fig. 69

	Lubrication point	Interval [h]	Number of lubrication points	Type of lubrication
Fig. 64				
1	Towing eye	8	1	Grease
2	Steering drawbar bearing	50	2	Grease nipple
Fig. 65	Rear floor belt flange bearing	100	2	Grease nipple
Fig. 66	Axle with expanding lever brake			
Fig. 67	Axle with S-cam brake / wing cam brake			
1	Brake shaft bearing, outer and inner	200		Grease nipple
2	Linkage adjuster	1000		Grease nipple
3	ECO-Master automatic linkage adjuster	1000		Grease nipple
4	Renew wheel hub bearing grease, check taper roller bearings for wear	1000		Grease nipple
not shown	Weighing pin	1000	3	Grease nipple

Brake shaft bearing, outer and inner

Caution: no grease or oil should be allowed to get into the brakes. Depending on the model series, the cam bearing for the brakes may not be sealed.

Only use lithium saponified grease with a dropping point greater than 190 °C.

ECO-Master automatic linkage adjuster

Each time the brake pads are replaced:

1. Remove the rubber stopper cap.
2. Apply grease (80 g) until sufficient clean grease escapes at the adjusting screw.
3. Slacken the adjusting screw by approximately one turn with a ring spanner. Actuate the brake lever several times by hand. The automatic readjustment should function smoothly. Repeat several times, as necessary.
4. Refit the stopper cap. Grease again.

Renewing the wheel hub bearing grease

1. Jack up the vehicle securely and release the brakes.
2. Remove the wheels and dust caps.
3. Remove the lynch pin and unscrew the axle nut.
4. Use a suitable extraction device to remove the wheel hub and brake drum, taper roller bearing and sealing elements from the axle stub.
5. Label the removed wheel hubs and bearing cages so that you do not confuse them when refitting.
6. Clean the brakes, check for wear, sound condition and function and replace worn parts.

The interior of the brake must be kept free from lubricants and dirt.

7. Thoroughly clean the interior and exterior of the wheel hubs. Remove all traces of old grease. Thoroughly clean the bearings and seals (diesel oil) and check for reusability.

Before refitting the bearings, lightly grease the bearing carrier and then refit all parts in the reverse order. Carefully fit parts with press fits and pipe bushings so that they are not twisted or damaged.

The bearings, the wheel hub cavity between the bearings and the dust cap must be smeared with grease before fitting. The grease should fill approximately a quarter to a third of the space in the fitted hub.

8. Fit the axle nut and adjust the bearing and brake. Finally, carry out a function check and an appropriate test run and rectify any detected faults.



The wheel hub bearing must only be greased with BPW special longlife grease with a dropping point greater than 190 °C.

The wrong grease or too great a quantity can result in damage.

Mixing lithium-saponified grease with sodium-saponified grease can result in damage caused by incompatibility.

12.3 Maintenance schedule – 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.

Before each start-up

1. Check hoses/tubes and connection pieces for any visually obvious defects/leaking connections.
2. Repair any areas of chafing on pipes and hoses.
3. Immediately replace worn or damaged hoses and pipes.
4. Immediately repair leaking connections.

Once after 50 operating hours

Component	Maintenance work	see page	Workshop work
Angular gearbox	• Oil change	144	
Coupling device	• Check for damage, deformation and cracks	129	

After the first working run

Component	Maintenance work	see page	Workshop work
Wheels	• Wheel nut check	138	X
	• Check for play in the wheel hub bearing	131	X
Hydraulic system	• Check for leak tightness • Check for defective hose lines	139	X

Daily

Component	Maintenance work	see page	Workshop work
Air reservoir for the air-pressure brake	• Drain the air reservoir	134	
Control butterfly valve	• Check for ease of movement and adjust if necessary	128	
Outlet openings	• Clean		
Agitator	• Check for damage		
Spreading vanes	• Condition check, replace if necessary	126	
Hydraulic fluid filter	• Check clogging indicator, clean or replace if necessary	143	X
Electric traffic light kit	• Replace defective bulbs	145	

Monthly / every 50 operating hours

Component	Maintenance work	see page	Workshop work
Hydraulic system	<ul style="list-style-type: none"> Check for leak tightness Check for defective hose lines 	139	X
Parking brake	<ul style="list-style-type: none"> Check the braking effect with the brake on 	136	
Agitator shaft	<ul style="list-style-type: none"> Check drive train tension 	128	
Wheels	<ul style="list-style-type: none"> Check the wheel nuts for firm seating. 	138	
	<ul style="list-style-type: none"> Check the air pressure. 		

Every three months / 200 operating hours

Component	Maintenance work	see page	Workshop work
Dual-circuit service brake system	<ul style="list-style-type: none"> Check for leak tightness Check pressure in the air reservoir Check brake cylinder pressure Visual inspection of brake cylinder Joints on brake valves, brake cylinders and brake linkages 	134	X
	<ul style="list-style-type: none"> Linkage adjuster brake settings 	132	X
	<ul style="list-style-type: none"> Check the function of the automatic linkage adjuster 	133	X
	<ul style="list-style-type: none"> Brake pad check 	132	X
Expanding lever brake	<ul style="list-style-type: none"> Brake settings 	133	X
Line filter	<ul style="list-style-type: none"> Clean Replace damaged filter inserts 	135	
Wheels	<ul style="list-style-type: none"> Check play on wheel hub bearings 	131	X
Coupling device	<ul style="list-style-type: none"> Check the fastening bolts for wear and tight fit 	129	

Annually / 1,000 operating hours

Component	Maintenance work	see page	Workshop work
Brake drum	<ul style="list-style-type: none"> Check for dirt 	131	X

As necessary

Component	Maintenance work	see page	Workshop work
Belt conveyor	<ul style="list-style-type: none"> Tension belt conveyor if it is running unevenly 	127	

