

Operating manual

AMAZONE

**Precision airplanter
EDX 9000-TC**



MG4346
BAH0048-6 09.2019

**Please read this operating
manual before initial
operation.
Keep it in a safe place for
future use!**

en



Reading the instruction

manual and to adhere to it should not appear to be inconvenient and superfluous as it is not enough to hear from others and to realise that a machine is good, to buy it and to believe that now everything would work by itself. The person concerned would not only harm himself but also make the mistake of blaming the machine for the reason of a possible failure instead of himself. In order to ensure a good success, one must consider the design of the object, in other words one must make himself familiar with every aspect of the machine and gain practice in handling the machine. Only by doing so would you be satisfied both with the machine and also with yourself. To achieve this is the purpose of this instruction manual.

Leipzig-Plagwitz 1872. Rud. Sark.

Identification data

Please insert the identification data of the implement. The identification data are arranged on the rating plate.

Implement ID No.:
(10-digit)

Type: EDX 9000-TC

Permissible system pressure (bar): Maximum 210 bar

Year of manufacture:

Basic weight (kg):

Permissible 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 SE & Co. KG. We thank you for your trust in our products.

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

Before initial operation, read and comply with the information in this operating manual, and particularly the safety instructions. Only after careful reading will you be able to benefit from the full scope of your newly purchased implement.

Please ensure that all the implement operators have read this operating manual before they put the implement into operation.

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

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

User evaluation

Dear Reader,

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

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1 User information

The User information section provides information concerning the operating manual.

1.1 Purpose of the document

This operating manual

- describes the operation and maintenance of the implement
- provides important information on safe and efficient handling of the implement
- is a component part of the implement and should always be kept with the implement or the towing vehicle.
- must be kept in a safe place for future use.

1.2 Location information in the operating manual

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

1.3 Presentations used

Instructions and implement reactions

Activities to be carried out by the user are presented as numbered instructions. Always observe the sequence of the instructions. The reaction to instructions is given by an arrow. Example:

1. Instruction 1
→ Reaction of the implement to handling instruction 1
2. Instruction 2

Listings

Listings without a mandatory sequence are presented as a listing with bullets. Example:

- Point 1
- Point 2

Item numbers in illustrations

Numbers in round brackets refer to the item numbers in the illustrations. The first number refers to the figure and the second number to the item.

Example: (Fig. 3/6)

- Figure 3
- Item 6

2 General Safety Instructions

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

2.1 Obligations and liability

Comply with the instructions in the operating manual

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

Obligations of the operator

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

- are aware of the basic workplace safety information and accident prevention regulations
- have received instruction in working with/on the implement.
- have read and understood this operating manual.

The operator is obliged

- to keep all the warning symbols on the implement in a legible state
- to replace damaged warning symbols.

Obligations of the user

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

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

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

General Safety Instructions

Risks in handling the implement

The implement has been constructed to the state-of-the art and the recognised rules of safety. However, operating the implement may cause risks and restrictions

- the health and safety of the user or third persons
- the implement itself
- other property.

Only use the implement

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

Eliminate any faults immediately which could impair safety.

Guarantee and liability

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

- Improper use of the implement
- Improper installation, commissioning, operation and maintenance of the implement
- Operation of the implement with defective safety equipment or improperly attached or non-functioning safety and protective equipment
- Non-compliance with the instructions in the operating manual regarding commissioning, operation and maintenance
- Unauthorised design changes to the implement
- Insufficient monitoring of implement parts which are subject to wear
- Improperly executed repairs
- Disasters due to the effects of foreign objects and force majeure.

2.2 Presentation 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 hazard with high risk, which will result in death or serious bodily harm (loss of limbs or long-term harm), if it is not avoided.

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



WARNING

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



IMPORTANT

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

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



NOTE

Indicates handling tips and particularly useful information.

These instructions will help you to use all the functions of your implement in the best way possible.

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:

- Safety glasses
- Protective shoes
- Chemical-resistant overalls
- Skin protection agents, etc.



The operation manual

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

Check all the available safety equipment regularly.

2.4 Safety and protective equipment

Before starting up the implement each time, all the safety and protection equipment must be properly attached and fully functional. Check all 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 you should comply with the statutory road traffic regulations.

2.6 User training

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

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

Person Job	Person specially trained for the activity ¹⁾	Trained person ²⁾	Person with specialist training (specialist workshop) ³⁾
Loading/Transport	X	X	X
Start-up	—	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⁾ Persons with specialised 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 from several years' experience in the relevant field.



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



2.7 Safety measures in normal operation

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

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

2.8 Danger from residual energy

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

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

2.9 Maintenance and repair work, fault elimination

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

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

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

Check all the bolted connections for tightness. On completion of the maintenance work, check the function of the safety devices.

2.10 Design changes

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

Any expansion or conversion work shall require the written approval of AMAZONEN-WERKE. Only use modification and accessory parts approved by AMAZONEN-WERKE so that the type approval, for example, remains valid in accordance with 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 crushing, cutting, being trapped or drawn in, or impact through the failure of support parts.

It is strictly 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 on load-bearing parts.

2.10.1 Spare and wear parts and aids

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

Use only genuine AMAZONE spare and wear parts or the parts cleared by AMAZONEN-WERKE so that the operating permit retains its validity in accordance with national and international regulations. If you use wear and spare parts from third parties, there is no guarantee that they have been designed and manufactured in such a way as to meet the requirements placed on them.

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

2.11 Cleaning and disposal

Handle and dispose of any materials used carefully, in particular

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

2.12 Workstation of the operator

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

2.13 Warning symbols and other markings on the machine



Always keep all the warning symbols of the implement 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 danger areas on the implement 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: risk of cutting

2. The consequence of non-compliance with the risk avoidance instructions.

For example: causes serious injuries to fingers or hands.

3. The risk avoidance instructions.

For example: only touch implement parts when they have come to a complete standstill.

General Safety Instructions

Order number and explanation

Warning signs

MD 076

Risk of drawing-in/entrapment for hand or arm due to moving force-transmission parts!

This hazard can cause the most severe injuries with loss of body parts.

Never open or remove protective equipment,

- while the tractor engine is running with the universal joint shaft or hydraulic/electronic system connected.
- if the ground wheel drive is moving.



MD 078

Risk of crushing of fingers/hand by accessible, moving parts of the implement!

This hazard can cause the most severe injuries with loss of body parts.

Never reach into the hazardous area while the engine of the tractor with connected universal joint shaft/hydraulic system/electronic system is running.



MD 082

Risk of falling when riding the implement on treads or platforms!

Causes serious, potentially fatal injuries anywhere on the body.

It is forbidden to ride on the implement or climb the implement when it is running. This prohibition also applies to implements with step surfaces or platforms.

Make sure that nobody is riding on the implement.

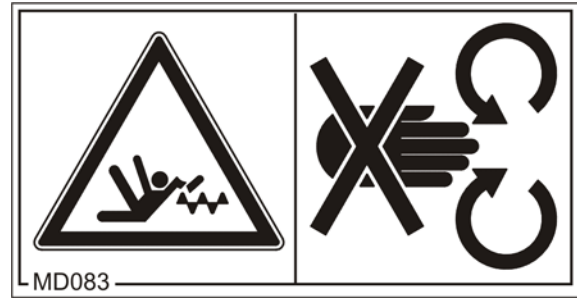


MD 083

Danger of arms being drawn in and/or caught by moving parts involved in the working process!

This hazard can cause the most severe injuries with loss of body parts.

Never open or remove protective devices while the tractor engine is running with the universal joint shaft/hydraulic or electronic systems connected.



MD 084

Risk of crushing the entire body due to standing in the swivel range when implement parts are being lowered.

Causes serious, potentially fatal injuries anywhere on the body.

- It is forbidden to stand in the swivel range of the implement when implement parts are being lowered.
- Instruct personnel to leave the swivel range of any implement parts which can be lowered before you lower the parts.

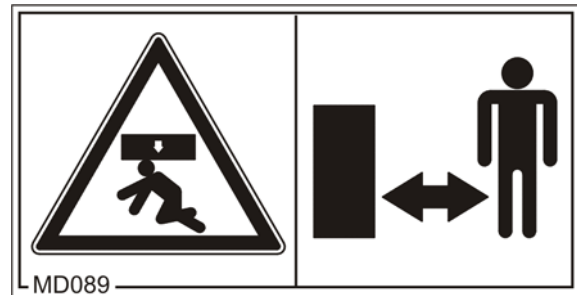


MD 089

Risk of crushing the entire body due to standing under suspended loads or raised implement parts.

Causes serious, potentially fatal injuries anywhere on the body.

- It is forbidden to stand under suspended loads or raised implement parts.
- Maintain an adequate safety distance from any suspended loads or raised implement parts.
- Ensure that all personnel maintain an adequate safety distance from suspended loads or raised implement parts.



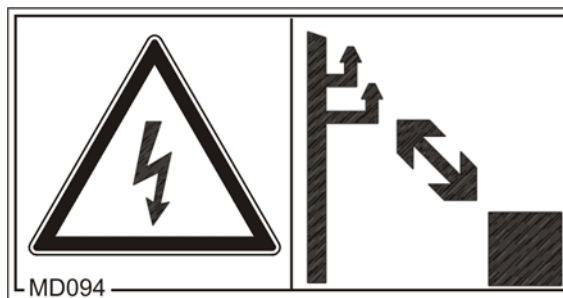
General Safety Instructions

MD 094

Risk of electric shock or burns from accidentally touching overhead power lines or by coming within the prohibited distance of high voltage overhead power lines.

These dangers can cause extremely serious and potentially fatal injuries.

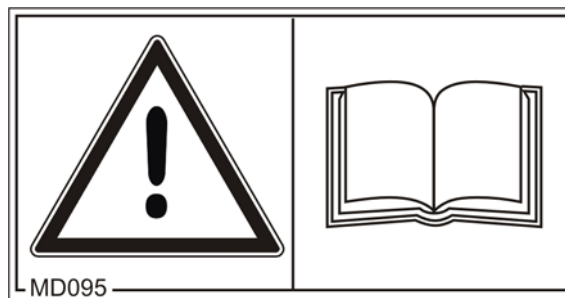
Maintain a sufficient distance from electrical overhead cables when swinging any parts of the implement in and out.



Rated voltage	Safety distance from transmission lines
up to 1 kV	1 m
over 1 up to 110 kV	2 m
over 110 up to 220 kV	3 m
over 220 up to 380 kV	4 m

MD 095

Before commissioning the implement read and observe the operating manual and the safety instructions carefully!

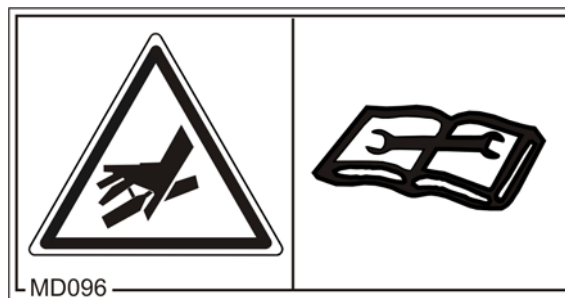


MD 096

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 with your hand or fingers.
- Read and observe the information in the operating manual before carrying out maintenance work on the hydraulic hose lines.
- If you are injured by hydraulic fluid, contact a doctor immediately.



MD 097

Risk of crushing the entire body by entering/remaining in the lifting area of the three-point linkage when the three-point hydraulic system is operated!

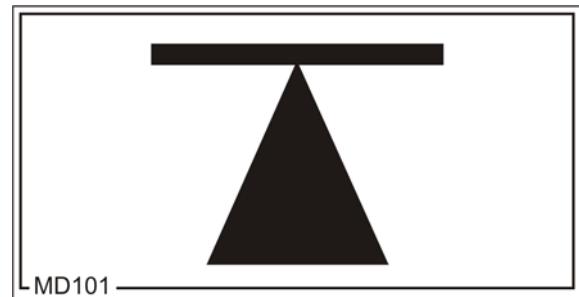
Causes serious, potentially fatal injuries anywhere on the body.

- Personnel are prohibited from standing in the lifting area of the three-point linkage when the three-point hydraulic system is operated.
- Actuate the operating controls for the tractor's three-point hydraulic system
 - o only from the designated workstation.
 - o under no circumstances if you are in the lifting area between the tractor and implement.



MD 101

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



MD 102

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

These dangers can cause extremely serious and potentially fatal injuries.

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



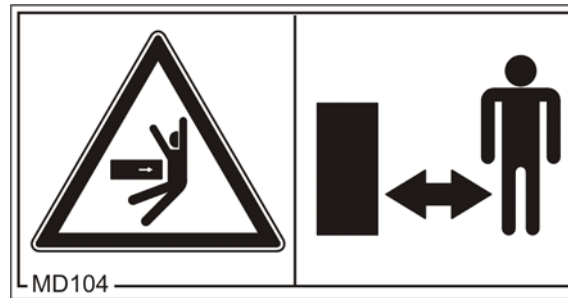
General Safety Instructions

MD 104

Risk of crushing the entire body or impacts due to standing in the swivel range of laterally moving implement parts.

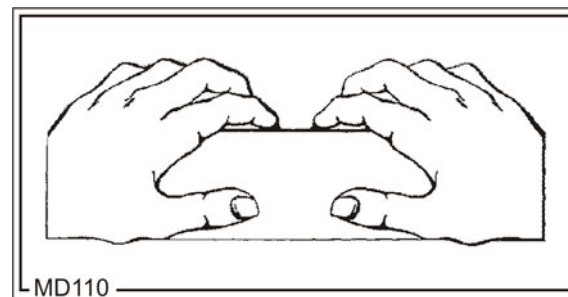
These dangers can cause extremely serious and potentially fatal injuries.

- Maintain an adequate safety distance from moving implement parts while the tractor engine is running.
- Ensure that all personnel maintain an adequate safety distance from moving implement parts.



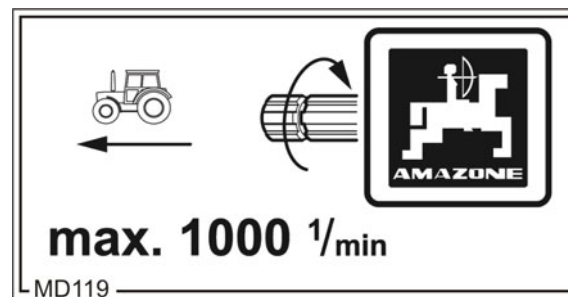
MD 110

This pictogram identifies parts of the implement that serve as a holding grip.



MD 119

Nominal speed (maximum 1000 rpm) and direction of rotation of the drive shaft on the implement side.

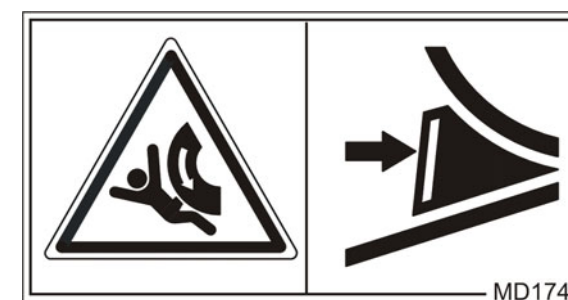


MD 174

Danger from unintended continued movement of the implement.

Will cause serious injuries anywhere on the body or death.

Secure the implement against moving away unintentionally before uncoupling the implement from the tractor. To do this, use the parking brake and/or the wheel chock(s).



MD 181

Check that the wheel nuts are secure.

- after the first 10 operating hours
- after a wheel change.



MD 187

Risk of injury to unprotected body parts!

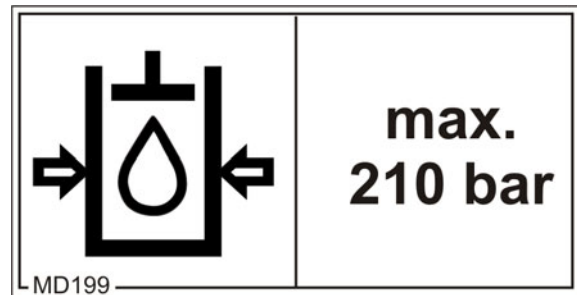
Seed grains may emerge uncontrollably at high speeds and cause injuries particularly to the eyes.

Never pull the seed lines out of the housing or raise the press rollers with the fan switched on (singling unit).



MD 199

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

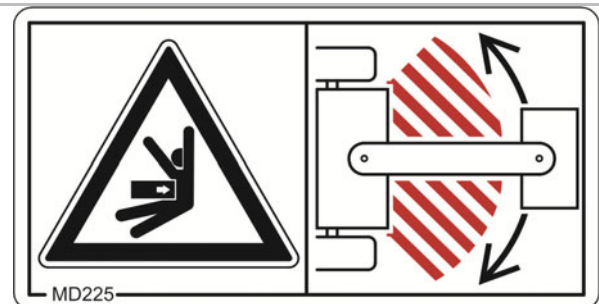


MD 225

Risk of crushing of the entire body due to standing in the swivel range of the drawbar between the tractor and the attached implement!

Causes serious, potentially fatal injuries anywhere on the body.

- Standing or walking in the danger area between the tractor and implement is prohibited whenever the tractor engine is running and the tractor is not secured against unintentional rolling.
- Instruct people to leave the danger area between the tractor and the implement whenever the engine of the tractor is running and the tractor is not secured against unintentional rolling.



2.13.1 Position of the warning signs and other markings

Warning signs

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

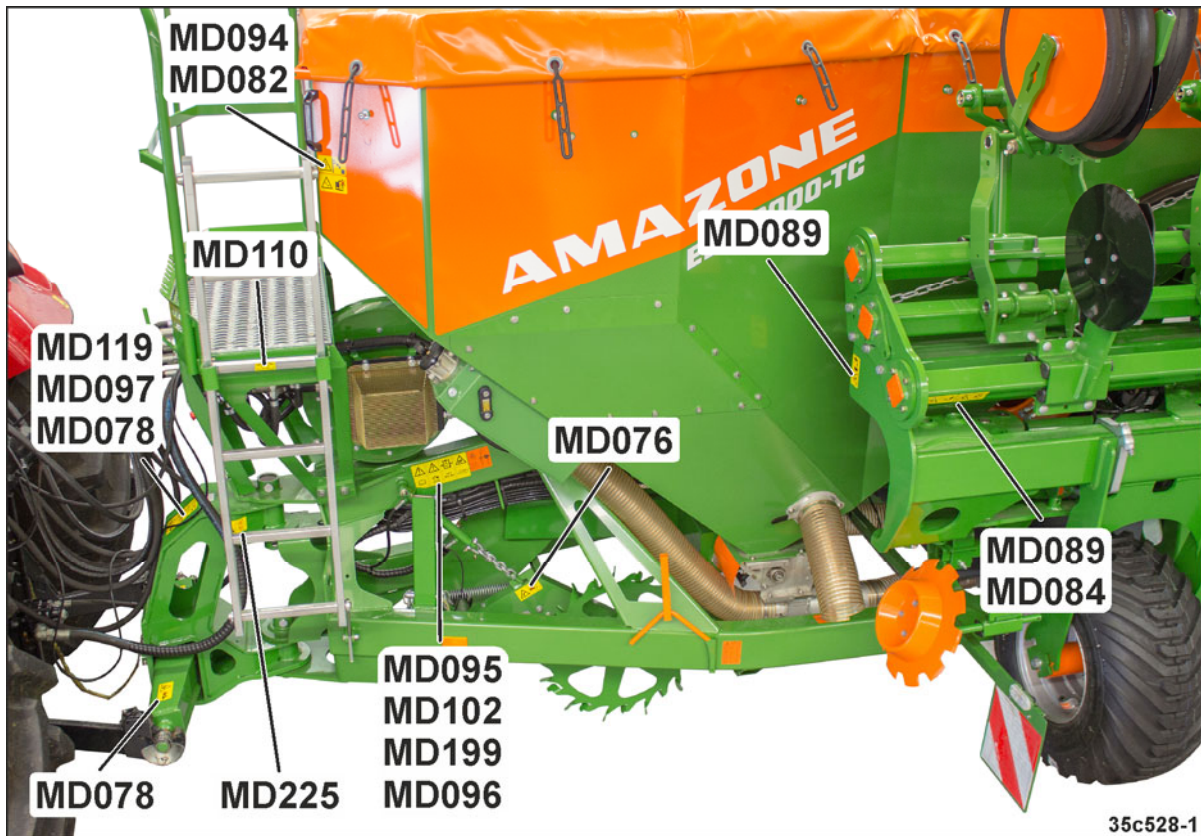


Fig. 1

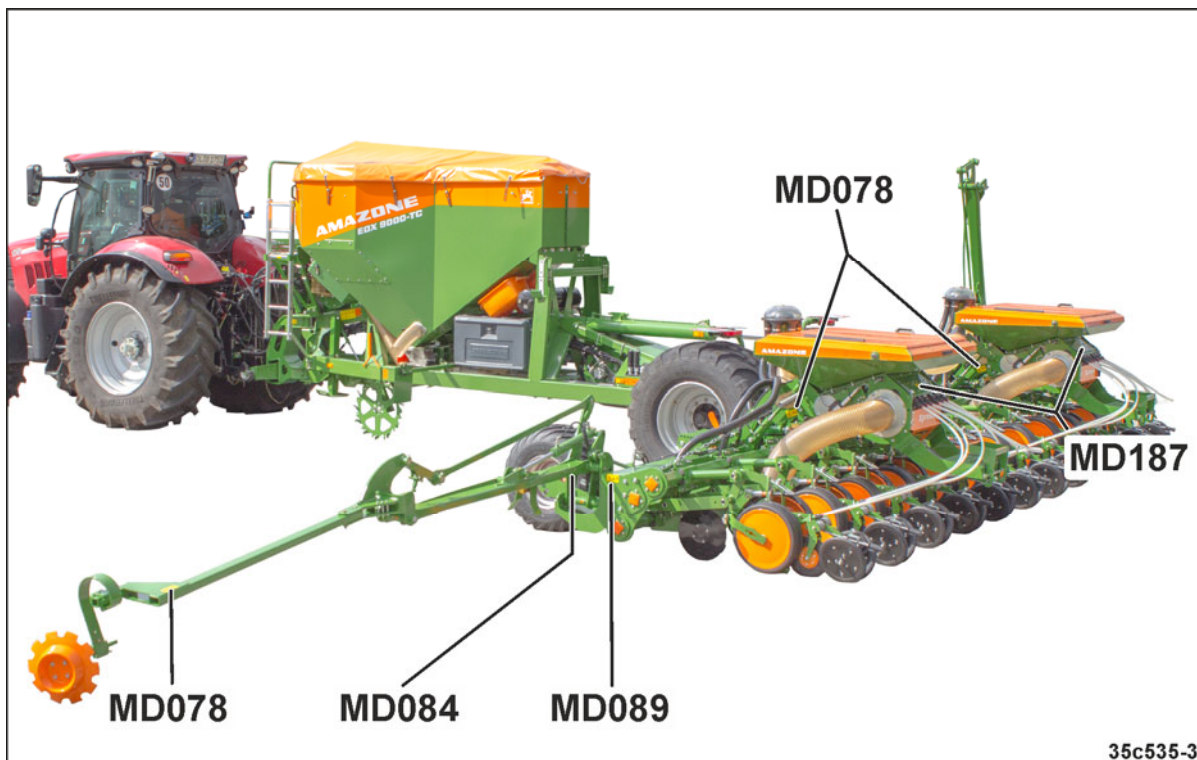


Fig. 2

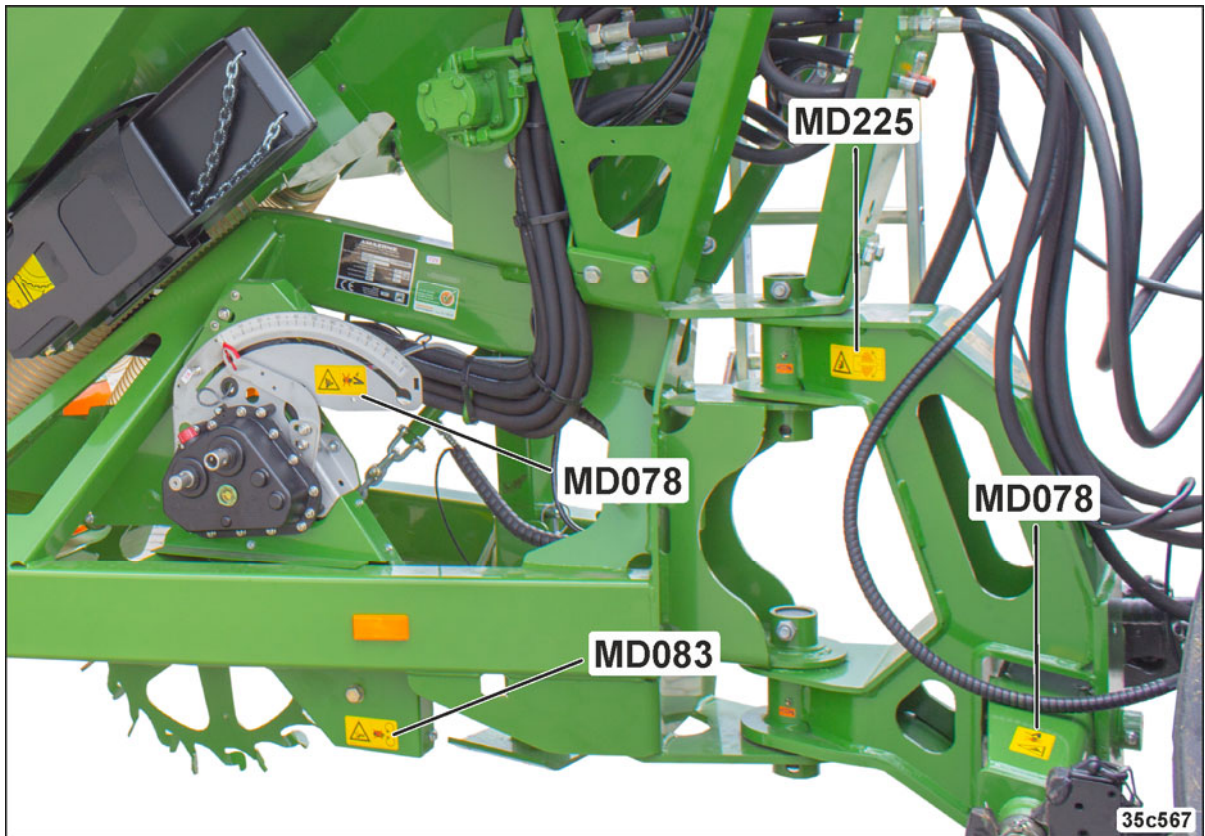


Fig. 3

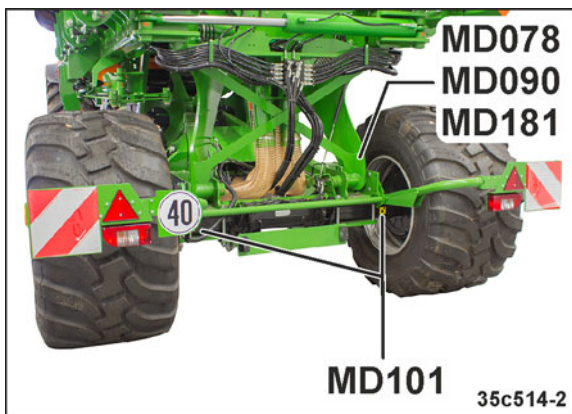


Fig. 4

2.14 Dangers in case of non-observance of the safety instructions

Non-compliance with the safety instructions

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

In particular, non-compliance with the safety information could pose the following risks:

- Risk to people from working in an unsafe working environment
- Failure of important implement functions
- Failure of prescribed methods of maintenance and repair
- Risk to people through mechanical and chemical influences.
- Risk to the environment through leakage of hydraulic fluid.

2.15 Safety-conscious working

In addition to the safety instructions in this operating manual, the generally applicable national occupational health and safety and accident prevention regulations are also 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 users



WARNING

Risk of crushing, cutting, being trapped or drawn in, or impact through inadequate roadworthiness and operational safety.

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



CAUTION

Switch off the on board computer

- before road transport.
- before adjustment, maintenance and repair work.

Risk of accident due to unintended movements of the metering unit or other implement components caused by radar pulses.

2.16.1 General safety instructions and accident prevention instructions

- In addition to these instructions, also comply with the generally valid national and safety and accident prevention regulations!
- The warning signs attached on the implement provide important instructions for safe operation of the machine. Compliance with these instructions is essential for your safety!
- Before moving off and starting up the implement, check the immediate area of the implement (children). Ensure that you can see clearly.
- It is forbidden to ride on the 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 implement.

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



Coupling and uncoupling the implement

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

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

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

Use of the implement

- Before starting work, ensure that you understand all the equipment and actuation elements of the implement and their function. There is no time for this when the machine is already in operation!
- Wear tight-fitting clothing! There is an increased risk of loose clothing getting caught or entangled on drive shafts!
- Only place the implement in service after all protective devices have been attached and are in protective position!
- Comply with the maximum load of the connected implement and the permissible 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 implement.
- It is forbidden to stand in the turning and swivel range of the implement.
- There are crushing and shearing hazards on implement parts actuated by external force (e.g. hydraulically)!
- Only actuate implement parts actuated by external force if personal are maintaining an adequate safety distance to the implement!
- Secure the tractor against unintentional start-up and rolling, before you leave the tractor.
For this:
 - Lower the implement onto the ground.
 - apply the tractor parking brake
 - switch off the tractor engine
 - remove the ignition spanner.

Implement transportation

- When using public roads, national road traffic regulations must be observed.
- Before moving off, check:
 - the correct connection of the supply lines,
 - the lighting system for damage, function and cleanliness,
 - that the brake and hydraulic system shows no visible signs of defect,
 - that the tractor parking brake is released completely
 - the function of the brake system.
- Ensure that the tractor has sufficient steering and braking power.

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

The tractor front axle must always be loaded with at least 20 % of the tractor tare 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 payload of the connected implement and the permissible axle and drawbar loads of the tractor.
- The tractor must guarantee the prescribed brake delay for the loaded vehicle combination (tractor plus connected implement).
- Check the brake power before moving off.
- When turning corners with the implement coupled, take the wide sweep and centrifugal mass of the implement into account.
- Before moving off, ensure sufficient side locking of the tractor lower links, when the implement is fixed to the three-point hydraulic system or lower links of the tractor.
- Before road transport, move all the swivel implement parts to the transport position.
- Before road transport, secure all the swivel implement parts in the transport position against risky position changes. Use the transport locks intended for this.
- Before road transport, secure the operating lever of the three-point hydraulic system against unintentional raising or lowering of the coupled implement.
- Check that the transport equipment, e.g. lighting, warning equipment and protective equipment, is correctly installed on the implement.
- Before road transport, carry out a visual check that the top and lower link pins are firmly fixed with the linch pin against unintentional release.
- Adjust your forward speed to the prevailing conditions.
- Before driving downhill, switch to a low gear.
- Before road transport, always switch off the independent wheel braking (lock the pedals).
- Observe the maximum permissible total weight. Only transport the implement with empty seed and fertiliser hoppers.

2.16.2 Attached implements

- Comply with the approved combination options for the attachment equipment on the tractor and the implement drawbar. Only couple approved combinations of vehicles (tractor and attached implement).
- In the case of single axle implements, observe the maximum permitted drawbar load of the tractor on the attachment equipment.
- Ensure that the tractor has sufficient steering and braking power. Implements connected to a tractor can influence your driving behaviour, as well as the steering and braking power of the tractor, in particular in the case of single axle implements with the drawbar load on the tractor.
- Only a specialist workshop may adjust the height of the drawbar on straight draw bars with a drawbar load.

2.16.3 Hydraulic system

- The hydraulic system is under a high pressure.
- Ensure that the hydraulic hose lines are connected correctly.
- When connecting the hydraulic hose lines, ensure that the hydraulic system is depressurised on both the implement and tractor.
- 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 or
 - are automatically locked or
 - require a float position or pressure position due to their function.
- Before working on the hydraulic system,
 - lower the implement
 - Depressurise the hydraulic system.
 - switch off the tractor engine
 - apply the tractor parking brake
 - take out the ignition spanner.
- Have the hydraulic hose lines checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose lines if they are 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 aging, thus limiting the duration 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 lines made of 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.
Risk of infection.
- When searching for leakage points, use suitable aids, to avoid the serious risk of infection.

2.16.4 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 danger of explosion!
- Risk of explosion. Avoid sparking and naked flames in the area of the battery.
- The implement may be equipped with electronic components whose function is influenced by electromagnetic interference from other units. Such interference can pose risks to people, if the following safety information is not observed.
 - In the case of retrofitting electrical units and/or components on the implement, with a connection to the on-board power supply, the operator 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 2004/108/EEC in the appropriate version and carry the CE mark.

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 checked regularly.
- If there are any functional faults in the brake system, stop the tractor immediately. Have any malfunctions rectified immediately.
- Before performing any work on the brake system, park the implement safely and secure the implement against unintentional lowering and rolling away (wheel chocks)!
- Be particularly careful with welding, burning 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.

Pneumatic braking system

- Before coupling the implement, clean any dirt on the sealing rings on the coupling heads of the supply and brake lines.
- Only move off with the implement connected when the pressure gauge on the tractor shows 5.0 bar.
- Before driving without the implement, seal the coupling heads on the tractor.
- Hang the coupling heads of the implement 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 implements

- Hydraulic brake systems are not approved 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 Tyre

- 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 air pressure! If the air pressure in the tyres is too high, then there is a risk of explosions.
- Park the implement in a safe place and lock the implement against unintentional falling 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 PTO shaft operation

- You can attach or detach items to/from the PTO shaft only after you have done all of the following:
 - the PTO shaft is switched off
 - the tractor engine is switched off.
 - the parking brake has been applied.
 - the ignition spanner has been removed.
- Before switching on the PTO shaft, check that the selected PTO shaft speed of the tractor matches the permitted drive speed of the implement.
- Instruct everyone to leave the danger area of the implement before switching on the PTO shaft.
- Never switch on the PTO shaft while the tractor engine is turned off.
- After the PTO shaft is switched off, there is a risk of injury from the continued rotation of freewheeling implement parts.
Do not approach too near to the implement during this time. You must only start work on the implement once all implement parts are at a complete standstill.

2.16.8 Operation of the precision airplanter

- Observe the permissible filling quantities for seed / fertiliser hoppers.
It is forbidden to ride on the implement during operation.
- During the calibration test, note the danger points from rotating and oscillating implement parts.
- Before road transport, remove the thrust collars of the tramline marker.
- Do not place any parts in the hopper.
- Lock the track markers (design-dependent) in the transport position before road transport.

2.16.9 Cleaning, maintenance and repair

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

3 Loading and unloading

3.1 Important information

The implement sections may only be folded if:

- all hydraulic supply lines on the tractor are connected;
- the AMATRON 3 on-board computer is connected.

To avoid damaging the implement, fold the implement sections as described in "Dual-circuit pneumatic service brake system", Seite 109.

Implement damage that can occur due to incorrect folding

During folding of the sections, the lighting can be damaged if the free hydraulic return flow is not connected to the tractor.



Fig. 5

When lifting the implement sections out of the transport locking mechanism (Fig. 6/1), the lighting is folded down.

When unfolding the sections, wait until the lighting is completely folded down (see also section "Unfolding implement sections") to prevent collisions.

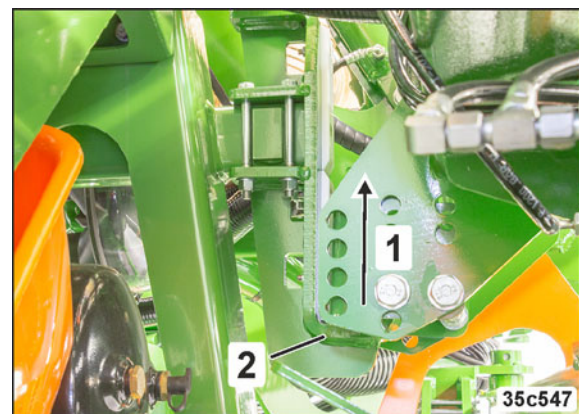


Fig. 6

3.2 Removal of individual implement components in order to comply with the permitted transport height

The following work must be carried out in order to comply with the permitted transport height of the implement and transport vehicle:

1. Label and remove the seed tubes (Fig. 7/1).

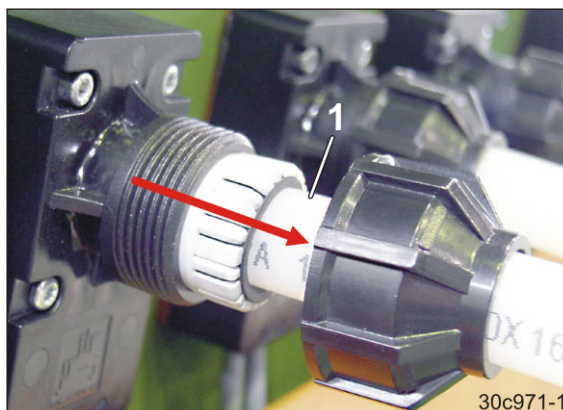


Fig. 7

2. Remove the loading boards (Fig. 8/1).
 - 2.1 Each loading board is attached with 4 bolts (Fig. 8/2).

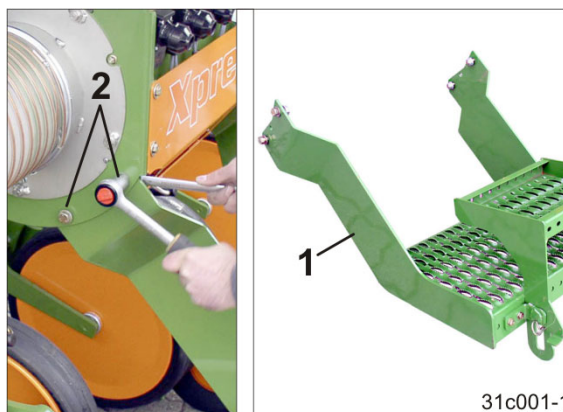


Fig. 8



In transport position, after dismantling the components:

- Transport height: 3.7 m
- Transport width: 3.0 m

3.2.1 Fastening the seed tube hoses

Remove the union nut (Fig. 9/1) completely from the opto-sensor (Fig. 9/3), and pull the seed tube along with the cutting ring (Fig. 9/2) out of the opto-sensor.

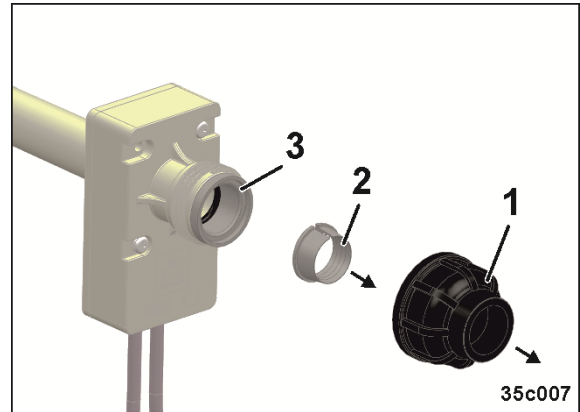


Fig. 9



- Always insert the seed tube as far as it will go to prevent seed accumulating in front of the seed tube. Insulation tape on the seed tube hoses mark the installation position of the hoses. Accidental loosening of a seed tube hose can be immediately seen.
- Lubricate the thread with multipurpose grease, e.g. Duplex 9 (from Fuchs) before fastening the union nut.
- Only tighten the union nut by hand to prevent damage.

The opto-sensor wrench (Fig. 10) serves to loosen and fasten the union nuts, especially for narrow-row seed drills.



Fig. 10

3.3 Loading and unloading with a tractor

**DANGER**

The implement can also be equipped without its own brake system.

There is a risk of accident

- if the tractor is unsuitable.
- if the brake system of the implement is not connected to the tractor and filled.



- Correctly couple the implement to the tractor, before loading the implement onto a transport vehicle or unloading it from a transport vehicle.
- You may only couple and transport the implement with a tractor for loading and unloading, as long as the tractor fulfils the power requirements.
- Pneumatic braking system:
Only move off with the implement connected when the pressure gauge on the tractor shows 5.0 bar!

**WARNING**

A marshalling person is required for the loading and unloading.

3.3.1 Loading the attached implement

1. Attach the implement to a suitable tractor for loading onto a transport vehicle, see
 - o "Start-up", Seite 99;
 - o "Coupling and uncoupling the implement", Seite 108;
2. Remove individual implement components in order to comply with the permitted transport height (see 3.2, Seite 40).
3. Move the implement into the transport position, see
 - o "Transportation", Seite 161;
 - o "Important information", Seite 39.
4. Push the implement carefully backwards onto the transport vehicle.
A marshalling person is required for loading.
5. Secure the implement in compliance with regulations.

Bear in mind that the implement may have no parking brake.
6. Uncouple the tractor from the implement.



Fig. 11



Fig. 12

The symbol marks the lashing points on the implement.

7. Uncouple the tractor from the implement.

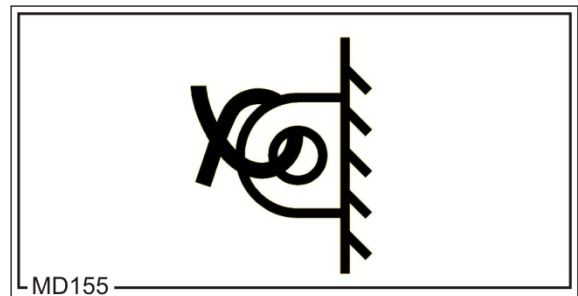


Fig. 13

3.3.2 Unloading the attached implement

1. Attach the implement to a suitable tractor for unloading from the transport vehicle, see
 - o "Start-up", Seite 99;
 - o "Coupling and uncoupling the implement", Seite 108.
2. Remove the transport securing device.
3. Pull the attached implement carefully away from the transport vehicle. A banksman (reversing assistant) is required for unloading.

Set the implement down

4. Disconnect the implement from the tractor (see section 7.5, Seite 125).

Mounting the components

5. Fold out the implement, see "Important information", Seite 39.
6. Fit the loading boards (Fig. 8).
7. Fit the seed tubes (see "Fastening the seed tube hoses", Seite 41).
8. Disconnect the implement from the tractor (see section 7.5, Seite 125).

4 Product description

This section:

- provides a comprehensive overview of the implement's structure.
- provides the names of the individual assembly groups and operating controls.

If possible, read this section when actually at the implement. This helps you to understand the implement better.

4.1 Overview of assembly groups

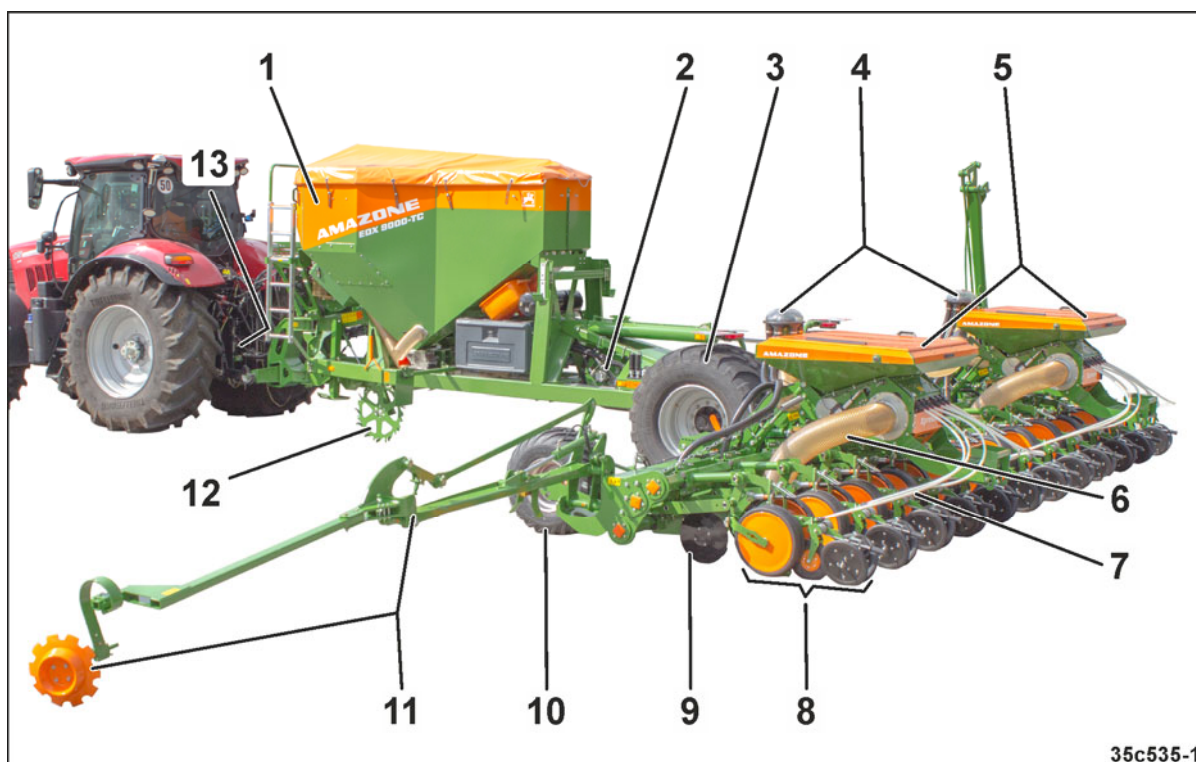


Fig. 14

- | | |
|--------------------------------------|--|
| (1) Fertiliser hopper | (8) Double disc coulters
with hydraulic coulters pressure adjustment |
| (2) Blower fan for the singling unit | (9) Fertiliser coulters
with hydraulic fertiliser coulters adjustment |
| (3) Running gear | (10) Support wheel |
| (4) Fertiliser distributor head | (11) Track marker |
| (5) Seed hopper | (12) Star wheel |
| (6) Exhaust air hose | (13) PTO shaft driven hydraulic pump
for the fan drive (fertiliser) |
| (7) Seed line hoses | |

Product description

Fig. 15/...

- (1) Case for stowing
 - o the operating manual
 - o the fertiliser metering roller
 - o the digital scale



Fig. 15

Fig. 16/...

- (1) Tensioned crosspiece
- (2) Jack, extendable



Fig. 16

Fig. 17/...

- (1) Mounting for supply lines

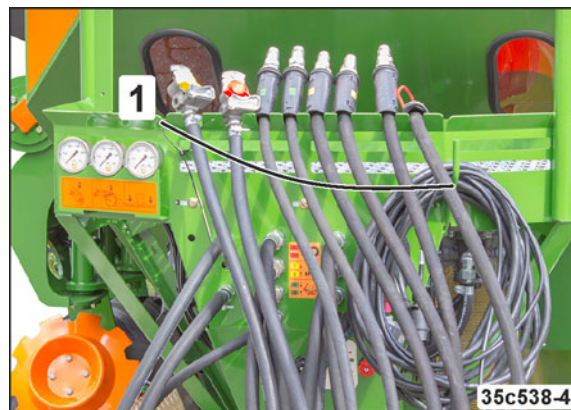


Fig. 17

Fig. 18/...

- (1) Fill level sensor (seed)
- (2) Sensor (compressed air)

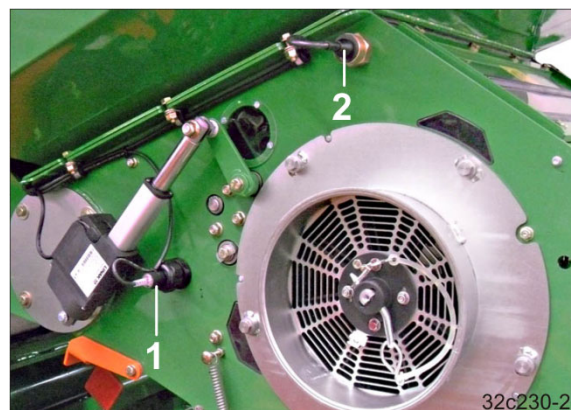


Fig. 18

Fig. 19/...

- (1) Setting lever for the seed shutter

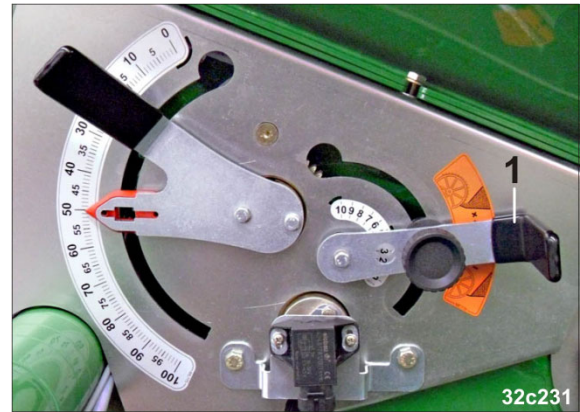


Fig. 19

Fig. 20/...

- (1) Setting lever for the air deflector

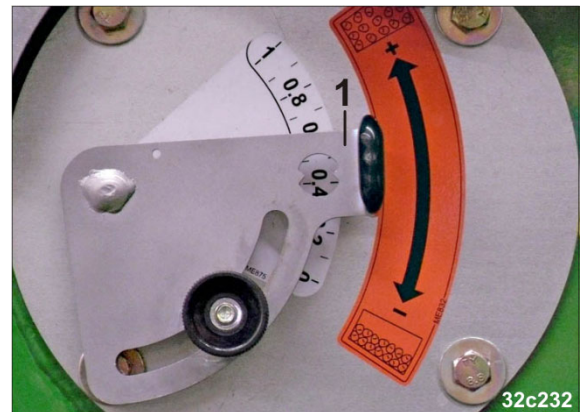


Fig. 20

Fig. 21/...

- (1) Setting lever for the sealing lip



Fig. 21

Fig. 22/...

- (1) Setting lever for the mech. adjustable seed scraper

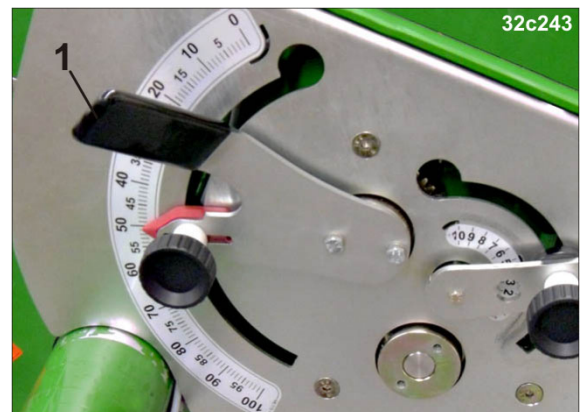


Fig. 22

Product description

Fig. 23/...

- (1) Indicator for the electrically adjustable seed scraper

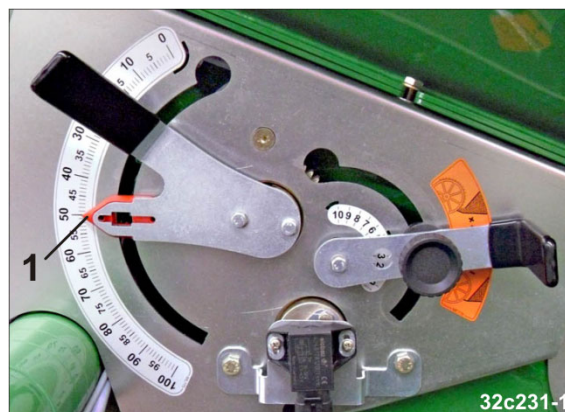


Fig. 23

Fig. 24/...

Double disc coulters



Fig. 24

Fig. 25/...

- (1) Ladder
- (2) Loading board
- (3) Holding point



Fig. 25

Fig. 26/...

- (1) Fill level sensor (fertiliser)
Please note: the charging sieve, which is folded up for clarification, remains closed while making settings.



Fig. 26

Fig. 27/...

- (1) Swivelling cover tarpaulin
- (2) Residual emptying



Fig. 27

Fig. 28/...

- (1) Fan (fertiliser transport)
- (2) Hydraulic drive

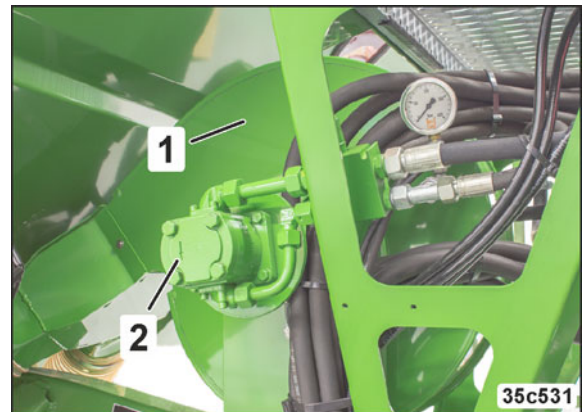


Fig. 28

Fig. 29/...

- (1) Star wheel
- (2) Vario gearbox (see also Fig. 31)
- (3) Metering unit (see also Fig. 30)

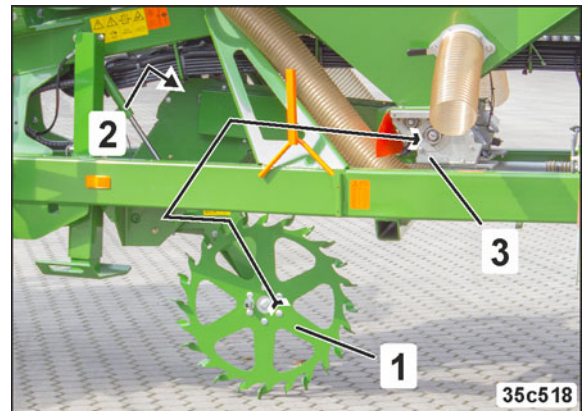


Fig. 29

Fig. 30/...

- (1) Calibration crank (in transport bracket)
- (2) Metering unit with integrated fertiliser metering roller
- (3) Injector sluice

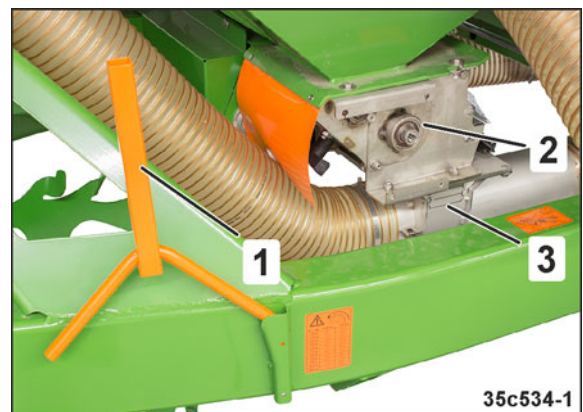


Fig. 30

Product description

Fig. 31/...

- (1) Vario gearbox (with remote control) for setting the fertiliser spread rate



Fig. 31

Fig. 32/...

- (1) Trailer brake valve

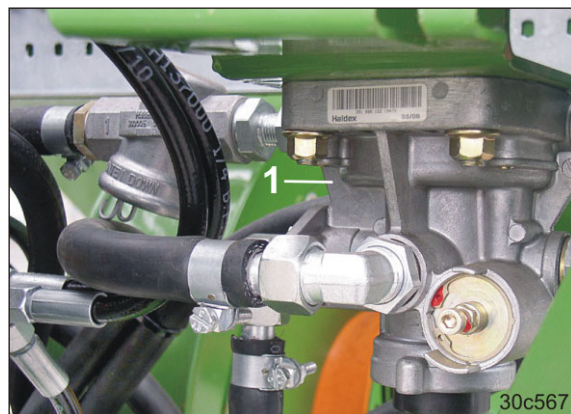


Fig. 32

Fig. 33/...

- (1) Electrohydraulic control block 1

Functions:

- o Actuating the track marker
- o Lift-out rear frame (coulters)

Automatically running functions:

- o Lift-out star wheel
- o Folding the rear carrier (lighting)

- (2) Electrohydraulic control block 2

Functions:

- o Pressure of the double disc coulters
- o Pressure of the fertiliser coulters
- o Pressure / folding of the implement sections

Automatically running functions:

- o Height adjustment of the seed hopper

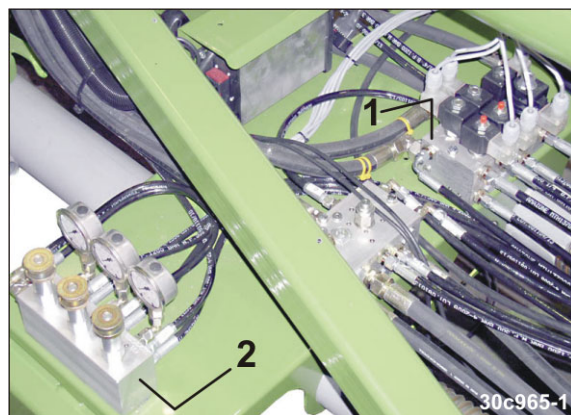


Fig. 33

4.2 Electronic monitoring and operation (optional)

The precision airplanter is electronically monitored and controlled using a control terminal.



Observe the corresponding operating manual when using the implement with the control terminal!

AMATRON 3 Fig. 34/.

- monitored function
- ISOBUS implement control



Fig. 34

Control options for ISOBUS control terminal

Fig. 35/.

1. AMASTICK
2. AMAPILOT



Fig. 35

4.3 Camera system (option)

The camera (Fig. 36/1) at the rear of the implement makes the area hidden by the hopper visible. The large monitor in the tractor cab displays the work performed by the implement tools and the filling funnel for the filling auger.

Make sure nobody is standing between the supply vehicle and filling funnel during manoeuvring.



Fig. 36

4.4 Safety and protective equipment

Fig. 37/...

- (1) Charging sieve
(acts as guard screen in fertiliser hopper)

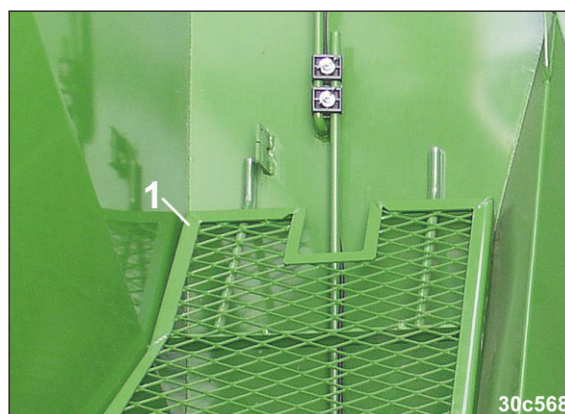


Fig. 37

Fig. 38/...

- (1) Locking hooks
(for locking the implement sections during transport)

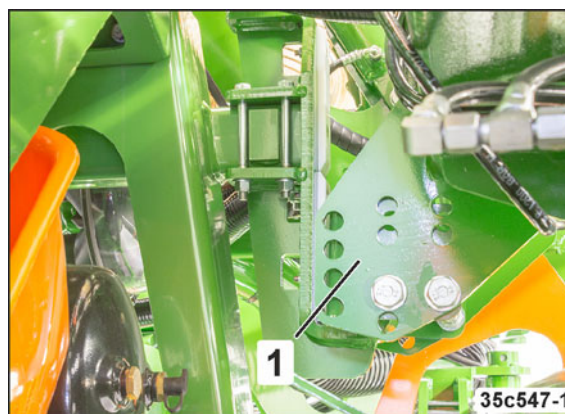


Fig. 38

Fig. 39/...

- (1) Stop for the implement sections
(Prevents collisions of the implement sections with the fertiliser hopper)
- (2) Adjustment screw for the stop
(4 pcs. / implement)

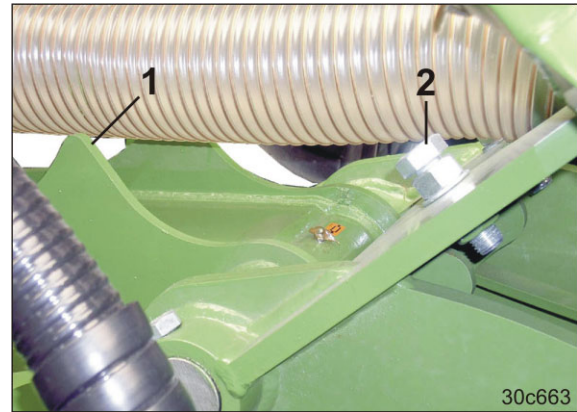


Fig. 39

Fig. 40/...

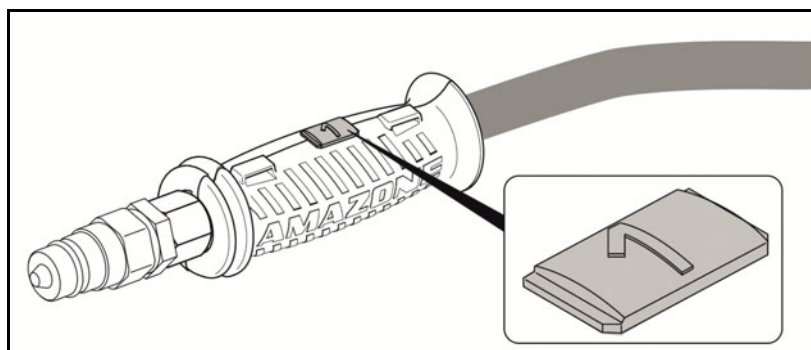
- (1) Wheel chocks
(parking position under the seed hopper)



Fig. 40

4.5 Supply lines between the tractor and the implement

- 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 tractor control unit	

Fig. 41/...

- (1) Dual-circuit pneumatic braking system: brake / supply line
- (2) Hydraulic hose lines
- (3) Implement plug for on-board computer, implement lighting (7-pin)

Without illustration: Hydraulic brake line
(not approved for Germany and some other EU countries)

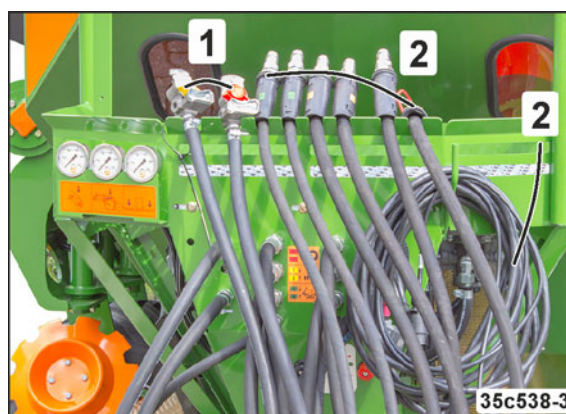

















Fig. 41

Designation		Function			Tractor control unit	
yellow		Pre-selection on the control terminal	Track marker	Move into working position	Double acting	
				Move into headlands position		
yellow			Rear frame	Lowering	Double acting	
				Lifting		
blue		Pre-selection via control unit	Filling auger (optional)	Folding	Single acting	
				Hydraulic motor for the filling auger		
green			Implement sections	Unfolding	Double acting	
				Fold in		
red		Blower fan hydraulic motor (fan for the singling unit) / coultter pressure (seeding and fertiliser coultter) (Pressure line with priority / approx. 38 l/min.)			Single-acting	
red		Pressure-free return flow (see section "Installation regulations for the hydraulic fan drive connection (singling unit)", Seite 107)				

Description	Marking		Function
Brake line	yellow	(See section 7.1, Seite 109.)	Dual-circuit pneumatic braking system
Supply line	red		

Description	Function
Implement plug (see section 5.2, Seite 66)	AMATRON 3 on-board computer
Connector (7-pin)	Road traffic lighting system
Hydraulic brake line (see section 7.2, Seite 115) ¹⁾	Hydraulic service brake system

¹⁾ not allowed in Germany and in many other EU countries

4.6 Transportation equipment

Fig. 42/...

- (1) 2 brake and rear lights
- (2) 2 rear-facing turn indicators
- (3) 2 red reflectors
- (4) 1 speed sign
- (5) Lighting for the number plate
- (6) 2 rear-facing warning signs

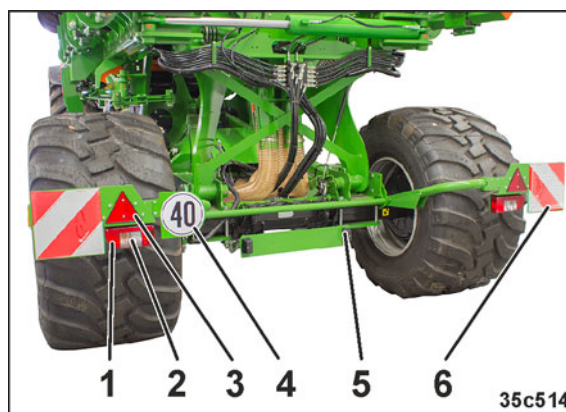


Fig. 42

Fig. 43/...

- (1) 2 forwards-facing marker lights
- (2) 2 forwards-facing warning signs



Fig. 43

Fig. 44/...

- (1) 2 x 3 reflectors, yellow, (laterally with a max. spacing of 3 m)

Supplemental for identification according to GostR (optional, not shown)

- 2 reflectors facing the front, white
- 2 reflectors facing the rear, red

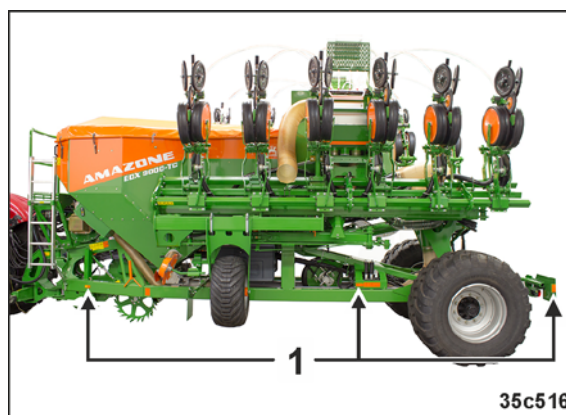


Fig. 44

4.7 Proper use

The implement

- is built
 - for the singling and spreading of commercially-available seed.
 - for metering and spreading commercially-available fertiliser types.
- is coupled to the tractor using the tractor three-point hitch attachment and is controlled by an operator.

Slopes can be travelled

- Along the contours
 - Direction of travel to left 10 %
 - Direction of travel to right 10 %
- Along the gradient
 - Up the slope 10 %
 - Down the slope 10 %

"Intended use" also covers:

- compliance with all the instructions in this operating manual
- adherence 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 sole responsibility
- AMAZONEN-WERKE accepts no liability.

4.8 Danger areas and danger points

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

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

Within the implement danger area, there are danger points with permanent or unexpected risks. Warning symbols indicate these danger points and warn against residual dangers, which cannot be eliminated for construction reasons. Here, the special safety regulations from the corresponding section are applicable.

No-one may remain in the danger area of the implement

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

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

Danger points exist:

- between the tractor and the implement, particularly when coupling and uncoupling and when filling the hopper
- in the area of moving parts
- in the area of the swivelling implement sections
- in the area of the swivelling track marker
- underneath raised, unsecured implements or parts of implements.
- when unfolding/folding the implement sections near overhead power lines.
- by climbing onto the implement.
- behind the implement in the area of the seed hopper. If the seed hose is torn off, seed shoots out of the optical sensor.

4.9 Rating plate and CE mark

Implement rating plate

Information on the implement rating plate:

- (1) Vehicle ID no.
- (2) Machine ID no.
- (3) Product
- (4) Basic weight (kg)
- (5) Perm. system pressure drawbar load kg
- (6) Perm. system pressure rear axle load
- (7) Perm. system pressure system pressure bar
- (8) Perm. system pressure total weight kg
- (9) Factory
- (10) Model year



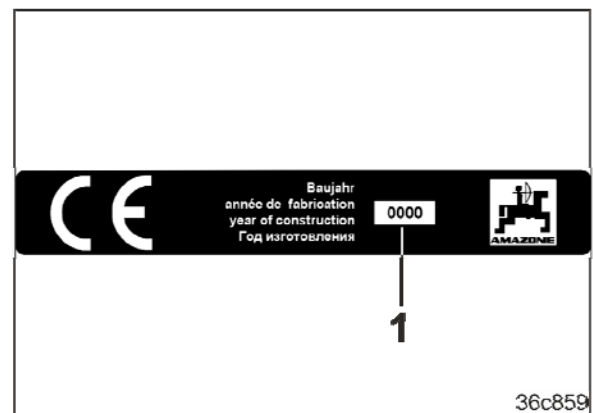
36c857

Fig. 45

CE mark

Information on the CE mark:

- (1) Year of manufacture



36c859

Fig. 46

4.10 Technical data

Precision airplanter		EDX 9000-TC
Number of seeding units		See table (Fig. 47)
Row spacing		
Working width		
Volume of the seed hopper	[l]	2 x 400
Volume of the fertiliser hopper	[l]	5000
Working speed	[km/h]	15
Power requirement (from)	[kW/bhp]	as of 147/200
Oil flow rate (minimum)	[l/min]	80
Max. hydraulic working pressure	[bar]	210
Electrical system	[V]	12 (7-pin)
Category of the coupling points		Cat. 3 Cat. 4N (optional) Cat. 5 (optional)
Tyres		700/50-26.5 (diagonal) 750/45-R26.5 (radial) (optional) 270/95 R32 (equipment-dependent option)
Total height (in working position)	[mm]	3200
Maximum drawbar load with full seed hopper (on the field)	[kg]	5000
Service brake system (optional) ¹⁾ (connection on the tractor)		Dual-circuit pneumatic braking system or hydraulic braking system ²⁾

¹⁾ The implement may not be equipped with a brake system.

Operation without a brake system is not permitted in Germany and in some other countries.

²⁾ Operation with a hydraulic brake system is not permitted in Germany and in several other countries.

Machine type	Number of seeding units	Row spacing [cm]	Working width
EDX 9000-TC	12	70	8.4
	12	75	9.0
	12	80	9.6
	18	50	9.0
	20	45	9.0

Fig. 47

Road transport data (only with empty fertiliser and seed hopper!)

Precision airplanter			EDX 9000-TC
Total width (in transport position)		[m]	3.0
Total length (in transport position)		[m]	8.5
Total height (in transport position)		[m]	3.975
Tare weight (basic weight)		[kg]	8000
Permissible total weight		[kg]	8500
Maximum load for road travel		[kg]	500
Permissible rear axle load		[kg]	5850
Perm. drawbar load (F_H) when driving on the road (see rating plate)		[kg]	2650
Permissible max. speed	without brake system ¹⁾	[km/h]	25
	with brake system	[km/h]	40

¹⁾ Operation without a brake system is not permitted in Germany and in several other countries.

4.11 Necessary tractor equipment

For operation of the implement in compliance with the intended use the tractor must fulfil the following requirements.

Tractor engine power

EDX 9000-TC Up to 16 rows, starting at 184 kW (250 HP)
 Above 18 rows, starting at 221 kW (300 HP)

Electrical system

Required output of tractor alternator

with EDX 9000-TC: 12V at 150 A

Lighting socket: 7-pin

Product description

Hydraulic system

Maximum operating pressure:	210 bar
Tractor pump capacity:	Up to 16 rows, 120 l/min at 190 bar Above 18 rows, 150 l/min at 190 bar
Implement hydraulic fluid:	<ul style="list-style-type: none"> HLP68 DIN 51524 <p>The implement hydraulic fluid is suitable for the combined hydraulic fluid circuits of all standard tractor brands.</p>
Tractor control unit, <i>yellow</i> :	Double-acting tractor control unit
Tractor control unit, <i>green</i> :	Double-acting tractor control unit
Tractor control unit, <i>red</i> :	<ul style="list-style-type: none"> 1 single-acting or double-acting tractor control unit with priority control for the feed line 1 unpressurised return line with a large push-fit coupling (ND 16) for the pressure-free oil return flow. In the return flow the banking-up pressure must be 10 bar at the maximum.
PTO shaft connection:	Connection of PTO shaft-driven hydraulic pump for fertiliser transport fan drive.

Service brake system

- Dual-circuit service braking system:
 - 1 coupling head (red) for the supply line
 - 1 coupling head (yellow) for the brake line
- Hydraulic brake system:
 - 1 hydraulic coupling in accordance with ISO 5676



The hydraulic braking system is not allowed in Germany and several other EU countries!

4.12 Noise production data

The workplace-related emission value (acoustic pressure level) is 70 dB(A), measured in operating condition at the ear of the tractor driver with the cab closed.

Measuring unit: OPTAC SLM 5.

The noise level is primarily dependent on the vehicle used.

5 Structure and function

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

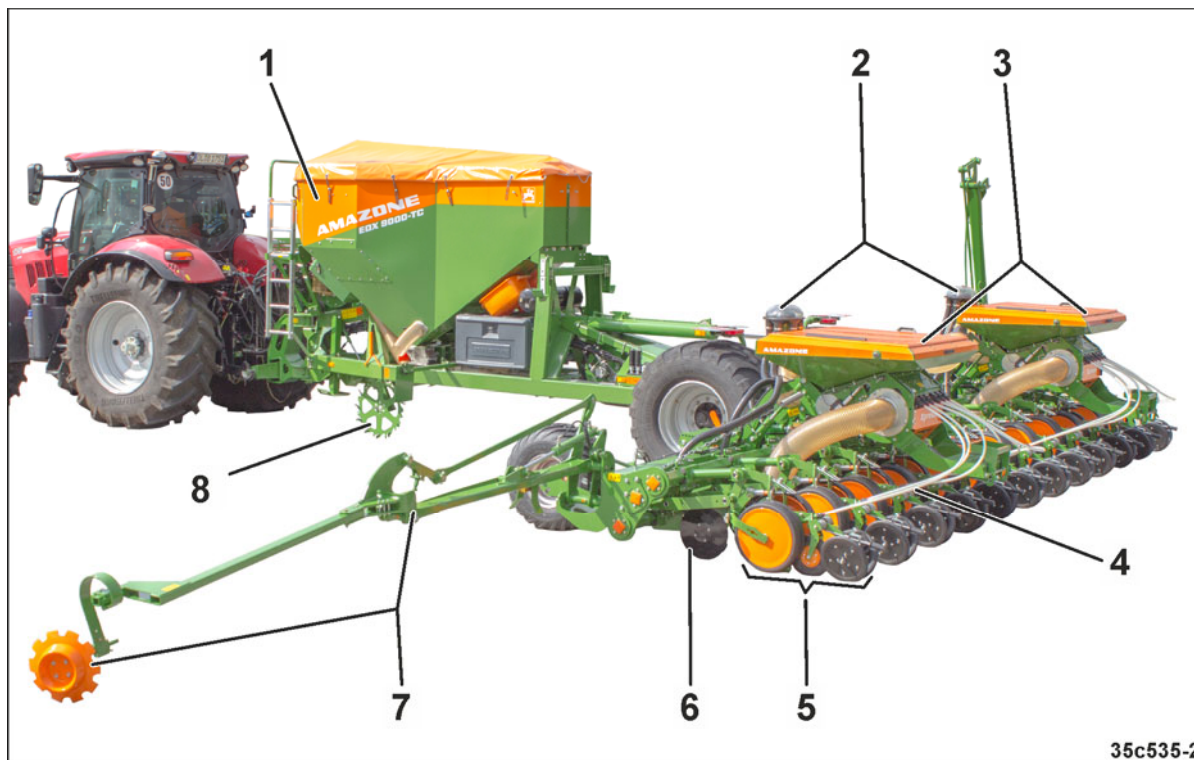


Fig. 48

The precision airplanter is equipped with 2 seed hoppers (Fig. 48/3). After the singling unit, the seed is conveyed through the feed hoses (Fig. 48/4) to the seeding coulter (Fig. 48/5) and deposited in the seedbed.

The fertiliser is carried in the fertiliser hopper (Fig. 48/1). The desired fertiliser spread rate is variably adjusted on the Vario gearbox and is metered into the metering unit by the metering roller. The metering roller is driven by the star wheel (Fig. 48/8). The drive speed of the metering roller is determined by the working speed and set fertiliser quantity.

A hydraulic pump that is connected to the tractor PTO shaft drives the fan, which produces the air flow to transport the fertiliser. The air flow produced by the fan conveys the fertiliser from the injector sluice to the distributor head (Fig. 48/2). In the distributor head, the fertiliser is evenly distributed on all of the connected fertiliser coulters (Fig. 48/6). The fertiliser is placed by the fertiliser coulters in the soil beside the seed. The depth adjustment of the fertiliser coulters is adjusted centrally by activating a tractor control unit.

The next bout on the field is marked by the track markers (Fig. 48/8), e.g. for 75 cm row spacing, at the centre of the tractor.

The implement can be folded to a transport width of 3 m.

5.1 Service brake system

In Germany and many other countries, the implement may only be transported on public roads when equipped with a dual-circuit pneumatic service braking system. In several other countries, the implement may only be operated with the hydraulic service brake system.

If the implement does not have a service brake system, check the officially approved registration of your implement before commissioning.

The implement can be equipped

- with dual-circuit pneumatic service braking system.
- with a hydraulic service brake system.

The hydraulic service brake system is not approved in Germany and several other EU countries.

- Without service brake system

5.1.1 Safety chain for implements without brake system (optional)

Depending on country-specific regulations, implements without a brake system / with single-pipe brake are equipped with a safety chain.

The safety chain must be mounted at a suitable point on the tractor as prescribed before the trip.

Check the suitability of the tractor for operation without service brake system (see section 6.1.3).

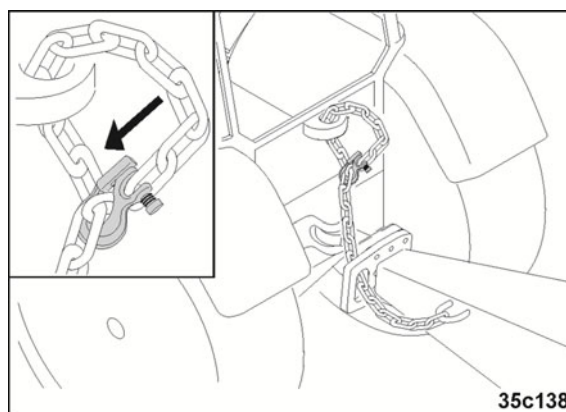


Fig. 49

5.1.2 Immobiliser

Lockable device for the drawbar eye, ball bracket, or lower link crosspiece, prevents unauthorised use of the machine.

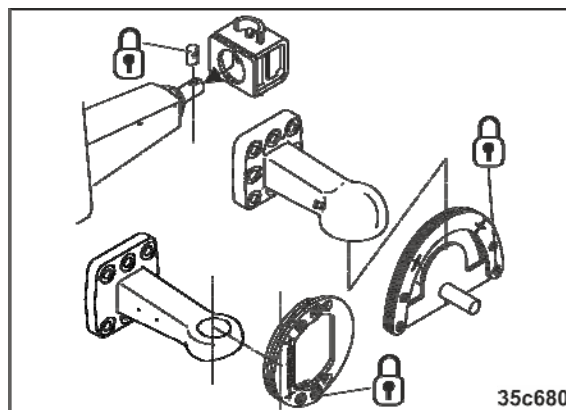


Fig. 50

5.1.3 Parking brake

Implements with a dual-circuit pneumatic service brake system and hydraulic service brake system are fitted with a parking brake. The extendible crank (Fig. 51) is used to activate the parking brake.

Engaging the parking brake:

Turn the crank to the right (R).

Releasing the parking brake:

Turn the crank to the left (L).

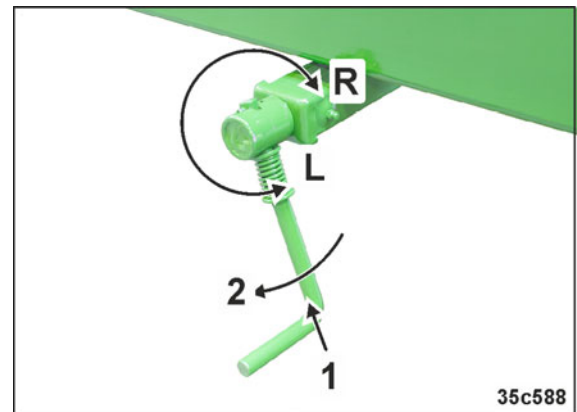


Fig. 51

5.1.4 Dual-circuit pneumatic service brake system

In Germany, the implement is equipped with the dual-circuit pneumatic service brake system. The dual-circuit pneumatic service brake system controls two brake cylinders, which actuate the brake shoes in the brake drums.

The tractor also has to be equipped with a dual-circuit pneumatic service brake system.

5.1.5 Hydraulic service brake system

The implement can be equipped with a hydraulic service brake system. The hydraulic service brake system is not allowed in Germany and a few other EU countries.

The tractor also has to be equipped with a hydraulic service brake system.

5.1.6 Implements without their own brake system

The implement may be equipped without a service brake system. The implement is not approved for Germany, the EU countries and several other countries without its own brake system (see section 6.1.3, page 105).

5.2 AMATRON 3 control terminal

The AMATRON 3 consists of the control terminal (Fig. 52), the basic equipment (cable and fastening materials) and the job computer on the implement.

Fasten the control terminal in the tractor cab according to the AMATRON 3 operating manual.



Fig. 52

The following are carried out via the control terminal (Fig. 52):

- input of the implement-specific data
- input of the job-related data
- control of the implement to change the seed rate during seeding operation
- activation of the hydraulic functions before the hydraulic functions can be executed using the corresponding tractor control unit
- monitoring of the seed drill during seeding operation
- monitoring of the fill level in the seed and fertiliser hopper

The AMATRON 3 determines:

- the current forward speed [km/h]
- the current seeding rate [grains/ha]
- the actual content [kg] in the seed hopper and fertiliser hopper
- the remaining distance [m] until the seed/fertiliser hopper is empty
- the fan speed
- the speed of the singling drums
- the singling unit pressure

For a commenced task, the AMATRON 3 stores

- the daily and total volume of seed/fertiliser applied [kg]
- the day and total area cultivated [ha]
- the day and total seeding time [h]
- the average work performance [ha/h]

5.2.1 Controlling the implement with the AMATRON 3 on-board computer

The hydraulic functions of the implement are actuated by the electrohydraulic control blocks (shown without covers).

First, the desired hydraulic function must be selected on the AMATRON 3 before the hydraulic function can be executed using the corresponding tractor control unit.

This activation of the hydraulic functions in the AMATRON 3 allows operation of all hydraulic functions with only:

- 2 tractor control units for the implement functions
- 1 tractor control unit for the fan (singling unit).

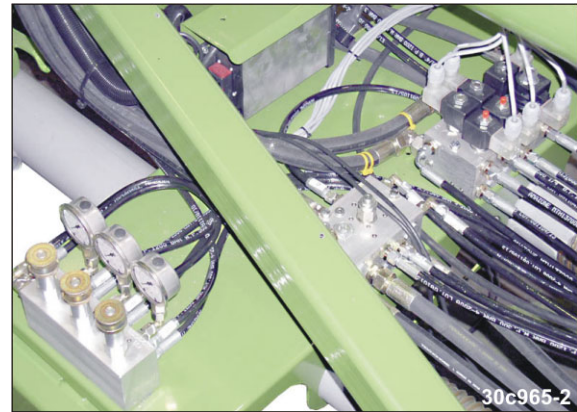


Fig. 53

5.3 Star wheel

The star wheel (Fig. 54/1) drives the fertiliser metering roller (Fig. 54/3). A Vario gearbox is located upstream of the metering roller (Fig. 54/2).

The distance covered is measured by the star wheel. The on-board computer requires this data to calculate the forward speed and cultivated area (hectare counter).

The "working position" sensor transmits the star wheel position to the on-board computer. When the star wheel is lowered, the on-board computer activates the functions that are required during operation.

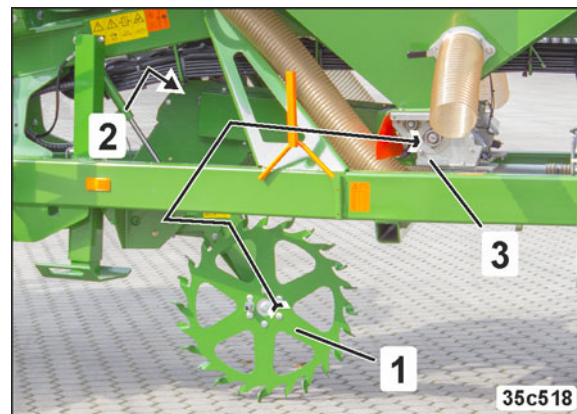


Fig. 54

5.4 Frame and implement sections



Fig. 55

The implement has

- a main frame (Fig. 55/1) with running gear and fertiliser hopper.
- a foldable rear frame (Fig. 55/2)
 - that lifts the coulter before turning at the end of the field.
 - is positioned more or less vertically before the implement sections are retracted (Fig. 55/3).
- two implement sections which are retractable for transportation purposes (Fig. 55/3).

5.5 Seed singling and spreading



The specified values serve as reference values and can vary depending on the seed type!

The seed hoppers are equipped with a pressure-tight lockable cover (Fig. 56/1). The cover is actuated using a lockable lever (Fig. 56/2).

The supply air (Fig. 56/3) produces overpressure in the seed singling unit. After the singling unit, the seed is conveyed through the seed line tubes (Fig. 56/5) for precise placement in the seed furrow. The exhaust air (Fig. 56/6) is discharged near the ground.

The opto-sensors (Fig. 56/4) differ depending on the equipment.

16 mm	For maize, sorghum, rapeseed and sunflowers ($\varnothing < 15 \text{ mm}$)
20 mm	Sunflower ($\varnothing < 20 \text{ mm}$)

The seed hopper (Fig. 56/1) is positioned above the housing of the singling drum.

The seed is singled by a suction force acting on the grain (Fig. 57/1) in the drum (Fig. 57/2). Surplus grains are removed by centrally adjustable scrapers (Fig. 57/3) in the event of multiple occupancy.

The suction acting on the grain (Fig. 57/1) in the drum (Fig. 57/2) is interrupted by a roller just upstream of the outlet nozzle. The overpressure escapes through the seed tube (Fig. 56/5). The grain is released from the drum, is accelerated rapidly by the flow and emerges with high velocity at the coulters. A catcher roller intercepts the seed and presses it firmly into the furrow.

The modular separation of the singling unit and seeding operations makes reliable seed placement possible, even at high working speeds up to 15 km/h.

Before folding the implement sections into transport position, the unit is lowered into transport position.

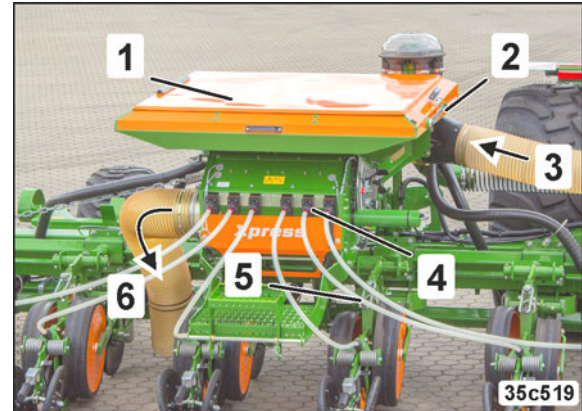


Fig. 56

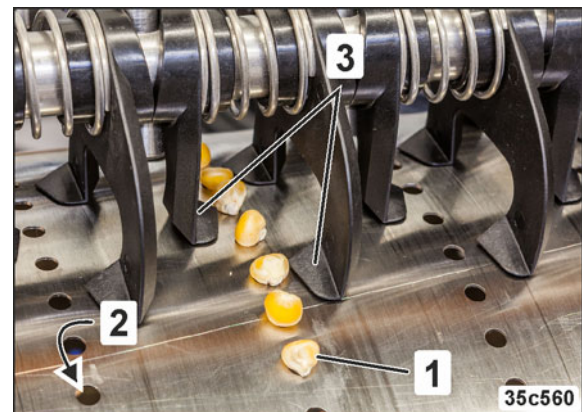


Fig. 57

5.5.1 Single row control (optional)

As an option, each seed tube (Fig. 58/1) can be closed off by a swivelling module (Fig. 58/2).

The modules are controlled by the on-board computer (see AMATRON 3 operating manual).

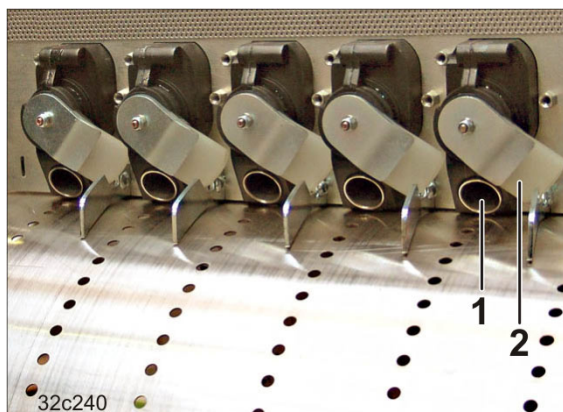


Fig. 58

By closing the seed tubes using the modules (Fig. 59/1),

- any number of rows can be switched off manually.
- tramlines can be created.

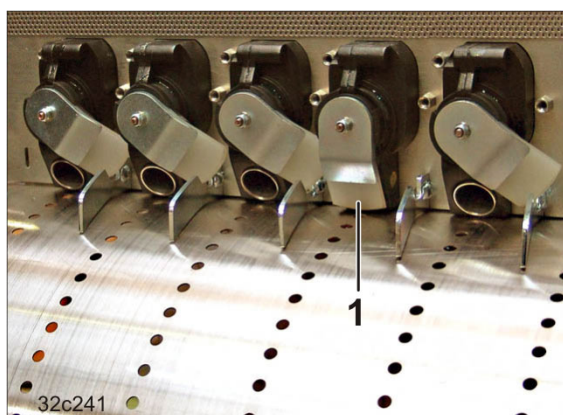


Fig. 59

5.5.2 Singling drum

Different seed types require adjustment of the singling drum for the seed type. The required singling drums can be selected from Table (Fig. 61) and installed (see section "Removing/installing the singling drum", Seite 207).

The singling drums differ in the number of rows (Fig. 60/1) and in the hole diameters.

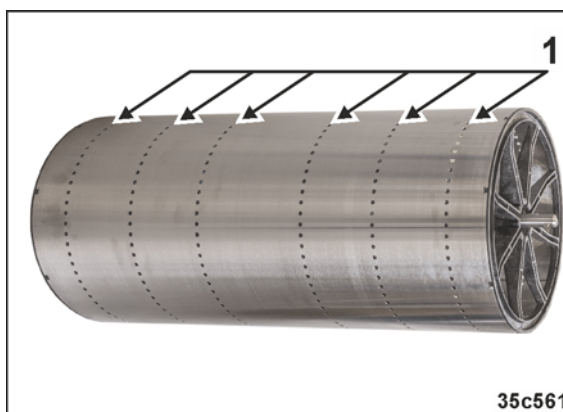


Fig. 60

Recommendation for the selection of the correct maize singling drum

The selection of the correct drum depends on the grain shape, which varies strongly in size and shape. Large grains usually have a secure hold on the Ø 5.5 mm drum. Only use the Ø 4.5 mm drum when large grains are shaped such that they are positioned too far inwards on the drum with Ø 5.5 mm hole diameter, and are therefore damaged.

In the overlap area (230 TGW to 250 TGW), select depending on the grain shape, e.g.:

- The drum with Ø 4.5 mm holes for elongated grains, so that it does not fall through the larger hole.
- The drum with Ø 5.5 mm holes for rounded grains, so that it adheres to the drum.

Seed	Singling drum						Notification
	Number of rows per singling drum					Hole [mm]	
Maize	6	8	9	10	-	Ø 5.5	Maize starting at 230 TGW.
	6	8	9	10	-	Ø 4.5	Maize up to 250 TGW
Soy	6	8	9	10		Ø 4.0	
Sunflowers	6	8	9	10	-	Ø 3.0	
	6	8	9	10	-	Ø 2.5	
Sorghum	6	8	9	10	-	Ø 2.0	
Rapeseed	6	8	9	10	-	Ø 1.6	
	6	8	9	10	-	Ø 1.2	

Fig. 61

Overview of the possible seeding rates:



The specified values represent reference values!

Row spacing	3 km/h	4 km/h	5 km/h	6 km/h	7 km/h	8 km/h	9 km/h
50 cm	600,000 K/ha	500,000 K/ha	400,000 K/ha	380,000 K/ha	300,000 K/ha	250,000 K/ha	200,000 K/ha
45 cm	700,000 K/ha	580,000 K/ha	480,000 K/ha	400,000 K/ha	310,000 K/ha	310,000 K/ha	220,000 K/ha

5.5.3 Seed shutter

The seed flows from the seed hopper to the fluid bed (Fig. 62/1) directly in front of the singling drum.

The fluid bed may not be completely filled with seed. Otherwise, a fluidised bed cannot be created when air is supplied later on.

If too much seed enters the fluid bed, reduce the feed quantity by adjusting the seed shutter (Fig. 62/2).

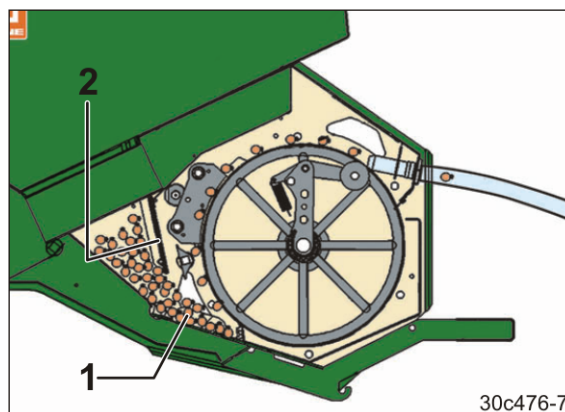


Fig. 62

The sight glass should be half full with seed when the implement is at rest.

The adjustment of the seed shutter depends on the working speed and the seed.



Fig. 63

5.5.4 Air baffle

Air flowing through the fluid bed sets the seed grains in front of the singling drum in motion

The air quantity is correctly metered when the seed grains

- move loosely at the viewing window (without jumping).
- are not thrown across the singling drum.



Fig. 64

5.5.5 Seed scraper

Multiple occupancy and gaps in the holes of the singling drum are detected by the opto-sensors after working speed has been reached. The AMATRON 3 issues an alarm.

Mechanically or electrically adjustable seed scrapers remove excess seed grains.

5.5.5.1 Seed scraper, mechanically adjustable

Adjustment of the lever (Fig. 65/1) changes the scraper position.

The numbers on the scale indicated by the indicator (Fig. 65/2) on the lever are provided for guidance.

The setting values can be found in Table (Fig. 172).



Fig. 65

5.5.5.2 Seed scraper, electrically adjustable

The set scraper position is displayed

- by the indicator (Fig. 66/1),
- by the AMATRON 3.

If at working speed, the AMATRON 3 indicates gaps or doubles, correct the scraper position as described in the AMATRON 3 operating manual.

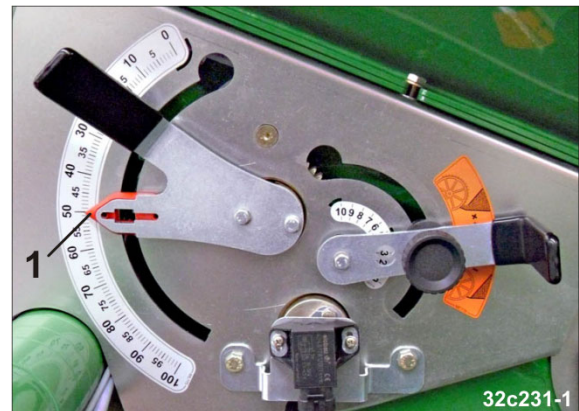


Fig. 66

An electrical setting motor (Fig. 67/1), controlled by the AMATRON 3, adjusts the seed scraper.

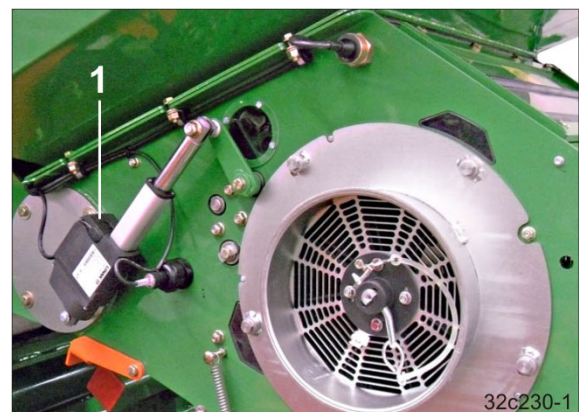


Fig. 67

5.5.6 Digital seed fill level monitoring

A fill level sensor (Fig. 68/1) monitors the seed level in the hopper.