12.4 Replacing the spreading vanes

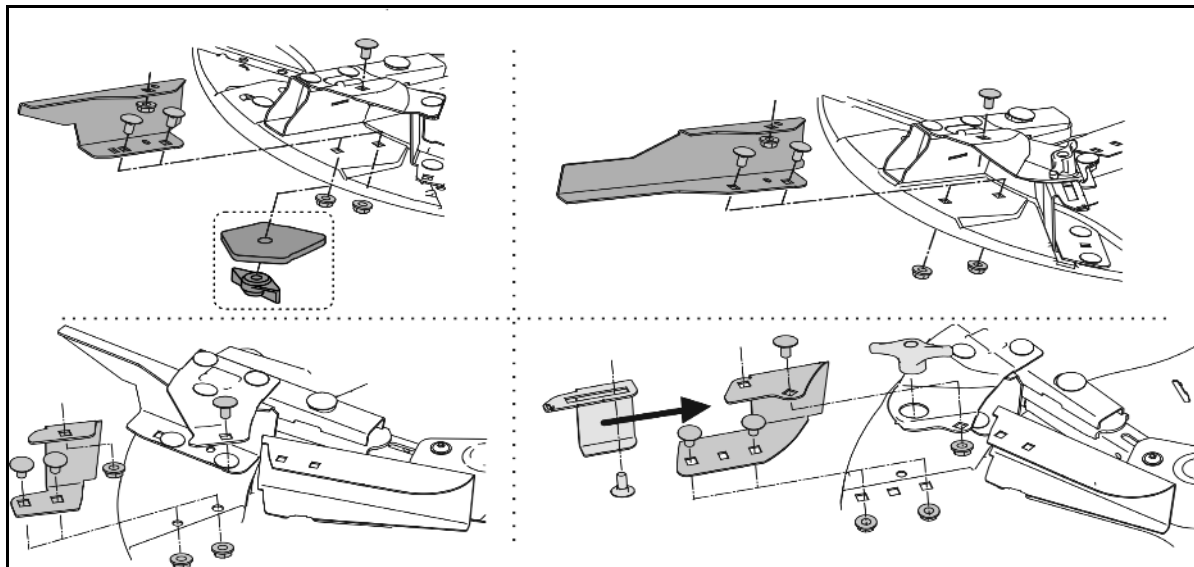


Fig. 70



When using spreading disc TS 3 with telescope D, install an additional balancing weight under the short spreading vane and secure with a wing nut!



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

Required tightening torque: 19.3 Nm



- The technical condition of the spreading vanes 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 as soon as holes from abrasion are visible.

12.5 Belt conveyor with automatic belt control

One property of belt conveyors (Fig. 69/1) is that they give way under load on inclines such as on sloping terrain or if they are loaded on one side only. The belt conveyor then runs outwards. One-sided belt conveyor running is prevented by the automatic belt control in AMAZONE bulk fertiliser spreaders ZG-TS.

The conveyor belt is tensioned in the floor belt with automatic belt control between the drive drum (Fig. 69/2) and the pulley (Fig. 69/3).

While the drive drum is secured rigidly in the floor belt, the pulley can turn around the swivel axle (Fig. 69/4). The belt conveyor is also guided between two control rollers (Fig. 69/5), which are connected to the pulley by a control frame (Fig. 69/6).

If the belt conveyor runs outwards due to a one-sided load, the control rollers follow this movement. Consequently, this causes the pulley to turn around the swivel axle. As a result, the distance between the pulley and the drive drum increases on the side toward which the belt conveyor is moving.

The larger distance causes the belt conveyor to return to the middle and continue to settle down in the middle.

Tensioning the belt conveyor:

The belt conveyor is tensioned with pretension in the floor belt for stable, even belt movement. If the belt conveyor runs unevenly in any circumstance, the belt conveyor should be retensioned on both sides as described below:

1. Loosen the rear lock nuts on both sides when viewed in the direction of travel (see arrow) (Fig. 70/1) by turning them anti-clockwise.
2. Turn the nuts on both sides evenly to the left when viewed in the direction of travel (see arrow) (Fig. 70/2).
3. Tighten the lock nuts.



The adjustment travel of the nuts (Fig. 70/2) must be equal on both sides of the floor belt. Do not turn either nut (Fig. 70/2) more than a ½ spanner turn. Tighten the lock nuts and check whether the belt conveyor is driven evenly again.

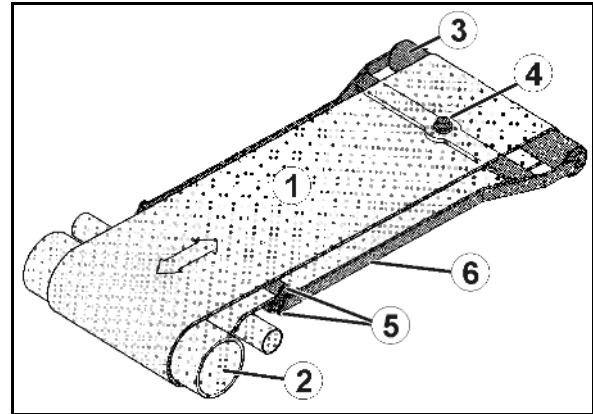


Fig. 71

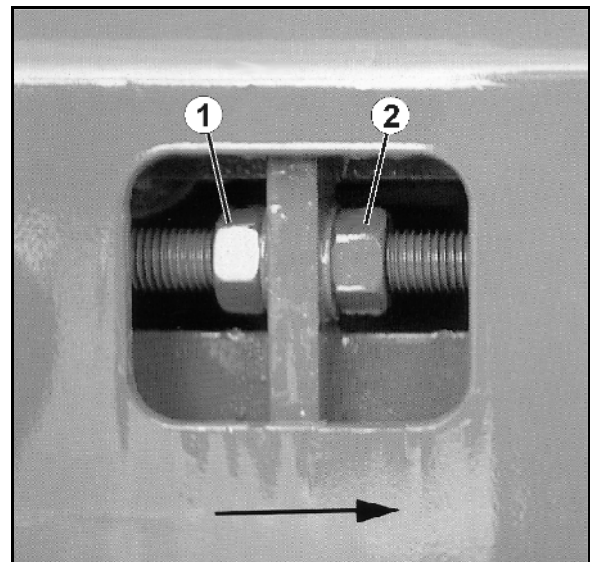


Fig. 72

12.6 Checking the control butterfly valve, outlet openings and agitator

1. Release lock button of hood (Fig. 71/1).
2. Open the hood.
3. Check the butterfly valve (Fig. 72/1) for ease of movement and adjust the adjustment rings if necessary.
4. Clean the outlet openings.
5. Check the agitator for damage.
6. Close the hood again.