When the seed level reaches the fill level sensor, the AMATRON 3 displays a warning message. At the same time, an alarm signal is issued.

This alarm is intended to remind the tractor driver to refill the hopper in due time.

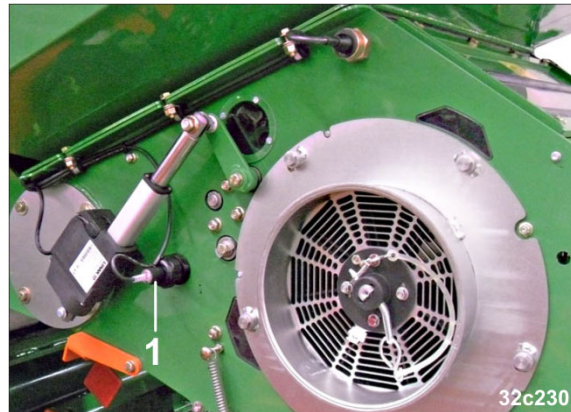


Fig. 68

The fill level sensor with the cable output must be inserted flush in the holder (Fig. 69/1).

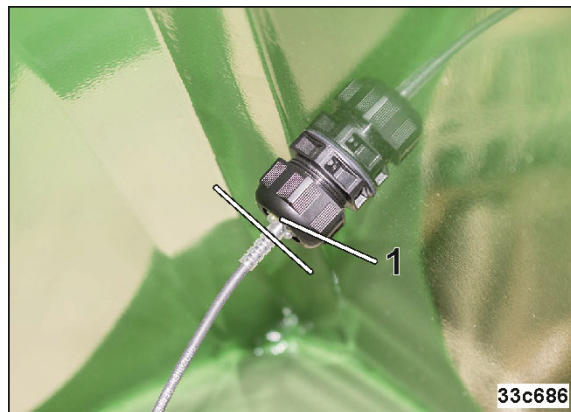


Fig. 69

5.5.7 Fine seed (optional)

To meter particularly fine seed (e.g. rapeseed), a singling unit with special fine seed equipment is required.

Fig. 70/...

- (1) Singling drum ($\varnothing 1.2 / \varnothing 1.6$)
- (2) Fluid bed shutter (very fine mesh)

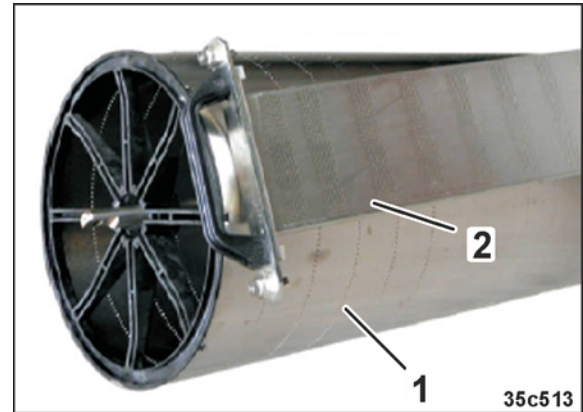


Fig. 70

Fig. 71/...

- (1) Sealing brushes

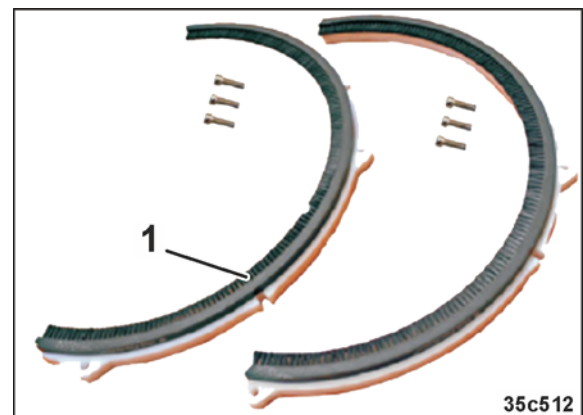


Fig. 71

Fig. 72/...

- (1) Press roller scraper, adjustable



Fig. 72

5.5.8 Baffle plate (optional)

When working on sloping terrain, the seed may shift inside the singling unit. In this case, individual holes on the drum or entire rows are no longer supplied with seed.

Baffle plates (Fig. 73/1) help to prevent the seed from slipping in the fluid bed.

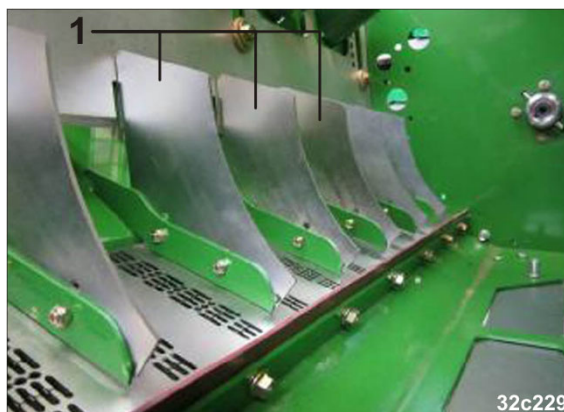


Fig. 73

5.5.9 Blower fan for seed singling

The fan (Fig. 74/1) generates the air current for seed singling (Fig. 74/2).

The fan hydraulic motor is driven by the tractor hydraulic system.

The fan speed is adjusted on the flow control valve of the tractor.

The fan speed is properly adjusted when the AMATRON 3 displays an air pressure of 55 mbar in the singling unit.

The air pressure in the singling housing is measured by a pressure sensor (Fig. 75/1).

To prevent the seed grains from falling from the singling drum, the air pressure must be kept constant in the singling housing.

The required air pressure is built up

- when all of the holes in the singling drum are occupied with seed grains.
- when maintaining a constant fan speed.
- when the system is properly sealed (pressure tank).

The AMATRON 3 issues an alarm if holes in the singling drum are not occupied by seed grains. The alarm is triggered if no seed is detected by the opto-sensors.

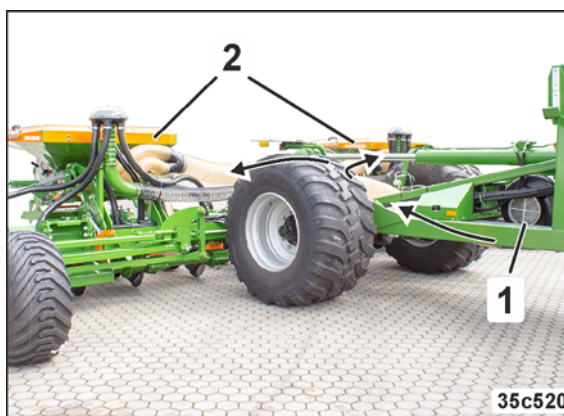


Fig. 74

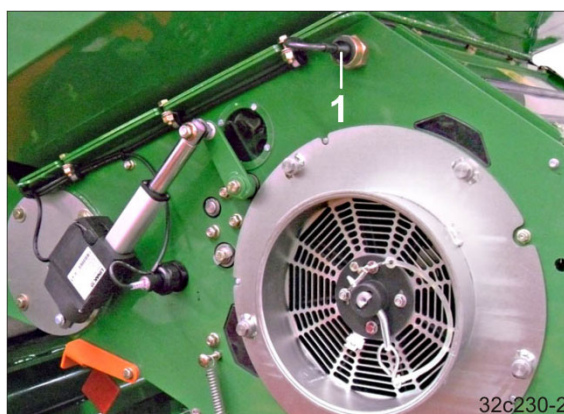


Fig. 75

5.5.9.1 Blower fan hydraulic motor with connection to the tractor hydraulic system

To connect the fan hydraulic motor to the tractor hydraulic system, the tractor must be equipped with the correct hydraulic connections (see section "Installation regulations for the hydraulic fan drive connection (singling unit)", Seite 107).

Adjusting fan speed

- at the flow control valve of the tractor (see section "Adjusting the fan speed (connection to the tractor hydraulic system)", Seite 157).
or (if not present)
- at the pressure relief valve of the hydraulic motor (see section "Basic setting (pressure relief valve)", Seite 160).

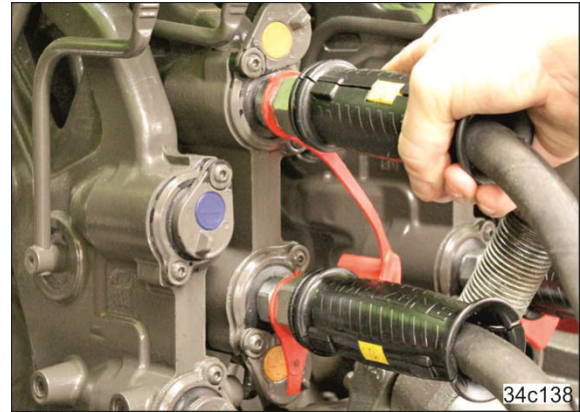


Fig. 76

5.5.9.1 Connecting the blower fan to the on-board hydraulic system (optional)

The on-board hydraulic system (optional) consists of a hydraulic pump and a hydraulic motor that drives the fan.

Set the fan speed according to section 8.7.2.

The hydraulic pump (Fig. 77/1) is driven by the tractor PTO shaft.

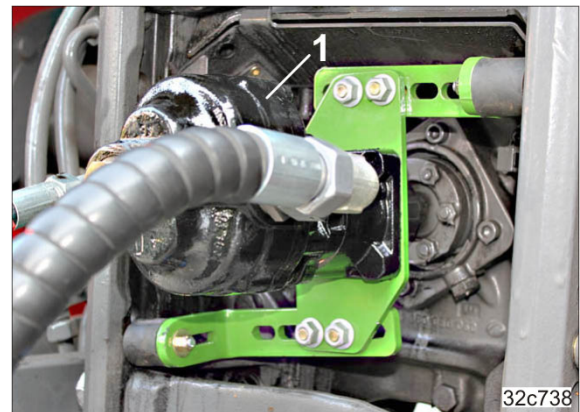


Fig. 77

In a closed circuit, the implement carries the hydraulic fluid in an oil tank (Fig. 78/1).

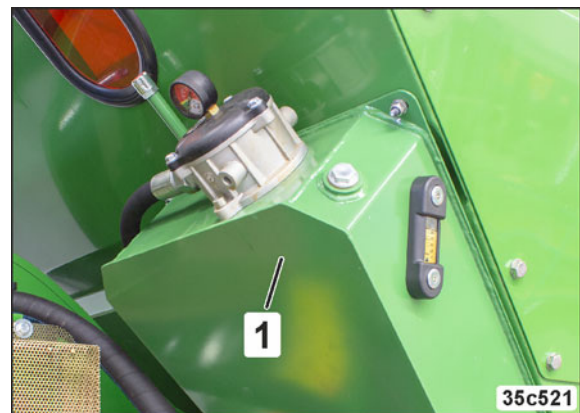


Fig. 78

5.6 Double disc coulters

The double disc coulters (Fig. 79/1) is supported by the two carrier rollers (Fig. 79/2) and maintains a constant working depth. The diameters of the double disc coulters and carrier rollers are especially large.

Remaining vegetation in front of the furrow former (Fig. 79/3) is moved to one side by the double disc coulters.

The adjustable press rollers (Fig. 79/4) close and press on the seed furrow.

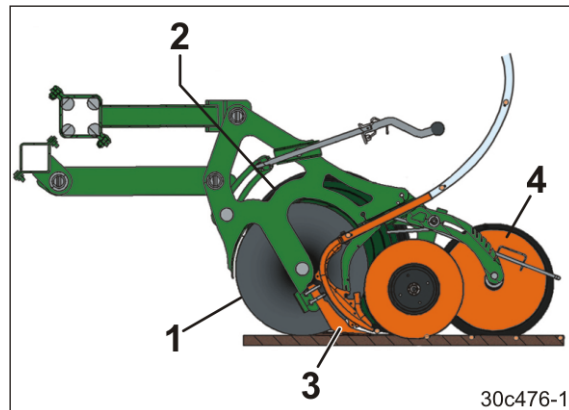


Fig. 79

The diameter of the seed hoses (Fig. 80/1) and feed channels (Fig. 80/2) vary depending on the seed.

12 mm	Rapeseed
16 mm	For maize, sorghum, rapeseed and sunflowers ($\varnothing < 15$ mm)
20 mm	Sunflower ($\varnothing < 20$ mm)

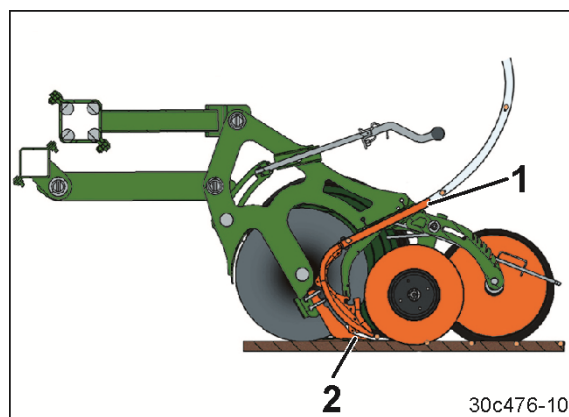


Fig. 80

5.6.1 Seed placement depth

The seed placement depth is adjusted via a spindle (Fig. 81/1). The scale (Fig. 81/2) is provided as an set-up assistance.

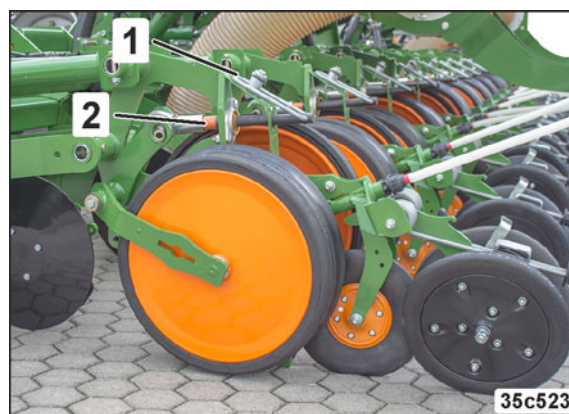


Fig. 81



Check the placement depth and grain spacing

- Following every adjustment to the seed placement depth
- When changing from light to heavy soil and vice-versa. The carrier rollers penetrate the ground more deeply with light soil than with heavy soil.

5.6.2 Coulter pressure (double disc coulter)

The adjustable coulter pressure applies a load of up to 250 kg on the double disc coulter. The required seed placement depth is only achieved when the coulter pressure is correctly set.

Adjust the coulter pressure by actuating

- the valve (Fig. 82/2)
- a setting motor (Fig. 83/1, optional), which is operated using the AMATRON 3 in the tractor cab.

If the coulter pressure is too low, the placement depth cannot be achieved. The coulters do not run smoothly.

If the coulter pressure is too high, the furrows formed by the carrier rollers will be too deep. The implement is lifted out.



Fig. 82



Fig. 83

Read the coulter pressure

- on the pressure gauge (Fig. 82/1) or
- from the tractor seat on the pressure gauge (Fig. 84/1) or
- on the AMATRON 3 display (with the optional "setting motor").

Actuation of the electr. coulter pressure adjustment is described in the AMATRON 3 operating manual.

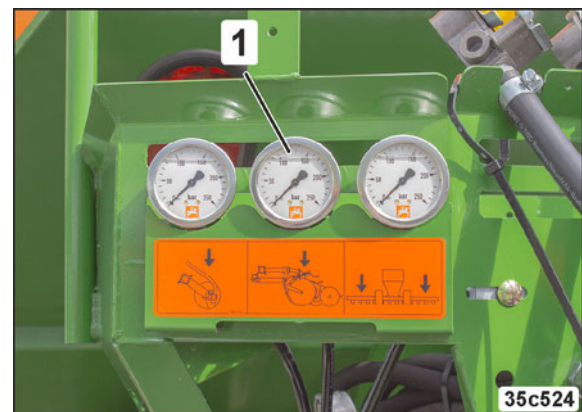


Fig. 84

5.6.3 Applying pressure on the unfolded sections

The hydraulic cylinder that folds and unfolds the sections applies pressure on the unfolded sections.

For optimal ground adaptation of the coulters, the pressure applied on the sections can be adjusted.

Adjust the pressure applied to the implement sections by actuating

- the valve (Fig. 85/2)

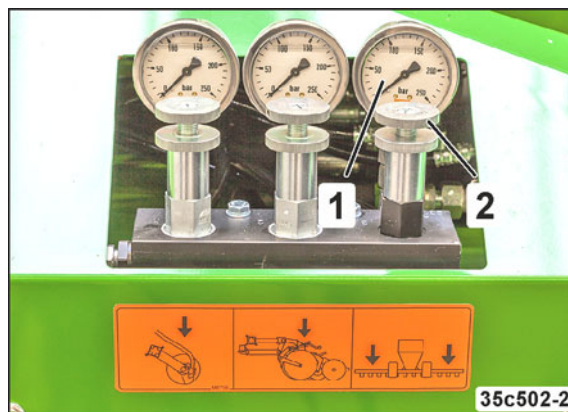


Fig. 85

The pressure that is applied to the implement sections can be read

- on the pressure gauge (Fig. 85/1) or
- from the tractor seat on the pressure gauge (Fig. 86/1).

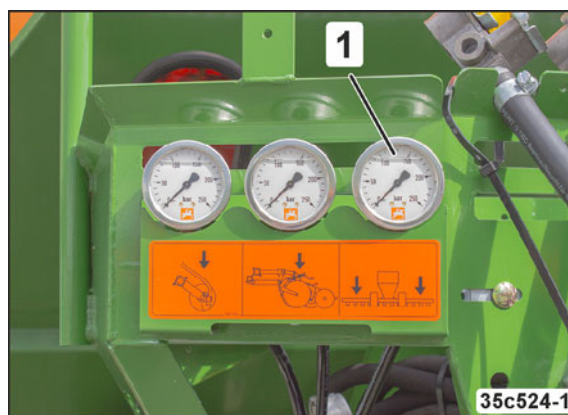


Fig. 86



The pressure displayed on the pressure gauge (Fig. 85/1) changes until the fan (singling) runs at a constant speed.

5.6.4 Ground contact pressure and intensity of press rollers

The adjustable press rollers (Fig. 87/1) close the seed furrow and push soil over the seed.

Ground contact pressure of the press rollers

The ground contact pressure of the press rollers increases with the height at which the tab (Fig. 87/2) engages in the toothed segment (Fig. 87/3).

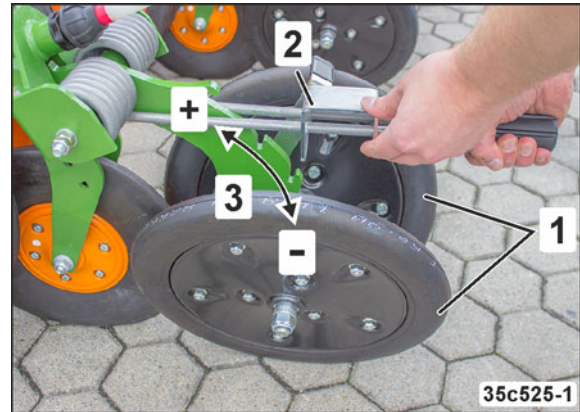


Fig. 87

Intensity of the press rollers

The intensity of the press rollers changes according to the axial adjustment of the press rollers (Fig. 88/1). Adjust the position of the press rollers to the ground or the seed furrow.

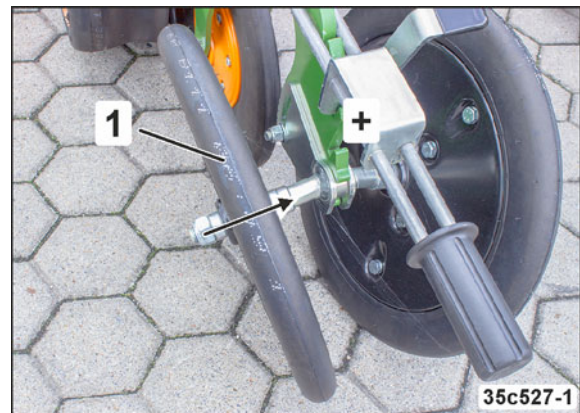


Fig. 88



If the desired results are not obtained, adjust the press rollers by turning the axle.

The lever (Fig. 89/1) serves for adjustment.

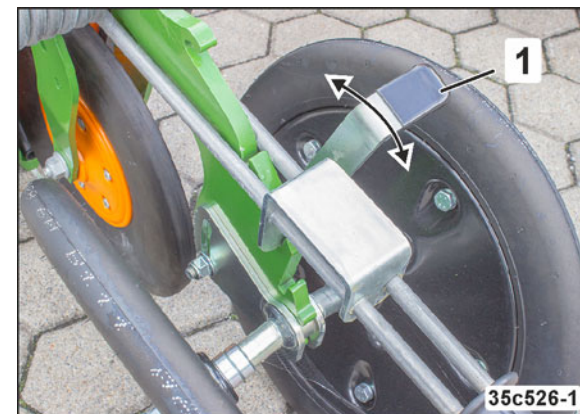


Fig. 89

5.6.5 Star clearer (optional)

The star clearers (Fig. 90/1) level out the seed furrow tracks.

The star clearers are adjustable and suitable for mulch seeding.

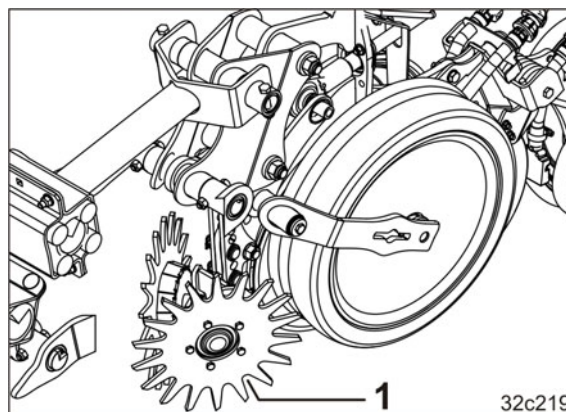


Fig. 90

5.6.6 Clod clearer (optional)

The clod clearers (Fig. 91/1) level out the seed furrow track.

The clod clearers are adjustable and suitable for mulch seeding.

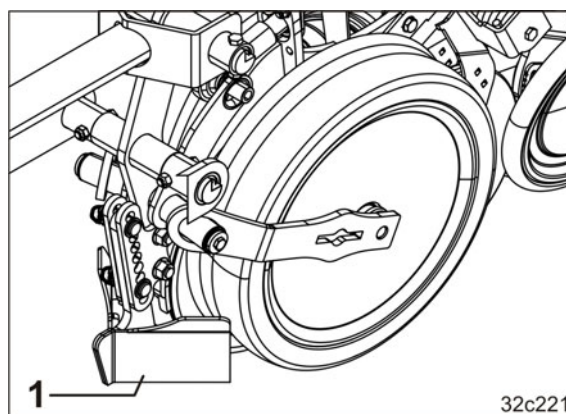


Fig. 91

5.6.7 Carrier roller scraper (optional)

Each carrier roller can be equipped with a scraper arm (Fig. 92/1).

When using the scraper arm, the row spacing may not be smaller than 45 cm.

The scrapers (Fig. 92/2) are adjustable.

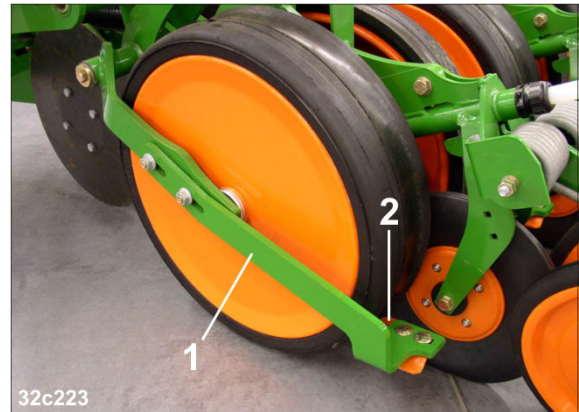


Fig. 92

5.6.8 Press roller scraper (only for fine seeds)

Seeding coulters with a 12 mm feed channel have an adjustable scraper on the press roller.



Fig. 93

5.7 Fertiliser metering and application

5.7.1 Fertiliser hopper

The hopper (Fig. 94/1) is easily accessible for filling, calibration, and emptying.

The shape of the hopper ensures an unobstructed view of the tools during work. The fertiliser hopper can be emptied through the residual quantity withdrawal (Fig. 94/2).



Fig. 94

The cover tarpaulin (Fig. 95/1) protects from rainwater.

The rubber loops (Fig. 95/2) secure the cover tarpaulin against accidental opening while driving.

The cover hook (Fig. 95/3) serves to release or hook on the rubber loops. The full-area opening of the hopper allows rapid filling.



Fig. 95

In parking position, the cover hook (Fig. 96/1) is inserted in the bracket under the hopper.



Fig. 96

5.7.1.1 Digital fertiliser fill level monitoring (optional)

The fill level sensors monitor the fertiliser level in the fertiliser hopper.

When the fertiliser level reaches the fill level sensor, the AMATRON 3 displays a warning message. At the same time, an alarm signal is issued. This alarm signal is intended to remind the tractor driver to refill the fertiliser in due time.

The height of the fill level sensor (Fig. 97/1) in the fertiliser hopper can be adjusted. The residual fertiliser volume can be set, at which the warning message and the alarm signal is to be emitted.

The height of the fill level sensor can only be adjusted when the fertiliser hopper is empty.

A fill level sensor is installed above each metering unit. Install the fill level sensors at the same height.

The charging sieves are not visible in the figure (Fig. 97) and are folded up for clarification. Do not fold up the charging sieves to adjust the fill level sensor.



Fig. 97



Increase the residual fertiliser volume that triggers the alarm

- the higher the spread rate,
- the greater the working width.



The fill level sensor may not rest against the hopper wall!

5.7.1.2 Filling auger (optional)

As an option, the implement can be fitted with a filling auger.

Fill the filling auger with fertiliser from the transport vehicle and convey it into the fertiliser hopper of the EDX.



Fig. 98

Folded-in condition of the filling auger for transport and use.

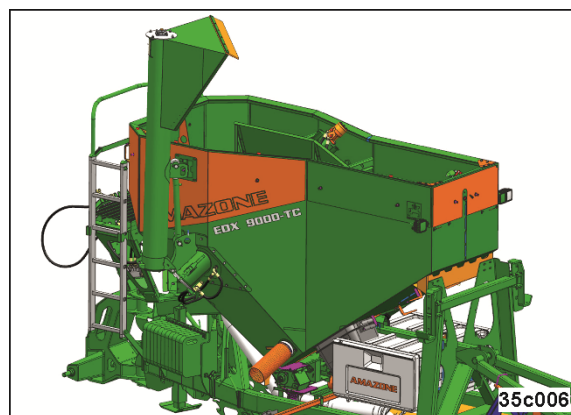


Fig. 99

Fig. 102/...

1. Folding and unfolding
2. Switch on the filling auger

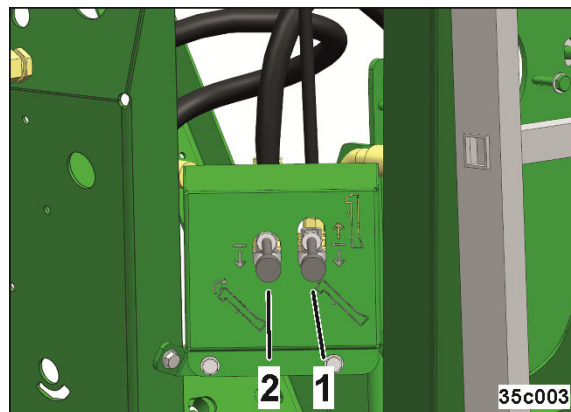


Fig. 100

5.7.2 Fertiliser metering unit and injector sluice

The metering unit (Fig. 101/1) measures the required fertiliser quantity.

The implement has two metering units and two injector sluices (Fig. 101/2).

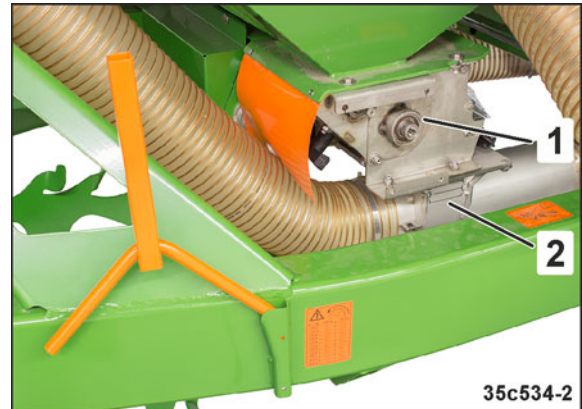


Fig. 101

Each metering unit is equipped with a fertiliser metering roller (Fig. 102/1).

The metering roller is driven by the star wheel via the Vario gearbox.

The fertiliser will then fall out of the metering unit into the injector sluice (Fig. 196) and is conveyed by the air current to the distributor head and then to the fertiliser coulters.

For calibration testing and emptying purposes, the fertiliser falls through an opening in the floor of the injector sluice.



Fig. 102

5.7.3 Fertiliser quantity adjustment on the Vario gearbox

The desired fertiliser quantity is set using the gearbox lever (Fig. 103/1) of the Vario gearbox.

Adjusting the gearbox lever changes the fertiliser quantity. The higher the number the gearbox lever points to on the scale (Fig. 103/2), the greater the fertiliser quantity.

Carry out a calibration test to determine whether the gearbox lever is correctly set and whether the fertiliser quantity is correct during subsequent seeding.

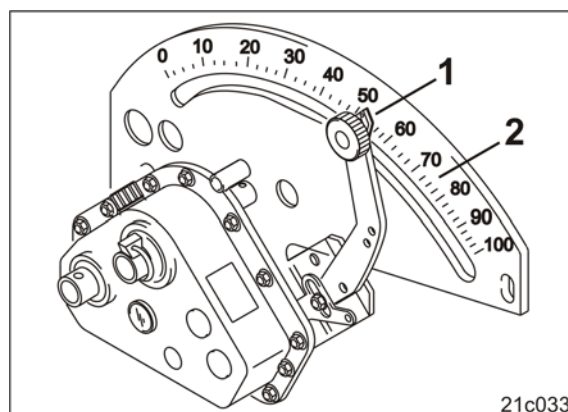


Fig. 103

A number of calibration tests are often necessary to determine the correct gearbox setting.

The gearbox setting can be calculated from the values of the first calibration test using the calculating disc rule. Always check the value determined on the calculating disc rule with a further calibration test.

The calculating disc rule has three scales

- An outer white scale (Fig. 104/1) for fertiliser quantities above 30 kg/ha
- An inner white scale (Fig. 104/2) for fertiliser quantities below 30 kg/ha
- A coloured scale (Fig. 104/3) with all gearbox settings from 1 to 100.

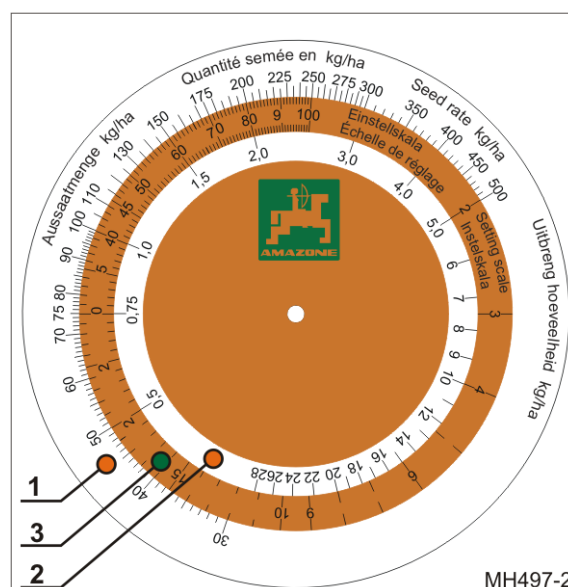


Fig. 104

5.7.4 Calibration test

The calibration test checks whether the set and actual fertiliser quantities are equal.

Always carry out a calibration test

- when changing the type of fertiliser.
- if the same type of fertiliser is used, but with a different grain size, grain shape and specific weight.
- if there are any deviations between the determined and actual fertiliser quantity.

The fertiliser quantity produced during the calibration test drops into the calibration trough (Fig. 105/2).

The number of calibration troughs corresponds to the number of metering units.

The calibration troughs are secured to the hopper rear wall using a linch pin (Fig. 105/1) for transport.

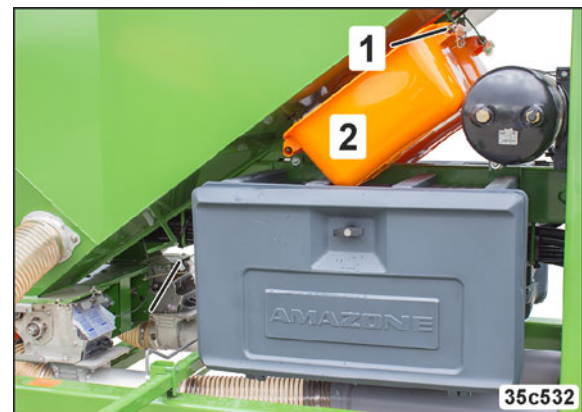


Fig. 105

The calibration crank (Fig. 106/1) is in parking position in the transport bracket.

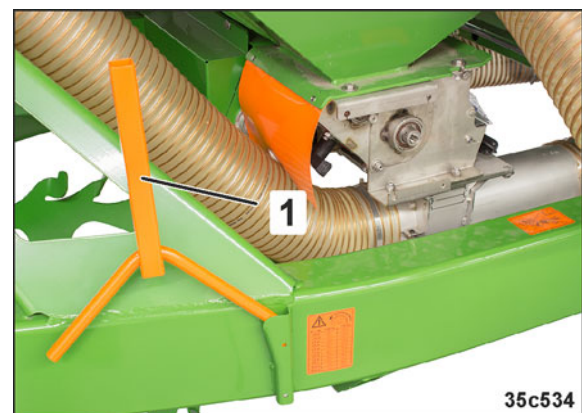


Fig. 106

5.7.5 Blower fan speed for transporting the fertiliser

The fan (Fig. 107/1) produces the air pressure for transporting the fertiliser from the injector sluice to the fertiliser coulters.

The hydraulic motor (Fig. 107/2) drives the fan (fertiliser).

The required fan speed is 3900 rpm.

The on-board computer displays the current fan speed and issues an alarm if there is a deviation from the target speed.

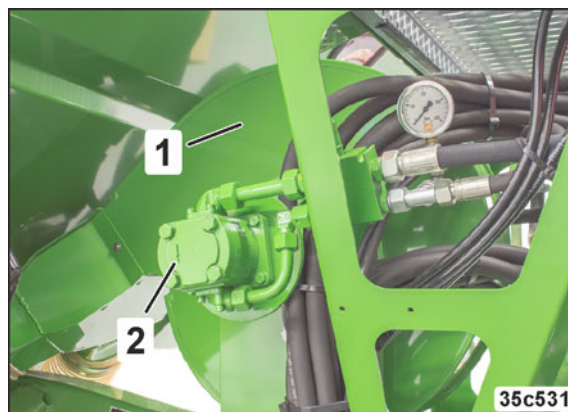


Fig. 107

A hydraulic pump (Fig. 108/1) connected to the tractor's PTO shaft drives the hydraulic motor (Fig. 107/2).

The tractor PTO shaft rotates clockwise as seen in the direction of travel.



Fig. 108

5.7.6 Distributor head

The fertiliser is distributed evenly amongst all fertiliser coulters in the distributor head (Fig. 109/1).

One fertiliser metering unit always supplies one distributor head.

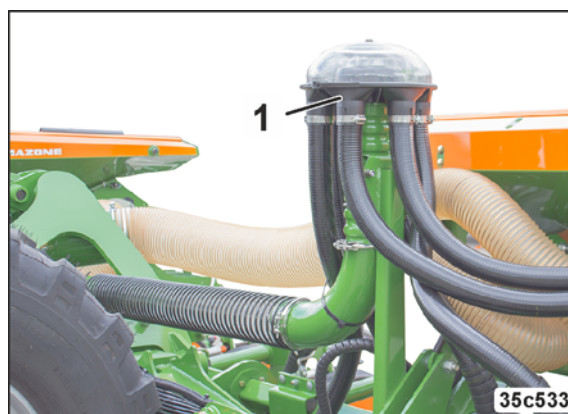


Fig. 109

5.7.7 Single disc type fertiliser coulters

The single disc type fertiliser coulters (Fig. 110/1) is suitable for spreading fertiliser on ploughed and mulched soil.

The fertiliser placement depth is adjustable.

The maximum fertiliser placement depth is 15 cm.

In the tractor track, the placement depth of individual fertiliser coulters can be adjusted by turning in addition to the hydraulic adjustment.

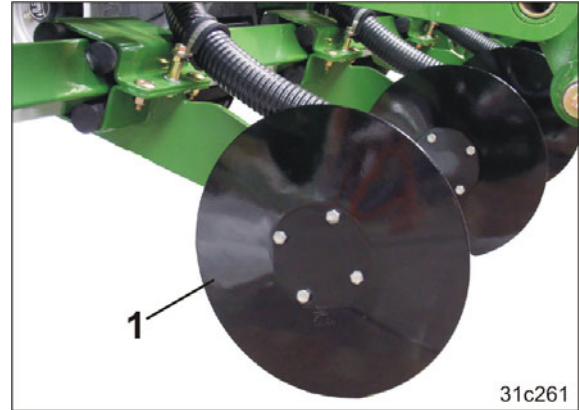


Fig. 110

Adjust the working depth of the single disc fertiliser coulters (Fig. 110/1) by actuating

- the valve (Fig. 111/2) or
- a setting motor (Fig. 112/1, optional), which is operated using the AMATRON 3 in the tractor cab.



Fig. 111

Read the pressure that is being applied to the central adjustment

- on the pressure gauge (Fig. 111/1),

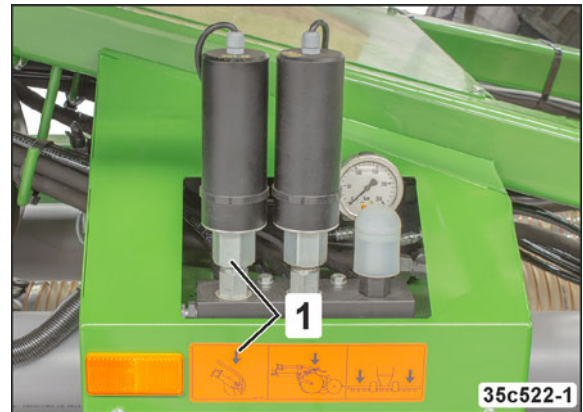


Fig. 112

- from the tractor seat on the pressure gauge (Fig. 113/1).

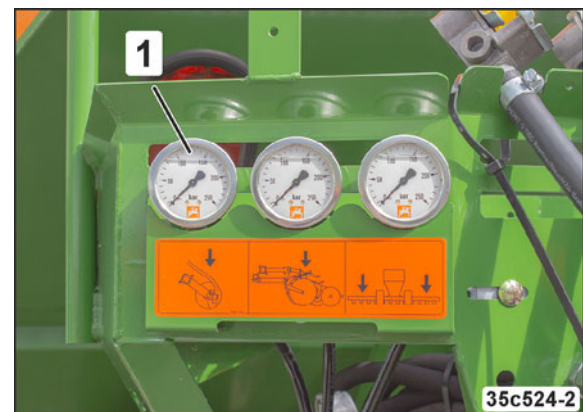


Fig. 113



The pressure displayed on the pressure gauge (Fig. 111/1) changes until the fan (singling) runs at a constant speed.



The fertiliser placement depth depends on the following factors

- the condition of the soil
- the pressure acting on the central adjustment unit;
- the working speed.

Check the placement depth at regular intervals.



5 cm is the distance set at the factory between fertiliser and seed placement.

The distance between the fertiliser and seed placement can be adjusted. (Specialist workshop).

Only very light soils, the single-disc fertiliser coulter can be guided by the seeding coulter down into the soil using an adjustable chain (optional, Fig. 114/1).

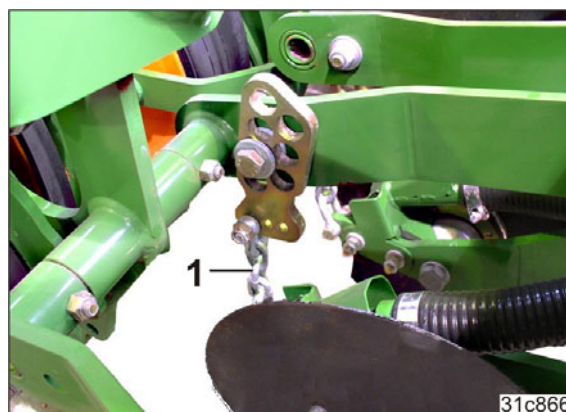


Fig. 114

5.7.8 One sided shut-off (part-width section)

The EDX 9000-TC precision airplanter can be operated with half the working width (part-width section).

One-sided seed shut-off

The seed supply can be switched off on one side by switching off the electric motor of one of the singling drums.

The electric motor is switched on and off with a keyboard entry on the on-board computer (see AMATRON 3 operating manual).

One-sided fertiliser shut-off

The fertiliser supply to the fertiliser coulters of the implement can be switched off on one side by means of two distributor heads.

On seed drills with two distributor heads (Fig. 115/1)

- one distributor head supplies the coulters on one side of the implement.
- The metering on one side of the implement (part-width section) can be switched off by removing the corresponding linch pin (Fig. 116/1).

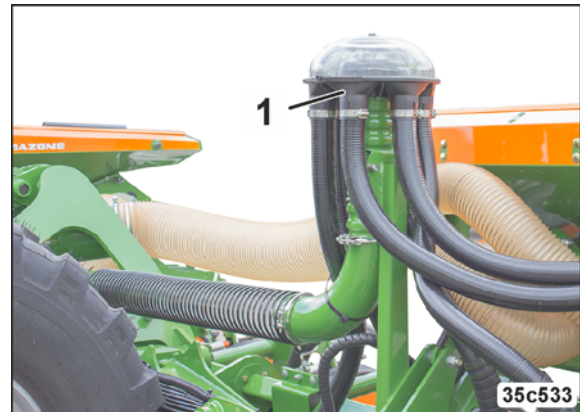


Fig. 115

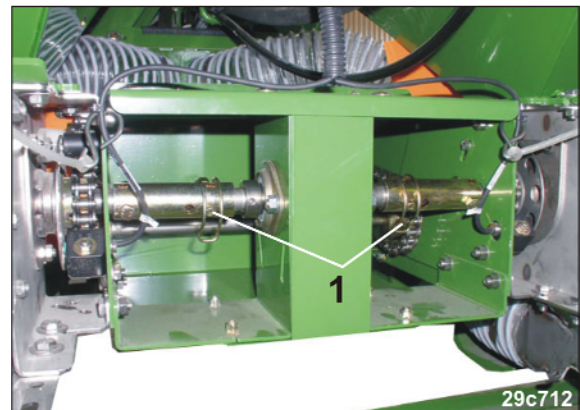


Fig. 116

5.8 Track marker

The hydraulically-actuated track markers (Fig. 117/1) dig into the ground alternately on the left and the right of the implement.

In doing so, the active track marker creates a mark. This mark serves as a reference for driving the next bout after turning at the headland.

On the next run, the tractor driver drives over the centre of the mark.

The inactive track marker (Fig. 117/2) is lifted during operation.

The following are adjustable

- the length of the track marker.
- the working intensity of the track marker, depending on the soil type.

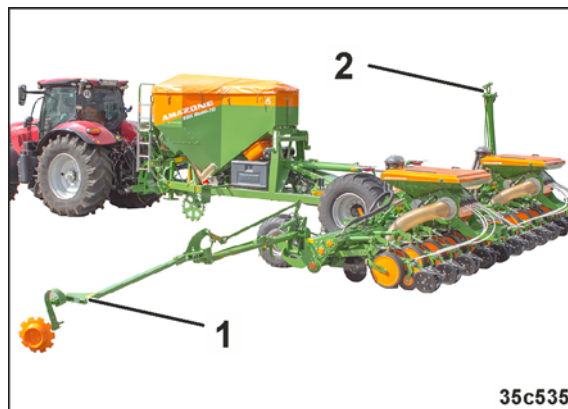


Fig. 117



Changing the row spacing can require changing of the track marker.

Before folding the implement sections for road transport, the track markers (Fig. 118/1) rest closely on the implement sections.



Fig. 118

5.9 Support wheels

When changing from firm to loose soils, the support wheels may sink into the soil at different depths.



Fig. 119

To achieve an equal distance between the sections and the soil across the entire section length, the support wheels can be adjusted by adjusting the bolts.

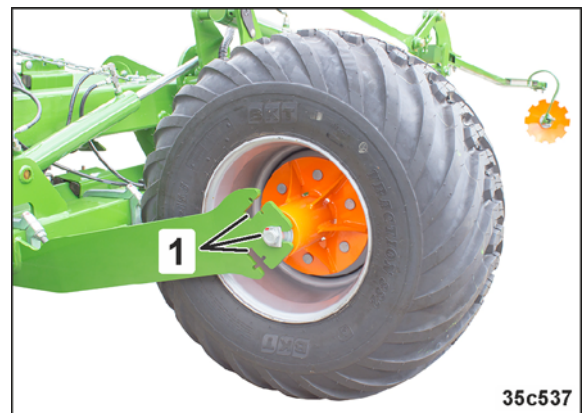


Fig. 120

5.10 Running gear with twin tyres (optional)

To avoid compaction in the seedbed, a running gear with twin tyres can be used for selected row spacings.



Fig. 121

5.11 Implement wheel track eradicator (optional)

The implement wheel mark eradicators (Fig. 122/1) loosen the track that was compacted by the implement tyres.

The wheel mark eradicators can be set horizontally and vertically. Horizontally, the wheel mark eradicators are infinitely adjustable.

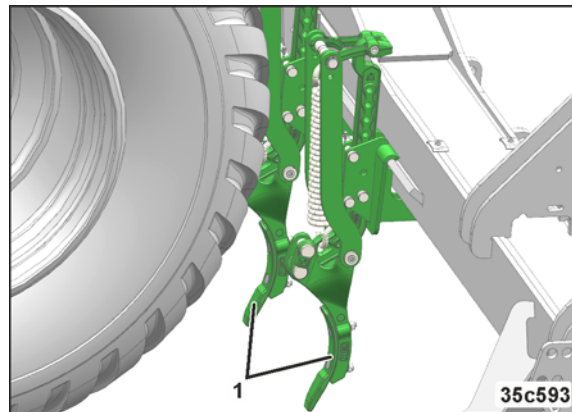


Fig. 122

5.12 Tractor wheel mark eradicator (optional)

The tractor wheel mark eradicators (Fig. 123/1) loosen soil compacted by the tractor tyres and produce fine earth for covering the seed furrow.

The wheel mark eradicators can be set horizontally and vertically. Horizontally, the wheel mark eradicators are infinitely adjustable.

The tools are interchangeable. Alternatively, duckfoot coulters can be used.

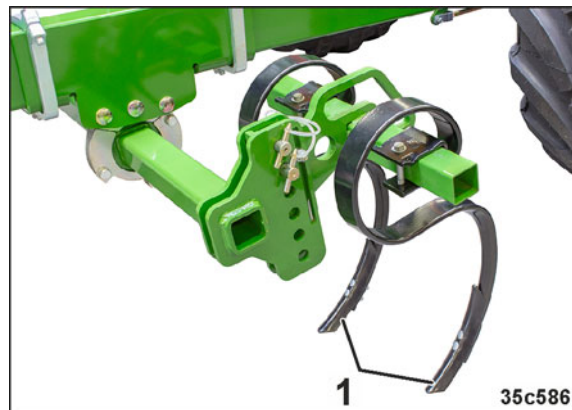


Fig. 123

When lifting the implement at the headlands or for road transport, the tractor wheel mark eradicators must be swivelled up by approx. 90°.

Throwing over the lever (Fig. 124/1) allows work to be performed without the tractor wheel mark eradicators.