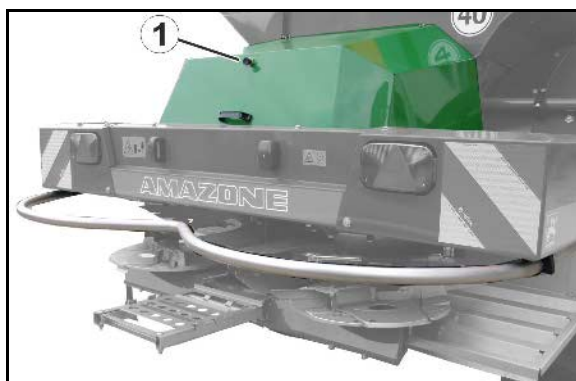


Fig. 73

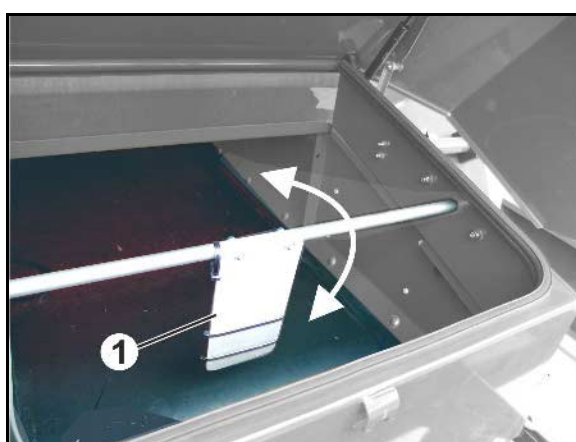


Fig. 74

12.7 Check the coupling device



DANGER!

- Replace a damaged drawbar with a new one immediately - for road traffic safety reasons.
- Repairs may only be carried out by the manufacturer factory.
- For safety reasons, it is forbidden to weld on and drill holes in the drawbar.

Check the coupling device (drawbar, lower link traverse, ball coupling, drawbar eye) for the following:

- damage, deformation, cracks
- wear
- tight fit of the fastening bolts

Coupling device	Wear dimension	Fixing bolts	Number	Tightening torque
Lower link traverse	Cat. 3: 34.5 mm Cat. 4: 48.0 mm Cat. 5: 56.0 mm	M20 8.8	8	410 Nm
Ball coupling				
K80 (LI009)	82 mm	M16 10.9	8	300 Nm
K80 (LI040)	82 mm	M20 10.9	8	560 Nm
K80 (LI015)	82 mm	M20 10.9	12	560 Nm
Drawbar eye				
D35 (LI038)	42 mm	M16 12.9	6	340 Nm
D40 (LI017)	41.5 mm	M16 10.9	6	300 Nm
D40 (LI006)	42.5 mm	M20 8.8	8	395 Nm
D46(LI034)	48 mm	M20 10.9	12	550 Nm
D50 (LI037)	60 mm	M16 12.9	4	340 Nm
D50 (LI010)	51.5 mm	M16 10.9	8	300 Nm
D50 (LI012)	51.5 mm	M20 10.9	4	540 Nm
D50 (LI011)	51.5 mm	M20 8.8	8	410 Nm
D50 (LI030)	52.5 mm	M20 8.8	8	395 Nm
D51 (LI039)	53 mm	M20 10.9	12	600 Nm
D58 (LI031)	60 mm	M20 10.9	12	550 Nm
D62 (LI007)	63.5 mm	M20 10.9	8	590 Nm
D79 (LI021)	81 mm	M20 10.9	12	550 Nm

12.8 Axle and brake



For optimum brake performance with a minimum of wear, we recommend that the brakes on the tractor are balanced with those on the machine. After the service braking system has been run in for a suitable period, arrange for the brakes to be balanced by a specialist workshop.

Have the balancing process carried out before these empirical values are reached if you discover excessive wear on the brake pads.

To avoid problems with the brakes, adjust all vehicles in accordance with EC Directive 71/320 EEC.



WARNING

- Repair and adjustment work on the service braking system should only be carried out by trained specialist personnel.
- Special care is required for welding, torch cutting and drilling work in the vicinity of brake lines.
- Always carry out a braking test after any adjusting or repair work on the braking system

General visual inspection



WARNING

Carry out a general visual inspection of the brake system. Observe and check the following criteria:

- Pipe lines, hose lines and hose couplings must not be externally damaged or corroded.
- Hinges, e.g. on fork heads, must be properly secured, easy to move, and not worn out.
- Ropes and cables
 - o must be properly run.
 - o may not have any visible cracks.
 - o may not be knotted.
- Check the piston stroke on the brake cylinders, and adjust as necessary.
- The air reservoir must not
 - o move around in the tensioning belts.
 - o be damaged.
 - o show any outward signs of corrosion damage.

Checking the brake drum for dirt

1. Unscrew the two cover plates (Fig. 73/1) on the inside of the brake drum.
2. Remove any dirt and plant debris which may have entered the drum.
3. Refit the cover plates.



CAUTION

Dirt entering the drums may be deposited on the brake pads (Fig. 73/2) and thus appreciably reduce brake performance.

Risk of accident.

If dirt is discovered in the brake drum, the brake pads must be inspected by a specialist workshop.

For this to happen, the wheel and brake drum must be removed.

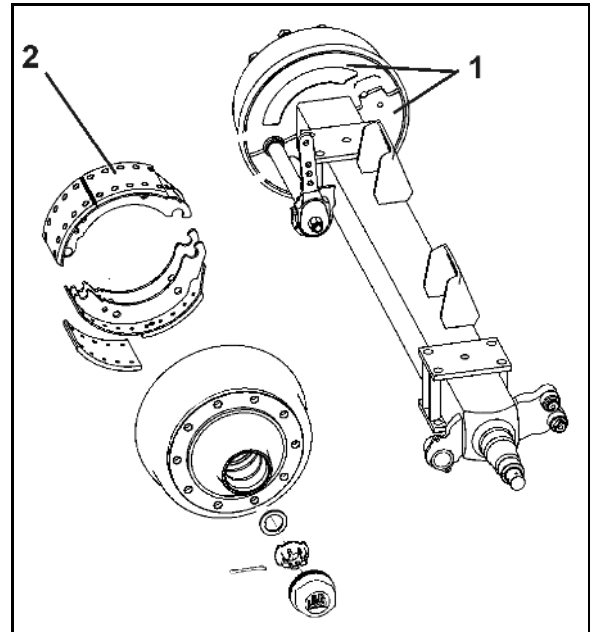


Fig. 75

Checking play on wheel hub bearings

1. To check the play on wheel hub bearings, raise the axle until the wheels turn freely (Fig. 74).
2. Release the brake.
3. Place a lever between the tyre and the ground and check the play.

If bearing play can be detected:

Adjust the bearing play

1. Remove the dust cup or hub cap.
2. Remove the split pin from the axle nut.
3. Tighten the wheel nut while turning the wheel at the same time until the wheel hub is lightly braked as it turns.
4. Turn the axle nut back to the next available split pin hole. If it is already over a hole, turn it to the next hole (max. 30°).
5. Fit the split pin and bend it slightly open.
6. Top up the dust cap with high melting point grease and drive it into, or screw it onto the wheel hub.

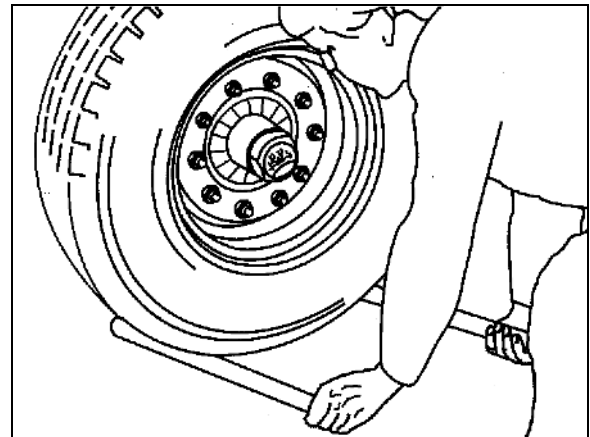


Fig. 76

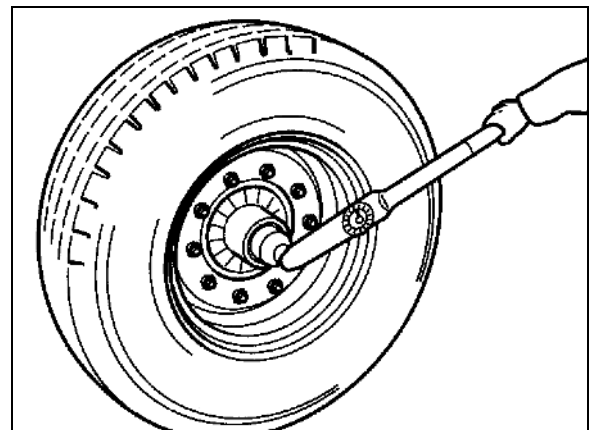


Fig. 77

Brake pad check

Open the inspection hole (Fig. 76/1) by pulling out the rubber stopper (if present).

At a residual thickness

- | | | |
|-----------|-------------------|------|
| a: | for riveted pads | 5 mm |
| | (N 2504) | 3 mm |
| b: | for adhesive pads | 2 mm |

the brake pad must be replaced.

Reinsert the rubber tab.

Brake adjustment

Depending on use, the wear and function of the brakes must be constantly checked and, if necessary, readjustment must be carried out. Readjustment is required after using approx. 2/3 of the max. cylinder stroke for emergency braking. To do this, jack up the axle and secure it against unintended movement.

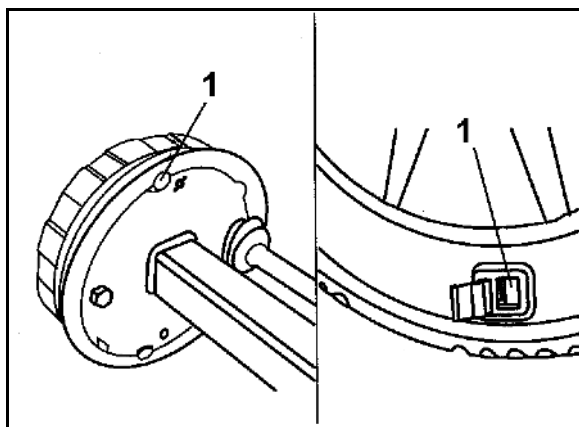


Fig. 78

Adjusting the linkage adjuster

Move the linkage adjuster by hand in the pressure direction (Fig. 78). If the free travel of the long-stroke diaphragm cylinder pressure rod is max. 35 mm, the wheel brake must be readjusted.

Adjustments are made using the readjustment hexagon bolt on the linkage adjuster. Set free travel "a" to 10-12 % of the connected brake lever length "B", e.g. lever length 150 mm = free travel 15 – 18 mm.

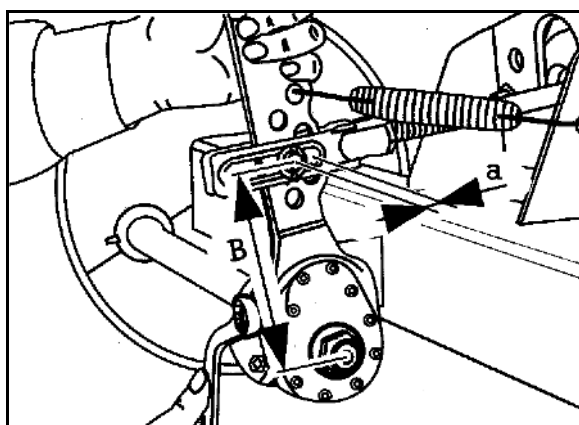


Fig. 79

Adjusting the automatic linkage adjuster

Basic settings are made in the same way as for the standard linkage adjuster. Readjustment occurs automatically at a cam rotation of approx. 15°.

The ideal lever position (which cannot be altered owing to the attachment of the cylinder) is approx. 15° before perpendicularity, and the same in the actuation direction.

Checking the function of the automatic linkage adjuster

1. Remove the rubber stopper cap.
2. Slacken the adjusting screw (arrow) with a ring spanner (Fig. 78) approx. $\frac{3}{4}$ of a turn anti-clockwise. There must be free travel of at least 50 mm for a lever length of 150 mm.
3. Actuate the brake lever several times by hand. This should cause a smooth automatic readjustment; it should be possible to hear the coupling engaging and, on the back stroke, the adjusting screw should turn clockwise slightly.
4. Refit the stopper cap.
5. Lubricate with BPW ECO_Li91 special high melting point grease.