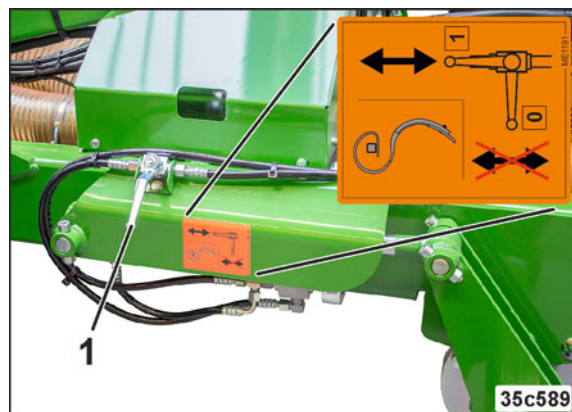


Fig. 124

5.13 Pre-emergence marker (option)

When pre-emergence markings are being created, the track discs (Fig. 125/2) are lowered automatically and mark the tramline that has just been created. This makes the tramlines visible before the seed has germinated.

The following are adjustable

- the track width of the tramline,
- the working intensity of the track discs.

The track discs are raised if no tramline is created.

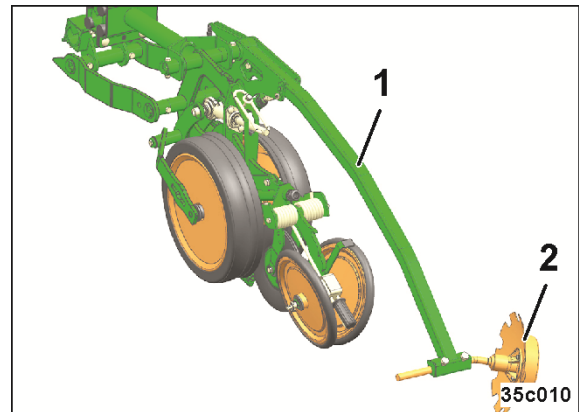


Fig. 125

5.14 Lighting of the work tools (optional)

The working area of the tools can be illuminated when working at night.

Fig. 126/...

- (1) Work lights on the fertiliser hopper

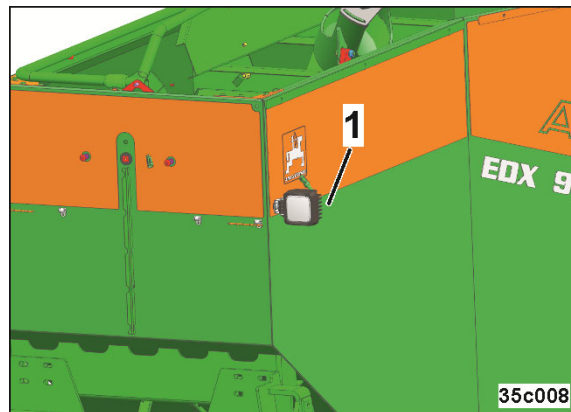


Fig. 126

Fig. 127/...

- (1) Single-row lighting on the coulter

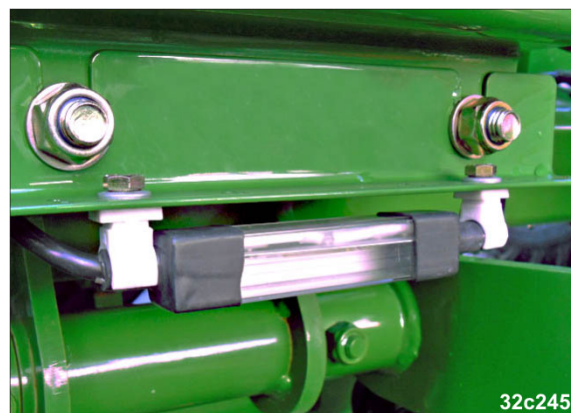


Fig. 127

The switch (Fig. 128) for the lighting can be fastened to the implement or in the tractor cab.

Connect the plug for the lighting to the 12 Volt power socket in the tractor cab.



Fig. 128

6 Start-up

This section contains information

- on initial operation of your implement
- on checking how you may couple/mount the implement to your tractor.



- Before operating the implement for the first time the operator must have read and understood the operating manual.
- Follow the instructions given in the section "Safety information for the operator" when
 - Coupling and uncoupling the implement
 - Implement transportation
 - Use of the implement
- Only couple and transport the implement to/with a tractor which is suitable for the task.
- The tractor and implement must meet the national road traffic regulations.
- The operator and the user 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 float position or pressure position due to their 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 you attach or hitch the implement to the tractor.
You may only connect the implement to tractors suitable for the purpose.
- Carry out a brake test to check whether the tractor achieves the required braking delay with the implement connected.

Requirements for the suitability of a tractor are:

- The hydr. pump output of the tractor must be at least 80 l/min.
- 12 V at 110 A output of the tractor alternator
- the permissible total weight
- the permissible axle loads
- the permissible drawbar load at the tractor coupling point
- the load capacity of the installed tyres
- The permissible 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 tare weight of the tractor.

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

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



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

- tractor tare weight
- ballast weight and
- total weight of the attached implement or drawbar load of the hitched implement.



This note applies only to Germany.

If, having tried all possible alternatives, it is not possible to comply with the axle loads and/or the permissible 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 (hitched implement)

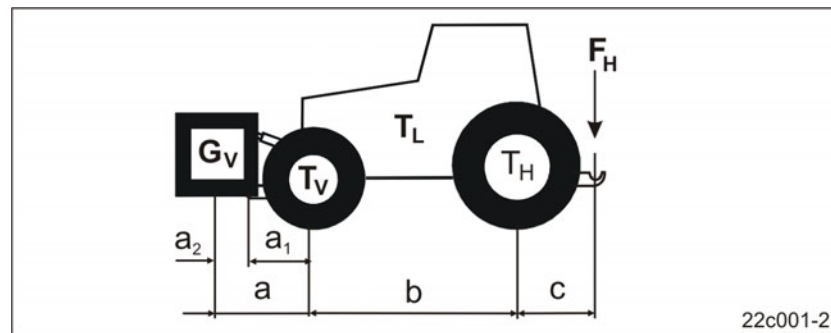


Fig. 129

T_L	[kg]	Tractor tare 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 section "Rating plate and CE mark"
a	[m]	Distance between the centre of gravity of the front mounting implement or the front weight and the centre of the front axle (total $a_1 + a_2$)	See technical data of tractor and front implement 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-mounted implement or front ballast (centre of gravity distance)	See technical data of front implement 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 for assurance of the steering capability

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

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 implement

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

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).

Start-up

6.1.1.7 Table

	Actual value according to calculation	Approved value according to tractor operating manual	Double approved load capacity (two tyres)
Minimum ballast front/rear	<div style="border: 1px solid black; padding: 5px; display: inline-block;">/ kg</div>	--	--
Total weight	<div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	<div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	--
Front axle load	<div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	<div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	<div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>
Rear axle load	<div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	<div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	<div style="border: 1px solid black; padding: 5px; 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 contusions, cutting, catching, drawing in and knocks through insufficient stability and insufficient tractor steering and brake power.

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

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



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 implements



WARNING

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

Ensure:

- that the connection device on the tractor has a sufficient permissible drawbar load for the drawbar load actually in question
- 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 static actual rear axle load of the tractor does not exceed the permissible rear axle load
- that the permissible total weight of the tractor is complied with
- that the approved load capacities of the tractor tyres are not exceeded.

6.1.3 Implements without their own brake system

The implement is not permitted in Germany and in several other countries without its own brake system.



WARNING

Risk of contusions, cuts, dragging, catching or knocks from insufficient tractor brake power!

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

When using public roads, be sure to observe the national road traffic regulations (Highway Code).

If the implement does not possess its own brake system:

- Then the actual tractor weight must be greater than or equal to (\geq) the actual weight of the connected implements. Some countries may have different regulations. In Russia, for example, the weight of the tractor must be twice as high as that of the implement connected.
 - The maximum forward speed is 25 km/h.
- **Note:** in Russia and in several other countries, the permissible maximum speed is 10 km/h. Some countries may have different regulations.

6.2 Securing the tractor/implement against unintentional start-up and rolling



WARNING

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact when making interventions in the implement, through

- unintentional lowering of the unsecured implement when it is raised via the three-point hydraulic system of the tractor.
- unintentional lowering of raised, unsecured parts of the implement.
- unintentional start-up and rolling of the tractor-implement combination.

Secure the tractor and the implement against unintentional start-up and rolling before any intervention in the implement.

It is forbidden to make any intervention in the implement, such as installation, adjustment, troubleshooting, cleaning, maintenance and repairs

- while the implement is being driven
- when the tractor's engine is running and the tractor's PTO shaft/hydraulic system is connected.
- if the ignition key is inserted in the tractor when the tractor's PTO shaft/hydraulic system is connected and the tractor engine could be started unintentionally.
- if the tractor and implement have not each been prevented from unintentionally rolling away by applying their parking brakes and/or securing them with wheel chocks.
- if moving parts are not blocked against unintentional movement.
- When carrying out such work, in particular, there is a high risk of contact with unsecured components.

1. Park the tractor and the implement on solid, level ground only.

2. Lower any raised, unsecured implement/raised, unsecured implement parts.

→ This is how to prevent unintentional falling:

3. Shut down the tractor engine.

4. Remove the ignition key.

5. Apply the tractor parking brake.

6. Secure the implement with wheel chocks against unintentionally rolling away.

6.3 Installation regulations for the hydraulic fan drive connection (singling unit)

The back pressure of 10 bar in the return line (Fig. 130/6) must not be exceeded. The installation regulations therefore have to be complied with when connecting the hydraulic fan connection.

- Connect the hydraulic coupling of the pressure line (Fig. 130/5) to a single-acting or double-acting tractor control unit with priority.
- Connect the large hydraulic coupling of the return line (Fig. 130/6) only to an unpressurized tractor connection with direct access to the hydraulic fluid tank (Fig. 130/4). To prevent the back pressure from exceeding 10 bar, do not connect the return line to a tractor control unit.
- For retro-installation of the tractor return line, use only piping with ND 16, e.g. 20 id. x 2.0 mm with a short return path to the hydraulic fluid tank.

For operation of all hydraulic functions, the tractor hydraulic pump output should be at least 80 l/min. at 150 bar.

Fig. 130/...

(A) On the implement side

(B) On the tractor side

- (1) Hydraulic fan motor
 $N_{max.} = 4000 \text{ rpm}$
- (2) Filter
- (3) Single-acting or double-acting tractor control unit with priority
- (4) Hydraulic fluid tank
- (5) Feed line:
pressure line with priority
(marking: 1 red)
- (6) Return flow:
unpressurised line with "large" push-fit
coupling
(marking: 2, red)

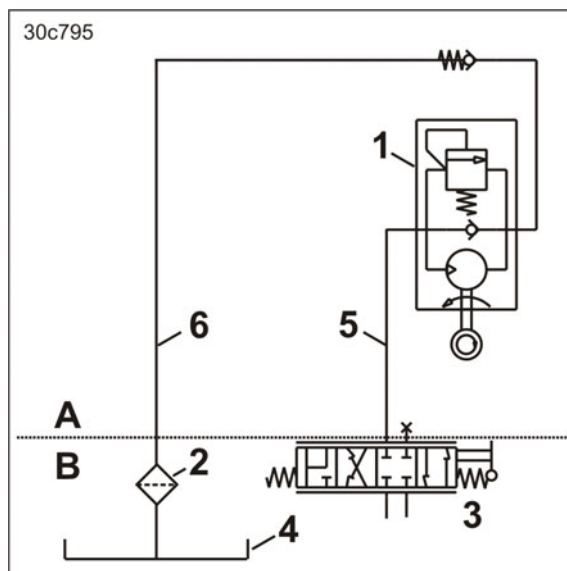


Fig. 130



The hydraulic fluid must not overheat.

High oil flow rates in conjunction with small oil tanks encourage rapid heating-up of the hydraulic fluid. The capacity of the tractor's oil tank (Fig. 130/4) should be at least twice the oil flow rate. If the hydraulic fluid heats up excessively, the installation of an oil cooler is required at a specialist workshop.

7 Coupling and uncoupling the implement



When coupling and uncoupling implements, follow the instructions given in the section "Safety instructions for the operator".



CAUTION

Switch off the on board computer

- before road transport.
- before adjustment, maintenance and repair work.

Risk of accident due to unintended movements of the metering unit or other implement components caused by radar pulses.



WARNING

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

When coupling or uncoupling the implement, secure the tractor and implement against unintentional start-up and rolling before entering the danger area between the tractor and implement.



WARNING

Risk of contusions between the rear of the tractor and the implement when coupling and uncoupling the implement!

Actuate the operating controls for the tractor's three-point hydraulic system

- from the workplace provided
- if you are outside of the danger area between the tractor and the implement.



DANGER

Risk of contusions when coupling and uncoupling the implement!

With the implement extended, lower the rear frame or coulter completely before uncoupling the implement from the tractor. When the coulters are raised, the tensioned crosspiece may move rapidly upwards when the tractor's lower link is released.

7.1 Dual-circuit pneumatic service brake system



DANGER

Before uncoupling the implement from the tractor, secure it with wheel chocks and apply the implement's parking brake.

Only remove the wheel chocks once the implement has been coupled up to the tractor. Then release the implement's parking brake.



WARNING

If the implement, when uncoupled from the tractor, has full compressed air tanks, the compressed air from the air tanks acts on the implement brakes and the wheels are blocked.

The compressed air in the compressed air tank and hence the braking force will drop continuously until there is a complete brake failure, if the compressed air tank is not refilled. This is why the implement may only be parked using wheel chocks and with the implement's parking brake applied.

The implement brakes are released immediately with a full compressed air tank when the supply line (red) is connected to the tractor. For this reason, the implement must be connected to the lower links of the tractor and the parking brake of the implement and tractor must be applied before the supply line (red) is connected. Only then can the wheel chocks be removed.



Compliance with the maintenance intervals is essential for the correct function of the brake system.

The dual-circuit pneumatic braking system has

- a supply line (Fig. 131/1) with coupling head (red).
- a brake line (Fig. 131/2) with coupling head (yellow).

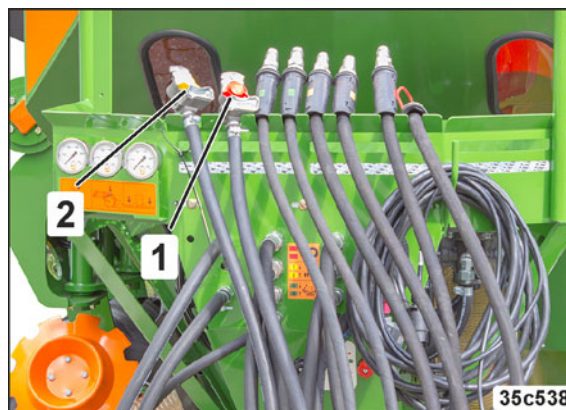


Fig. 131

- a trailer brake valve (Fig. 132/1).

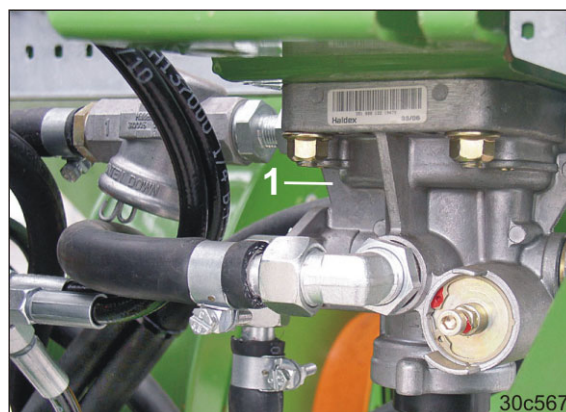


Fig. 132

Once the implement has been properly coupled, the implement service braking system responds when the tractor brake pedal and the tractor parking brake are applied.

If the implement is uncoupled with a full compressed air tank, the service brake system (emergency brake) automatically controls the implement.

The air slowly but continuously escapes from the compressed air tank. This causes the braking force to drop, leading to complete brake failure unless the compressed air tank is refilled. This is why the implement may only be parked with the implement's parking brake applied and using 2 wheel chocks. Only release the parking brake again after the implement has been coupled to the tractor.

If the implement is uncoupled with an empty compressed air tank, the implement has no braking effect if the supply line (red) is released.

If the implement is coupled up with a full compressed air tank, the emergency brake is released as soon as the supply line (red) is connected. The brake is not released if the implement's parking brake is applied.

To make sure that the implement is braked after uncoupling, apply the implement's parking brake beforehand. Only release the parking brake once the implement has been coupled up to the tractor.

7.1.1 Coupling the brake and supply lines

**WARNING**

Risk of contusions, cuts, dragging, catching or knocks from incorrectly functioning brake system.

- When coupling the brake and supply line, ensure that:
 - the sealing rings of the coupling heads are clean.
 - the sealing rings of the coupling heads form a proper seal.
- Always replace damaged seals immediately.
- Only move off with the implement connected when 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 implement, if the service brake is released.

Always first connect the hose coupling of the brake line (yellow), followed by the coupling head of the supply line (red).

The operating brake of the implement moves out of the brake position immediately the red coupling head has been coupled.

**DANGER**

Check the routing of the brake line. The brake line must not chafe on other parts.

1. Check if the implement is secured with 2 wheel chocks and the implement parking brake is applied.

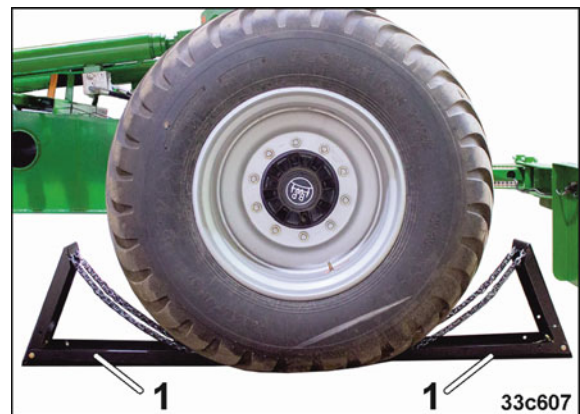


Fig. 133

Coupling and uncoupling the implement

2. Open the covers (Fig. 134/1) of the hose couplings on the tractor.
 3. Check the sealing rings on the coupling head for damage and cleanliness.
 4. Clean the dirty sealing rings and replace any damaged sealing rings.
 5. Fasten the hose coupling of the brake line (yellow) in compliance with regulations in the coupling marked yellow (Fig. 134/2) on the tractor.
 6. Remove the coupling head of the supply line (red) from the empty coupling.
 7. Check the sealing rings on the coupling head for damage and cleanliness.
 8. Clean the dirty sealing rings and replace any damaged sealing rings.
 9. Fasten the hose coupling of the supply line (red) in the coupling marked red on the tractor in accordance with regulations.
- The black button is pushed out when the supply line (red) is coupled.
- If the tractor parking brake is:
- o engaged, the service brake of the implement is also engaged.
 - o released, the service brake of the implement is also released.

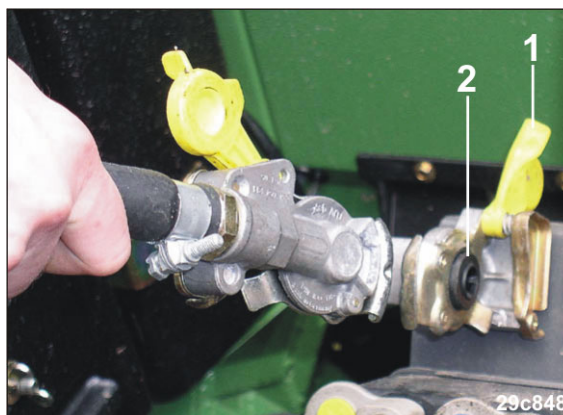


Fig. 134



DANGER

In an emergency, pull the red button (Fig. 135/1) to brake the implement.

The implement does not have any braking effect if the tractor parking brake is released when the supply line (red) is connected.

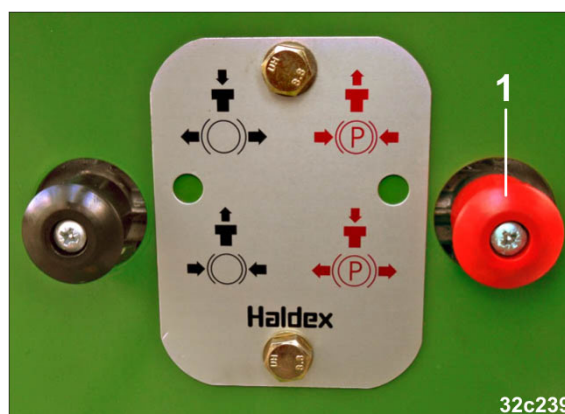


Fig. 135

7.1.2 Uncoupling the supply and brake line



DANGER

Always secure the implement with the wheel chocks before you uncouple the implement from the tractor.



WARNING

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

Always first disconnect the coupling head of the supply line (red), followed by the coupling head of the brake line (yellow).

When the supply line (red) is uncoupled from the tractor, the service brake of the implement moves into braking position.

Always keep to this order, as otherwise the operating brake system will trip and may set the unbraked implement moving.

1. Secure the implement against unintentionally rolling away. To do so, use the tractor parking brake and the wheel chocks.
2. Release the coupling head (Fig. 137) of the supply line (red).

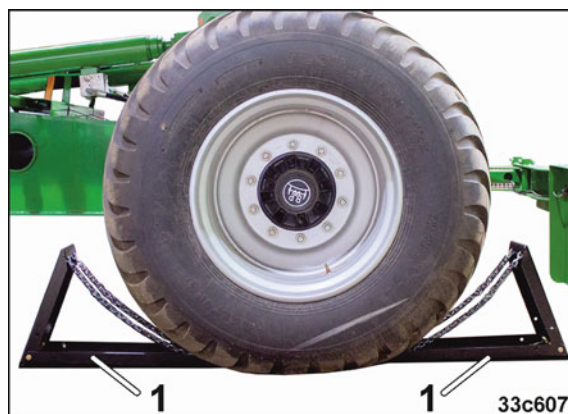


Fig. 136

3. Release the coupling head of the brake line (yellow).
4. Fasten the coupling heads in the empty couplings.
5. Close the covers of the coupling heads on the tractor.

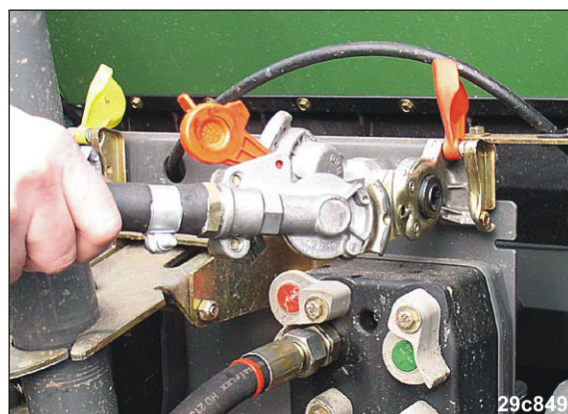


Fig. 137

7.1.3 Control elements of the dual-circuit pneumatic service brake system:



DANGER

Never release the parking brake of the uncoupled implement on sloping ground.

After the supply line (red) is detached, the implement is braked automatically.

If it is necessary to manoeuvre the implement while it is uncoupled from the tractor (on a level surface only), e.g. while it is in the specialist workshop, you can actuate the dual-circuit pneumatic braking system using the control elements (Fig. 138).

For this purpose, the compressed air tank must be filled. If the compressed air tank is empty, the parking brake cannot be disengaged using the control elements.

Releasing the parking brake:

Push in the black button (Fig. 138/1), e.g. to manoeuvre the uncoupled implement on level ground.

Engaging the parking brake:

Pull out the black button (Fig. 138/1).



Do not press the red button (Fig. 138/2). It is always pulled out.

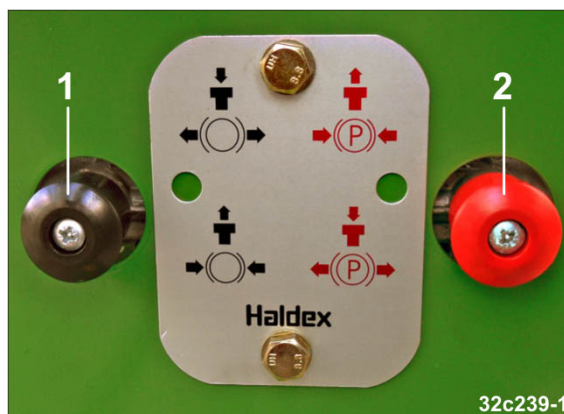


Fig. 138



When the supply line (red) is coupled to the tractor, the parking brake is released automatically, and as soon as the operating pressure has built up, the black button (Fig. 138/1) will be automatically pulled out of the valve chest.

7.2 Hydraulic service brake system

The hydraulic service braking system acts on two braking cylinders which actuate the brake shoes in the brake drums.

The tractor also has to be equipped with a hydraulic service brake system.



WARNING

If the hydraulic socket is decoupled from the tractor, the service brake system of the implement has no braking effect.

Before uncoupling the implement from the tractor, secure it with 2 wheel chocks and apply the implements parking brake.

After decoupling the implement, first fill the hydraulic accumulator. Then remove the wheel chocks and release the implement parking brake.



DANGER

Check the routing of the brake line. The brake line must not chafe on other parts.



CAUTION

Engage the parking brake before uncoupling the implement and do not disengage it until after coupling the implement to the tractor.



Compliance with the maintenance intervals is essential for the correct function of the brake system.

7.2.1 Coupling the hydraulic service brake system



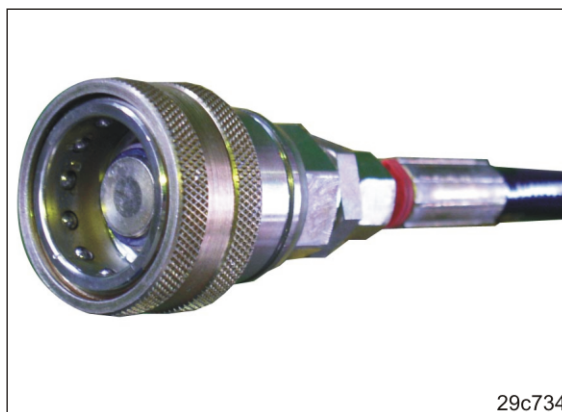
Avoid oil contamination due to soiled hydraulic couplings.



DANGER

Check the routing of the brake line. The brake line must not chafe on other parts.

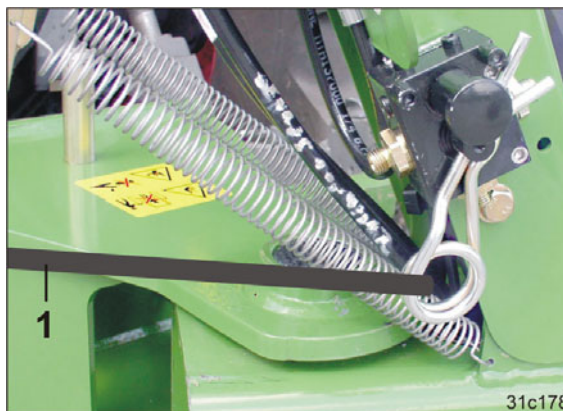
1. Check if the implement is secured with two wheel chocks and the implement parking brake is applied.
2. Couple the implement to the tractor.
3. Apply the tractor parking brake, switch off the tractor engine, and remove the ignition key.
4. Clean the hydraulic socket and the tractor-side hydraulic connector.
5. Couple the hydraulic socket to the tractor.



29c734

Fig. 139

6. Connect the break-away valve to the tractor using the cable (Fig. 140/1). If the implement is separated from the tractor due to an accident, the implement will be braked.



31c178

Fig. 140

7. Fill the hydro reservoir (Fig. 141/1) before moving off.
 - 7.1 Press the brake pedal of the tractor for at least 10 seconds.

This fills the hydraulic accumulator.



To ensure the full effectiveness of the service brake system, fill the hydraulic accumulator before moving off.



Fig. 141

8. Apply the tractor parking brake, switch off the tractor engine, and remove the ignition key.
9. Remove wheel chocks.
10. Release the implement parking brake.



DANGER

Risk of accidents due to disfunctional brakes!

After pulling out the spring cotter pin (e.g. when triggering the emergency brake), be sure to reinsert the spring cotter pin into the brake valve from the same side (Fig. 140). Otherwise, the brakes are without function.

After the spring cotter pin has been reinserted, it is necessary to perform a brake test for the service brake and for 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.

7.2.2 Uncoupling the hydraulic service brake system



DANGER

The implement does not have a parking brake.

Always secure the implement with the wheel chocks before you uncouple the implement from the tractor.

1. Secure the tyres with two wheel chocks.
2. Apply the implement's parking brake.

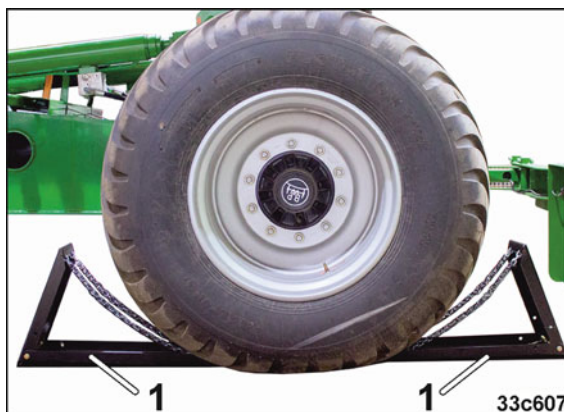


Fig. 142

3. Drain the hydro reservoir (Fig. 141/1) before uncoupling the hydraulic socket (Fig. 144).
 - 3.1 Actuate the valve (Fig. 143/1). This empties the hydraulic accumulator.



The hydraulic socket (Fig. 144) cannot be coupled to the tractor again unless the hydro reservoir is empty.

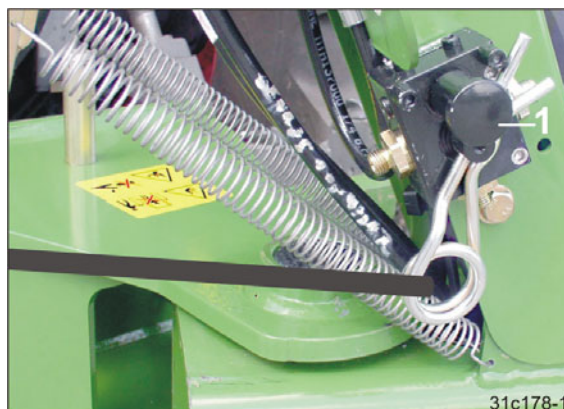


Fig. 143

4. Apply the parking brake.
5. Uncouple the hydraulic socket from the tractor.
6. Protect the hydraulic socket and the hydraulic connector against soiling using protective caps (Fig. 144/1).
7. Place the hydraulic lines in the hose cabinet.

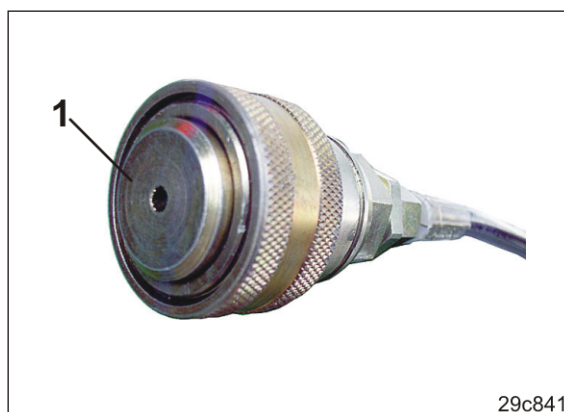


Fig. 144

7.3 Hydraulic hose lines



WARNING

Danger of infection from escaping hydraulic fluid at high pressure!

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

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

7.3.1 Coupling the hydraulic hose lines



WARNING

Risk of being crushed, cut, caught, drawn in or struck due to faulty hydraulic functions when the hydraulic hose lines are connected incorrectly!

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



- Check the compatibility of the hydraulic fluids before connecting the implement to the hydraulic system of the tractor.
Do not mix any mineral oils with biological oils.
- Observe the maximum approved hydraulic fluid pressure of 210 bar.
- Only couple clean hydraulic connectors.
- Push the hydraulic push-fit connector(s) into the hydraulic sockets until the hydraulic connector(s) perceivably lock(s).
- Check the coupling points of the hydraulic hose lines for a correct, tight seat.

1. Swivel the actuation lever on the control valve on the tractor control unit 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).

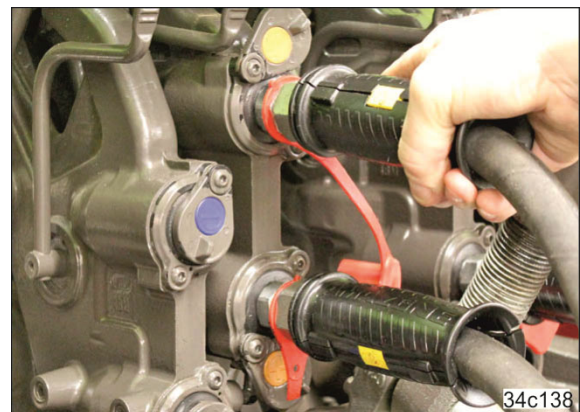


Fig. 145

7.3.2 Uncoupling the hydraulic hose lines

1. Swivel the actuation lever on the control valve on the tractor control unit on the tractor to float position (neutral position).
2. Release the hydraulic connectors from the hydraulic sockets.
3. Place the hydraulic hose lines in the hose cabinet.

7.4 Coupling the implement



WARNING

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

You may only connect the implement to tractors suitable for the purpose. On this subject see the section "Checking the suitability of the tractor", Seite 100.



WARNING

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

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

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



WARNING

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

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



WARNING

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

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

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

**DANGER**

If the tractor has been separated from the implement, always

- secure the implement with the service parking brake and also with 2 wheel chocks.
- secure the implement with 4 wheel chocks if it has no brake system!

**DANGER**

The lower link of the tractor must not have any lateral play so that the implement always runs centrally behind the tractor and does not knock back and forth!

**CAUTION**

Only establish the implement connections once the tractor and implement have been coupled, the tractor engine is shut down, the tractor parking brake is applied and the ignition key is removed!

**CAUTION**

Do not connect the supply line (red) of the dual-circuit pneumatic brake system to the tractor until the tractor engine is shut down, the tractor parking brake is applied and the ignition key is removed!



The implements can be coupled or uncoupled when folded or unfolded.

**WARNING**

Do not remove the wheel chocks until the implement is connected to the tractor's lower links and the tractor parking brake is applied.

1. Verify that the implement is secured with wheel chocks (Fig. 146/1).
2. Apply the implement's parking brake.

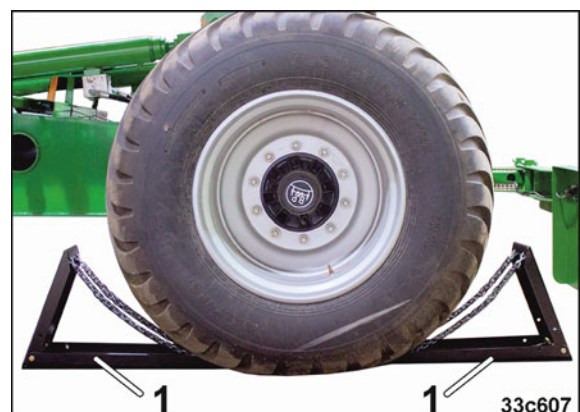


Fig. 146

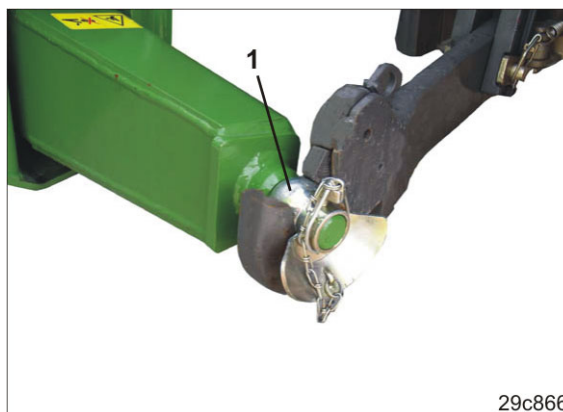
Coupling and uncoupling the implement

3. Attach a ball sleeve to each lower link pin (Fig. 147/1) with a collecting tray.

Note:

- o Coupling point category (see "Rating plate and CE mark", Seite 59)
- o The design of the ball sleeves depends on the tractor type (see the operating manual for the tractor).

4. Secure each ball sleeve with a linch pin.



29c866

Fig. 147



CAUTION

Danger of getting crushed in the area of the moving tensioned crosspiece.

5. Open the tractor lower link securing device, i.e. it must be ready for coupling.
6. Align the lower link hooks so that they are flush with the linking points of the implement.
7. Direct people out of the danger area between the tractor and implement before you approach the implement with the tractor.
8. Drive the tractor in reverse up to the implement so that the lower link hooks of the tractor automatically pick up the ball of the implement.
→ The lower link hooks lock automatically.
9. Check whether the securing device of the tractor's lower link locking system is closed and secured (see tractor's operating manual).
10. Lift the tractor's lower link until the jack (Fig. 148/1) is just above the ground.
11. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
12. Clean the hydraulic couplings.
13. Connect the supply lines to the tractor (see the section "Overview – Supply lines between the tractor and implement"). Connect the implement plugs to the terminal as described in the AMATRON 3 operating manual.



Clean the hydraulic couplings before connecting them to the tractor. Minor oil contamination with particles can cause a failure of the hydraulic system.



During operation, the **yellow** tractor control unit is actuated more frequently than any other tractor control unit. Assign the connections of the **yellow** tractor control unit to an easily accessible tractor control unit in the tractor cabin.



On the tractor (with dual-circuit pneumatic braking system), couple

- the **yellow** coupling head first (brake line).
- and then the **red** coupling head (supply line).

14. Connect the hydraulic pump (see section "Coupling the hydraulic pump" Seite 129).
15. Hold the jack tightly by the handle (Fig. 148/1) and remove the positioning pin (Fig. 148/2).
16. Push up the jack and secure it using the positioning pin (Fig. 148/1).
17. Secure the positioning pin with the supplied linch pin.

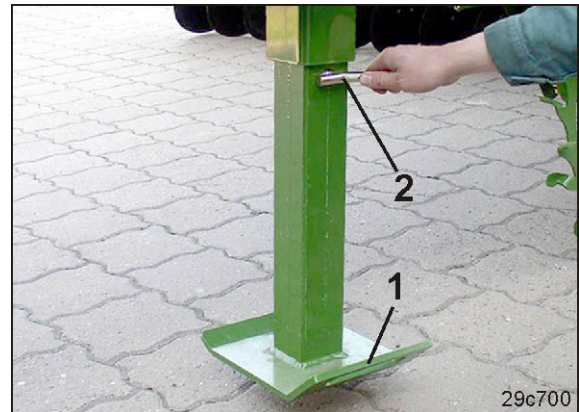


Fig. 148

Coupling and uncoupling the implement

18. Insert the plug (Fig. 149/1) for the coulter frame lighting into the socket in the tractor cab.

Route the cable into the tractor cab

The switch (Fig. 149/2) is for switching the lighting on and off (Fig. 149/3).

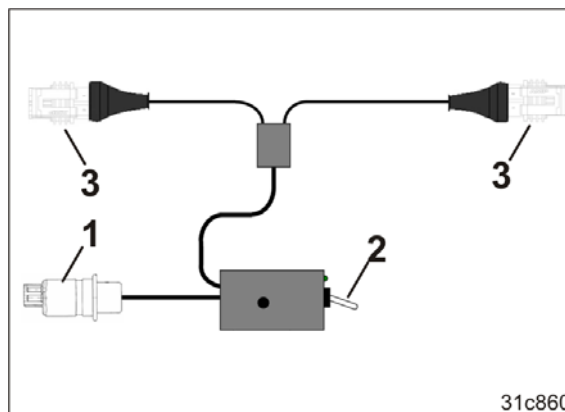


Fig. 149

19. Check the function of the braking and lighting system.
20. Push the wheel chocks (Fig. 150/1) into the bracket until the locking device (Fig. 150/2) engages.
21. Before commencing a run, perform a braking test.



Fig. 150



Check the route of the supply lines.

The supply lines

- must easily give way to all movements in bends without tensioning, kinking or rubbing.
- must not chafe against other parts.

7.5 Uncoupling the implement



WARNING

Danger of being crushed, cut, caught, drawn in or struck through insufficient stability and possible tilting of the uncoupled implement!

Set the empty implement down on a horizontal parking area with a firm base.

Fully fold in or out the sections of the implement before decoupling the implement from the tractor. The implement is tail-heavy with the coulters half raised. Once the tractor's lower link has been detached, the implement tilts over the axle onto the coulters and the tensioned crosspiece whips upwards.



When uncoupling the implement, there must always be enough free space in front of the implement that the tractor can be aligned with the implement again during recoupling.



DANGER

The implement is tail-heavy with the coulters frame raised.

If, in exceptional circumstances, you need to uncouple the implement with the coulters frame raised, equip the implement with additional weights (available as accessories) before uncoupling it.

1. Switch off the tractor PTO shaft.
2. Align the tractor and implement so that they are straight on a horizontal parking surface with a firm substrate.
3. Fold the implement completely in or out.
4. Switch off the AMATRON 3.
 - 4.1 Press the (Fig. 151/1) button.
5. Apply the tractor parking brake, switch the tractor engine off and remove the ignition spanner.

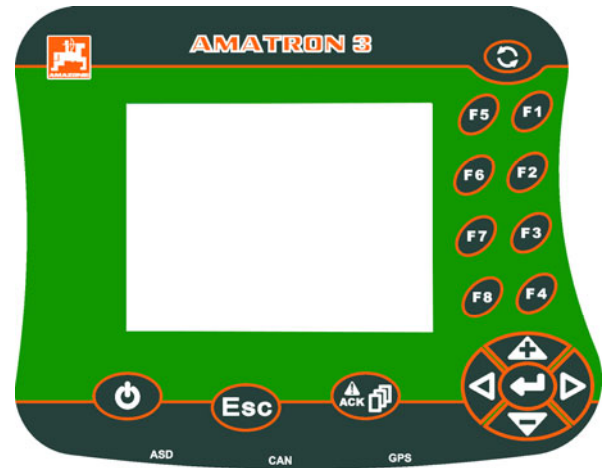


Fig. 151

Coupling and uncoupling the implement

6. Hold the jack tightly (Fig. 152/1) and remove the positioning pin (Fig. 152/2).
7. Lower the jack and secure it using the supplied positioning pin.
8. Secure the positioning pin with the supplied linch pin.

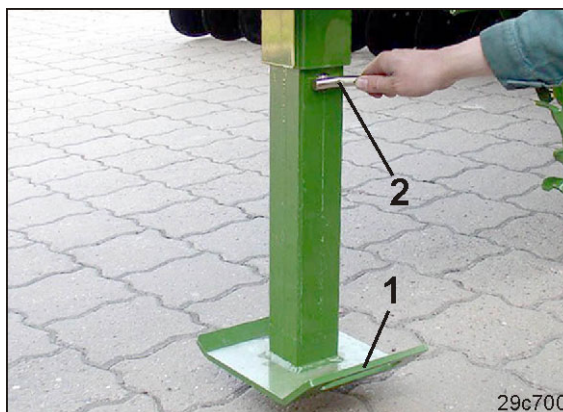


Fig. 152

9. Remove the wheel chocks from the bracket:
 - 9.1 Push the plate down (Fig. 153/1) until the locking catch (Fig. 153/2) is unlocked.
 - 9.2 Pull out the wheel chock (Fig. 153/3)



Fig. 153

10. Secure the implement with two wheel chocks (Fig. 154/1).



DANGER

Always secure the implement with 2 wheel chocks before you uncouple the implement from the tractor.

11. Repeat the procedure on the second implement tyre if the implement does not have a braking system.
12. Disconnect
 - o the brake line and the supply line of the dual-circuit pneumatic service brake system.
 - o the coupling of the hydraulic service brake system.

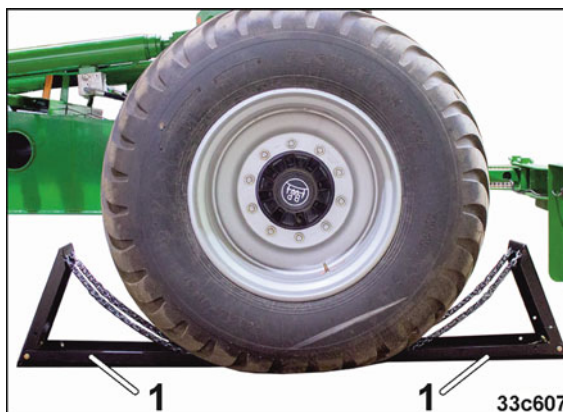


Fig. 154



When uncoupling the dual-circuit pneumatic service braking system, first disconnect the red hose coupling (supply line) and then the yellow hose coupling (brake line) from the tractor!

13. Close the couplings with protective caps.
14. Place the supply lines in the hose cabinet (Fig. 155).
15. Secure the hydraulic pump in the transport bracket.

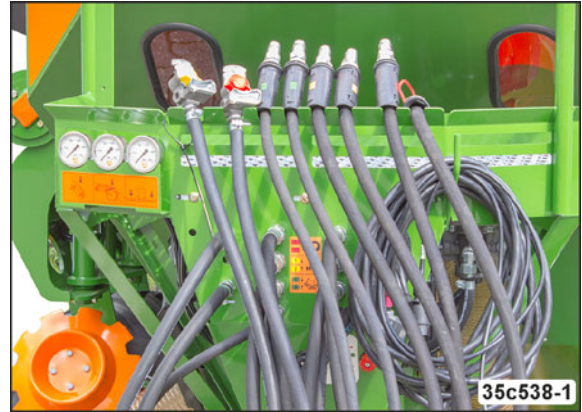


Fig. 155

16. Set the implement down on the jack.



WARNING

Set the implement down on a horizontal, firm base only!

Ensure that the jack does not sink into the ground. If the jack sinks into the ground, it will be impossible to couple the implement again!



Fig. 156

17. Open the securing device (Fig. 157) of the tractor's lower link (see tractor operating manual).
18. Uncouple the tractor's lower link.
19. Pull the tractor forwards.



DANGER

While pulling the tractor forwards no personnel are allowed to be between the tractor and the implement!

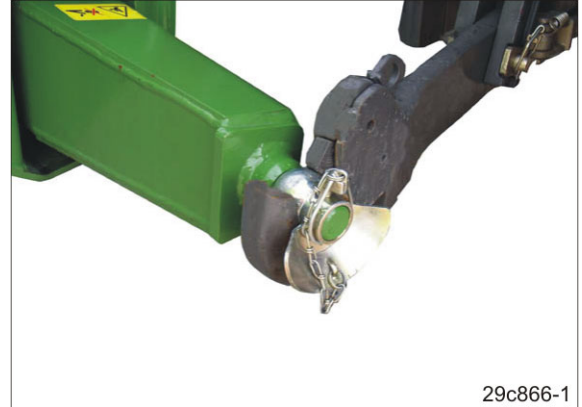


Fig. 157



CAUTION

Danger of getting crushed in the area of the moving tensioned crosspiece.

7.6 Aligning a towed implement

After coupling to the tractor, align the implement horizontally (Fig. 158/1) so that the catcher rollers (Fig. 159/1) in the shaped grooves are always in contact with the ground.

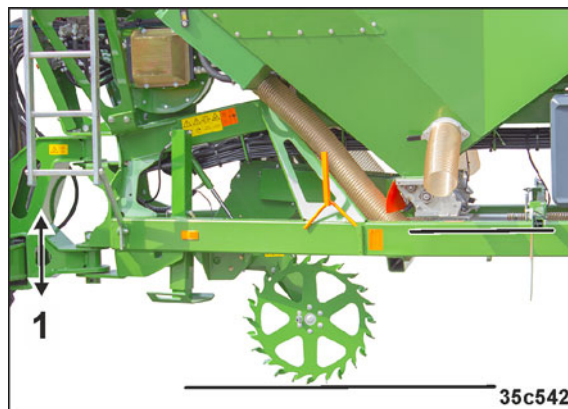


Fig. 158

If the implement is not level, the catcher rollers might lift up from the ground and the seeds shoot out under the catcher roller after coming out of the shoot pipe (Fig. 159/2).