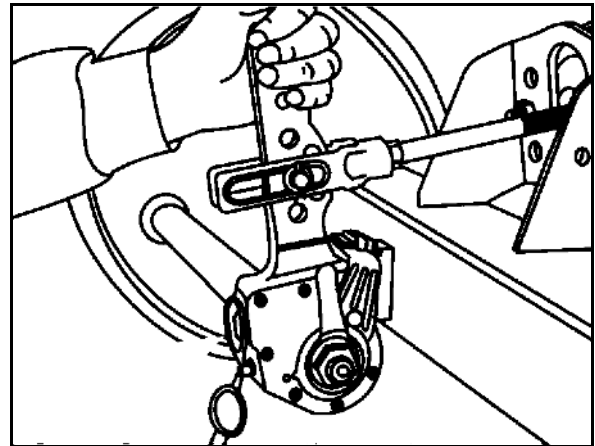


Fig. 80

Adjusting the S3008 RAZG expanding lever brake

1. Tension lever system for ramp equipment and for releasing the hand brake lever.
 2. Tighten the regulating screws on the wheel brakes in the direction of the arrow, using a screwdriver, until the wheel is hard to turn in the direction of travel.
 3. Turn the regulating screw back until a braking effect can no longer be felt when the wheel turns forwards.
 4. Reinstall the tension lever system for ramp equipment and adjust it so that it is free from play.
 5. As a test, apply the parking brake slightly and use the same braking torque (in the direction of travel) to check the wheels on the left and right.
- Inspection hole (Fig. 79/1)

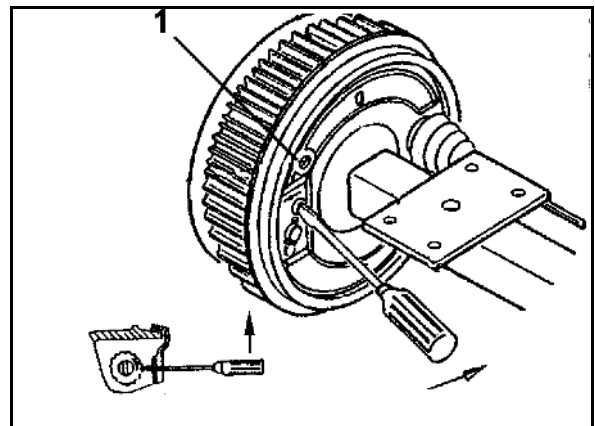


Fig. 81

Air reservoir



Drain the air reservoir every day.

Draining the air reservoir

Fig. 80/...

- (1) Air reservoir
 - (2) Tensioning belts
 - (3) Drainage valve
 - (4) Test connection for pressure gauge
1. Pull the drain valve (Fig. 80/3) in a side-ways direction using the ring until no more water escapes from the air reservoir (Fig. 80/1).
- Water flows out of the drain valve (Fig. 80/3).
2. Unscrew the drain valve (Fig. 80/3) from the air reservoir and clean the reservoir if there are signs of dirt.

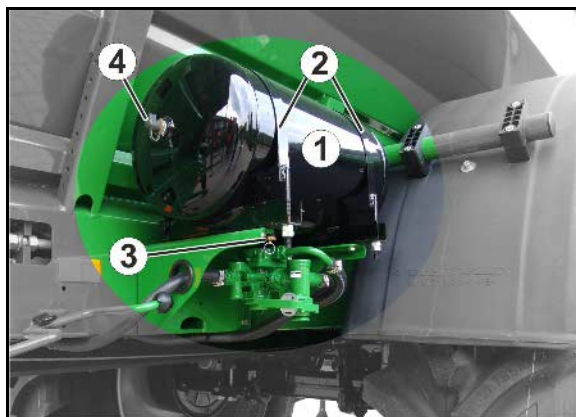


Fig. 82

Inspection instructions for the dual circuit service brake system

1. Leak tightness check

1. Check all connections, pipe lines, hose lines and screw connections for leak tightness.
2. Remedy any leaks.
3. Repair any areas of chafing on pipes and hoses.
4. Replace porous and defective hoses.
5. The dual-circuit service brake system may be considered leakproof if the drop in pressure is no more than 0.15 bar after 10 minutes.
6. Seal any leaking areas or replace leaking valves.

2. Checking the pressure in the air reservoir

Connect a pressure gauge to the test connection on the air reservoir.

→ Set value 6.0 to 8.1 + 0.2 bar

3. Checking the brake cylinder pressure

Connect a pressure gauge to the test connection on the brake cylinder.

→ Set value: with brake not applied 0.0 bar

If an ALB regulator is installed, the values are checked in line with the information on the Haldex ALB plate.

4. Visual inspection of the brake cylinder

1. Check the dust sleeves or gaiters for damage.
2. Replace damaged parts.

5. Joints on brake valves, brake cylinders and brake linkages

Joints on brake valves, brake cylinders and brake linkages must move freely. Grease or lightly oil, if necessary.

12.8.1 Line filter



- Change damaged filter inserts.

1. Press together the locking piece (Fig. 81/1) on the two lugs.
2. Remove the locking piece with O-ring, pressure spring and filter insert.
3. Clean (rinse out) the filter insert with petrol or thinner and blow dry with compressed air.
4. Press together the locking piece (Fig. 81/1) on the two lugs.
5. Insert the locking piece with O-ring, pressure spring and filter insert.

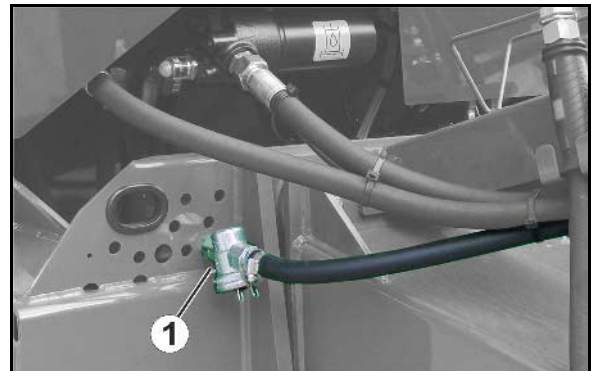


Fig. 83



When inserting the locking piece, make sure that the O-ring is not twisted in the guide slot.

12.9 Parking brake



On new machines, the brake cables of the parking brake may stretch. Readjust the parking brake,

- if three quarters of the spindle tensioning distance is required to firmly apply the parking brake.
- if you have just fitted new brake pads.

When carrying out maintenance on the brake system, comply with the chapter "Safety information for the operator", page 23.

Adjusting the parking brake



When the parking brake is off, the brake cable must be slightly slack (even if the air-sprung suspension is raised to the maximum or fully lowered). However, the brake cable must not rest or chafe against other parts of the vehicle.

1. Release the cable clamps.
2. Shorten the brake cable as appropriate and retighten the cable clamps.
3. Check for the correct braking effect from the parking brake when applied.

12.10 Tyres / wheels

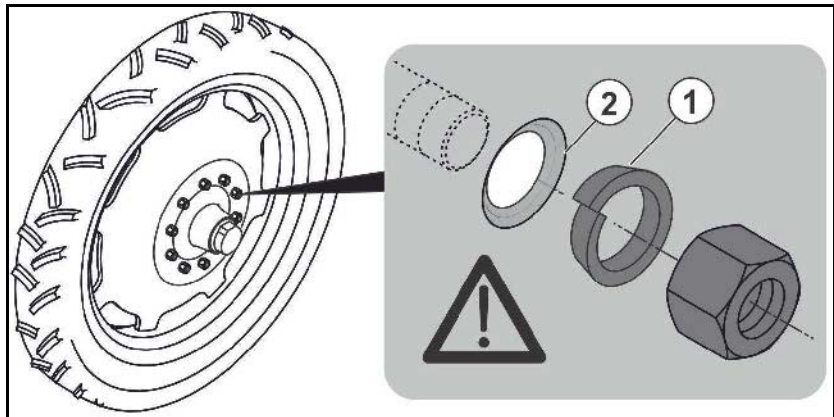


- Required tightening torque for wheel nuts or bolts:
510 Nm



To assemble the wheels, use:

- (1) conical rings in front of the wheel nuts.
- (2) only rims with a fitting countersink for the conical ring.



- Regularly check the
 - wheel nuts for firm seating.
 - tyre pressures.
- Only use the tyres and wheels which we have specified (see page 40).
- Repair work on tyres must only be carried out by specialists using suitable fitting tools.
- Installing tyres requires sufficient knowledge and proper fitting tools.
- Use the jack only at the jacking points indicated.

12.10.1 Tyre pressures



CAUTION

There is a risk of tyres bursting when tyres are pumped up and if tyre pressure is too high.



The maximum permissible inflation pressure for the tyres is 2.4 bar. See technical data.

→ When using new tyres, pay attention to the required tyre load capacity at 2.4 bar.



- The required tyre pressure is dependent on
 - o tyre size.
 - o tyre loading capacity.
 - o speed.
- The operational performance of the tyres is reduced
 - o by overloading.
 - o if tyre pressure is too low.
 - o if tyre pressure is too high.



- Check tyre pressures regularly when the tyres are cold, i.e. before starting a run (see page 40).
- The difference in pressure between the tyres on one axle must be no greater than 0.1 bar.
- Tyre pressure can be raised by up to 1 bar after a fast run or in warm weather. Tyre pressure should on no account be reduced as it is then too low when the tyres cool down.

12.10.2 Fitting tyres



- Remove any instances of corrosion from the wheel rim seating surfaces before fitting a new / another tyre. Corrosion can cause damage to the wheel rims when the vehicle is in operation.
- When fitting new tyres, always use new valves for tubeless tyres or new inner tubes.
- Always fit the valves with valve caps which have a gasket insert.

Fitting tyres:

To jack up the ZG-TS for tyre changes, use the jack at the jacking points indicated (Fig. 82/1).

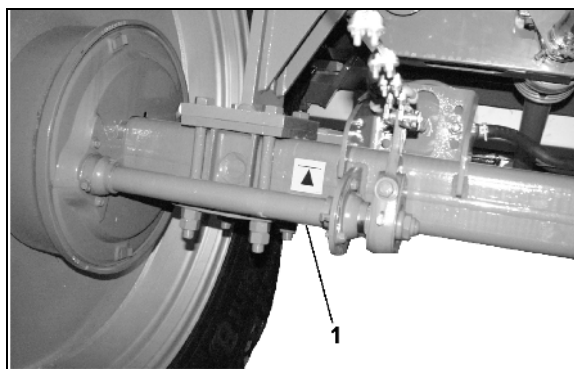


Fig. 84

12.11 Hydraulic system



WARNING

Risk of infection through the high pressure hydraulic fluid of the hydraulic system entering the body!

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

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

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



WARNING

Danger of unintentional contact with hydraulic fluid!

Please take the following first-aid measures:

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



- When connecting the hydraulic hose lines to the hydraulic system of connected machines, ensure that the hydraulic system is depressurised on both the drawing vehicle and the trailer.
- 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 original AMAZONE 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.

12.11.1 Labelling hydraulic hose lines

The assembly labelling provides the following information:

Fig. 83/...

- (1) Manufacturer's labels (A1HF)
- (2) Date of manufacture of the hydraulic hose lines (02 04 = February 2004)
- (3) Maximum approved operating pressure (210 bar).

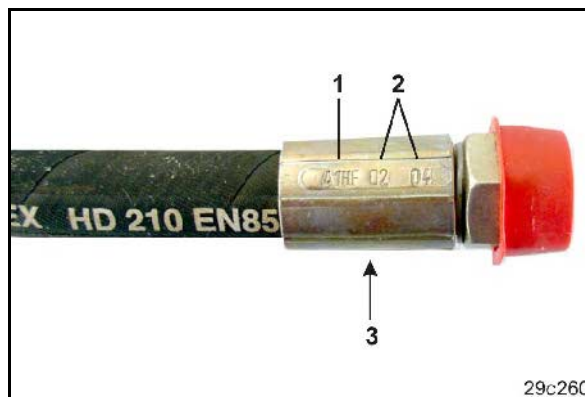


Fig. 85

12.11.2 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. Replace any worn or damaged hydraulic hose lines immediately.