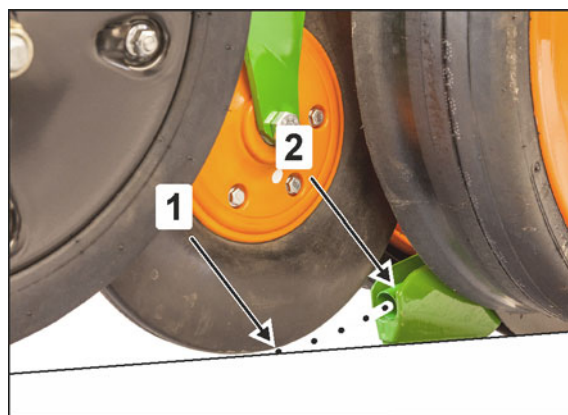


Fig. 159

The coulter frame has a horizontal spirit level on the outer left of the implement for alignment.

1. Spread seed for approx. 100 m at working speed on the field.
2. Adjust the tractor lower link such that the horizontal spirit level (Fig. 160/1) on the coulter frame indicates a horizontal position.

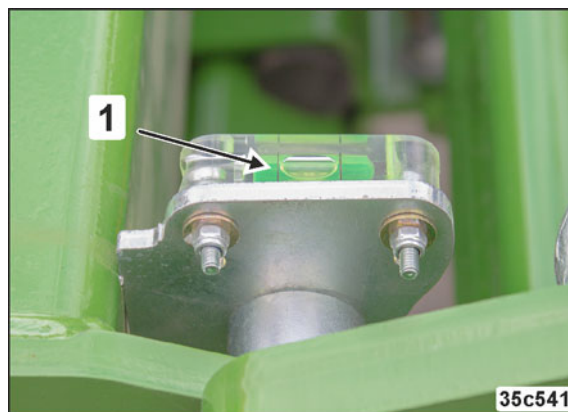


Fig. 160

7.7 Coupling the hydraulic pump



WARNING

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

Only couple/uncouple the hydraulic pump and tractor PTO shaft if the tractor and implement are secured to prevent unintentional start-up and rolling.

For hydraulic pumps with 1 3/8 inch (6 parts) connection, reducers are available (optional):

Reducer	1 3/4 inch (20 parts)
Reducer	1 3/8 inch (21 parts)
Reducer	1 3/4 inch (6 parts)
Reducer	8x32x38

7.7.1 Connecting the hydraulic pump

1. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
2. Clean and grease the tractor universal PTO shaft.
3. Couple the tractor and implement.
4. Secure the tractor against unintentional starting and unintentional rolling away.
5. Couple the hydraulic pump (Fig. 161/1) to the tractor's PTO shaft.
The hydraulic pump is equipped with a QC fastener. Make sure that the QC fastener has engaged correctly.
6. Set the adjuster segment so that both buffers (Fig. 161/2) rest against it.

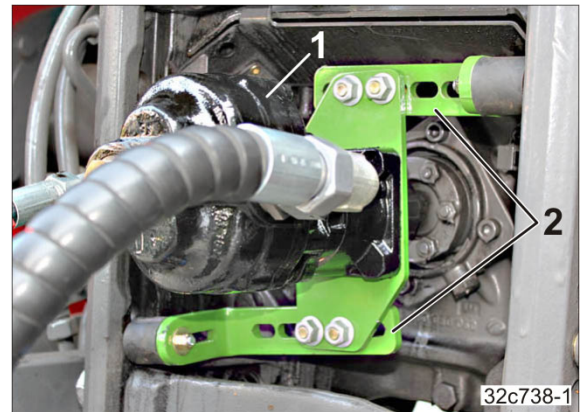


Fig. 161

7.7.2 Uncoupling the hydraulic pump



DANGER

- Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine, and remove the ignition key.
- The hydraulic pump contains hot components that may cause burns. Wear protective gloves.

1. Park the implement on solid level ground.
2. Support the implement on the jack (Fig. 162/1).
3. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.

Wait until the PTO shaft stops moving.



Fig. 162

4. Uncouple the hydraulic pump (Fig. 163/1) from the tractor's PTO shaft. The hydraulic pump is equipped with a QC fastener.

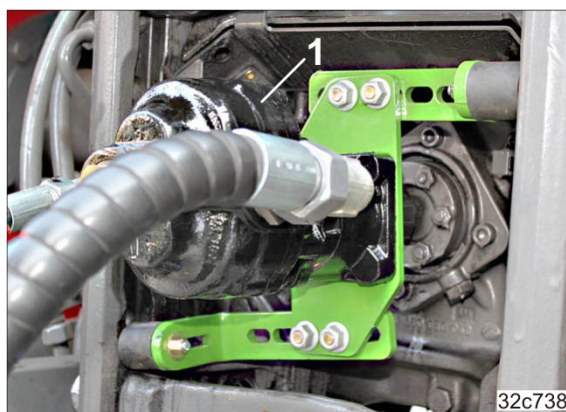


Fig. 163

5. Insert the hydraulic pump (Fig. 164/1) on the transport bracket.

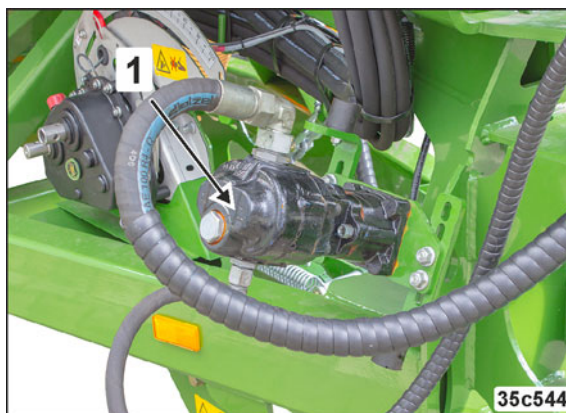


Fig. 164

8 Settings



DANGER

Before adjustment work (unless otherwise specified),

- **Unfold and lower the implement sections.**
- **Switch off the tractor's PTO shaft.**
- **Apply the tractor's parking brake.**
- **Switch off the tractor's engine.**
- **Remove the ignition key.**



CAUTION

Switch off the on board computer

- before road transport.
- before adjustment, maintenance and repair work.

Risk of accident due to unintended movements of the metering unit or other implement components caused by radar pulses.



WARNING

Danger of crushing, shearing, cutting, being caught or drawn in, winding and knocks through:

- **unintentional falling of the implement raised using the tractor's three-point hydraulic system.**
- **unintentional lowering of raised, unsecured implement parts.**
- **unintentional start-up and rolling of the tractor-implement combination.**

Secure the tractor and the implement against unintentional starting and rolling away before you make any adjustments to the implement.

8.1 Seed metering and application

8.1.1 Adjusting the seeding rate

Set the following on the AMATRON 3 one time:

- the implement type
- the number of seeding units
- the implement equipment
- the row spacing
 - grain quantity
 - Fertiliser calibration test.

For a more detailed description, refer to the AMATRON 3 operating manual.



Fig. 165

8.1.2 Setting the seed shutter

Actuate the seed shutter with the lever (Fig. 166/1).

The numbers on the scale indicated by the indicator (Fig. 166/2) on the lever are provided for guidance.

The setting values can be found in Table (Fig. 167). The table values (Fig. 167 to) are reference values. Verify the results of the setting through the viewing window (Fig. 48/3) and readjust accordingly using the lever.

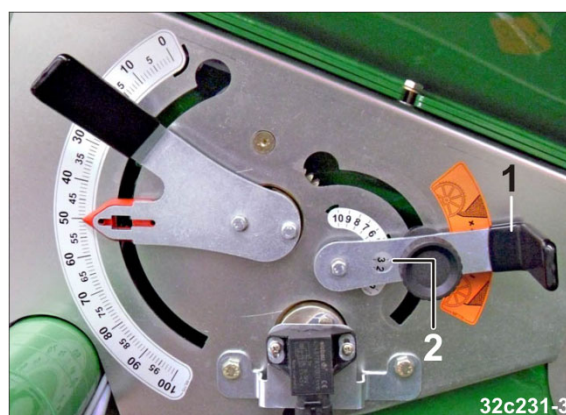


Fig. 166



The specified values represent reference values!

The fluid bed

- **contains too much seed:**
Move the lever (Fig. 166/1) clockwise (-).
- **contains too little seed:**
Move the lever (Fig. 166/1) counterclockwise (+).
- If the lever points to the scale value "0", the inlet from the seed hopper is closed.

Seed	Scale value Seed shutter
Maize / Rapeseed / Soy	2 – 3
Sunflower / Sorghum	2

Fig. 167

1. Adjust the seed shutter using the lever (Fig. 168/1). Take the preliminary setting value from Table (Fig. 167).
2. Secure the lever position with the knurled screw (Fig. 168/2).

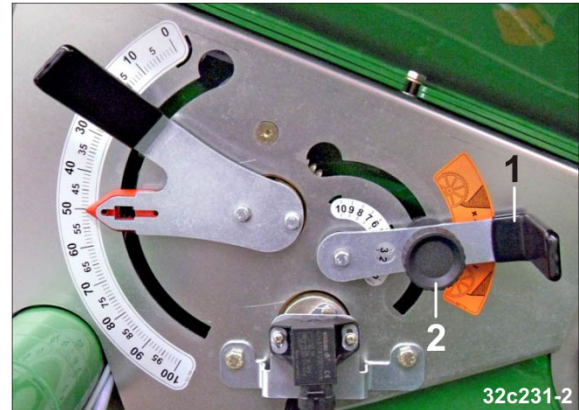


Fig. 168



This setting influences the occupancy of the seed grains in the holes of the singling drum.

Multiple occupancy and gaps in the holes of the singling drum are detected by the opto-sensors after working speed has been reached. The AMATRON 3 issues an alarm.

8.1.3 Adjusting the air guide

Set the required air quantity for the fluidised bed by adjusting the air deflector using the lever (Fig. 169/1).

The numbers on the scale indicated by the indicator (Fig. 169/2) on the lever are provided for guidance.

The setting values can be found in Table (Fig. 170). The table values (Fig. 170 to) are reference values. For example, small free-flowing maize grains require less air than large maize grains with a sticky dressing. Check the results of the adjustment in the viewing window (Fig. 48/3).

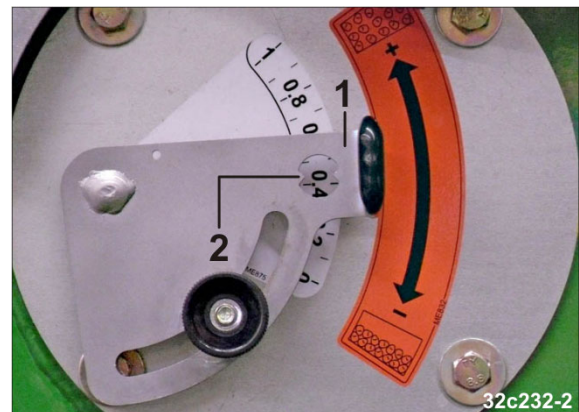


Fig. 169



The specified values represent reference values! Higher air quantities are required in combination with single row control!

In order to

- **reduce the air quantity in the fluid bed:**

Move the lever (Fig. 169/1) clockwise (-).

- **increase the air quantity in the fluid bed:**

Move the lever (Fig. 169/1) counterclockwise (+).

Seed	Scale value Air deflector
Maize / Soy	0.6
Sunflower / Sorghum	0.5
Rapeseed	0.4

Fig. 170

1. Set the air guide with the lever (Fig. 171/1) (see setting instructions, section 5.5.4, Seite 72).
2. Secure the lever position with the knurled screw (Fig. 171/2).

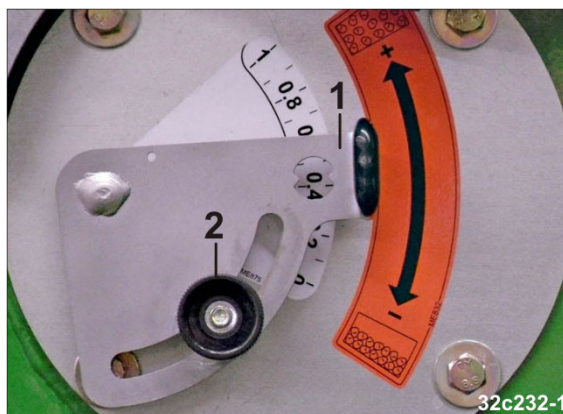


Fig. 171



This setting influences the occupancy of the seed grains in the holes of the singling drum.

Multiple occupancy and gaps in the holes of the singling drum are detected by the opto-sensors after working speed has been reached. The AMATRON 3 issues an alarm.

8.1.4 Setting the seed scraper



This setting influences the occupancy of the seed grains in the holes of the singling drum.

Multiple occupancy and gaps in the holes of the singling drum are detected by the opto-sensors after working speed has been reached. The AMATRON 3 issues an alarm.

The table values (Fig. 172 to) are reference values.

- **If there is double occupancy:**
move the indicator counterclockwise to the higher scale value.
- **If there are gaps:**
move the indicator clockwise to the lower scale value.

Correct the scraper position if at working speed the AMATRON 3 indicates gaps or doubles.

Seed	Scale value Seed scraper
Maize	60
Sunflowers	60
Rapeseed	60
Sorghum	60
Soy	60

Fig. 172

Seed scraper (mechanical adjustment)

1. Adjust the seed scraper with the lever (Fig. 173/1). Take the preliminary setting value from Table (Fig. 172).
2. Secure the lever position with the knurled screw (Fig. 173/2).



Fig. 173

Seed scraper (electronic adjustment)

Adjust the indicator (Fig. 174/1) of the seed scraper on the AMATRON 3. Take the preliminary setting value from Table (Fig. 172).

For a more detailed description, refer to the AMATRON 3 operating manual.

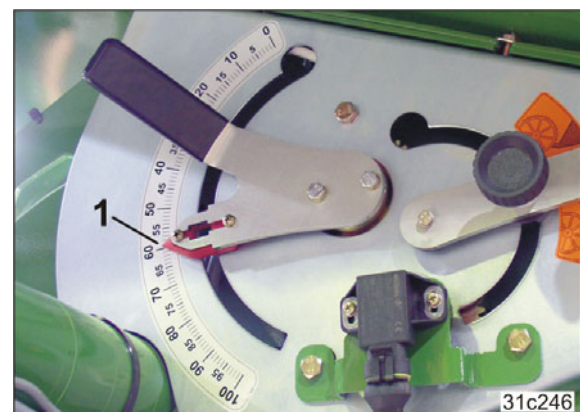


Fig. 174

8.1.5 Adjusting the seed placement depth

1. Move the implement on the field to the working position.
2. Set the desired placement depth by turning the spindle (Fig. 175/2) with the clamp (Fig. 175/1).

Spindle adjustment

Turn to right: reduce working depth

Turn to left: increase working depth.

The maximum placement depth is 10 cm.

Adjust all seeding units so that the same value appears on the scale.

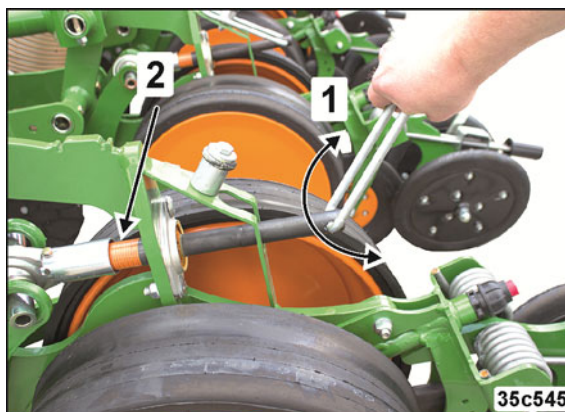


Fig. 175

3. Secure the clamp (Fig. 176/1) against rotation.
4. Check the placement depth of the first seeding unit and adjust if required (see section "Checking the placement depth and grain spacing", Seite 142).
5. If the spindle adjustment does not produce the required seed placement depth,
 - o adjust the coulter pressure (see section "Setting the coulter pressure", Seite 137).
 - o change the load from the implement's weight (see section "Setting the sections pressure", Seite 138).
6. Adjust all seeding units to match the value of the first seeding unit and check the placement depth of each seeding unit.

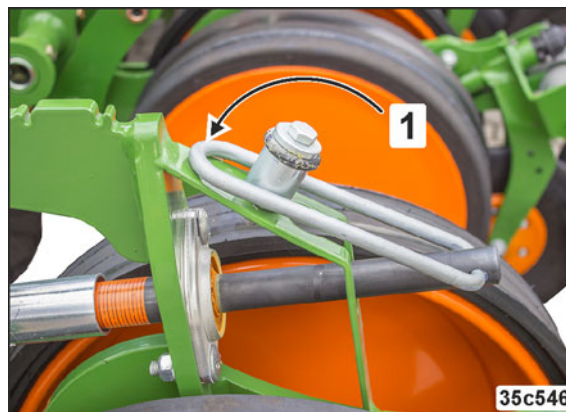


Fig. 176



Check the placement depth and grain spacing

- Following every adjustment to the seed placement depth
- When changing from light to heavy soil and vice-versa. The carrier rollers penetrate the ground more deeply with light soil than with heavy soil.

8.1.6 Setting the coulter pressure

The adjustable coulter pressure applies a load of up to 200 kg on the double disc coulter. The required seed placement depth is only achieved when the coulter pressure is correctly set.



Make the following adjustment only on the field with the fan (singling unit) running.

This setting influences the placement depth of the seed.



The pressure is set to 20 bar at the factory.

1. Unscrew the lock nut (Fig. 177/1).
 2. Adjust the coulter pressure by turning the valve screw (Fig. 177/2).
- Read of the pressure at the pressure gauge (Fig. 177/3).
3. Tighten the lock nut.

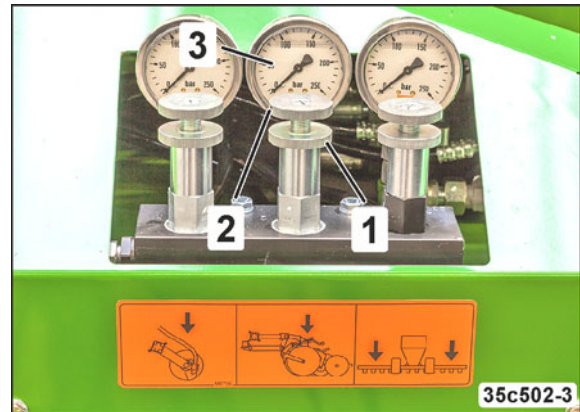


Fig. 177



Actuation of the electrical coulter pressure adjustment is described in the software operating manual.

On implements with manual coulter pressure adjustment, close the stop tap for the tractor wheel mark eradicator before adjusting the coulter pressure, and open it again after completing the coulter pressure adjustment. (see section "Adjusting the tractor wheel mark eradicator", Seite 154).



The pressure displayed on the pressure gauge (Fig. 177/1) changes until the fan (singling) runs at a constant speed.

Check the setting (see section "Checking the placement depth and grain spacing", Seite 142).

8.1.7 Setting the sections pressure

Adjust the pressure on the unfolded section for optimal ground adaptation of the coulters.



Make the following adjustment only on the field with the fan (singling unit) running.

This setting influences the placement depth of the seed.



The pressure is set to 50 bar at the factory.

1. Unscrew the lock nut (Fig. 178/1).
 2. Adjust the pressure on the sections by turning the valve screw (Fig. 178/2).
- Read of the pressure at the pressure gauge (Fig. 178/3).
3. Tighten the lock nut.

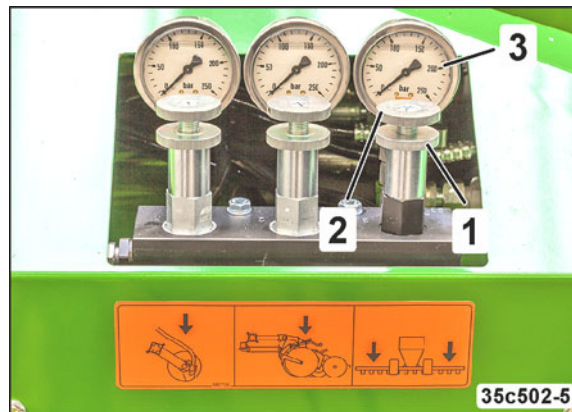


Fig. 178



The pressure displayed on the pressure gauge (Fig. 178/1) changes until the fan (singling) runs at a constant speed.

Check the setting (see section "Checking the placement depth and grain spacing", Seite 142).

8.1.8 Adjusting the ground contact pressure and intensity of the press rollers

The adjustable press rollers (Fig. 179/4) close the seed furrow and push soil over the seed.

1. Lift up the lever (Fig. 179/1) briefly and locate the tab (Fig. 179/2) in the toothed segment (Fig. 179/3).
2. Make the same axial adjustment on each of the press rollers:
3. Remove the lock nut (Fig. 180/1)

To unscrew the lock nut, it must be turned opposite to the direction of rotation of the press roller!

4. Pull off the press roller and reposition the spacers (Fig. 180/2)
5. Adjust the position of the tab and axial adjustment of the press rollers until the required working result is achieved.



If the desired work results are not obtained, adjust the press rollers by turning the axle.

6. Rotate the axle by moving the lever (Fig. 181/1).
7. Secure the lever position with the bolt (Fig. 181/2).
8. Make the same settings on all seeding units.

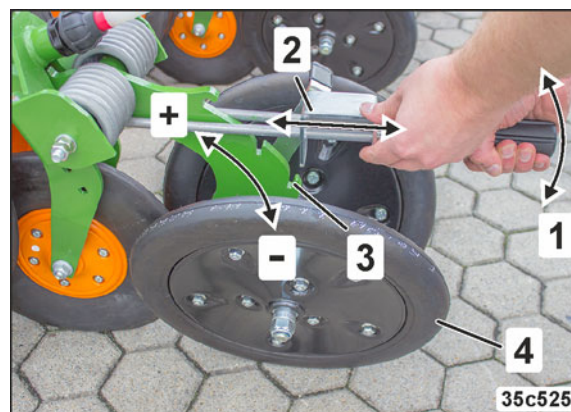


Fig. 179

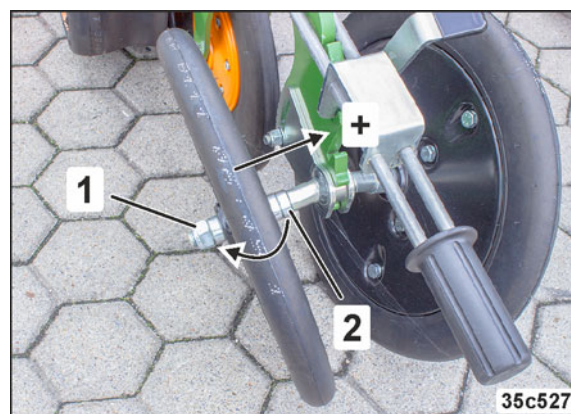


Fig. 180

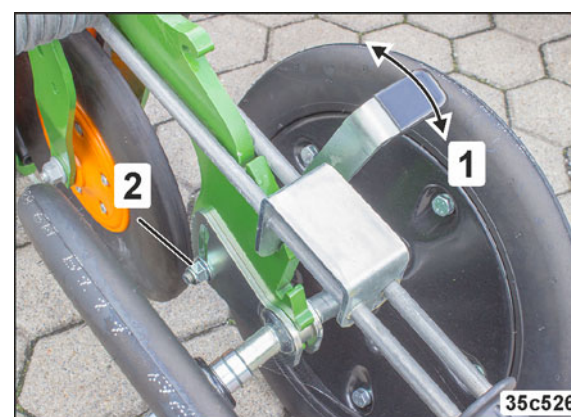


Fig. 181

8.1.9 Adjusting the star clearers

Position the star clearers in the adjuster segment with a pin (Fig. 182/2) and secure it with a linch pin (Fig. 182/4).

- The star clearers should only move plant residues to the side. Do not position the star clearers too deep.
- If the star clearers cause complete earth movement, this has a negative impact when closing the seed furrows.
- Position the star clearers right at the top if they are not needed.

Position the star clearers (Fig. 182/1) with two pins (Fig. 182/2) and 4 discs (Fig. 182/3) on the coulter. Secure the pins with linch pins (Fig. 182/4).

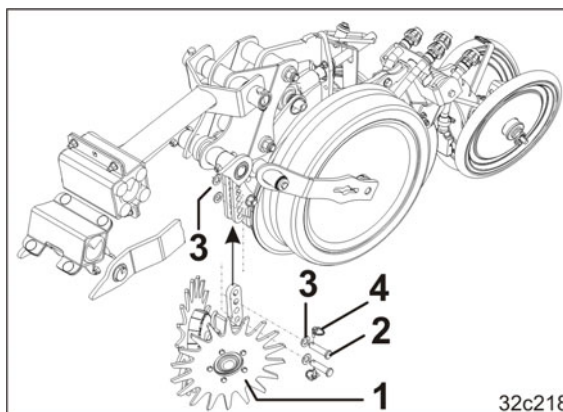


Fig. 182

8.1.10 Adjusting the clod clearers

The clod clearer (Fig. 183/1) allows the seeding unit to run smoothly on ground with rough surface structures. Position the clod clearer (Fig. 183/1) in the adjuster segment with a pin (Fig. 183/2) and secure it with a linch pin.

- The clod clearers should only clear the large clods off to the side. Do not position the clod clearers too deeply.
- If the clod clearers cause complete earth movement, this has a negative impact when closing the seed furrows.
- Position the clod clearers right at the top if they are not needed.

Position the clod clearers (Fig. 183/1) with two pins (Fig. 183/2) and 4 discs (Fig. 183/3) on the coulter. Secure the pins with linch pins (Fig. 183/4).

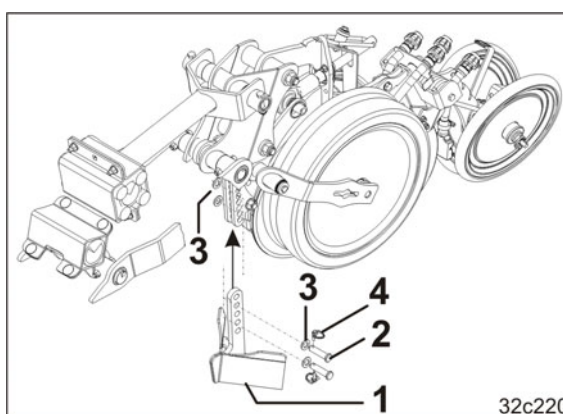


Fig. 183

8.1.11 Adjusting the carrier roller scraper

Carbide-coated scrapers (Fig. 184/1) clean the carrier rollers.

The distance between the scraper and carrier roller is 10 mm.

To adjust the scrapers, loosen the bolts (Fig. 184/2).

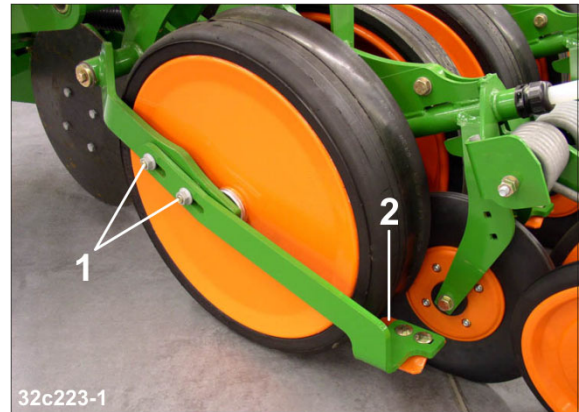


Fig. 184

8.1.12 Adjusting the press roller scraper

Seeding coulters with fine seed equipment have a carbide-coated scraper (Fig. 185/3) to clean the press rollers.

To adjust the scraper, loosen the fastening nut (Fig. 185/1) and the adjustment nut (Fig. 185/2). Swivel the holding arm on the press roller (Fig. 185/3).

The distance between the scraper and press roller is 1 mm.

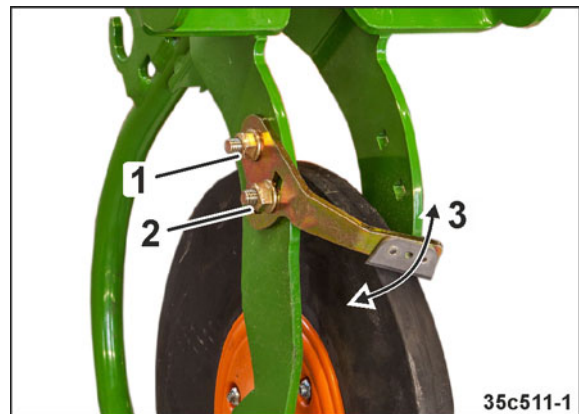


Fig. 185

8.1.13 Checking the placement depth and grain spacing

1. Spread seed for approx. 100 m at working speed on the field.
2. Expose the grains at several points using the multi-placement tester (optional). Use the read-off edge to remove the earth in layers.
3. Place the multi-placement tester (Fig. 186) horizontally on the ground
4. Place the indicator (Fig. 186/1) on the seed grain and read off the placement depth from the scale (Fig. 186/2).
5. Measure the grain spacing with the blade.

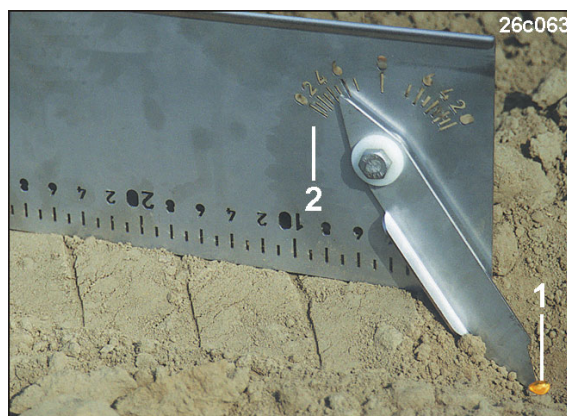


Fig. 186



The desired grain spacing is achieved by adjusting the speed of the singling drum with reference to the forward speed.

The speed of the electric motor that drives the singling drum is a result of the calibration value (pul./100 m).

The slippage of the star wheel can alter during operation, e.g. when changing from heavy to light soil. A slippage change also changes the calibration value (pul./100 m).

If the required grain spacing is not achieved (see AMATRON 3 operating manual), re-determine the calibration value (pulses/100 m) by completing a new calibration distance.

8.2 Fertiliser metering and application

8.2.1 Setting the fill level sensor

1. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
2. Climb into the fertiliser hopper via the steps (Fig. 187).



Fig. 187

3. Loosen the wing nuts (Fig. 188/1).
4. Adjust the height of the fill level sensor (Fig. 188/2).
5. Tighten the wing nuts.
6. Repeat the setting on the second fill level sensor (if equipped).

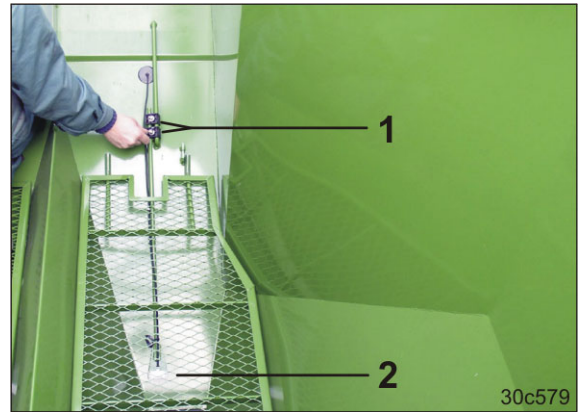


Fig. 188

8.2.2 Installing/removing the metering roller



CAUTION

Switch off the AMATRON 3 on-board computer before working on the metering unit.



DANGER

Secure the tractor and implement against unintentional start-up and rolling (see section 6.2, Seite 106)



The metering roller can be replaced more easily if the hopper is empty.



Fit all the metering units on the implement with the same metering roller. Open all shutters (Fig. 189/1) and secure [linch pin (Fig. 189/2)].

1. Remove the linch pin (Fig. 189/2).
(Only required with filled fertiliser hopper to close the hopper with the shutter (Fig. 189/1).
 2. Push the shutter (Fig. 189/3) into the metering unit up to the stop.
- The shutter seals the fertiliser hopper. Fertiliser cannot pour out inadvertently when the metering roller is being replaced.
3. Loosen two nuts with the supplied tool (Fig. 190/1), but do not remove them.

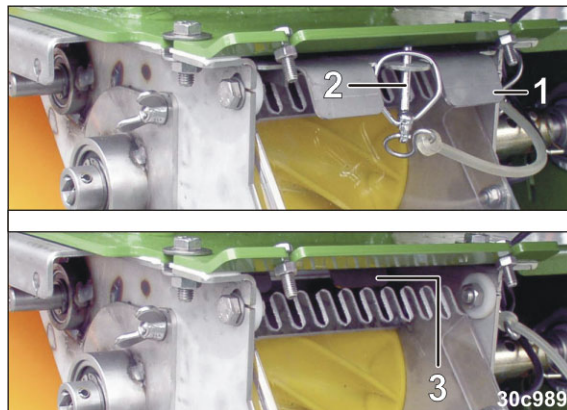


Fig. 189

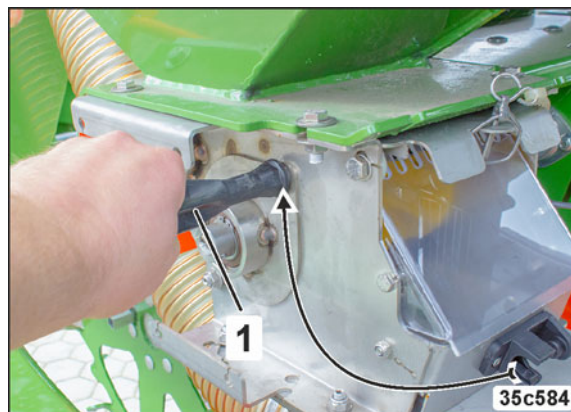


Fig. 190

4. Twist (Fig. 191/1) and remove (Fig. 191/2) the bearing cover.

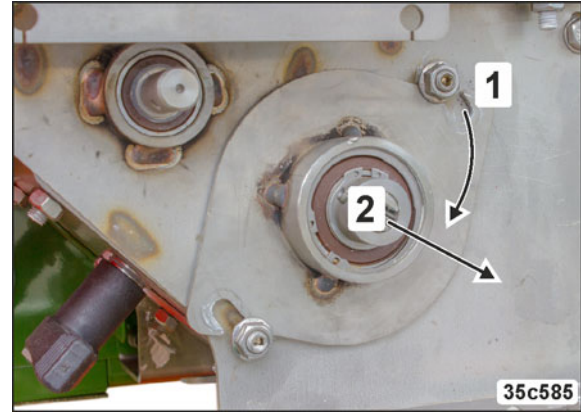


Fig. 191

5. Pull the metering roller out of the metering unit (Fig. 192/1).



Install the metering roller in the reverse sequence.



Fig. 192

8.2.3 One-sided shut-off of the fertiliser supply

1. Unfold the implement (see section "Unfolding the implement sections", page 171).
2. Apply the tractor parking brake, switch the tractor engine off and remove the ignition spanner.



CAUTION

Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine and remove the ignition key.

3. Remove one of the two linch pins (Fig. 193/1).

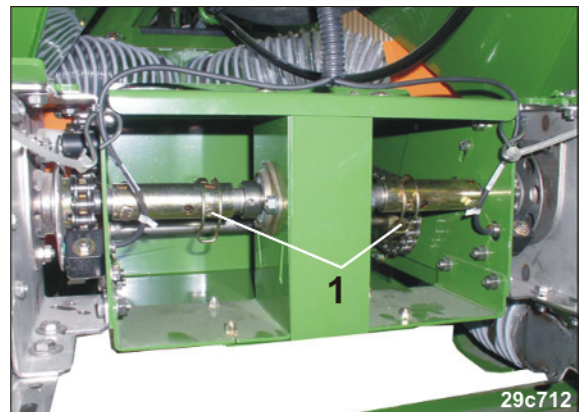


Fig. 193

Shutting off the right side of the implement:
Remove the linch pin on the right.

Shutting off the left side of the implement:
Remove the linch pin on the left.

8.2.4 Setting the fertilising rate using a calibration test

1. Fill the fertiliser hopper with at least 200 kg of fertiliser (see section "Filling the hopper", Seite 177).
2. Unfold the implement into the working position (see section "Unfolding the implement sections", page 171).



CAUTION

Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine and remove the ignition key.

3. Insert a calibration trough into the holder under each metering unit (Fig. 194/1).
4. Open all of the injector sluice flaps (Fig. 195/1).

The opening at the bottom of the injector sluice is closed when

- the lever (Fig. 196/1) of the left injector sluice points to the left in the direction of travel
- the lever of the right injector sluice points to the right in the direction of travel.

Note:

The left injector sluice is shown.

Lever position (Fig. 196/1): closed

Lever position (Fig. 196/2): open.

A slider element closes the opening. The slider element is actuated by a lever (Fig. 196/1). Make sure that the lever engages when opening and closing the sliding element.

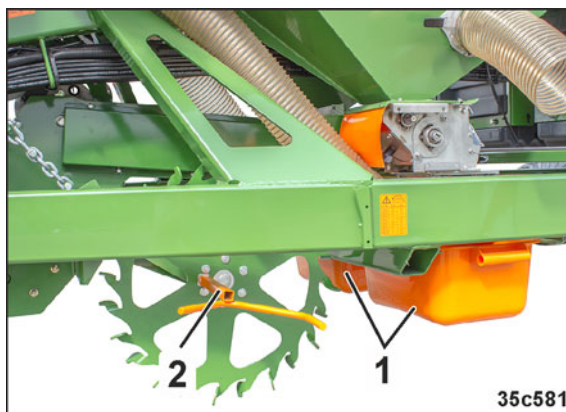


Fig. 194



Fig. 195

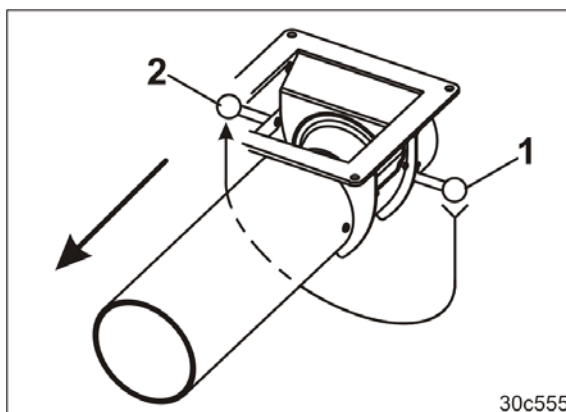


Fig. 196

5. If required, create a job on the AMATRON 3.
6. Undo the locking knob (Fig. 197/1).
7. Set the indicator (Fig. 197/2) of the gearbox lever from below to the gearbox setting value "50".
8. Tighten the locking knob.
9. Fit the calibration crank handle on the star wheel (Fig. 194/2).
10. Turn the star wheel with the calibration crank counterclockwise until the screw flights of the metering roller in each metering unit are filled with fertiliser.
11. Close all of the injector sluice flaps (Fig. 196/1).
12. Empty the calibration troughs under each metering unit and then put them back underneath again.
13. Open all of the injector sluice flaps (Fig. 196/2).
14. Turn the star wheel anticlockwise the number of crank turns specified in the table (Fig. 198).

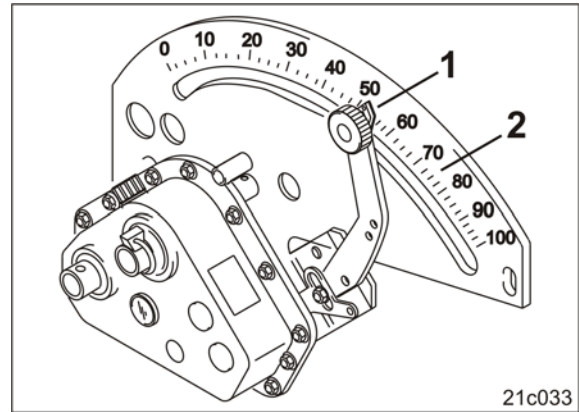


Fig. 197

Number of seeding units	Row spacing [cm]	Working width [m]	Crank turns on 1/40 [ha]	Crank turns on 1/10 [ha]
12	70	8.4	13.9	55.2
12	75	9.0	13.0	51.5
12	80	9.6	12.2	48.3
16	55	8.8	13.3	52.7
16	60	9.6	12.2	48.3
18	50	9.0	13.0	51.5
20	45	9.0	13.0	51.5

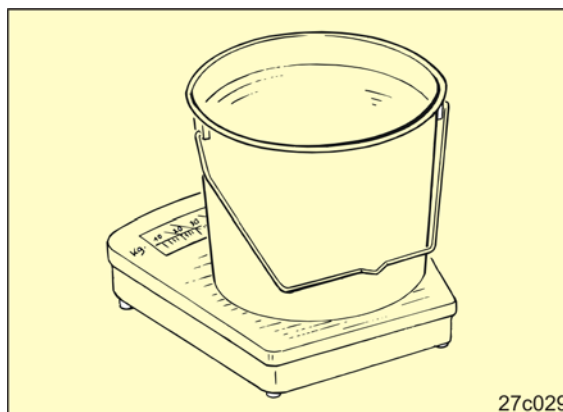
Fig. 198

Settings

15. Weight the fertiliser quantity collected in the calibration trough (take account of the container weight) and multiply
 - o by a factor of 40 (for 1/40 ha).
 - o by a factor of 410 (for 1/10 ha).



Check the scales to ensure the display is accurate.



27c029

Fig. 199

Calibrating on 1/40 ha:

$$\text{Application rate [kg/ha]} = \text{Calibrated fertiliser quantity [kg/ha]} \times 40$$

Example:

Calibrated fertiliser quantity: 3.2 kg on 1/40 ha

Fertiliser quantity [kg/ha] = 3.2 [kg/ha] x 40 = 128 [kg/ha]



The desired application rate is not generally achieved with the first calibration test. The correct gearbox setting can be determined using the calculating disc rule with the values from the first calibration test and the calculated application rate (see section "Determining the gearbox setting using the calculating disc rule", Seite 149).

16. Repeat the calibration test until the desired application rate is achieved.
17. Attach the calibration trough(s) to the fertiliser hopper.
18. Close the injector sluice flap(s).
19. Clip the calibration crank into its transport bracket.

8.2.4.1 Determining the gearbox setting using the calculating disc rule

Example:

Values from the calibration test

Calculated spread rate: 175 kg/ha

Gearbox setting: 70

Required application rate: 125 kg/ha.

1. The values from the calibration test
 - o Calculated application rate 175 kg/ha (Fig. 200/A)
 - o Gearbox setting 70 (Fig. 200/B) opposite one another on the calculating disc rule.
 2. Read the gearbox setting for the desired application rate of 125 kg/ha (Fig. 200/C) from the calculating disc rule.
- Gearbox setting 50 (Fig. 200/D).
3. Set the gearbox lever to the value read from the disc.
 4. Check the gearbox setting by carrying out another calibration test (see "8.2.4", Seite 146).

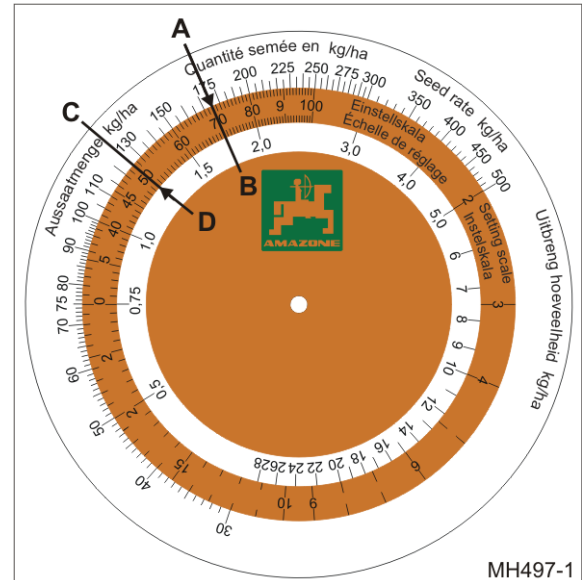


Fig. 200

8.2.5 Adjusting the fertiliser placement depth

The adjustable coulter pressure applies a load of up to 200 kg on the fertiliser coulter. The required fertiliser placement depth is only achieved when the coulter pressure is correctly set.

1. Unscrew the lock nut (Fig. 201/1).
 2. Turn the valve screw (Fig. 201/2) to adjust the fertiliser coulter pressure.
- Read off the fertiliser coulter pressure at the pressure gauge (Fig. 201/3).
3. Tighten the lock nut.



Fig. 201



In the tractor track, the placement depth of individual fertiliser coulters can be separately adjusted in addition to the hydraulic adjustment.

1. Loosen the fastening nut (Fig. 202/1).
2. Loosen the adjustment screw (Fig. 202/2) and remove.



DANGER

Do not stand in the swivelling area of the fertiliser coulters!

3. Swivel the fertiliser coulter to the desired position (Fig. 202/3).
4. Insert the adjustment screw (Fig. 202/2) and tighten.
5. Tighten the fastening nut (Fig. 202/1).

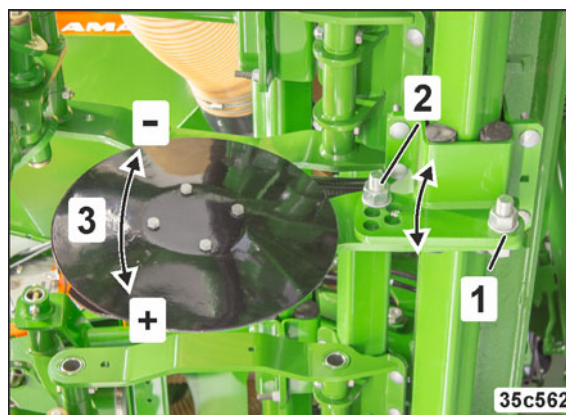


Fig. 202



Always check the placement depth of the fertiliser:

- before starting work
- following every adjustment of the fertiliser coulter pressure
- if the forward speed changes during operation
- if the soil conditions change.

Drive the implement across the field for a distance of roughly 100 m at the intended working speed and check the placement depth, adjust if necessary.

8.2.6 Adjusting the furrow former on the fertiliser coulters

The gap (arrow) between the furrow former (Fig. 203/1) and coulters disc (Fig. 203/2) is adjustable.

The furrow former (Fig. 203/1) should be close to the coulters disc (Fig. 203/2), but not touch it.

The gap (arrow) can be adjusted, like a toggle, by variously tightening the two bolts (Fig. 203/3). Do not tighten the bolts too hard. It should be possible to move the furrow former with average force.

Lock the bolts after each adjustment.

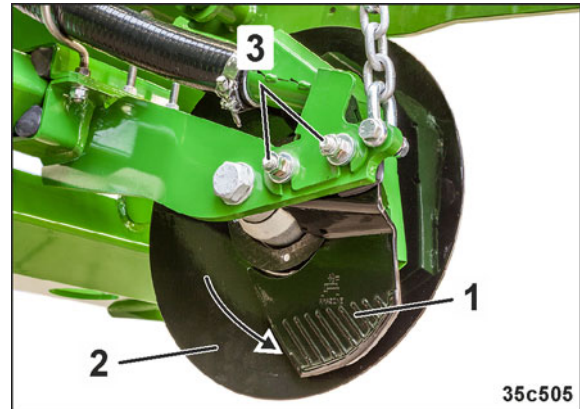


Fig. 203

8.3 Adjusting the track marker length and working intensity



DANGER

It is forbidden to stand in the swivelling area of the track marker!

1. Direct people out of the danger area.
2. Fold out both track markers simultaneously on the field (see AMATRON 3 operating manual) and drive several metres.
3. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
4. Unscrew the bolt (Fig. 204/1).
5. Set the track marker length to distance "A" (see section 8.3.1, Seite 152).
6. Release both bolts (Fig. 204/2).
7. Turn the track marker disc to adjust the working intensity of the track marker so that it runs roughly parallel to the direction of travel on light soil and is more attuned to grip on heavier soil.
8. Fully tighten all bolts.
9. The implement is equipped with two track markers. Repeat the procedure as described.

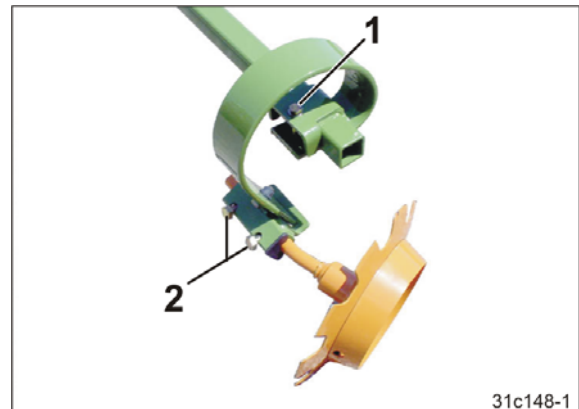


Fig. 204

8.3.1 Calculating the track marker length

The working width is the track marker length A (Fig. 205), measured from the centre of the implement to the contact surface of the track marker wheel on the ground.

$$\text{Track marker length A} = \text{Row spacing R [cm]} \times \text{number of seeding units}$$

Example:

Row spacing R:.....75 cm

Number of seeding units:.....12

Track marker length A = 75 cm x 12

Track marker length A = 900 cm

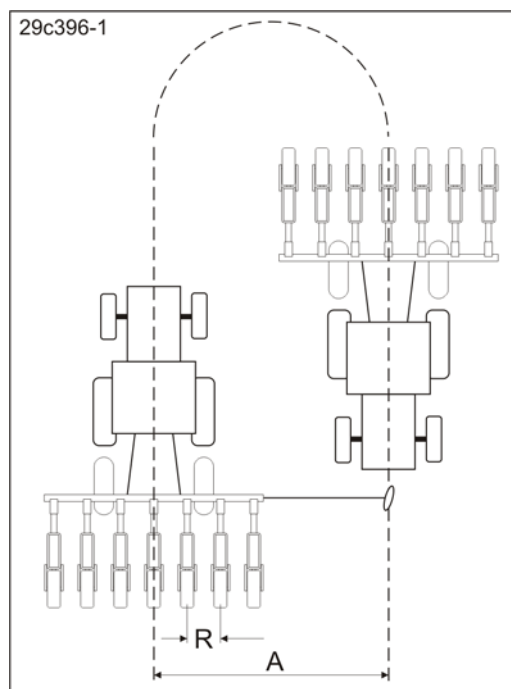


Fig. 205

8.4 Adjusting the implement wheel mark eradicator

Horizontal adjustment

1. Loosen the bolts (Fig. 206/1)
2. Push the wheel mark eradicator horizontally (Fig. 206/3) and move to the desired position.
3. Tighten (Fig. 206/1) and lock the bolts (Fig. 206/2) after adjusting the wheel mark eradicator.

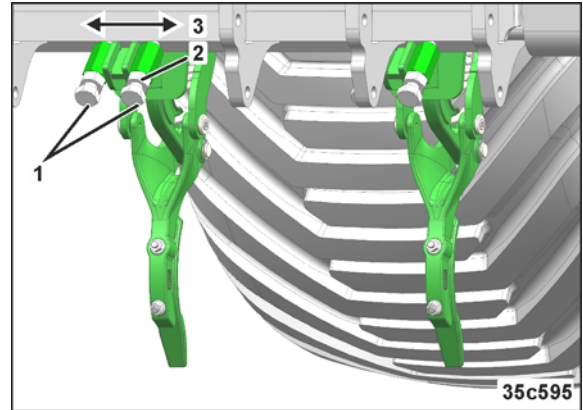


Fig. 206

Vertical adjustment

1. Hold the wheel mark eradicator by the handle (Fig. 207/2).
2. Remove the pin (Fig. 207/1).
3. Adjust the wheel mark eradicator as follows:
 - o Adjust in a vertical direction.
 - o Locate with the pin.
 - o Secure with the linch pin supplied.

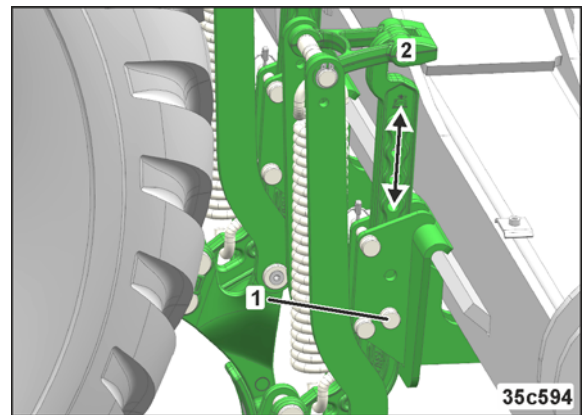


Fig. 207

8.5 Adjusting the tractor wheel mark eradicator

Horizontal adjustment

1. Loosen the fastening nuts (Fig. 208/3).
2. Push the wheel mark eradicator horizontally and move it to the desired position.
3. After adjusting the wheel mark eradicator, tighten the fastening nuts (Fig. 208/3)

Tightening torque: 100 Nm

Vertical adjustment

1. Hold the wheel mark eradicator by the handle (Fig. 208/1).
2. Remove the pins (Fig. 208/2).
3. Adjust the wheel mark eradicator as follows:
 - o Adjust in a vertical direction.
 - o Secure with the pin.
 - o Lock with a linch pin.

By throwing over the valve lever to transport position (Fig. 209/A), it is also possible to work without the tractor wheel mark eradicator.

Fig. 209

Valve lever position A: Transport position

Valve lever position B: Working position

Putting the valve lever into position A prevents accidental swivelling of the tractor wheel mark eradicators from transport position into working position.

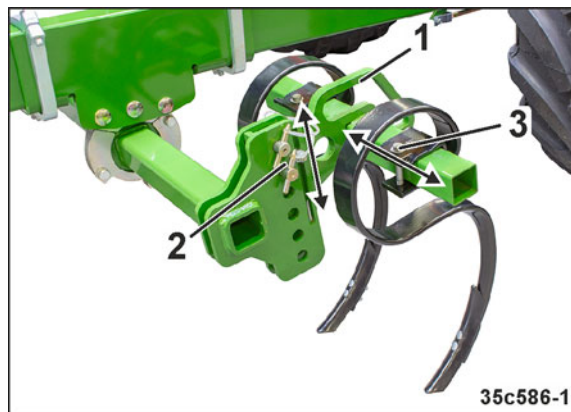


Fig. 208

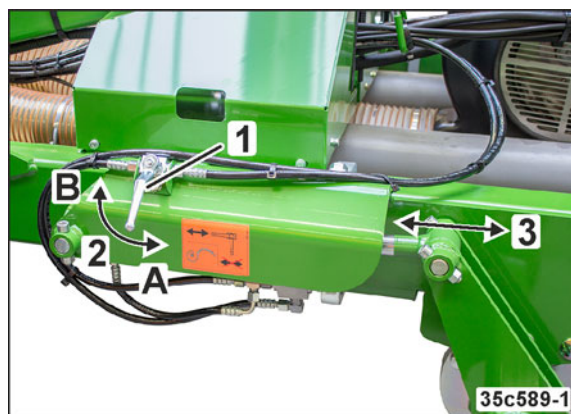


Fig. 209

Fig. 210/...

- (1) Sharp-pointed coulter
- (2) Duckfoot coulter
- (3) Fastening nuts

1. Loosen the fastening nuts
2. Install the desired coulter
3. Tighten the fastening nuts

Tightening torque: 48 Nm

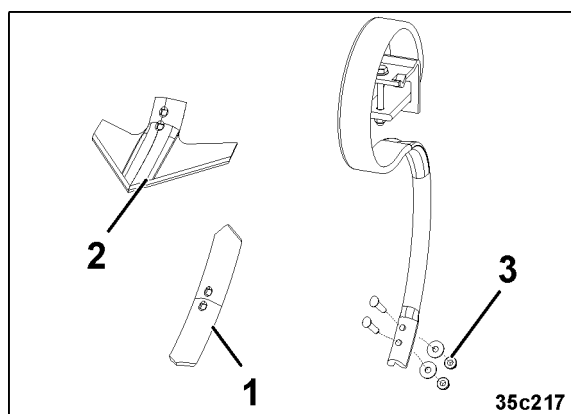


Fig. 210

8.6 Adjusting the pre-emergence marker

Fig. 211/...

1. Loosen the bolts.
2. Adjust the track disc.
 - 2.1 Track width
 - 2.2 Working intensity
3. Tighten the bolts.

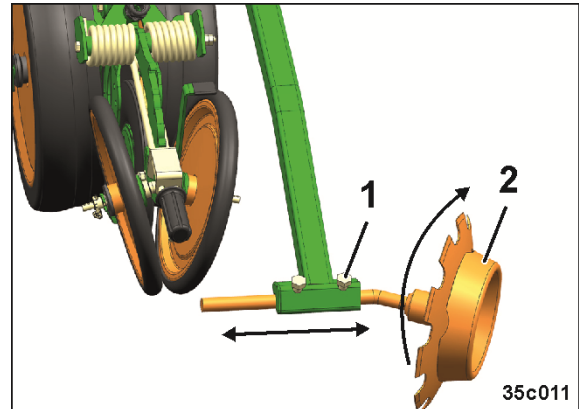


Fig. 211

Fig. 212/...

1. Remove the linch pin.
2. Adjust the desired working depth by reinserting the positioning pin.
3. Secure the positioning pin with the linch pin.

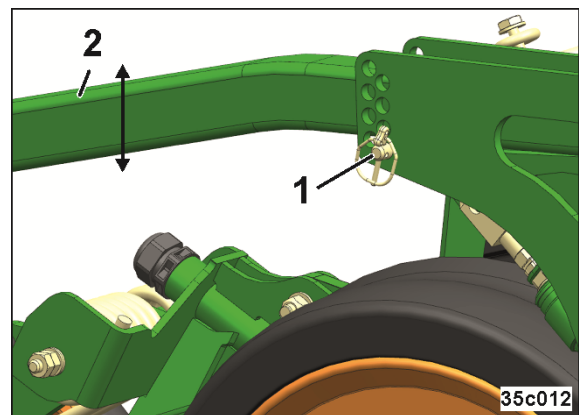


Fig. 212

8.7 Adjusting fan speed



The fan speed alters until the hydraulic fluid has reached its working temperature.

On initial operation correct the fan speed up to attainment of the working temperature.

If the fan is put back into operation after a long stoppage period, the preset fan speed is not attained until the hydraulic fluid has heated up to working temperature.



DANGER

Do not exceed the maximum fan speed of 4000 rpm.



The maximum approved system pressure is 210 bar, which can be read on the pressure gauge (Fig. 213/1) beside the fan hydraulic motor.

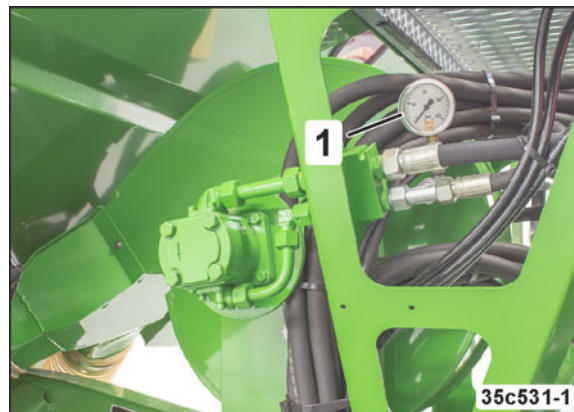


Fig. 213



The seed hopper cover (Fig. 214/1)

- must be closed before switching on the fan (Fig. 214/2)
- must always be kept closed when the fan is running.

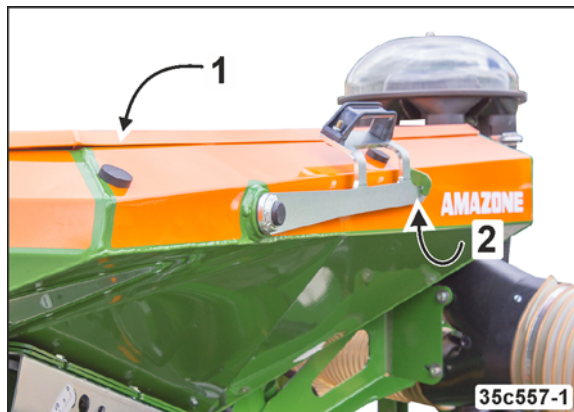


Fig. 214

The fan (Fig. 215/1) generates the air current for seed singling (Fig. 215/2). Adjust the fan speed on the flow control valve of the tractor

The fan speed is correctly set when the pressure displayed on the AMATRON 3 for the singling unit is 55 mbar.


DANGER

Do not exceed the maximum fan speed of 4000 rpm.

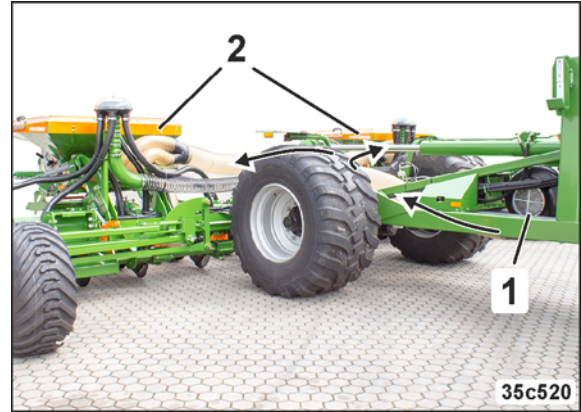


Fig. 215

The fan (Fig. 216/1) produces the air pressure for transporting the fertiliser from the injector sluice to the fertiliser coulters.


DANGER

Do not exceed the maximum fan speed of 4000 rpm.

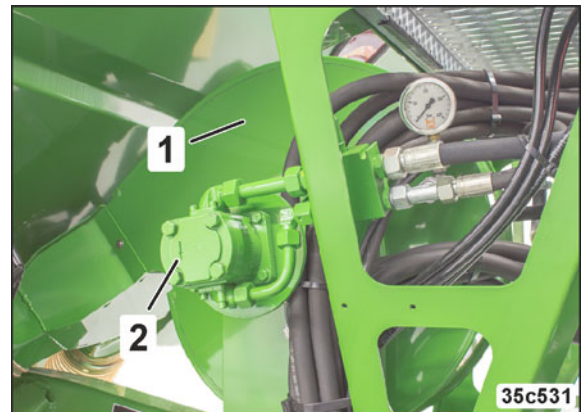


Fig. 216

8.7.1 Adjusting the fan speed (connection to the tractor hydraulic system)



This setting is not required if the fan is driven by the tractor PTO shaft.

1. Adjust the fan speed on the tractor's flow control valve such that the pressure displayed on the AMATRON 3 for the singling unit is of 55 mbar.
- For an 8-row implement (maize setting), the fan speed is approx. 3900 rpm.

8.7.2 Adjusting the fan speed (connection to the tractor PTO shaft)



Do not exceed the maximum permissible tractor PTO shaft speed of 1000 rpm.

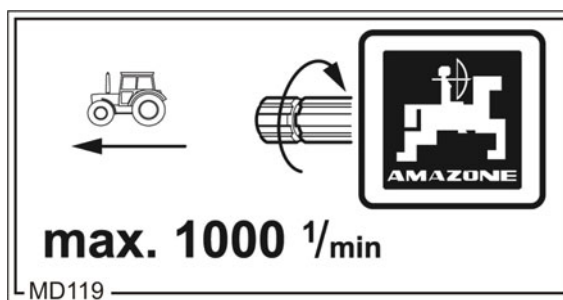


Fig. 217

A hydraulic pump (Fig. 218/1) connected to the tractor's PTO shaft drives the hydraulic motor.

Adjust the fan speed such that the pressure displayed on the AMATRON 3 for the singling unit is of 55 mbar.

For an 8-row implement (maize setting) the fan speed is approx. 3900 rpm.

The required fan speed is reached when the tractor PTO shaft speed reaches approx. 800 rpm.

The on-board computer displays the current fan speed (see on-board computer operating manual).

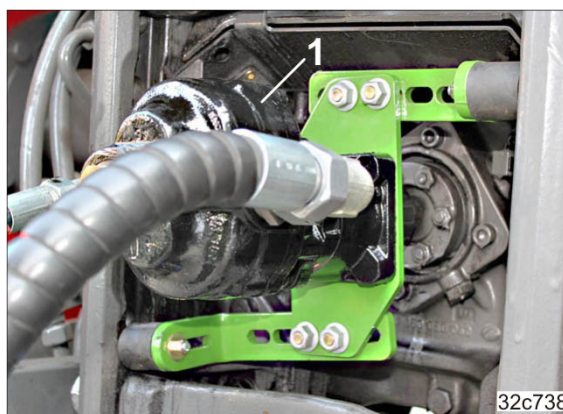


Fig. 218

8.7.3 Adjusting the fan speed (pressure relief valve)



Only change this setting if the fan hydraulic motor cannot be adjusted with the flow control valve or using the speed on the tractor PTO shaft connection!

The pressure relief valve of the fan can be installed in two versions

Fig. 219/...

- (1) Round outer contour

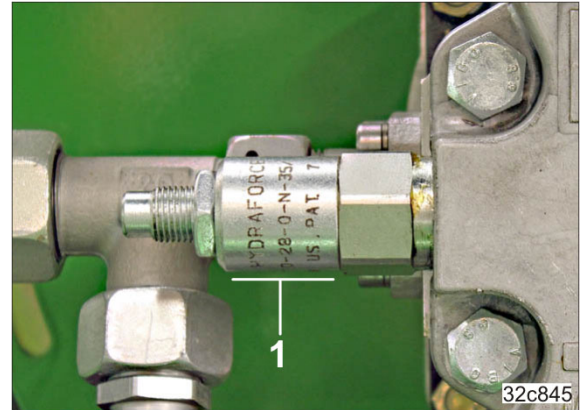


Fig. 219

Fig. 220/...

- (1) Hexagonal outer contour

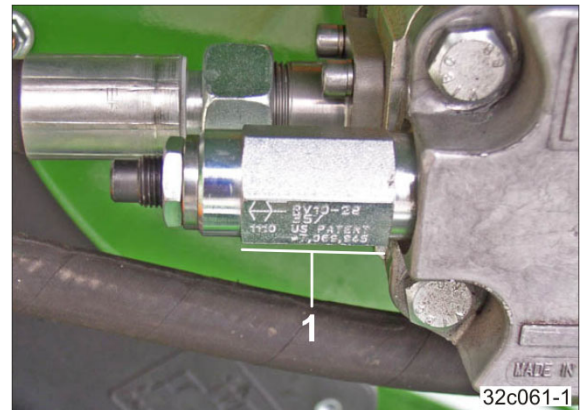


Fig. 220

1. Loosen the lock nut.
2. Use the hexagon socket wrench (Fig. 225/1) to set the fan speed on the pressure relief valve.

Do not exceed the maximum fan speed of 4000 rpm.

Turning to the right: Increase the fan speed
Turning to the left: Reduce the fan speed

3. Tighten the lock nut.

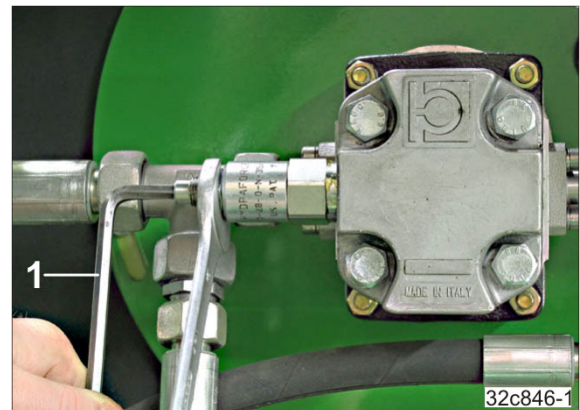


Fig. 221

8.7.4 Basic setting (pressure relief valve)

The basic setting depends on the design of the pressure relief valve.

- Round outer contour (Fig. 219/1)

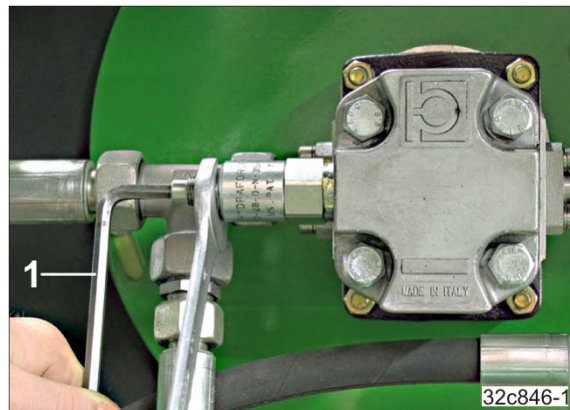


Fig. 222

1. Loosen the lock nut (Fig. 222).
2. Adjust the pressure relief valve to the factory-set dimension "21 mm" (Fig. 222).
 - 2.1. Turn the bolt with the hexagon socket wrench (Fig. 222/1) accordingly.
3. Tighten the lock nut.

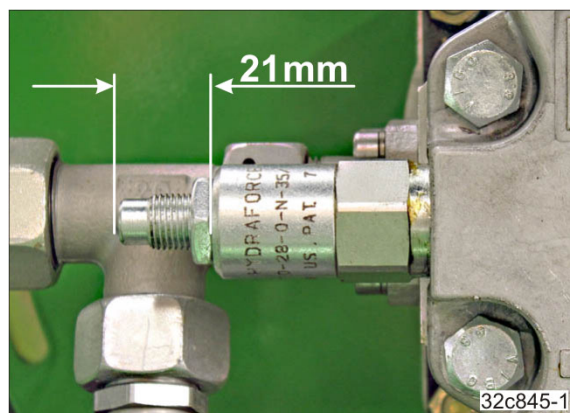


Fig. 223

- Hexagonal outer contour (Fig. 220/1)

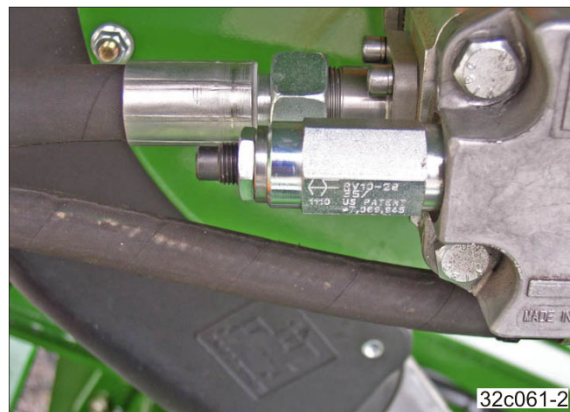


Fig. 224

1. Loosen the lock nut (Fig. 225).
2. Using a hexagon socket wrench, screw the bolt in completely (Fig. 225/1) (clockwise).
3. Using a hexagon socket wrench, unscrew the bolt back by 3 turns.
4. Tighten the lock nut.



Fig. 225

9 Transportation

When driving on public streets or roads, the tractor and implement must comply with the national road traffic regulations (in Germany the StVZO and the StVO) and the accident prevention regulations (in Germany those of the industrial injury mutual insurance organisation).

The vehicle keeper and driver are responsible for compliance with the statutory stipulations.

Furthermore, the instructions in this section have to be complied with prior to starting and during travel.

In Germany and in many other countries, the transportation of a implement combination up to 3.0 m width mounted on the tractor is permissible.

The max. transport height of 4.0 m must not be exceeded!

Depending on the equipment of the implement, the permitted maximum speed¹⁾ is as follows:

- 25 km/h (without brake system ²⁾)
- 25 km/h (with hydr. service brake system³⁾)
- 40 km/h (with dual-circuit pneumatic service brake system).

In particular on bad roads and ways driving may only take place at a considerably lower speed than specified!

¹⁾ The permissible maximum speed for attached work equipment differs in the various countries according to national traffic regulations. Ask your local importer/implement dealer about the maximum permitted speed for road travel.

²⁾ The implement is not permitted in Germany and in several other countries without its own brake system.

³⁾ The implement with hydraulic service brake system is not permitted in Germany and several other countries.



- Before transport, follow the instructions given in the section "Safety information for the operator".
- Before moving off, check:
 - that the permissible weight is not exceeded
 - the correct connection of the supply lines,
 - the lighting system for damage, function and cleanliness,
 - that the brake and hydraulic system shows no visible signs of defect,
 - that the tractor's parking brake is completely disengaged.
 - that the brakes are functioning correctly.



Prior to starting a journey, switch on the warning beacon (if available), which is subject to authorisation, and check its functioning.



WARNING

Risk of crushing, cutting, being caught and/or drawn in, or impact 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 or coupled implement.
- Before road transport, fasten the side locking of the tractor lower link, so that the connected or coupled implement cannot swing back and forth.



WARNING

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

These risks may lead to serious injuries or death.

Comply with the maximum load of the connected implement and the approved axle and drawbar loads of the tractor.

**WARNING**

Risk of falling when riding on the implement, contrary to instructions.

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

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

**WARNING**

Risk of contusions, cutting, catching, drawing in and knocks when making interventions in the implement through unintentional implement movements.

- On folding implements, check that the transport locks are locked correctly.
- Secure the implement against unintentional movements before starting transportation.

**DANGER**

Empty all of the hoppers.

The brake system is designed for driving with empty hoppers only.

9.1 Set the implement to road transport mode



WARNING

Danger of crushing, shearing, cutting, being caught or drawn in, winding and knocks through:

- unintentional lowering of the implement raised using the lower links of the tractor.
- unintentional lowering of raised, unsecured implement parts.
- unintentional start-up and rolling of the tractor-implement combination.

Secure the tractor with the attached implement against unintentional starting and rolling away before you make any adjustments to the implement. See section 6.2, Seite 106.



DANGER

Lock the tractor control units during road transport to avoid accidental operation!



DANGER

Switch off the control terminal during road transport.

If the on-board computer is switched on, there is a risk of accident caused by operation errors.



WARNING

Risk of contusions, cutting, catching, drawing in and knocks when making interventions in the implement through unintentional implement movements.

On folding implements, check that the transport locks are properly fastened.



WARNING

Risk of crushing, cutting, being caught and/or drawn in, or impact 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 or coupled implement.
- Before road transport, fasten the side locking of the tractor lower link, so that the connected or coupled implement cannot swing back and forth.

**WARNING**

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

These risks pose serious injuries or death.

Comply with the maximum load of the connected implement and the approved axle and drawbar loads of the tractor.

**WARNING**

Risk of falling when riding on the implement, contrary to instructions.

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

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



In bends take into consideration the wide sweep and the centrifugal mass of the implement.



Lift up and lock the ladders (Fig. 243) after use.

The drawbar can damage the lowered ladder when turning with the implement.



Before starting a journey, read the section "Safety information for the operator" and check:

- that the permissible weight is not exceeded.
- that the supply lines are connected correctly
- the lighting system for damage, function and cleanliness.
- the warning signs and yellow reflectors must be clean and undamaged.
- the brake and hydraulic system for visible damage.
- that the brake system functions properly.
- the tractor parking brake must be released completely.

1. Actuate the **yellow** tractor control unit until the following are fully lifted
 - o the active track marker
 - o the star wheel
 - o the coulters out of the soil.
2. Switch off the tractor PTO shaft (fertiliser fan, EDX 9000-TC).
3. Switch off the fan (singling unit).
4. Align the tractor and the implement in a straight line on a level surface with solid ground.
5. Lower the coulter frame.
6. Switch off the AMATRON 3 on-board computer.
7. Empty the seed hopper (see section 10.6.1, page 186).
The brake system is designed for driving with empty hoppers only.
8. Empty the fertiliser hopper (see section 10.6.2, page 189).
The brake system is designed for driving with empty hoppers only.
9. Close and secure the cover tarpaulin, push up and lock the ladder (only EDX 9000-TC). (see section 10.4.2, page 178)
10. Fold and lock the track marker (only EDX 6000-TC).
11. Move the wheel mark eradicator into transport position and lock it (see section 10.3.2, page 176).
12. Move the tramline marker into transport position and lock it
13. Move the filling auger into transport position and lock it (see section 10.4.3, page 180).
14. Fold the sections (see section 10.1.2, page 173).
15. When transporting the implement on public roads, switch off the work floodlights (see section 5.14, page 98).
16. Switch off the control terminal
17. Check the lighting system and warning signs for function and cleanliness
18. Lock the tractor control units (see tractor operating manual).
19. Read and observe section 9.2 with the legal guidelines and the safety instructions before and during transportation.
20. Switching on the warning beacon (if present) prior to starting a journey and check operation.

9.2 Legal regulations

When driving on public roads and ways the tractor and implement must comply with the national road traffic regulations (in Germany the StVZO and the StVO) and the accident prevention regulations (in Germany those of the industrial injury mutual insurance organisation).

The vehicle keeper and driver are responsible for compliance with the statutory stipulations.

Furthermore, the instructions in this section have to be complied with prior to starting and during travel.

Transport width/Transport height

In Germany and in many other countries, the maximum transport width of the implement combination mounted on the tractor is approved up to 3.0 m.

The max. transport height of 4.0 m must not be exceeded!

Max. permissible speed



- Depending on the equipment of the implement, the permitted maximum speed¹⁾ is as follows:
 - 40 km/h (with dual-circuit pneumatic braking system).
 - 25 km/h with hydraulic brake system
 - 10 km/h (without brake system ²⁾)

Note: in Russia and in several other countries, the permissible maximum speed is 10 km/h.

Particularly on poorly maintained roads or paths, you must always drive at a substantially lower speed than that specified!

- Switch on the warning beacon (if present), which is subject to authorisation, prior to starting a journey and check for operability.

¹⁾ The permissible maximum speed for attached work equipment differs in the various countries according to national traffic regulations. Ask your local importer/implement dealer about the maximum permitted speed for road travel.

²⁾ The implement is not permitted in Germany and in several other countries without its own brake system (see section 6.1.3).

Revolving beacon

In several countries, the implement and/or the tractor must be equipped with a revolving beacon. Ask your local importer/implement dealer about the legal guidelines. The revolving beacon is subject to approval in Germany.

10 Use of the implement



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

- Warning symbols and other labels on the implement
- Safety information for the operator.

Observing this information is important for your safety.



WARNING

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

Comply with the maximum load of the connected implement and the approved axle and drawbar loads of the tractor.



WARNING

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

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

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



WARNING

Risk of contusions, drawing in and catching during implement operation without the intended protective equipment!

Only ever start up the implement when the protective equipment is fully installed.



Actuate the tractor control units only in the tractor cab.

**WARNING**

Risk of being crushed, caught or struck by damaged components or foreign objects ejected by the implement!

Before turning on check to ensure that the tractor PTO shaft speed corresponds with the permitted drive speed of the implement.

**WARNING**

Risk of crushing, entrapment and entanglement and risk of foreign objects being hurled out in the danger area of the driven PTO shaft.

- Direct people away from the danger area of the implement before switching on the tractor's PTO shaft.
- Stay at a safe distance from the driven PTO shaft.
- Direct people away from the danger area of the driven PTO shaft.
- Shut down the tractor engine immediately in case of danger.

10.1 Folding/unfolding the implement sections and track markers



DANGER

Before you fold or unfold the implement sections and track markers, instruct people to leave the swivel area

- of the implement sections.
- of the rear frame
- of the track markers.



Align the tractor and implement straight on a flat surface before you fold or unfold the implement sections.

Drive the tractor in front of the implement at a slight angle. This makes the locking hooks (Fig. 226/1) for the implement sections more visible.

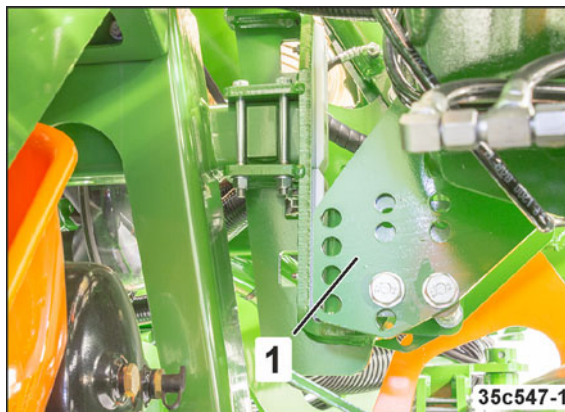


Fig. 226



Before unfolding/folding the implement sections,

- connect all hydraulic supply lines to the tractor.
- connect the AMATRON 3 and switch it on.

If the pressure-free return flow is not connected up, the swivelable rear lighting can collide with the rear swivel frame.

The AMATRON 3 monitors the folding and unfolding of the implement sections.

Always follow the instructions on the display (AMATRON 3) before you confirm the instructions in order to prevent any collisions of the implement components.



Before folding it in, switch off the tractor PTO shaft and do not switch it on again until the implement sections are extended completely.

10.1.1 Unfolding the implement sections

1. Apply the tractor parking brake.
2. Switch on the tractor engine.
3. Switch off the tractor PTO shaft.
4. Switch on the AMATRON 3.
5. On the AMATRON 3, select: "Unfold implement".

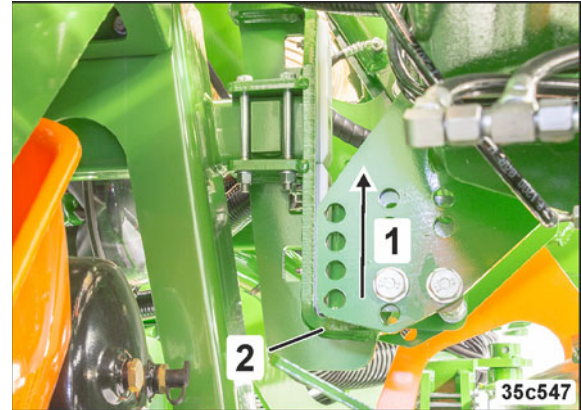


Fig. 227

6. Lift the implement sections (Fig. 227/1) out of the transport locking mechanism (Fig. 227/2).

- 6.1 Actuate the *yellow* tractor control unit until both implement sections are released.

The lifting operation finishes automatically.

When a suitable position for the unfolding procedure is reached, the AMATRON 3 issues an acoustic signal. Once the signal has sounded, you can switch functions in AMATRON 3 and start unfolding the implement sections.

When lifting the implement sections out of the transport locking mechanism, the lighting (Fig. 229/1) is folded down.



When unfolding the sections, wait until the lighting is completely folded down to prevent collisions.



Fig. 228



Fig. 229

7. Unfold the implement sections.
 - 7.1 Actuate the *green* tractor control unit until
 - o the implement sections are completely unfolded as shown in the figure (Fig. 230).
 - o the seed hoppers are folded into working position.



Fig. 230

Use of the implement

8. Put the *green* tractor control unit into neutral position and leave it in neutral position during operation.
9. Lower the raised implement components into the working position.
 - 9.1 Activate the *yellow* tractor control unit by confirming that the implement sections have been released from the transport locking mechanism on the AMATRON 3 (see Fig. 227).
 - 9.2 Actuate the *yellow* tractor control unit until the implement is unfolded into working position (see Fig. 231).
10. Put the *yellow* tractor control unit into neutral position and leave it in neutral position during operation.



Fig. 231



Pull the implement forward when lowering the coulters into the ground.

Blockages may occur

- when driving backwards or
- when the coulters are lowered on the field and the implement is not pulled forward.



Actuating the *yellow* tractor control unit causes

- lowering of the rear frame
- unfolding of the track markers into vertical position
- lowering of the star wheel.

10.1.2 Folding the implement sections



Close and lock the seed hopper cover before folding.

If the seed hopper cover is not locked, it may collide with other implement parts when the implement sections are being folded.

1. Apply the tractor parking brake.
2. Close and lock the seed hopper cover.
3. Switch on the tractor engine.
4. Switch off the tractor PTO shaft.
5. On the AMATRON 3, select: "Fold implement".
6. Actuate the *yellow* tractor control unit until
 - o the track markers (Fig. 232/1) are folded (parking position)
 - o the star wheel is lifted
 - o the rear frame is lifted (see Fig. 233).

The lifting procedure finishes automatically as soon as the rear frame is around 10° from vertical (see Fig. 233).

As soon as the lifting procedure is finished, the AMATRON 3 indicates that the 10° position has been reached.



Fig. 232

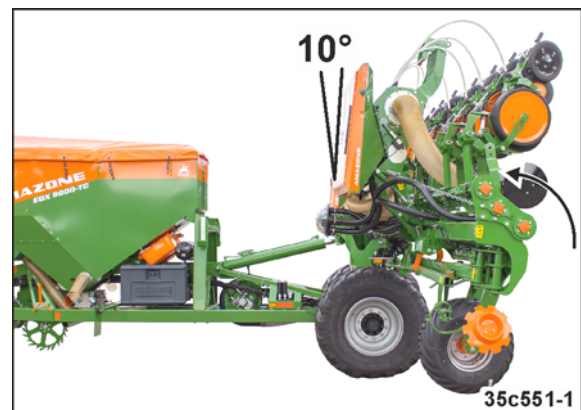


Fig. 233

7. Fold the implement sections.
 - 7.1 Keep actuating the *green* tractor control unit until both implement sections (Fig. 234/1) rest against the runners (Fig. 234/2) of the transport locking mechanism.



Beware of possible collisions with the implement.
Correct the tilt of the rear frame (see Fig. 233) if necessary.

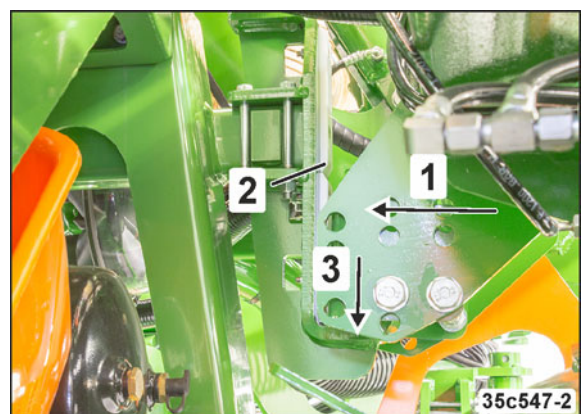


Fig. 234

Use of the implement

8. Latch the implement sections into place.
 - 8.1 Activate the *yellow* tractor control unit by confirming that the 10° position has been reached on the AMATRON 3 (see Fig. 233).
 - 8.2 Actuate the *yellow* tractor control unit until
 - o the implement sections have been lowered and stopped by the locking hook (Fig. 234/3);
 - o the rear carrier (Fig. 235/1) with light fittings and warning signs is folded into road transport position.
9. Move the implement into a horizontal position by actuating the tractor lower links.



The implement requires sufficient ground clearance in all driving situations.



Fig. 235

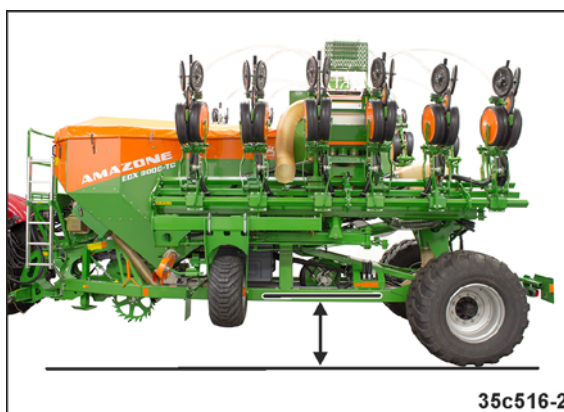


Fig. 236



DANGER

The locking hooks (Fig. 234/3) act as the mechanical arresting device for the implement sections during transportation.

Check that the locking hooks are fitted correctly (Fig. 234/3).

10.2 Working without track markers



DANGER

Direct people out of the danger area of the track markers.

1. Press the "Parking" button (see AMATRON 3 operating manual).
2. Keep actuating the *yellow* tractor control unit until both track markers are resting against the implement sections (see Fig. 237/1).



Fig. 237

10.3 Folding/unfolding the tractor wheel mark eradicators



DANGER

Direct people out of the danger area of the track markers.

10.3.1 Moving the tractor wheel mark eradicators into working position

1. Swivel the tractor wheel mark eradicators into working position (Fig. 238/3):
2. Turn the valve to working position "B" (see section "Adjusting the tractor wheel mark eradicator", page 154).
3. Actuate the tractor control unit (yellow).

When unfolding the implement, swivel the tractor wheel mark eradicators from transport position into working position.

4. Adjust the wheel mark eradicators to the desired working depth (see section "Adjusting the tractor wheel mark eradicator", page 154)

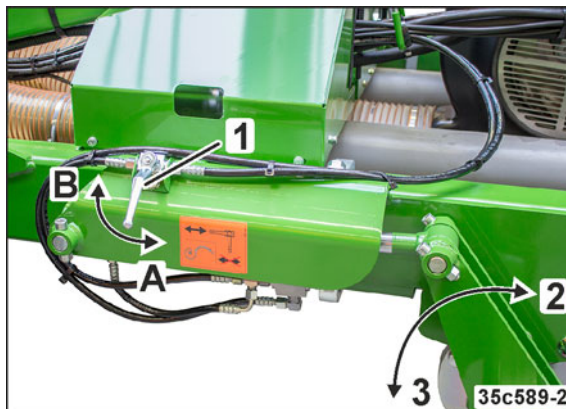


Fig. 238

10.3.2 Moving the tractor wheel mark eradicator into transport position

1. Swivel the tractor wheel mark eradicators into transport position (Fig. 238/2):
2. Put the wheel mark eradicators into the topmost position (see section "Adjusting the tractor wheel mark eradicator", page 154).
3. Actuate the tractor control unit (yellow).

When folding the implement, the tractor wheel mark eradicators swivel from working position into transport position.

4. To lock the actuation, turn the valve to lock position "A" (see section "Adjusting the tractor wheel mark eradicator", page 154).

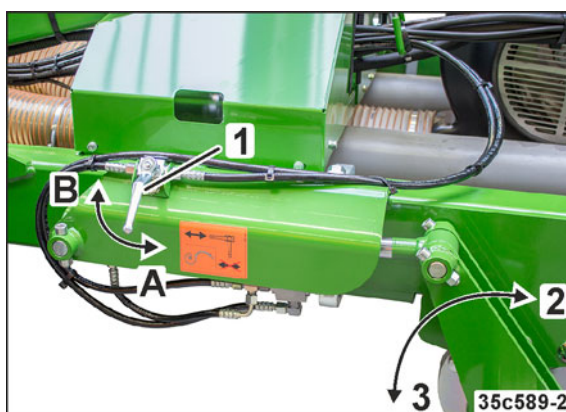


Fig. 239



WARNING

Before road transport, move the valve lever to position A (see Fig. 209, page 154) to prevent accidental swivelling of the tractor wheel mark eradicators.

10.4 Filling the hopper



DANGER

- Couple the implement to the tractor before filling the hopper.
- Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine, and remove the ignition key.
- The seed hopper is pressurised when the fan is running.
- Observe the approved filling levels and total weights.
- Transportation of the implement on roads and lanes with filled hoppers is prohibited. The brake system is designed only for an empty implement.



CAUTION

Never open the seed hopper cover with the fan running.

Switch off the fan before opening the seed hopper cover and only switch back on when the cover is closed.

10.4.1 Fill the seed hopper

1. Lower the rear frame.
2. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
3. Fold down the step.
 - 3.1 Remove the spring cotter pin (Fig. 240/1).
 - 3.2 Lift the step and then fold it down (Fig. 240/2).
4. Open the cover (Fig. 241/1) of the hopper.
 - 4.1 Unlock the lever (Fig. 241/2).
 - 4.2 Open the lid (Fig. 241/1) by actuating the lever.
5. Fill the seed hopper.
6. Close and lock the cover.
7. Fold the step up again and secure with the spring cotter pin.
8. The implement has two seed hoppers. Repeat the procedure as described.

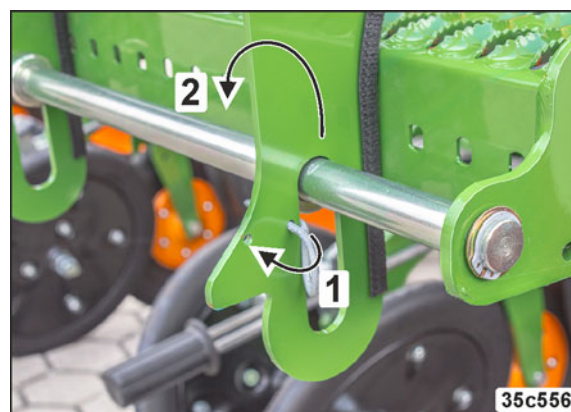


Fig. 240

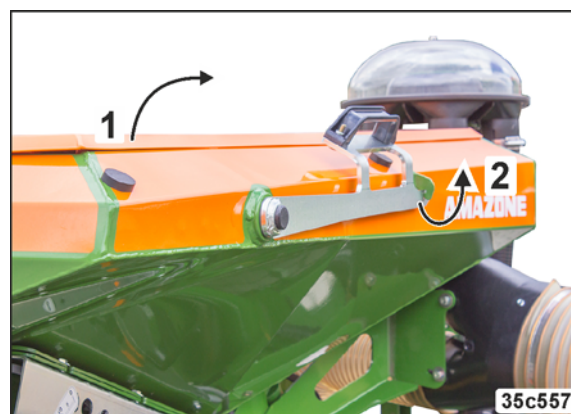


Fig. 241

10.4.2 Filling the fertiliser hopper



DANGER

Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine and remove the ignition key.

1. Proceed as follows:
 - o Couple the implement to the tractor (see section "Coupling and uncoupling the implement", Seite 108)
 - o Unfold (see section "Unfolding the implement sections", Seite 171)
 - o Place the implement on the coulters.
2. Switch off the fan.
3. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
4. Release the rubber loops (Fig. 242/1) together with the cover hook (Fig. 242/2).
5. Lift the ladder (Fig. 243/1) out of the locking device (Fig. 243/2) and lower to the stop (Fig. 243/3).

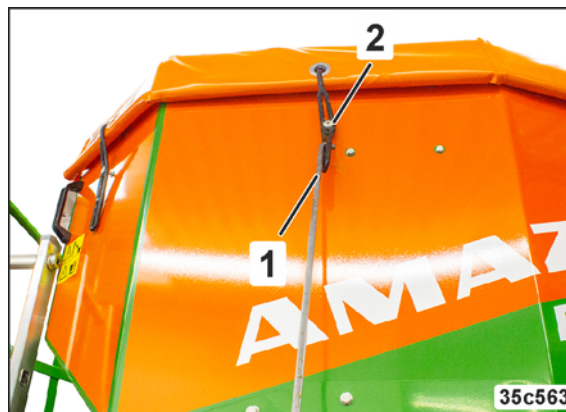


Fig. 242



CAUTION

Danger of getting crushed. Hold the ladder only at the marked positions.

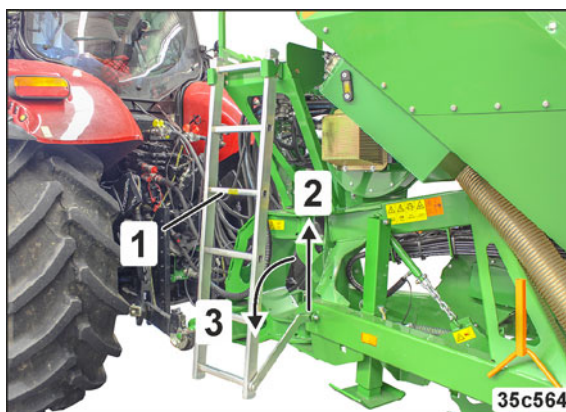


Fig. 243

6. Climb on the loading board via the ladder.
7. Release the rubber loops on the end face.
8. Open the swivelling cover tarpaulin.
9. Remove any other parts in the hopper.
10. Adjust the fill level sensor(s) in the hopper (see section "Setting the fill level sensor", Seite 143).



Fig. 244

11. Switch the interior lighting of the seed hopper on and off for night-time working.

The interior lighting is coupled with the driving lights of the tractor.