12.11.3 Inspection criteria for hydraulic hose lines



For your own safety and in order to reduce pollution, ensure the following inspection criteria.

Replace hoses if the respective hose 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. Both in a depressurised and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
 - Leak points.
 - 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".



Common causes for leaking hoses / pipes and connection pieces include:

- missing O-rings or seals
- damaged or badly fitting O-rings
- brittle or deformed O-rings or seals
- foreign bodies
- badly fitting hose clips

12.11.4 Installation and removal of hydraulic hose lines



Use

- only genuine AMAZONE replacement hoses. These hoses stand up to chemical, mechanical and thermal loads.
- hose clips made from V2A for fitting hoses, as a rule.



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

- 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 fixing to prevent any scouring of the hoses on components or on each other. 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.

12.11.5 Mounting hose fittings with O-rings and sleeve nuts

1. First, tighten the sleeve nut manually.
2. Then, use the spanner to tighten the sleeve nut at least $\frac{1}{4}$ to a maximum of $\frac{1}{2}$ turn.



You must not tighten screw unions with O-rings as tight as those with compression rings.

If you tighten the sleeve nut tighter than specified, the cone-shaped screw union may break (in particular at the welded pin on the hydraulic cylinder).

12.12 Hydraulic fluid filter

Hydraulic fluid filter (Fig. 84/1) with contamination indicator (Fig. 84/2):

Green → Filter fully functional

Red → Replace filter

To remove the filter, twist off the filter cover and replace the filter.



CAUTION

Dump the pressure in the hydraulic system beforehand.

After replacing the filter, press the contamination indicator back into place.

→ Green ring again visible.

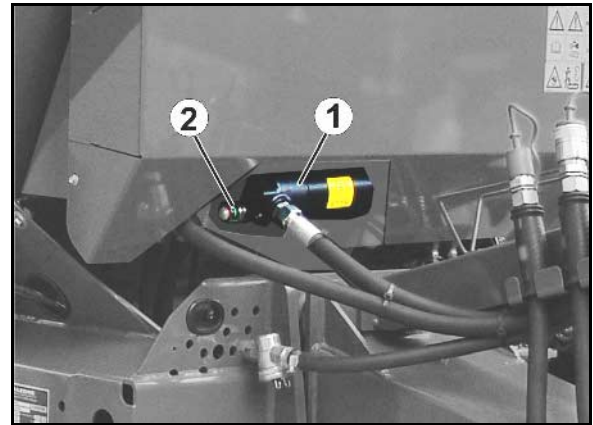


Fig. 86

12.13 Conveyor belt gearbox

Gear oil: SAE 090

Fill levels: 1l

Correct oil fill level at L = 132 mm

There is no need to change the oil.!

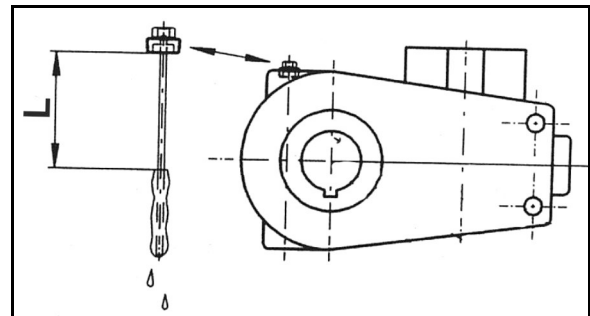


Fig. 87

12.14 Oil change angular gearbox

1. Dismantle the transport device if necessary.
Maintain the tension in the extension spring by inserting a retaining screw in the frame, swivel the transport device up and dismantle.
 2. Dismantle the cover underneath the gearbox.
 3. Place a container under the angular gearbox.
 4. Remove the bleed screw.
- Oil flows out.
5. Dismantle filler plug / sensor.
 6. Reinstall the bleed screw, use a new copper washer.
 7. Fill the gearbox with oil.
 8. Reinstall the filler plug / sensor.
 - Use a new o-ring.
 - Protect the cylindrical part of the sensor against moisture with a generous amount of grease.
 9. Reinstall the dismantled parts, remove the retaining screw from the extension spring.
- Oil: ISO VG 150 EP / SAE 90
 - Oil filling quantity: 0.23 l

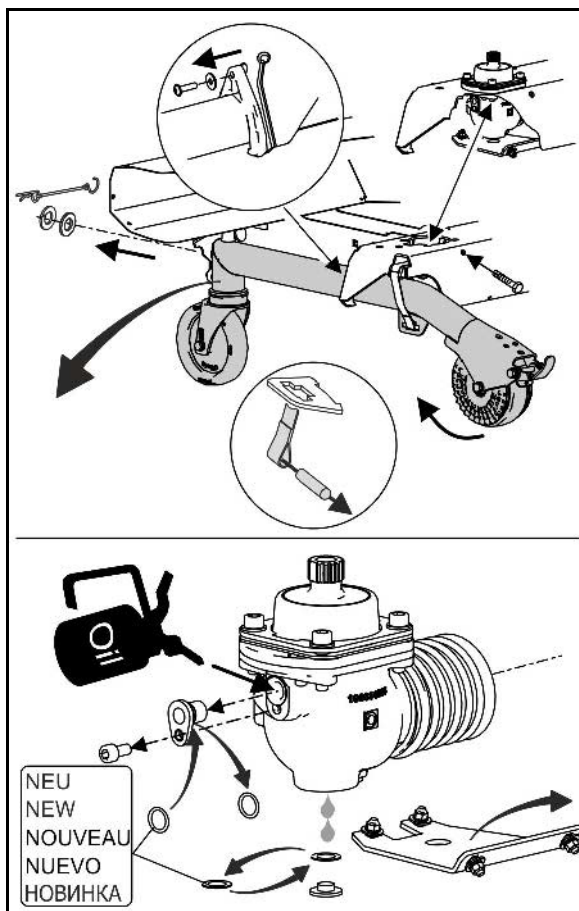


Fig. 88

12.15 Taring the spreader

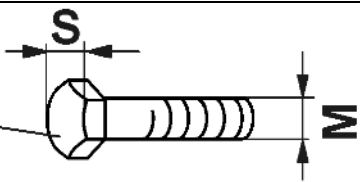
If the on-board computer does not show 0 kg (+/- 5 kg) fill weight with the spreader empty, the spreader must be retared (see on-board computer operating manual).