12. Fill the hopper
 - o from bulk bags.
 - o with bagged material from a supply vehicle.
 - o with a filling auger from a supply vehicle

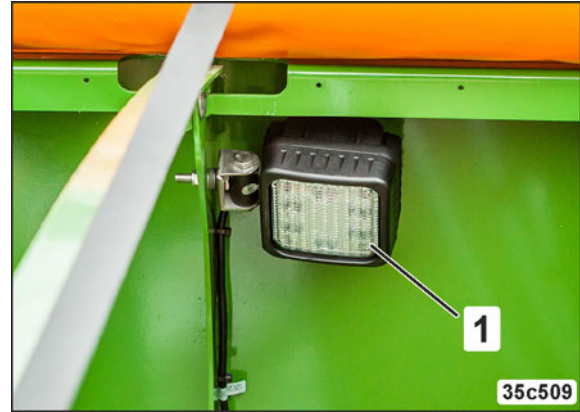


Fig. 245

13. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
14. Close the swivelling cover tarpaulin cover and secure it with the rubber loops.
15. Push up the ladder (Fig. 246) and lock it.

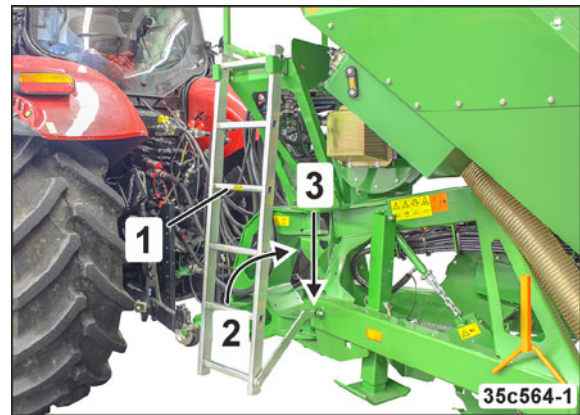


Fig. 246



Push the ladder up and lock it after use.

The drawbar can damage the lowered ladder when the implement is turned!

10.4.3 Filling the fertiliser hopper with the filling auger



DANGER

Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine and remove the ignition key.

The collection bucket is used to collect any residual amounts.

1. Hook on the collection bucket (Fig. 247/1)
2. Unlock the flap (Fig. 247/2)
3. Open the flap (Fig. 247/3)

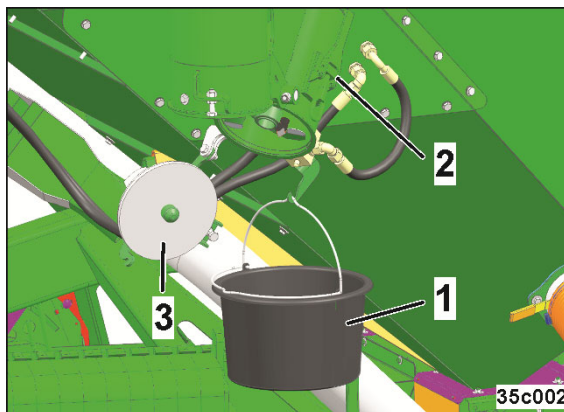


Fig. 247

4. Actuate the auger unfolding (Fig. 248/1)

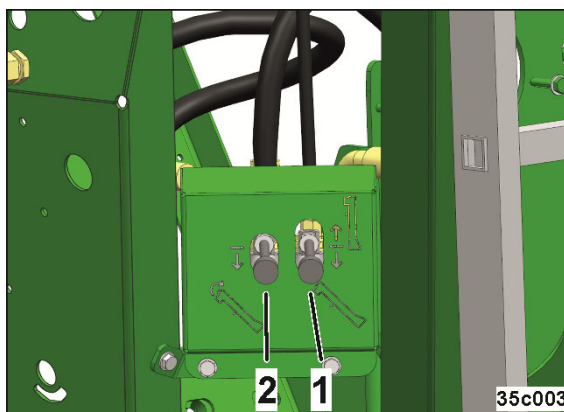


Fig. 248

5. Fill the hopper (Fig. 248/2)

Set the speed of the filling auger at 400 rpm. This corresponds to the set oil quantity of 32 l/min. at the tractor control valve.

6. After filling, let the auger run until it is completely empty



Fig. 249

7. Hook on the collection bucket (Fig. 250/1)
8. Actuate the folding of the auger
9. Collect residual quantities and fill into the hopper
10. Close the flap (Fig. 247/3)
11. Lock the flap (Fig. 247/2)

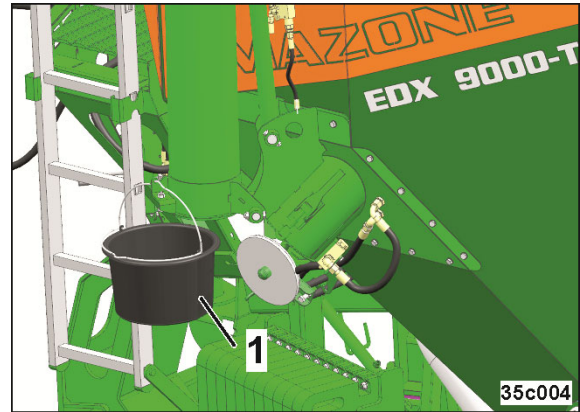


Fig. 250

**DANGER**

Never move between the supply vehicle and the implement.

Never stand under suspended loads.

Observe the approved filling levels and total weights!

10.5 Work commencement



DANGER

Direct people out of the implement's danger zone and particularly away from the swivel range of the implement sections, the rear frame and the track markers, and the PTO shaft-driven hydraulic pump.



Instructions to be observed when handling the PTO shaft-driven hydraulic pump:

- Before switching on the PTO shaft, read and follow the safety instructions for PTO shaft operation in the section "Safety information for the operator".
- Observe the permitted drive speed of the tractor PTO shaft.
- For tractors with hydraulically or pneumatically switchable PTO shafts, the PTO shaft may only be switched on to idle in order to prevent damage to the hydraulic pump.



When lowering the coulters, pull the implement forward slightly.

Never drive in reverse as soon as the coulters are in the soil. This can cause the coulters to become clogged.

Slightly raise the coulters before stopping on the field.

1. Unfold the implement sections and the track markers into working position (see section "Dual-circuit pneumatic service brake system", Seite 109).
2. Switch on the fan (singling unit) and set the required air pressure by adjusting the fan speed.

When the "Pre-calibration" function is actuated (see AMATRON 3 operating manual), the holes of the singling drum are sealed with seed grains. The required air pressure can be built up and measured.
In event of air pressure deviation, check that all holes are filled with seed grains. If not, correct the implement settings.
3. Switch on the fan (fertiliser supply) and adjust the speed by regulating the PTO shaft speed.
4. Start-up
5. Check the required air pressure in the singling unit on the AMATRON 3.

6. Check the placement depth and grain spacing of the seed as well as the placement depth of the fertiliser on all of the coulters, and adjust if necessary (see section "Checking the placement depth and grain spacing", Seite 142)
 - o after the first 100 m travelled at working speed
 - o after switching from light to heavy soil or vice-versa
 - o at regular intervals, at the latest when refilling the seed hopper.
 - o Impurities in the seed delivery sections can cause erroneous seeding.

10.5.1 During operation



During operation, the opto-sensor detects gaps on the singling drum. Gaps are displayed on the AMATRON 3.

Correct the implement settings if there are gaps.



From time to time, check the fertiliser distributor heads for impurities.

Impurities may block the fertiliser distributor heads and must be removed immediately (see section "Cleaning the fertiliser distributor head").

10.5.2 Turning at end of the field

Before turning at the end of the field

1. Slow down your travel speed.
2. Do not reduce the tractor's rotational speed too far so that the hydraulic functions continue without interruption at the headland.
3. Actuate the *yellow* tractor control unit until the following are fully lifted
 - o the active track marker
 - o the star wheel
 - o the coulter.
4. Turn the combination.



Fig. 251



Avoid strong deceleration and acceleration to prevent placement errors in the distribution along the row.

The speed of the singling drum is regulated depending on the tractor speed and can only adjust immediately for normal speed changes.



Only reduce the PTO shaft speed when the star wheel is lifted and there is no more fertiliser in the hose lines between the injector sluice and the fertiliser coulters. If fertiliser comes to a standstill in the hose lines, the fertiliser can block the lines.



The raising of the seed hopper, e.g. when turning at the end of the field, causes the seed to move down.

After turning at the end of the field

1. Actuate the *yellow* tractor control unit until the following are fully lowered
 - o the coulters
 - o the star wheel
 - o the active track marker
2. Continue actuating the *yellow* tractor control unit for another 15 seconds then put it into neutral position.

During operation, operate the *yellow* tractor control unit in neutral position.



DANGER

After turning, the opposite track marker is moved into working position when the *yellow* tractor control unit is actuated.

10.5.3 Folding the track markers before reaching an obstacle

To prevent damage to the active track marker when hitting an obstacle, press the "Obstacle" button on the AMATRON 3 and fold in the track marker.

If it is necessary to move both track markers into transport position, you must also press the "Park track markers" button on the AMATRON 3.

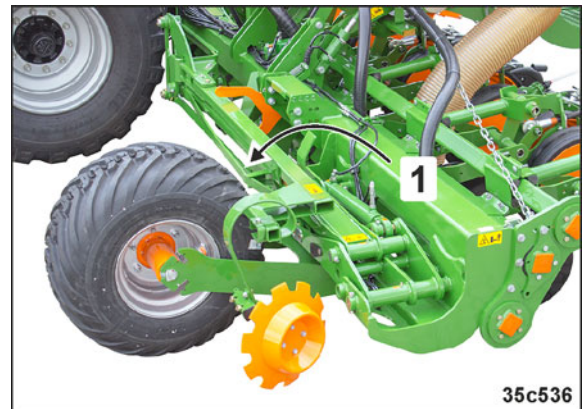


Fig. 252

When the "Obstacle" button is activated with / without the activating the "Park track marker" button, operation can be continued without using the track markers.

After passing the obstacle, press the "Obstacle" button again so that the implement is lifted when turning around.

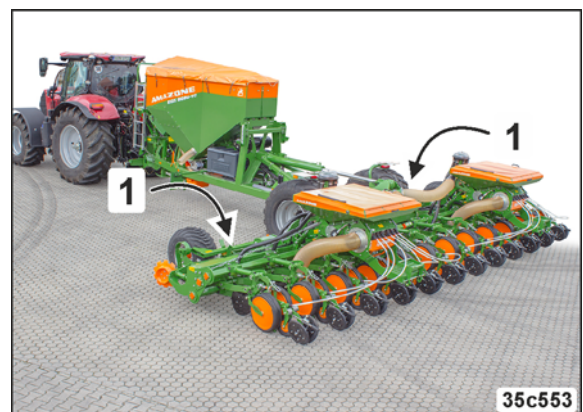


Fig. 253

10.6 End of work on the field

1. The brake system is designed for driving with empty hoppers only.
 - o see section "Emptying the fertiliser hopper and the metering unit", page 189
 - o see section "Emptying the seed hopper and/or seed singling unit", page 186
2. (see section "Set the implement to road transport mode", page 164).

10.6.1 Emptying the seed hopper and/or seed singling unit



DANGER

Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine and remove the ignition key.



WARNING

The seed hopper is pressurised when the fan is running (singling unit).

Only necessary if the seed hopper is full and should not be emptied:

1. Close the inlet from the seed hopper to the singling unit (Fig. 62/2).
 - 1.1 Position the lever (Fig. 166/1) to the scale value "0".

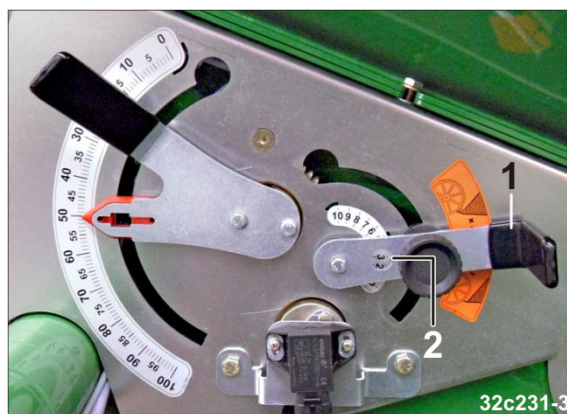


Fig. 254

2. Open the bottom flap (Fig. 255/1).

The bottom flap is secured with quick-release clamps (Fig. 255/2).

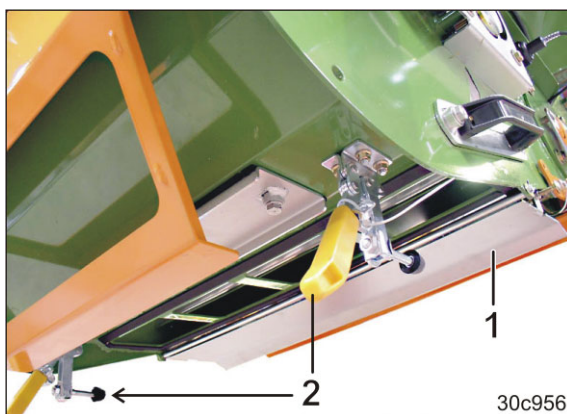


Fig. 255

3. Fold the mount down and secure [linch pin (Fig. 256/1)].

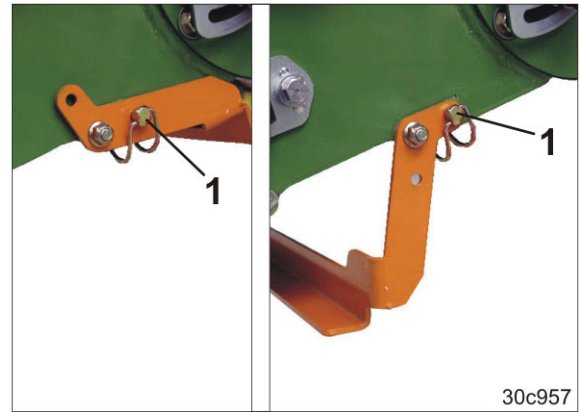


Fig. 256

4. Place the collecting trough in the mount.



Fig. 257

5. Release the screen shutter.



Fig. 258



Use the hexagon wrench provided.



Fig. 259

Use of the implement

6. Pull the screen shutter (Fig. 260/1) slowly out of the housing.
→ The seed will drop into the collecting trough (Fig. 260/2).

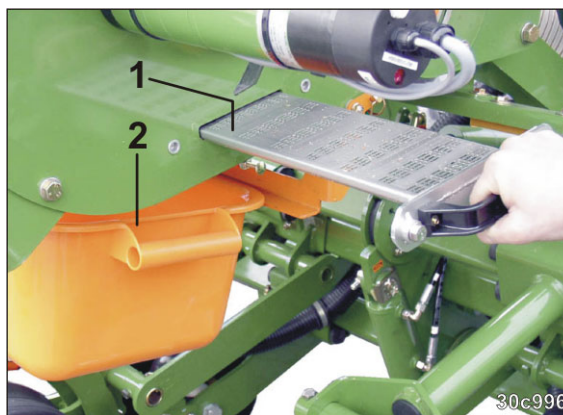


Fig. 260

7. Empty the collection trough.
 - 7.2 Open the lock (Fig. 261/1) with the hexagon wrench provided (Fig. 261/2).
 - 7.3 Pour the collected seed into the seed hopper for re-use.
8. Close the singling unit housing or clean while it is opened (see section "Daily fast cleaning of the singling unit and the spur gears", Seite 203).

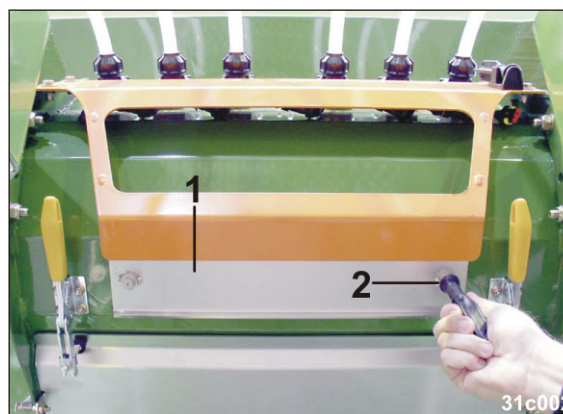


Fig. 261

10.6.2 Emptying the fertiliser hopper and the metering unit



DANGER

Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine and remove the ignition key.



CAUTION

Switch off the AMATRON 3 on-board computer before working on the metering unit.

10.6.3 Emptying the fertiliser hopper

1. Unlock (Fig. 262/1) and open (Fig. 262/2) the shutter. Empty the contents of the hopper into the calibration trough or a suitable container.
2. Empty and clean the metering unit after operation! (see section "Cleaning the metering unit", unterhalb).

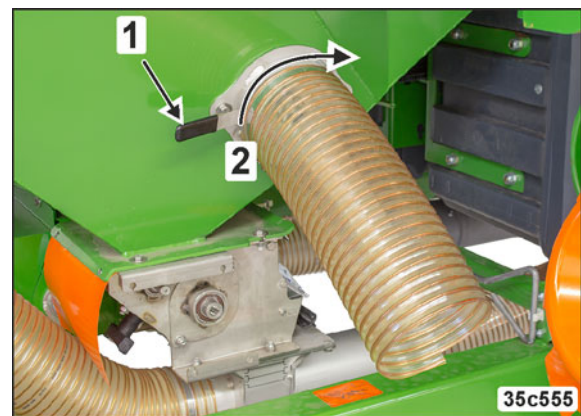


Fig. 262

10.6.4 Cleaning the metering unit



Empty and clean the metering unit after use!

In metering units that are neither emptied nor cleaned,

- a viscous to solid mass may form there is water enters under the metering roller. The metering roller is braked strongly and deviations may occur between the preset and actual seeding rates.
- seed residues and fertiliser may swell or germinate in the metering units. As a result, rotation of the metering rollers is blocked and damage can be caused to the drive!

1. Push a calibration trough into the mounting under the metering unit.



Fig. 263



If the fertiliser hopper should not be emptied, close the shutters (Fig. 264/1) (see section "Installing/removing the metering roller", Seite 144) on all of the metering units.

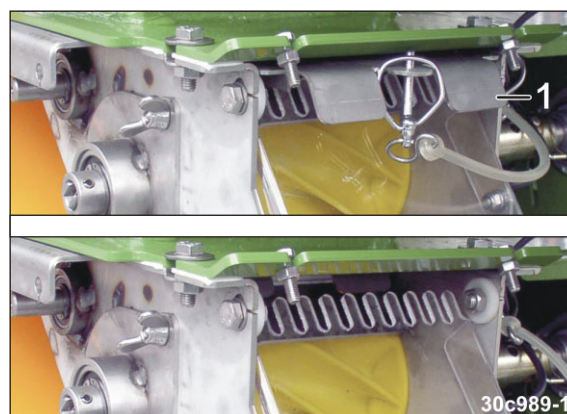


Fig. 264

2. Empty the residual quantities from the hopper and metering unit.
 - 2.1 Turn the handle (Fig. 265/1).

→ The metering unit is emptied through the residual emptying flap.
3. The implement has two metering units. Repeat the procedure as described.

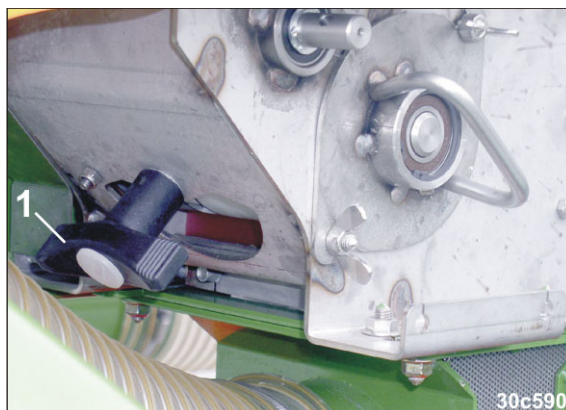


Fig. 265

3. Open both injector sluices (Fig. 266) and empty them (see section 5.7.2, Seite 87).

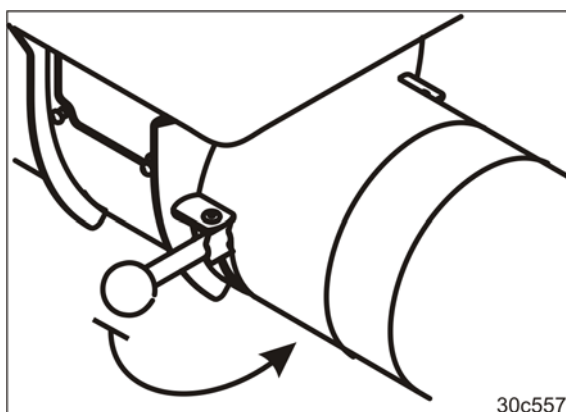


Fig. 266

4. Empty the metering units and the metering rollers completely.
 - 4.1 Turn the star wheel (Fig. 267/2) to the left using the calibration crank (Fig. 267/1).

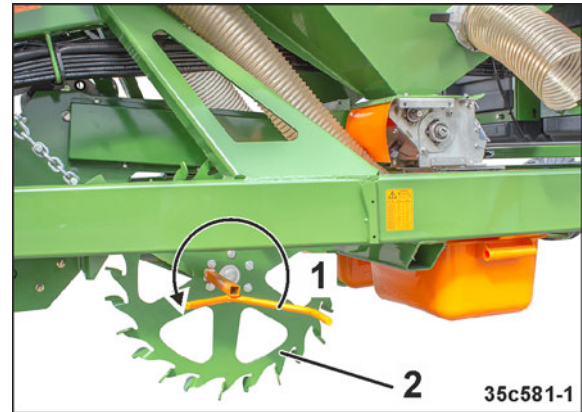


Fig. 267

5. To completely clean the metering unit, remove the metering roller (see section "Installing/removing the metering roller", Seite 144).



The metering unit must be emptied and cleaned after completing the seeding work in all cases.

6. Open the shutter(s) (Fig. 189/1) and secure (linch pin).
7. Close the residual emptying flap(s) (Fig. 265/1).
8. Close the injector sluice flap(s) (Fig. 266/1).
9. Secure the calibration trough(s) (Fig. 105) on the transport bracket.
10. Clip the calibration crank into its transport bracket.

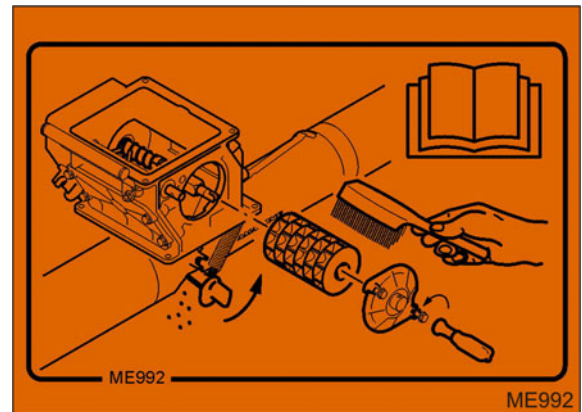


Fig. 268

11 Faults



WARNING

Danger of crushing, shearing, cutting, being caught or drawn in, winding and knocks through:

- **unintentional falling of the implement raised using the tractor's three-point hydraulic system.**
- **unintentional lowering of raised, unsecured implement parts.**
- **unintentional start-up and rolling of the tractor-implement combination.**

Secure the tractor and the implement against unintentional start-up and rolling, before you eliminate any faults on the implement. On this subject see section 6.2, Seite 106.

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



CAUTION

Switch off the AMATRON 3 on-board computer before working on the metering unit.

11.1 Residual quantity display

If the residual quantity in the hopper is undercut (and if the fill level sensor is properly set), a message appears on the on-board computer display, accompanied by an acoustic signal (see on-board computer operating manual).

The residual quantity should be large enough to prevent fluctuations in the spread rate.

11.2 Cleaning the seed tube



DANGER

Never switch the blower fan (singling unit) on under the following circumstances

- if a seed line has detached from the housing
- if the press rollers are raised.

Seed grains may emerge uncontrollably at high speeds and cause injuries to unprotected parts of the body, particularly the eyes.

The AMATRON 3 indicates when one or more coulters are blocked and the seed is no longer being placed in the soil.

The air flow in the seed tube then ceases and the supply of seed in the seed tube is interrupted. The grains do not enter the delivery hose, but accumulate at the sealing lip below the seed tube.

If there is blockage in the seed placement area (Fig. 269/1), perform the following steps:

- Clean the seed tube.
- Eliminate seed accumulations at the sealing lip.

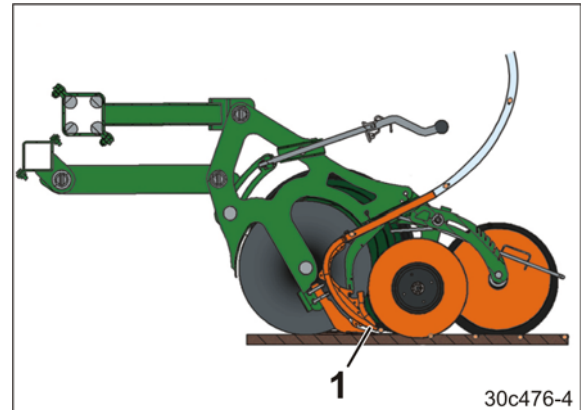


Fig. 269

11.2.1 Cleaning the seed tube

1. Switch off the fan (singling).
2. Raise the coulter to the point where they have just come clear of the ground.
3. Release, but do not remove, the two bolts (Fig. 270/1).



Fig. 270

4. Fold up the press rollers and hook onto the clamp (Fig. 271/1).
5. Clear the blockage in the shoot pipe (Fig. 271/2), remove the shoot pipe to clean it if necessary.
6. Put the coulter in the working position.

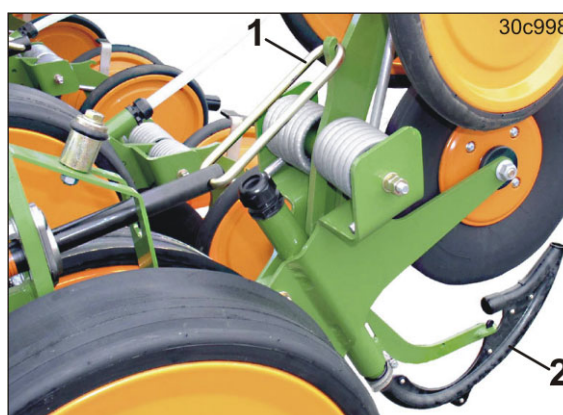


Fig. 271

11.2.2 Eliminating seed accumulations at the sealing lip

1. Move the lever several times clockwise to the end stop.
- This causes the seed to fall from the sealing lip into the collection trough.

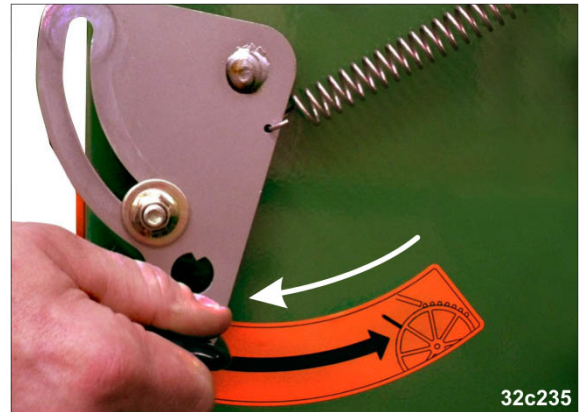


Fig. 272

2. Then move the sprung lever (Fig. 273/1) back to the end stop to its initial position.



Fig. 273

3. The collection trough (Fig. 274/1) is generally emptied after finishing the field work (see section "Emptying the seed hopper and/or seed singling unit", Seite 186).

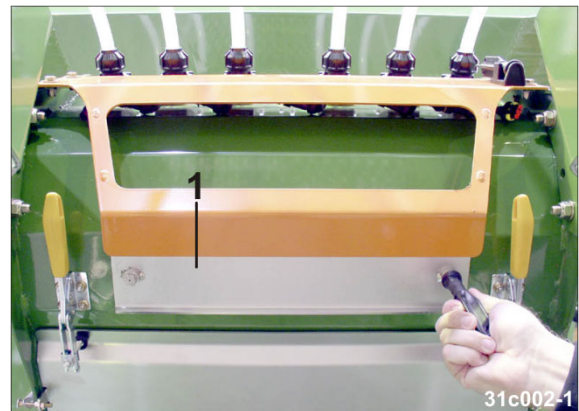


Fig. 274

11.3 Failure of the AMATRON 3 during operation

If a failure of the AMATRON 3 comes about while working on the field, the seeding cannot be continued.

The implement can be folded for transport to a nearby specialist workshop (see section 11.3.1, unterhalb).

11.3.1 Transporting the implement after failure of the AMATRON 3



DANGER

- **Actuate the tractor control units only in the tractor cab.**
- **Before actuating the tractor control units, direct any people out of the danger area.**
- **Only fold the implement in emergency mode if the AMATRON 3 fails.**

1. When the on-board computer fails on the field, keep actuating the *yellow* tractor control unit until the active track marker is completely raised (see Fig. 275)
2. Switch off the tractor PTO shaft ("fertiliser transport" fan).
3. Switch off the fan (singling).
4. Apply the tractor parking brake, switch the tractor engine off and remove the ignition spanner.
5. Empty the seed hopper (see section 10.6.1)
6. Close the seed hopper cover (Fig. 56/1).
7. Empty the fertiliser hopper (see section "Emptying the fertiliser hopper and the metering unit")
8. Close the cover tarpaulin and secure it (see Fig. 95)
9. Push up the ladder (Fig. 243) and lock it.
10. Remove the panel from the control block (Fig. 276).
11. Unscrew the two valve pins (Fig. 276/1) from the valves.



Fig. 275

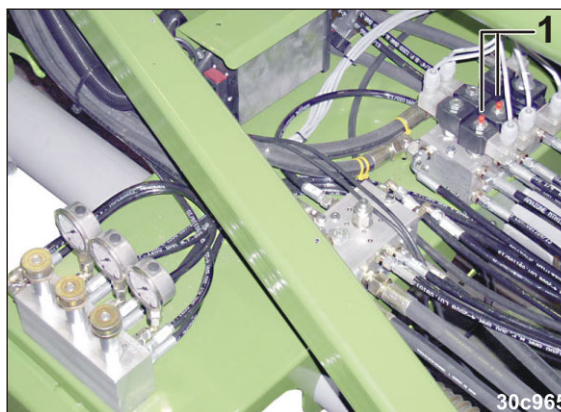
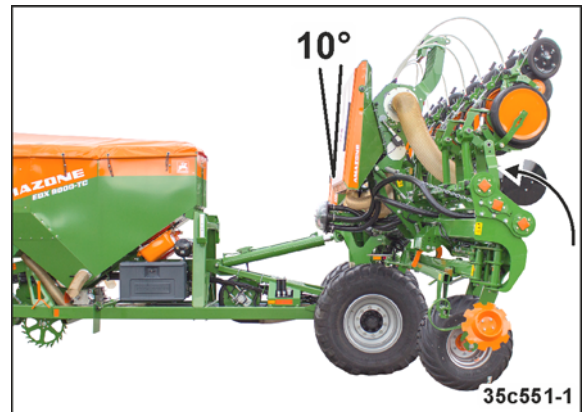


Fig. 276

12. Direct people out of the danger area.
13. Actuate the *yellow* tractor control unit.
 - Both track markers are folded into transport position (Fig. 277/1)
 - The star wheel is lifted.


Fig. 277

14. Keep actuating the *yellow* tractor control unit until the rear frame is approx. 10° before the vertical position (see Fig. 278).

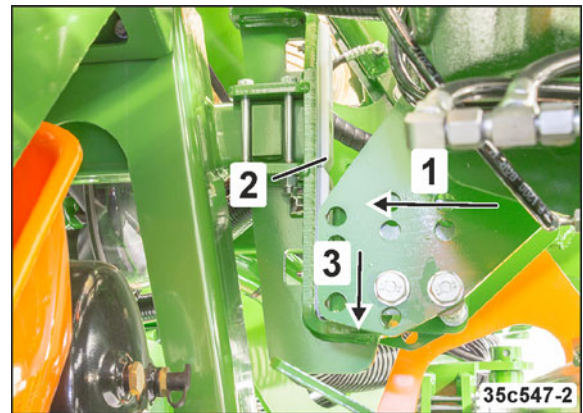

Fig. 278

15. Fold the implement sections.
 - 15.1 Keep actuating the *green* tractor control unit until both implement sections (Fig. 279/1) rest against the runners (Fig. 279/2) of the transport locking mechanism.



Beware of possible collisions with the implement.

Correct the tilt of the rear frame (see Fig. 278) if necessary.


Fig. 279

- 15.2 Actuate the *yellow* tractor control unit until
 - o the implement sections have been lowered and stopped by the locking hook (Fig. 279/3);

Faults

- o the rear carrier (Fig. 280/1) with light fittings and warning signs is folded into road transport position.



Fig. 280



DANGER

The locking hooks (Fig. 279/3) act as the mechanical arresting device for the implement sections during transportation.

Check that the locking hooks are fitted correctly (Fig. 279/3).

16. Move the implement into a horizontal position by actuating the tractor lower links.



The implement requires sufficient ground clearance in all driving situations.

17. Observe the road transport regulations (see section 9, Seite 161).

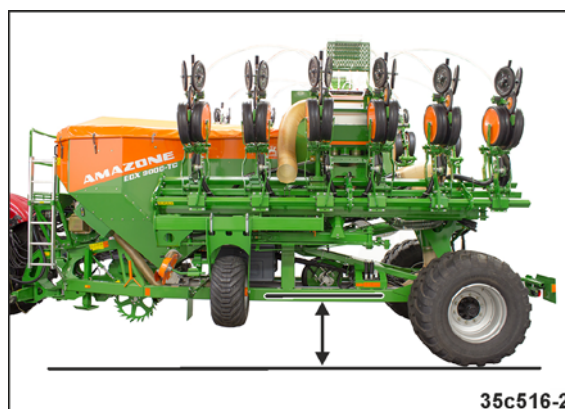


Fig. 281



DANGER

Go to the nearest repair workshop without delay.



After the repairs, put the valve pins (Fig. 276) back into their normal position.

11.4 Triggering the track marker safety

To pass obstacles, the active track marker can be folded and unfolded on the field. If the track marker still encounters a solid obstacle, a shear bolt shears off (Fig. 282/2) and thus protects the track marker from damage.

Only use original bolts (Fig. 282/3) as a replacement (see online spare parts list).

(Fig. 282/...)	Function	Tightening torque
1	Pivot point	210 Nm
2	Shear bolt	20 Nm

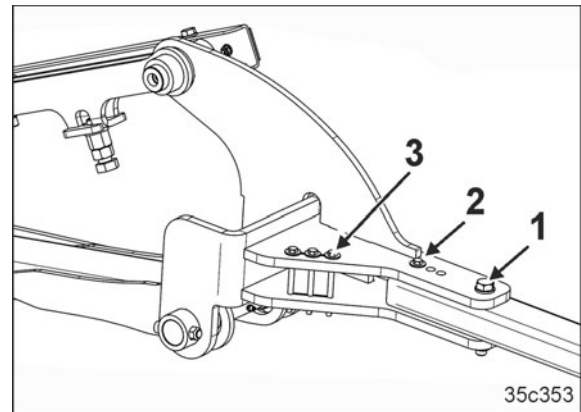


Fig. 282

11.5 Fault table

Malfunction	Possible cause	Remedy
Track marker not changing	Working position sensor is not correctly set	Adjust the sensor
	Working position sensor defective	Replace the working position sensor
	Hydraulic valve defective	Replace the hydraulic valve
Track marker switches too early	Working position sensor is not correctly set	Adjust the sensor
False alarm from fan sensor, indicated on the AMATRON 3 display screen	Alarm limit is not correctly set	Alter the alarm limit
	Oil volume too low or too high	Set the oil volume
	Fan sensor defective	Replace the fan sensor
Distance sensor (star wheel/Vario gearbox) not functioning	Distance sensor defective	Replace the distance sensor
Grains are not placed with the target spacing	The incorrect calibration value (pul./100) is being used for seeding	Determine the calibration value (pul./100) and recalibrate the AMATRON 3.
Warning message: "Pressure of singling unit"	Compressed air for singling unit seed grains is escaping.	Check the seed hoppers for leaks.
		Check the compressed air hoses.
Gaps in entire rows	The accumulation of grains is preventing singling unit	Cleaning the seed tube (see Seite 193).
	Foreign objects in front of the hole rows or scraper	Remove foreign objects
The outer rows are not occupied.	The screen shutter is blocked.	Remove deposits from the sieve shutter.
The electric motor of a singling drum does not start.	"Working position" sensor is maladjusted/defective	Adjust/replace the sensor
Incorrect message from the optosensor	Seed dressing deposits impair the optics of the optosensor	Clean the optosensor with a damp cloth.
		Important! Do not use any sharp-edged cleaning equipment. Remove heavy soiling with technical alcohol.

12 Cleaning, maintenance and repairs



WARNING

Danger of crushing, shearing, cutting, being caught or drawn in, winding and knocks through:

- unintentional falling of the implement raised using the tractor's three-point hydraulic system.
- unintentional lowering of raised, unsecured implement parts.
- unintentional start-up and rolling of the tractor-implement combination.

Secure the tractor and implement against unintentional starting and unintentional rolling before you perform any cleaning, servicing or maintenance work on the implement, see Seite 106.



CAUTION

Switch off the on board computer

- before road transport.
- before adjustment, maintenance and repair work.

Risk of accident due to unintended movements of the metering unit or other implement components caused by radar pulses.



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 implement.
- Replace defective protective equipment with new equipment.



Danger

Carry out cleaning, maintenance or repair work (unless otherwise specified) only after the following conditions are fulfilled:

- The implement sections are unfolded (see section 7.1, Seite 109).
- The coulter frame is fully lowered.
- The tractor parking brake is applied.
- The tractor PTO shaft is shut off.
- The tractor engine is switched off.
- The ignition key is removed.



DANGER

The tasks marked with "Specialist workshop" in the sections may only be performed by a specialist workshop.

12.1 Securing the connected implement

Before working on the implement, place the implement connected to the tractor on the jack (Fig. 283/1) to prevent unintentional lowering of the tractor's lower link.

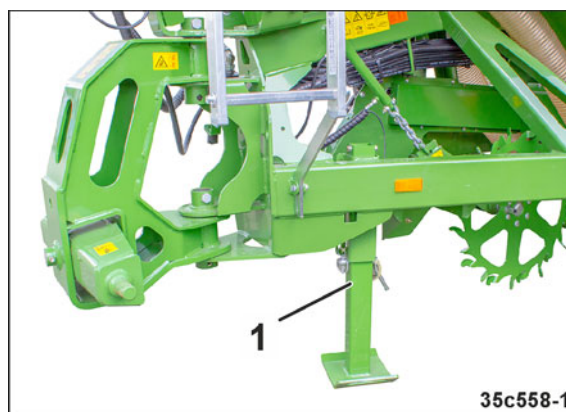


Fig. 283

12.2 Cleaning the machine



DANGER

Dressing dust is toxic and must not be inhaled or come into contact with body parts.

When emptying the seed hopper and the singling unit or when removing dressing dust, e.g. with compressed air, wear a protective suit, face mask, safety glasses and gloves.



DANGER

Fully extend or retract the implement before cleaning it.

Never clean the implement if the rear frame and implement sections are not completely folded.



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



What should be observed when cleaning with a high-pressure cleaner/steam cleaner:

- Do not clean any electrical components.
- Do not clean any chromed components.
- Never aim the cleaning jet from the cleaning nozzle of the high pressure cleaner/steam jet directly on lubrication points, bearings, rating plate, warning signs, and stickers.
- Always maintain a minimum jet distance of 300 mm between the high pressure cleaning or steam jet cleaning nozzle and the implement.
- The set pressure of the high-pressure cleaner/steam jet must not exceed 120 bar.
- Comply with safety regulations when working with high pressure cleaners.
- Completely dispose of fertiliser residue. Fertiliser residues harden up and can damage rotating components on the next use.

12.2.1 Daily fast cleaning of the singling unit and the spur gears



DANGER

Dressing dust is toxic and must not be inhaled or come into contact with body parts.

When emptying the seed hopper and the singling unit or when removing dressing dust, e.g. with compressed air, wear a protective suit, face mask, safety glasses and gloves.

1. Secure the tractor against unintentional start-up and rolling.
2. Open the bottom flap (Fig. 284/1).

The bottom flap is secured with quick-release clamps (Fig. 284/2).

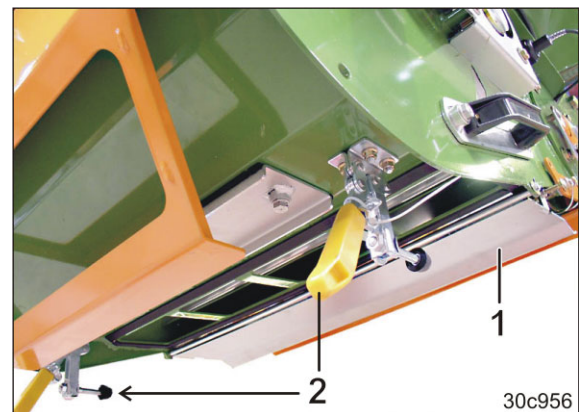


Fig. 284

Cleaning, maintenance and repairs

3. Direct people out of the danger area.
4. Switch on the fan.
- Seed residues and dressing deposits will be blown out of the singling unit housing.
5. Move the air deflector lever (Fig. 285/1) from stop to stop several times with the fan running.
6. Switch off the fan.

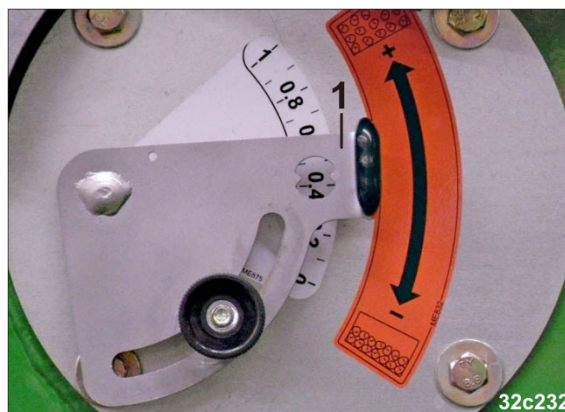


Fig. 285

7. Use compressed air to remove dust and dirt from the star wheels (Fig. 286/1) behind the scale area (Fig. 286/2).
Dismounting of the scale plate, as shown, is not required.
8. Close the singling unit housing after cleaning.

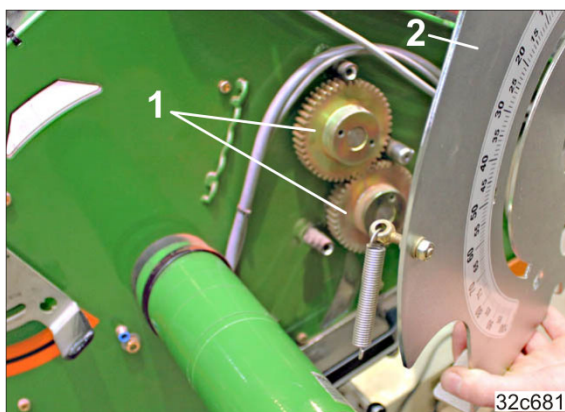


Fig. 286



Deep cleaning is performed after emptying the seed hopper and the singling unit (see section "Deep cleaning of the implement", Seite 205).

12.2.2 Cleaning the supply hoses



Completely remove all fertiliser residues. Fertiliser residues can harden and cause blockage in the feed hoses.

12.2.3 Deep cleaning of the implement

1. To clean, always place the implement connected to the tractor on the jack (Fig. 283/1).
2. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
3. Empty the seed hoppers (see section "Emptying the seed hopper and/or seed singling unit", Seite 186).
4. Empty the fertiliser hopper and metering unit (see section Emptying the fertiliser hopper and the metering unit, Seite 189).
5. Clean the fertiliser distributor head (see section Cleaning the fertiliser distributor head, Seite 206).
6. Fully extend or retract the implement before cleaning it (see section 7.1, Seite 109).
Never clean the implement if the rear frame and implement sections are not completely folded.
7. Clean the implement with water or with a high-pressure cleaner. Important: Only clean the singling unit with compressed air.
8. Clean the opto-sensors with ISOPRORANOL (alcohol). Seed dressing deposits may adversely affect the correct operation of the opto-sensor. Do not use any aggressive cleaning agents.



Clean the dirty fan guard screen to ensure an unobstructed air flow.

If the required quantity of air is not reached, faults may occur in the seed distribution along the row.



Clean the blower fan of any deposits. Deposits lead to imbalance and damage to the bearing.



When the implement is not to be used for a longer period, relieve the hole-covering rollers.

12.2.3.1 Cleaning the fertiliser distributor head

1. Unfold the implement sections (see section 7.1, Seite 109).
2. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.



DANGER

Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine and remove the ignition key.



WARNING

There is the risk of slipping on the path to the distributor head and in the area of the distributor head.

3. Loosen the clamping ring (Fig. 287/1) and remove the clear plastic cap (Fig. 287/2) from the distributor head.
4. Remove any impurities with a brush, and wipe out the distributor head and plastic cap with a dry cloth.
5. Refit the plastic cap.

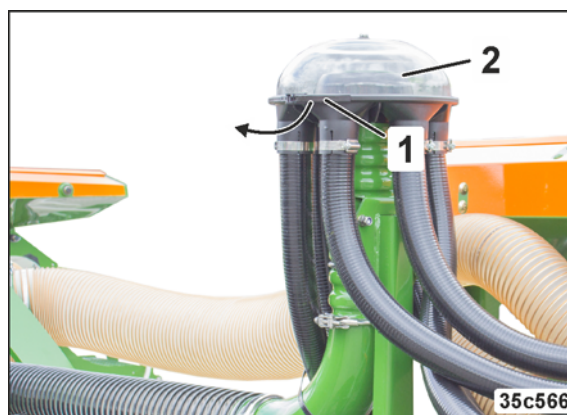


Fig. 287

12.2.3.2 Cleaning the opto-sensor

1. Pull the seed line tube out of the opto-sensor, (see section 3.2.1, Seite 41).
2. Clean the opto-sensor with a soft brush

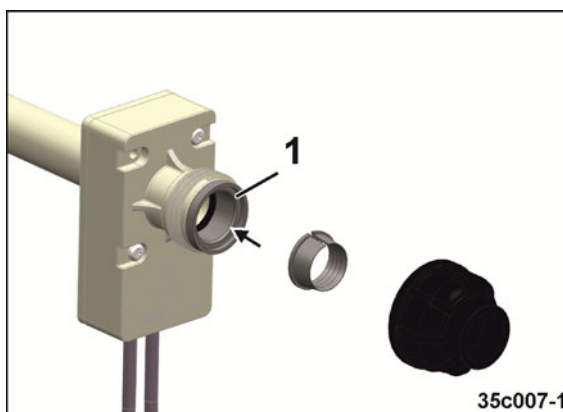


Fig. 288

12.3 Removing/installing the singling drum

1. When the seed hopper is full, close the seed shutter so that no seed can flow out of the seed hopper onto the fluid bed.
2. Disconnect the exhaust air hose (Fig. 289/1) from the housing cover (Fig. 289/2).



Fig. 289

3. Release the bolts (Fig. 290/2) with the hexagon wrench provided.
4. Remove the pin (Fig. 290/3).
5. Remove the housing cover (Fig. 290/1).



Fig. 290

6. Pull the singling drum out of the housing. To do so, turn slowly clockwise.
7. Installation is in the reverse sequence.

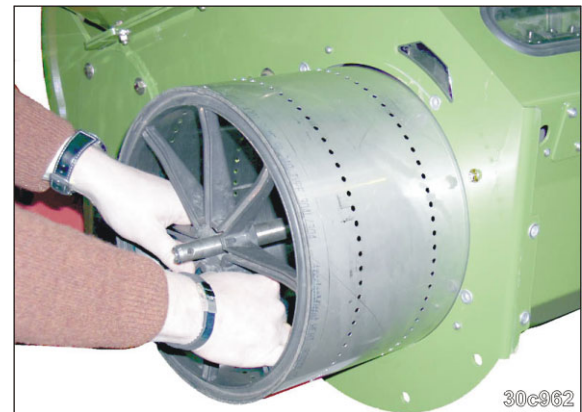


Fig. 291



When mounting and dismounting the drum

To prevent damage to the sealing lips, turn the drum slowly in a clockwise direction.

When mounting the drum

Carefully press the drum spoke into the receptacle of the electric motor by slightly raising the drum. If excessive force is used, the spoke may be damaged.