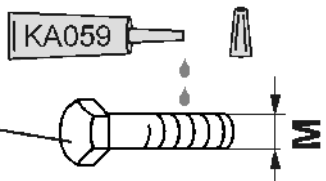
This may occur, for example, after the attachment of special accessories.

12.16 Calibrating the spreader

If after filling the retared spreader does not show the correct fill weight, the spreader must be recalibrated (see the on-board computer operating manual).

12.17 Screw tightening torques

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> 8.8 10.9 12.9 </div>  </div>				
M	S	Nm		
		8.8	10.9	12.9
M 8	13	25	35	41
M 8x1		27	38	41
M 10	16 (17)	49	69	83
M 10x1		52	73	88
M 12	18 (19)	86	120	145
M 12x1,5		90	125	150
M 14	22	135	190	230
M 14x1,5		150	210	250
M 16	24	210	300	355
M 16x1,5		225	315	380
M 18	27	290	405	485
M 18x1,5		325	460	550
M 20	30	410	580	690
M 20x1,5		460	640	770
M 22	32	550	780	930
M 22x1,5		610	860	1050
M 24	36	710	1000	1200
M 24x2		780	1100	1300
M 27	41	1050	1500	1800
M 27x2		1150	1600	1950
M 30	46	1450	2000	2400
M 30x2		1600	2250	2700

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> A2-70 A4-70 </div>  </div>												
M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
Nm	2,4	4,9	8,4	20,6	40,7	70,5	112	174	242	342	470	589



Coated bolts have different tightening torques.

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

13 Hydraulic diagram

Mechanical spreader disc drive

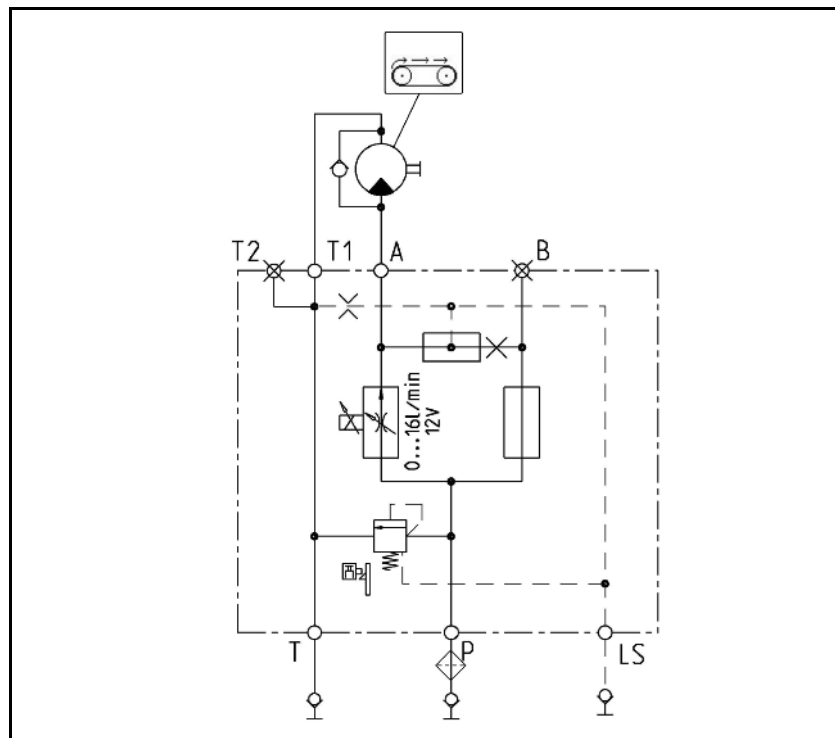


Fig. 89

Hydraulic spreader disc drive

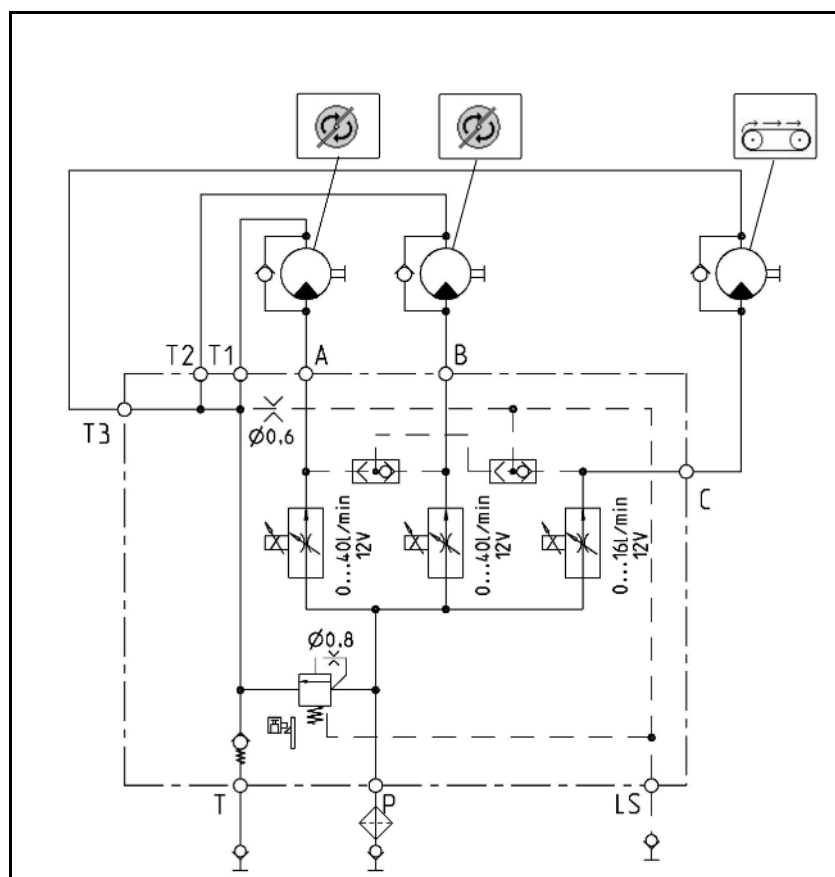


Fig. 90



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