When installing the housing cover, pay attention to the recesses (Fig. 292/1).

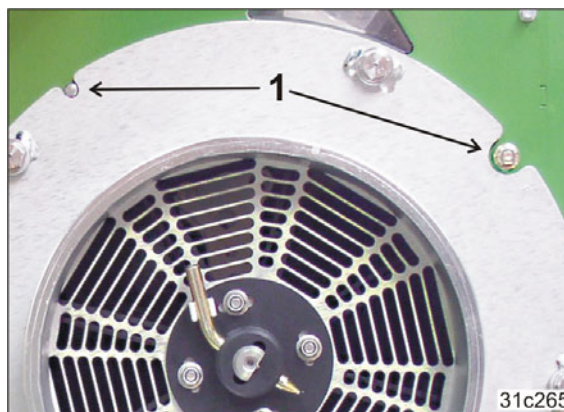


Fig. 292



Secure the bearing seat with the pin (Fig. 292/1).



Fig. 293

The transport box (Fig. 294/1) serves to park the singling drum.

The transport box can be locked (Fig. 294/2).

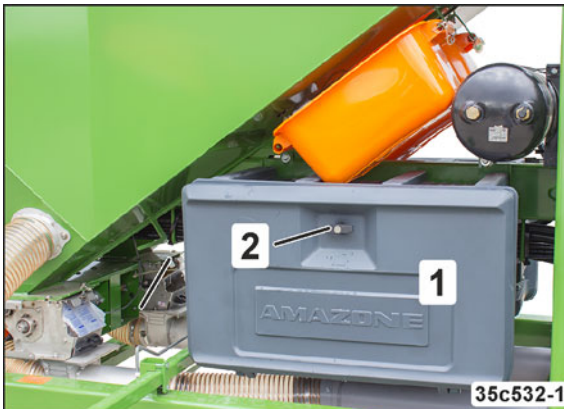


Fig. 294

12.4 Lubrication specifications



WARNING

Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine and remove the ignition key.

The lubrication points on the implement are marked with a foil sticker (Fig. 295).

Carefully clean the grease nipple and grease gun before lubrication so that no dirt is pressed into the bearings. Press the dirty grease completely out of the bearings and replace with new grease!

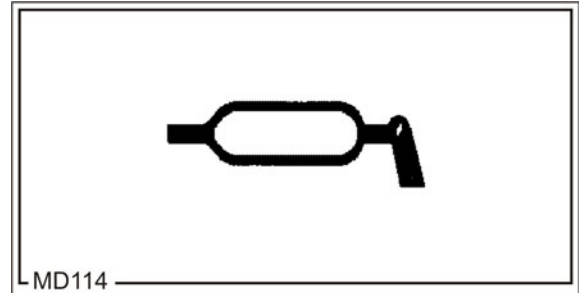


Fig. 295

Lubricants

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

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

12.4.1 Overview of lubrication points

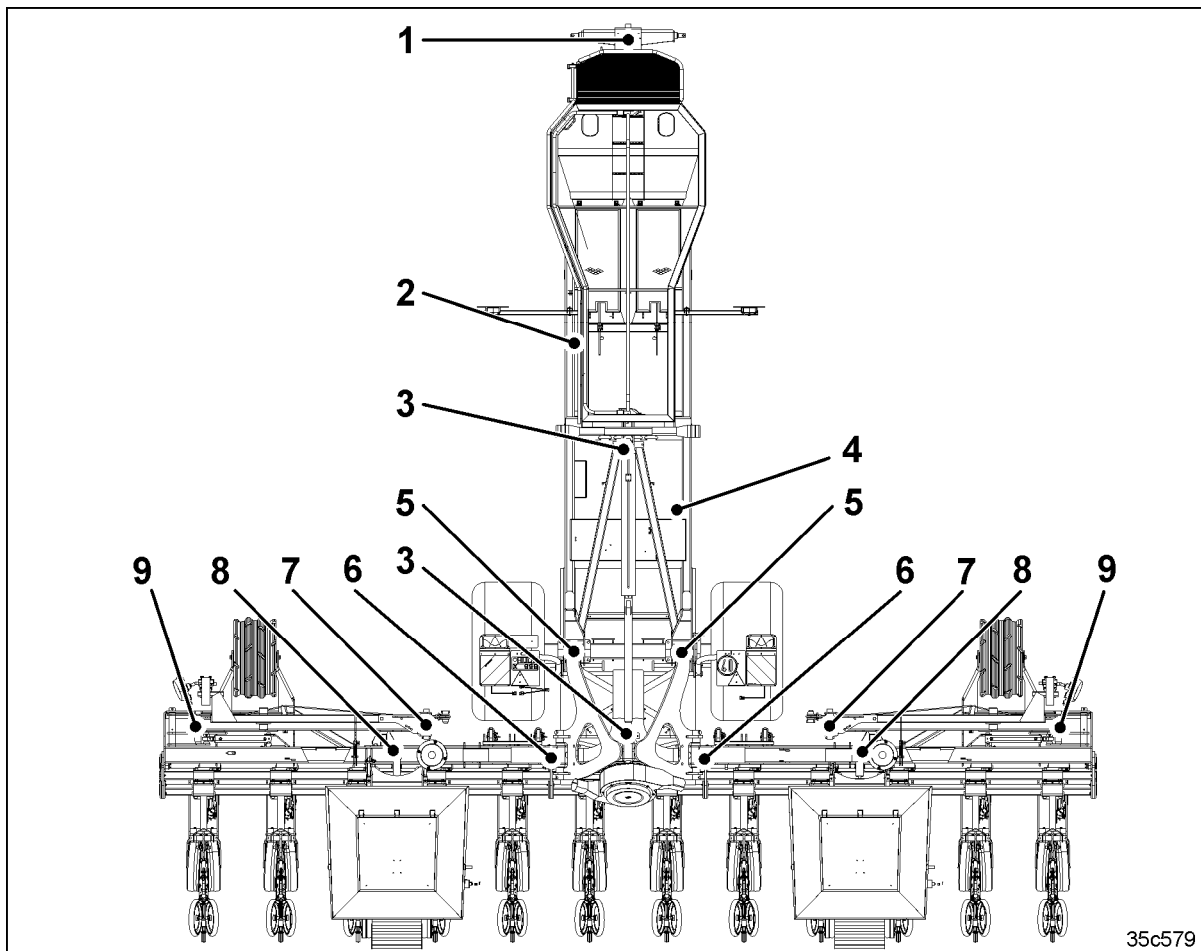


Fig. 296

Fig. 296/...	Assembly group:	Quantity	see Figure	Lubrication interval [h]
1	Tensioned crosspiece	3	Fig. 297	25
2	Parking brake (not shown)	1	Fig. 304	25
3	Rear frame hydraulic cylinder	1	Fig. 299 - Fig. 300	25
4	Tractor wheel mark eradicator (not shown)	2	Fig. 310	25
5	Rear frame folding	2	Fig. 298	25
6	Implement section folding	4	Fig. 302	25
not shown	Implement section hydraulic cylinder	2	Fig. 301	25
7	Track marker outer folding	6	Fig. 307 - Fig. 309	25
8	Coulter pressure cylinder pivot point	8/16	Fig. 303	25
9	Track marker inner folding	12	Fig. 305 - Fig. 306	25
not shown	Axle	see section 12.5, Seite 213		

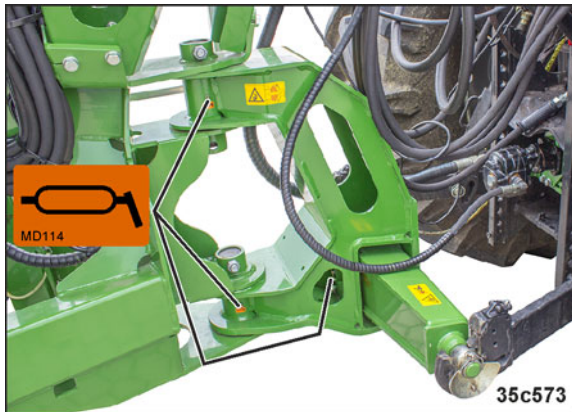


Fig. 297

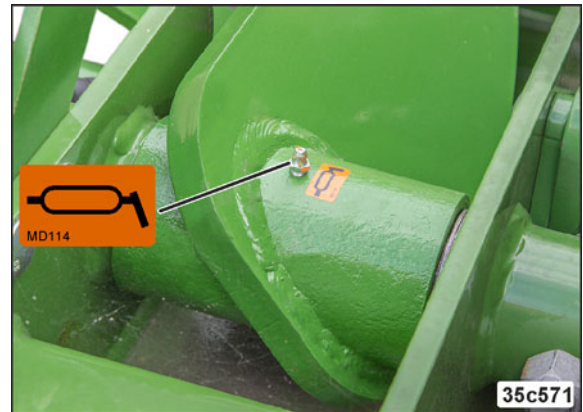


Fig. 298



Fig. 299

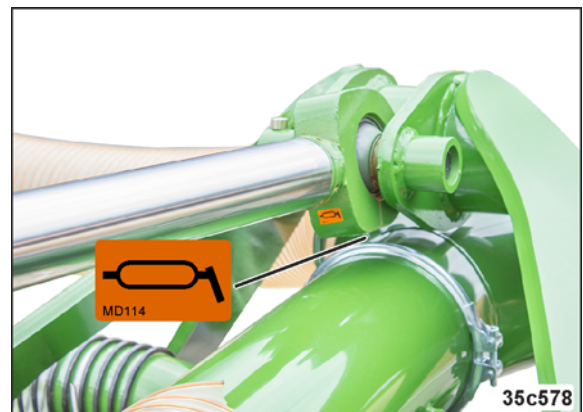


Fig. 300

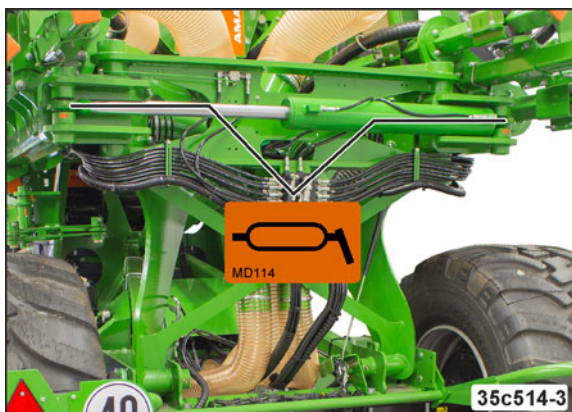


Fig. 301

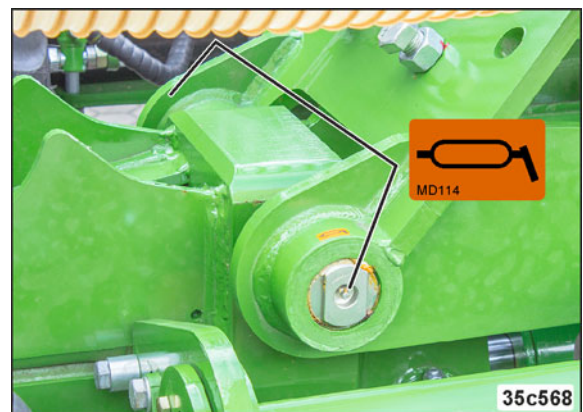


Fig. 302

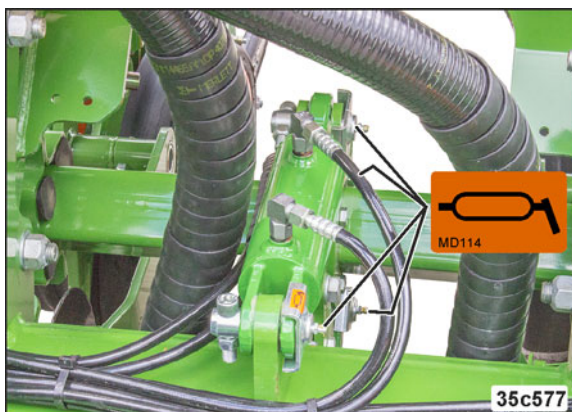


Fig. 303

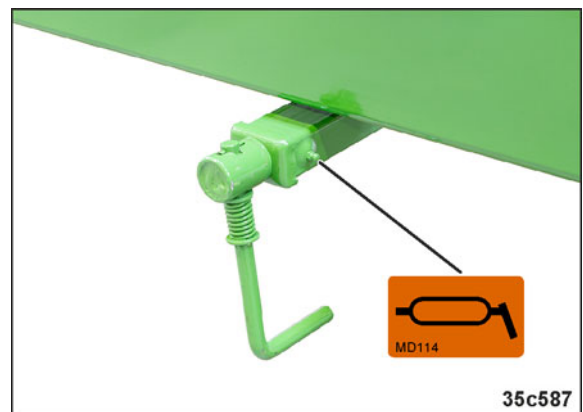


Fig. 304

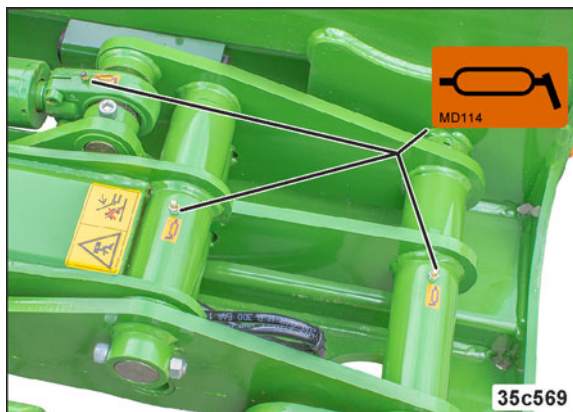


Fig. 305

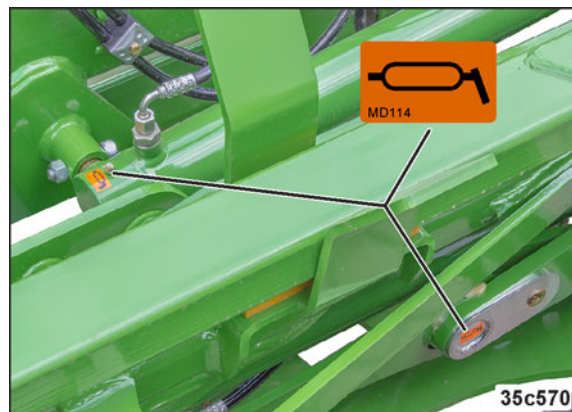


Fig. 306

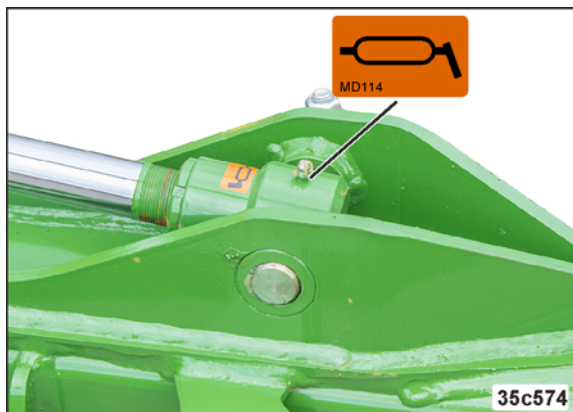


Fig. 307

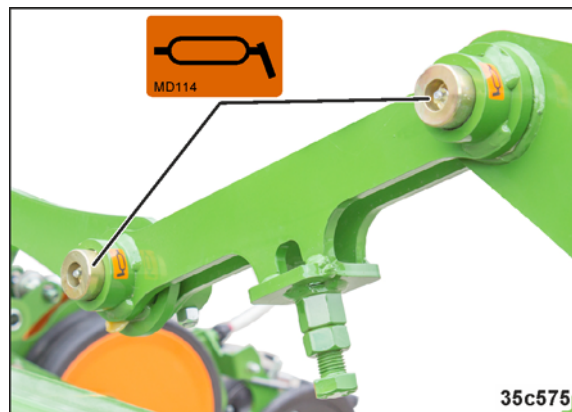


Fig. 308



Fig. 309

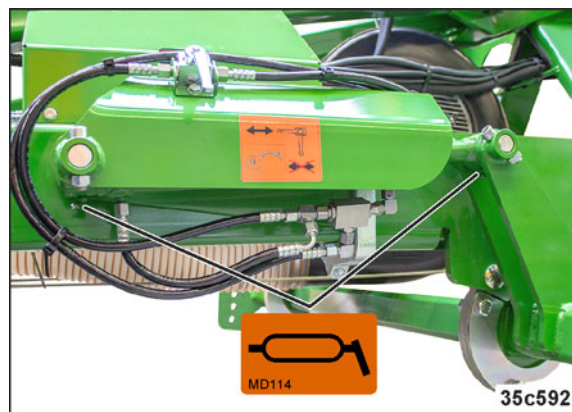


Fig. 310

12.5 Maintenance schedule – overview



Carry out maintenance work when the first interval is reached.

The times, continuous services or maintenance intervals specified in any third party documentation shall have priority.

Initial operation	Before initial commissioning	Specialist workshop	Check and service the hydraulic hose lines. This inspection has to be recorded by the operator.	Section 12.5.16
			Checking the oil level in the Vario gearbox	Section 12.5.8
			Checking inflation pressure of the tyres	Section 12.5.12
	After the first 10 operating hours	Specialist workshop	Check and service the hydraulic hose lines. This inspection has to be recorded by the operator.	Section 12.5.16
		Specialist workshop	Roller chain maintenance	Section 12.5.22
		Specialist workshop	Check all bolted connections for a secure fit.	Section 12.10
		Specialist workshop	Checking the tightening torque of the wheel nuts	Section 12.5.13

Cleaning, maintenance and repairs

<u>Before beginning work</u> (daily)		Visual inspection of the lower link pins	Section 12.5.10
		Visual inspection of the tensioned crosspiece	Section 12.6
<u>hourly</u> (e.g. when refilling a hopper)		Checking the placement depth and grain spacing	Section 8.1.13
		Check and eliminate dirt: <ul style="list-style-type: none"> Fertiliser metering unit Fertiliser hoses Fertiliser distributor head Blower fan intake guard screen (fertiliser) 	
		Remove surplus grains from sealing lips	Section 11.2
<u>During operation</u>		Check the fertiliser distributor head(s) for impurities and clean if necessary (see section "Cleaning the fertiliser distributor head")	Section 12.2.3.1
		Check fertiliser metering units for contamination and clean if necessary (see section "Emptying the fertiliser hopper and the metering unit")	Section 10.6.2
<u>After completion of work</u> (daily)		Cleaning the machine (as required)	Section 12.2
		Remove deposits on the interlocking bar	Section 10.6.1
		Seed dressing deposits may adversely affect the correct operation of the optosensor. Clean the opto-sensors with ISOPRORANOL (alcohol). Do not use any aggressive cleaning agents.	
<u>Each week</u> (at least every 50 operating hours)	Specialist workshop	Check and service the hydraulic hose lines. The inspection has to be recorded by the owner/operator.	Section 12.5.16
		Clean blower fan (Eliminate risk of imbalance).	
	Specialist workshop	Roller chain maintenance	Section 12.5.22

<u>every 2 weeks</u>		Checking inflation pressure of the tyres	Section 12.5.12
		Checking the oil level in the Vario gearbox	Section 12.5.8
<u>every 3 months</u>	Specialist workshop	Service brake system (all variants)	Section 12.7
		On-board hydraulics oil filter change	Section 12.5.9
		Checking the seeding coulter discs	Section 12.5.1
		Adjusting the spacing of the seeding coulter discs	Section 12.5.2
		Adjusting the seeding coulter disc drive	Section 12.5.3
		Replacing the seeding coulter's furrow formers	Section 12.5.4
		Checking the fertiliser coulter's coulter disc	Section 12.5.5
		Checking the fertiliser coulter furrow former	Section 12.5.6
		Checking the wear bushing on the support roller arm	Section 12.5.7
<u>Every 12 months</u>	Specialist workshop	Checking the service brake system for safe operating condition (specialist workshop) This inspection has to be recorded by the operator.	Section 12.7.2
		Dual-circuit pneumatic service brake system: Exterior inspection of the compressed air tank	Section 12.8.1
		Dual-circuit pneumatic service brake system: Checking the pressure in the compressed air tank (specialist workshop)	Section 12.8.2
		Dual-circuit pneumatic service brake system: Leak tightness check (specialist workshop)	Section 12.8.3
		Dual-circuit pneumatic service brake system: Cleaning the line filter	Section 12.8.4
		Servicing the sowing shaft bearing	Section 12.5.11

12.5.1 Checking the seeding coulter discs

1. Loosen the bolt (Fig. 311/1) and remove it.
2. Dismount the support roller bracket (Fig. 311/2) with support roller.
3. Determine the diameter of the coulter discs. If the cutting discs are less than 350 mm in diameter:
→ Replace the coulter discs.
4. Remove the dust caps (Fig. 311/3).
5. Unscrew and remove the central bolts (Fig. 311/4).
6. Pay attention to the number of spacer discs (Fig. 311/5).

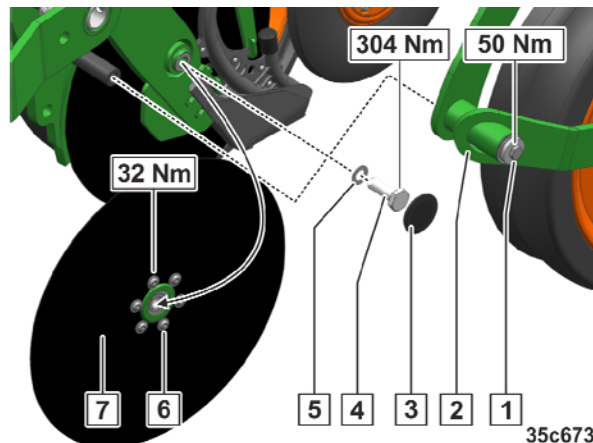


Fig. 311



The central bolts have different thread:

- The right central bolt has right-hand thread
- The left central bolt has left-hand thread

7. Dismount the coulter discs (Fig. 311/7).
8. Unscrew and remove the bolts on the bearing seat (Fig. 311/6).
9. Replace worn coulter discs with new cutting discs.
10. Fit on and tighten the bolts on the bearing seat.
11. Mount new coulter discs.
12. Mount the support roller bracket with support roller.

12.5.2 Adjusting the spacing of the seeding coulter discs

1. Loosen the bolt (Fig. 312/1) and remove it.
2. Dismount the support roller bracket (Fig. 312/3) with support roller.
3. Pay attention to the number of spacer discs (Fig. 312/2).
4. Remove the dust caps (Fig. 312/4).
5. Unscrew and remove the central bolts (Fig. 312/5).



The central bolts have different thread:

- The right central bolt has right-hand thread
- The left central bolt has left-hand thread

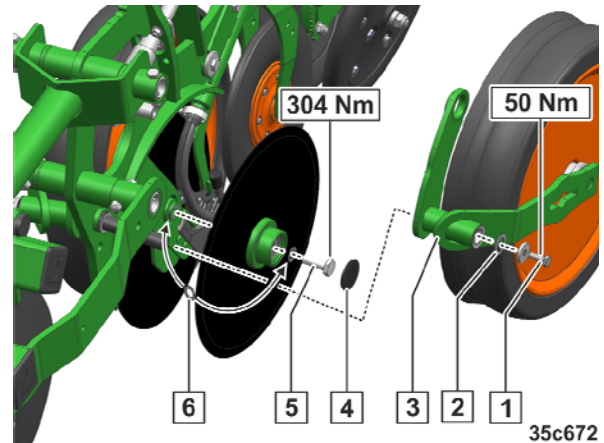


Fig. 312

6. The coulter discs must always sit close to each other with slight pretension.
- Remove or add spacer discs (Fig. 312/6) as required.
7. Mount the spacer discs that are not required on the opposite side of the coulter disc bearing with the central bolt.
 8. Fit on and tighten the central bolt.
 9. Install the dust caps.
 10. Mount the support roller bracket with support roller.

12.5.3 Adjusting the seeding coulter disc drive

1. Loosen the bolt (Fig. 313/1) and remove it.
 2. Dismount the support roller arm with the support roller.
 3. Adjust the spacing with the spacer discs (Fig. 313/2) so that the support roller slightly touches the coulter disc.
- The support roller drives the coulter disc through rotation.
4. Fasten the spacer discs that are not required on the opposite side of the support roller arm using the bolt.
 5. Fit on and tighten the bolt.

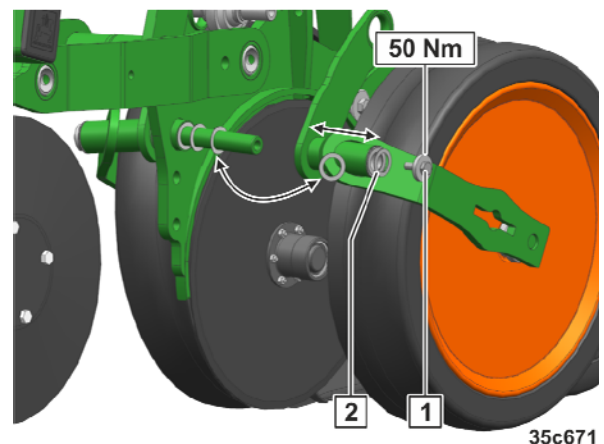


Fig. 313

12.5.4 Replacing the seeding coulter's furrow formers



The furrow formers form the furrow. The furrow formers are subject to wear. A clean furrow is the basis for optimal seed embedding.

1. Loosen the bolt (Fig. 314/1) and remove it.
2. Dismount the support roller arm (Fig. 314/2) with the support roller.
3. Remove the dust caps (Fig. 314/3).
4. Unscrew and remove the central bolts (Fig. 314/4).
5. Uninstall the coulter disc (Fig. 314/5).



The central bolts have different thread:

- The right central bolt has right-hand thread
- The left central bolt has left-hand thread

6. Loosen and remove the seeding tube (Fig. 315/4).
7. Undo the bolt (Fig. 315/2).
8. Undo the bolt (Fig. 315/3).
9. Swivel the rear coulter unit into maintenance position and secure with the bracket (Fig. 315/5).
10. The seeding tube (Fig. 315/1) is swung out of the furrow former.

11. Unscrew and remove the bolts (Fig. 316/1).
12. Dismount the hold-down clamp (Fig. 316/2).
13. Dismount the worn furrow former (Fig. 316/3).
14. Install new furrow former.
15. Install the hold-down clamp.
16. Mount the bolts.
17. Swing the rear coulter unit back into working position and install the bolts.
18. Mount the seeding tube.
19. Mount the coulter disc.
20. Mount the support roller arm with the support roller.

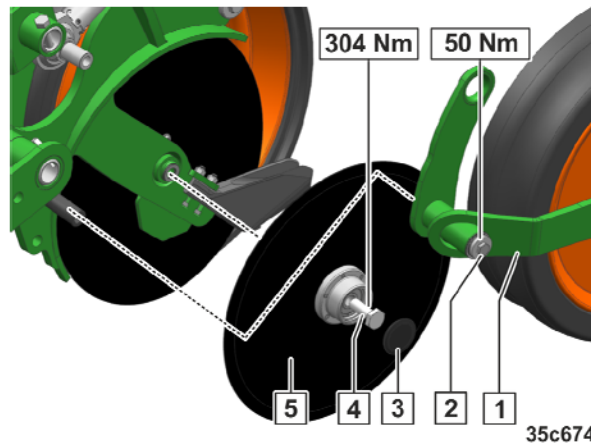


Fig. 314

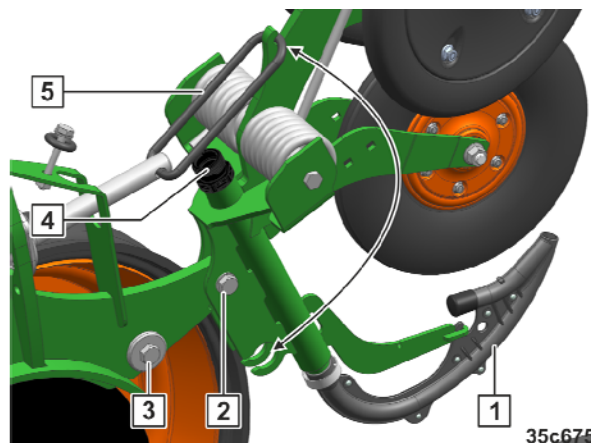


Fig. 315

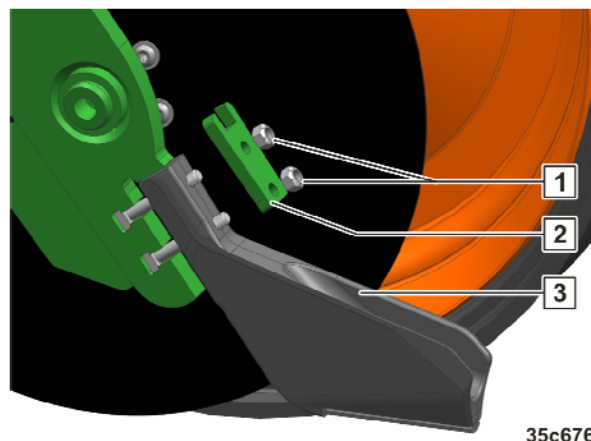


Fig. 316

12.5.5 Checking the fertiliser coulters' coulters disc

1. Determine the diameter of the coulters discs.
2. Replace the cutting discs if the diameter of the coulters disc is less than 360 mm.
3. Unscrew and remove the bolts (Fig. 313/1).
4. Dismount the worn coulters disc (Fig. 313/2).
5. Install the new coulters disc.
6. Install and tighten the bolts.

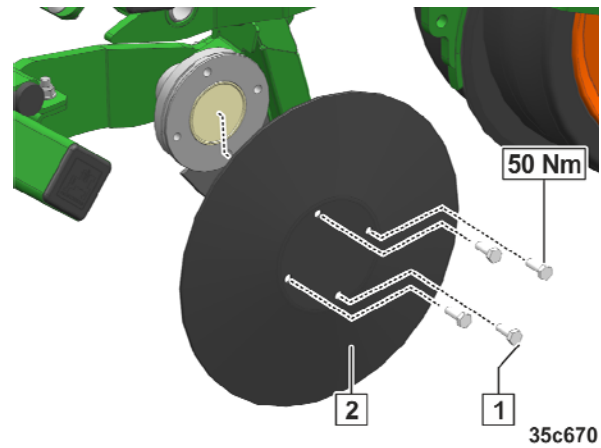


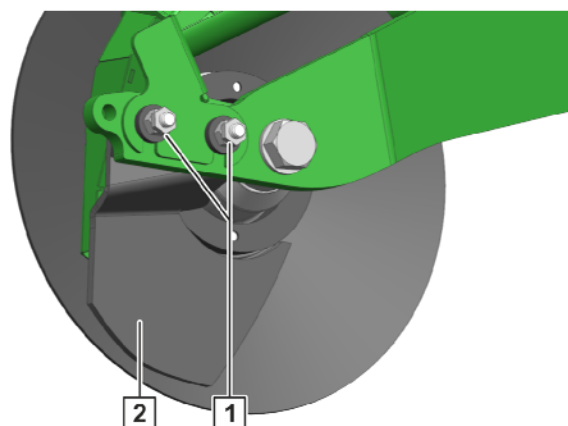
Fig. 317

12.5.6 Checking the fertiliser coulters furrow former



The new furrow former must not protrude too far beyond the edge of the coulter disc. The worn furrow formers can be individually replaced up to a coulter disc diameter of 370 mm.

1. Loosen the nuts (Fig. 318/1) and remove them.
2. Uninstall the worn furrow formers (Fig. 318/2).
3. Mount new furrow formers.
4. Fit on the nuts.
5. Adjust the gap between the furrow former and coulter disc to 1-2 mm by tightening the nuts differently.
6. Lock the nuts.



35c677

Fig. 318

12.5.7 Checking the wear bushing on the support roller arm

1. Check the condition of the wear bushing.
- Replace the wear bushing in a timely manner before the setting spindle damages the support arm.
2. Loosen the bolt (Fig. 319/4) and remove it.
 3. Dismount the support roller arm (Fig. 319/2) with the support roller.
 4. Remove the spot weld on the rear (Fig. 319/3).
 5. Dismount the worn bushing (Fig. 319/1).
 6. Insert a new bushing.
 7. Place spot weld on the rear (Fig. 319/3).
 8. Mount the support roller arm with the support roller.
 9. Fit on and tighten the bolt.

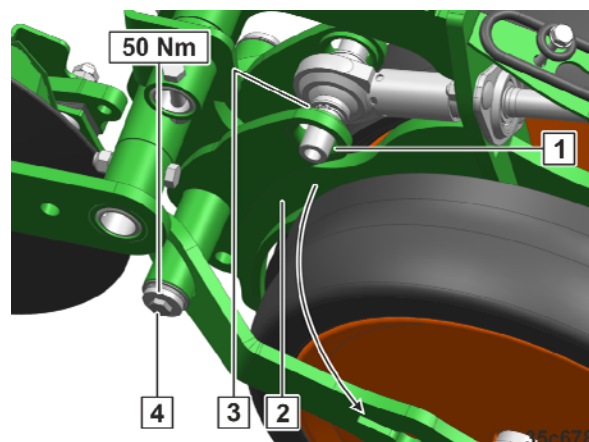


Fig. 319

35c678

12.5.8 Checking the oil level in the Vario gearbox

1. Position the implement on a horizontal surface.
2. Check the oil level.



The oil level must be visible in the oil sight glass (Fig. 320/1).

There is no need to change the oil.

3. Top up the oil if necessary.



The oil filler neck (Fig. 320/2) is used to top up the Vario gearbox.

Refer to the table (Fig. 321) for the grade of transmission oil required.

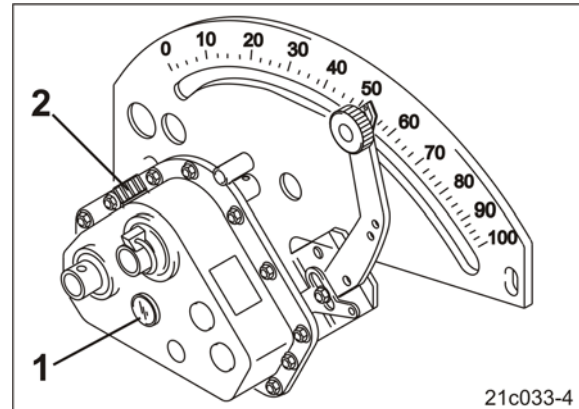


Fig. 320

Hydraulic fluid grades and fill level of the Vario gearbox

Total filling quantity:	0.9 litres
Gear oil (selectable):	Wintershall Wintal UG22 WTL-HM (ex-works)
	Fuchs Renolin MR5 VG22

Fig. 321

12.5.9 On-board hydraulics oil filter change

The on-board hydraulic system has an oil tank with an oil filter change indicator (Fig. 322/1). During operation, the indicator is in the green area.

The indicator changing to the red area indicates that the oil filter must be replaced.

Check the filling level in the oil tank when the implement is parked horizontally. The oil level must be visible in the window (Fig. 322/2).

Top up as needed with the oil brand HLP68 in the oil filling spout (Fig. 322/3).

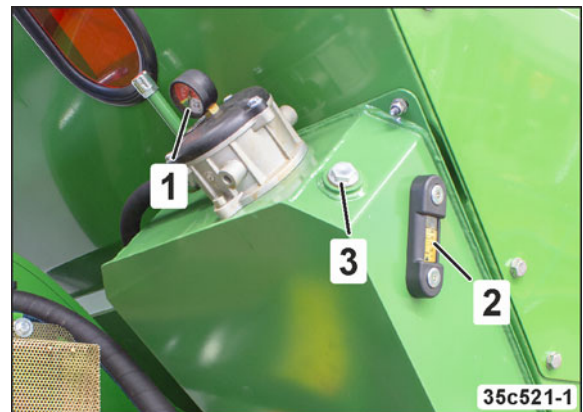


Fig. 322

12.5.10 Visual inspection of the lower link pins



WARNING

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

Check the lower link pin for conspicuous defects whenever the implement is coupled. Replace the drawbar, if there are any clear signs of wear to the lower link pins.

12.5.11 Servicing the sowing shaft bearing

Lightly grease the seat of the sowing shaft bearing with a thin mineral oil (SAE 30 or SAE 40).

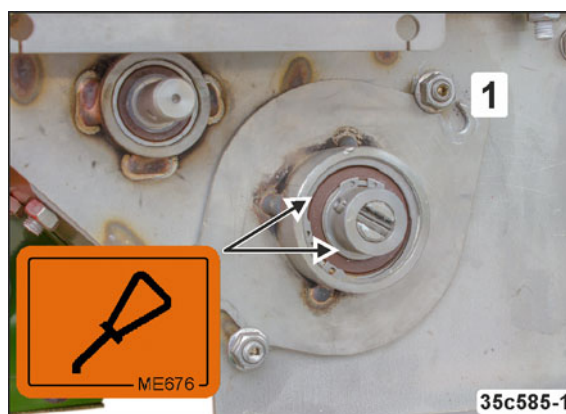


Fig. 323

12.5.12 Checking inflation pressure of the tyres




- The required tyre pressure is dependent on
 - o the tyre size
 - o the tyre load-bearing capacity
 - o the forward speed
- The operational performance of the tyres is reduced
 - o by overloading
 - o if the 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).
- The difference in pressure between the tyres on one axle must be no greater than 0.1 bar.
- The tyre pressure can be raised by up to 1 bar after a fast run or in warm weather. Tyre pressure should never be reduced in this case, as it is then too low when the tyres cool down.

12.5.12.1 running gear tyres

	<ul style="list-style-type: none"> Check the tyre inflation pressure regularly. see section Maintenance schedule – overview, Seite 213).
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	Axle load 6600 kg / speed 40 km/h	
	Tyres	Nominal inflation pressure
	ALLIANCE 380 - 750 / 45 R 26.5 FLOTATION RADIAL	0.8 bar
	BKT FL630 - 750 / 45 R 26.5 FLOTATION RADIAL	1.2 bar
	ALTURA - T422 700 / 50 - 26.5 FLOTATION	0.5 bar
	BKT - 648 700 / 50 - 26.5 16 TL FLOTATION	2.0 bar
	Axle load 6600 kg / speed 25 km/h	
	Tyres	Nominal inflation pressure
	BKT - 270 / 95 R32 AGRIMAX RT 955 136 A8 / B TL	4.0bar
	Axle load 7000 kg / 8500 kg / speed 25km/h	
	Tyres	Nominal inflation pressure
	ALLIANCE 380 - 750 / 45 R 26.5 FLOTATION RADIAL	1.5bar
	BKT FL630 - 750 / 45 R 26.5 FLOTATION RADIAL	1.5bar
	ALTURA - T422 700 / 50 - 26.5 FLOTATION	0.5bar
	BKT - 648 700 / 50 - 26.5 16 TL FLOTATION	2.0bar
	BKT - 270 / 95 R32 AGRIMAX RT 955 136 A8 / B TL	4.0bar

Fig. 324

12.5.12.2 Support wheels

	<ul style="list-style-type: none"> Check the tyre inflation pressure regularly. see section Maintenance schedule – overview, Seite 213).
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	Tyres	Nominal inflation pressure
	400/60-15.5	1.8 bar

Fig. 325

12.5.13 Checking the tightening torque of the wheel nuts (specialist workshop)



- Check the tightening torques of the wheel nuts/bolts regularly (see section Maintenance schedule – overview, Seite 213).
- Using the torque wrench, tighten the wheel nuts across from each other to the required tightening torque.


	Wheel nut	Coating	Torque
	M22x1.5	black	510 Nm
		Dakromet	510 Nm
		Zinc-plated	560 Nm

Fig. 326

12.5.14 Relieving the hole covering rollers

Fig. 327/...

- (1) Tension spring
- (2) Actuation lever for the hole covering rollers
- (3) Relief pin in working position (hole covering rollers are pre-tensioned)



To ensure concentricity of the hole covering rollers, relieve them before longer periods of non-use.

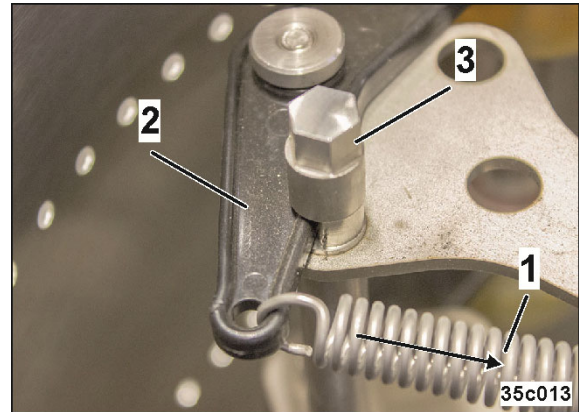


Fig. 327

1. Dismount the singling drum (see section "Removing/installing the singling drum", Seite 207).
2. Turn in the relief pins (Fig. 328/1) by approx. half a turn

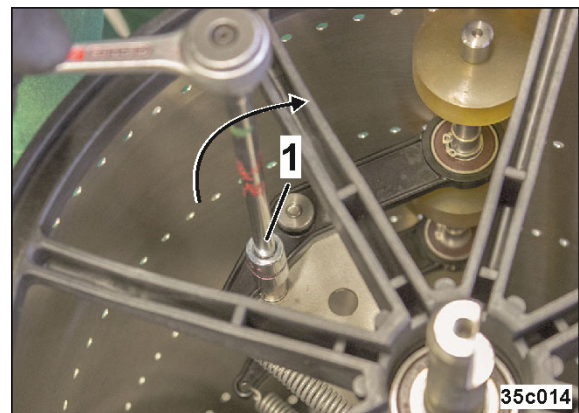


Fig. 328

3. The groove (Fig. 329/1) must be completely released from the actuation lever (Fig. 327/2), the relief pin is in parking position (hole covering rollers are tension-free).

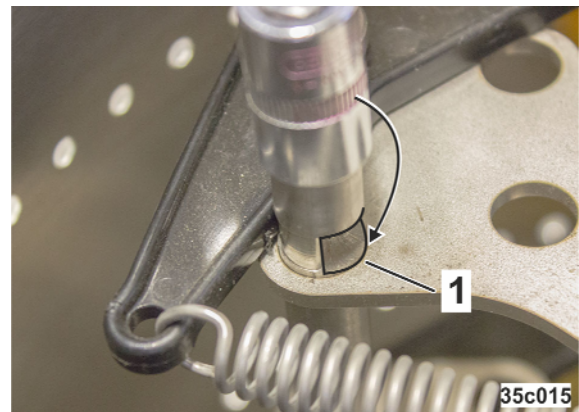


Fig. 329

4. The actuation levers (Fig. 327/2) are swivelled towards the turning axle on one side, and there is space between the hole covering rollers and the singling drum (Fig. 330/1).
5. Offload on both sides of the singling drum.

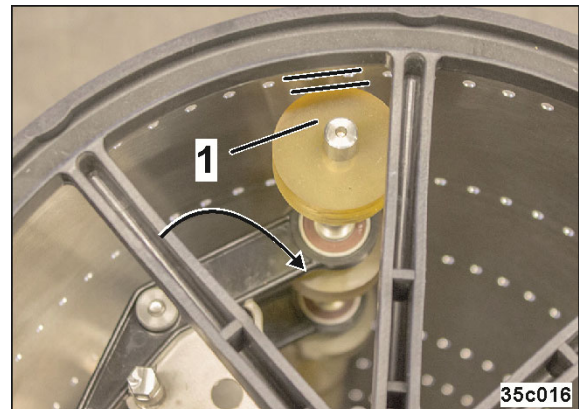


Fig. 330

12.5.15 Pretensioning the hole-covering rollers

Fig. 331/...

- (1) Tension spring
- (2) Actuation lever for the hole covering rollers
- (3) Relief pin in working position (hole covering rollers are pre-tensioned)

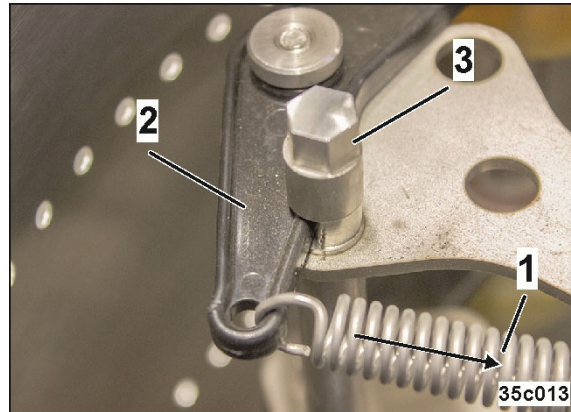
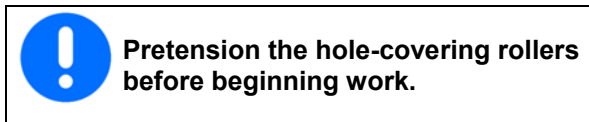


Fig. 331

1. Place the hole-covering rollers (Fig. 332/1) on the singling drum.

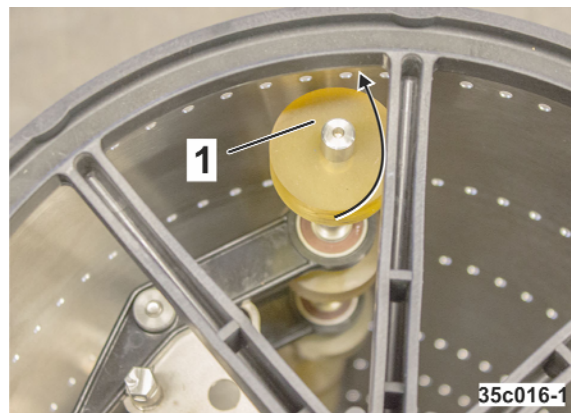


Fig. 332

2. Dismount the singling drum (see section "Removing/installing the singling drum", Seite 207).
3. Turn in the relief pins (Fig. 333/1) by approx. half a turn

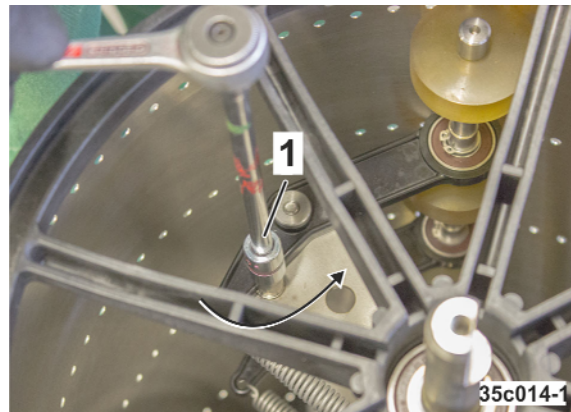


Fig. 333

4. The actuation lever must completely lock in place in the groove (Fig. 334/1).
 5. Pretension both sides of the singling drum.
- The hole-covering rollers rest on the singling drum.

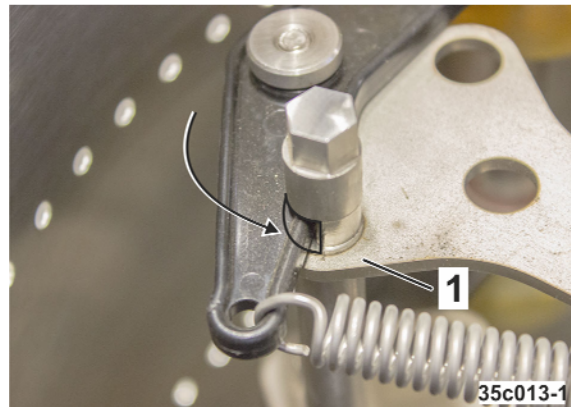


Fig. 334

12.5.16 Hydraulic system (specialist workshop)



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!



- When connecting the hydraulic hose lines to the hydraulic system of connected implements, 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 lines checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose lines if they are damaged or worn. Only use our 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 aging, thus limiting the duration 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 lines made of thermoplastics, other guide values may be decisive.
- Dispose of old oil in compliance with regulations. 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.

12.5.16.1 Labelling of hydraulic hose lines

The valve chest identification provides the following information:

Fig. 335/...

- (1) Manufacturer's marking on the hydraulic hose line (A1HF)
- (2) Date of manufacture of the hydraulic hose line (12/02 = year/month = February 2012)
- (3) Maximum permitted operating pressure (210 bar).

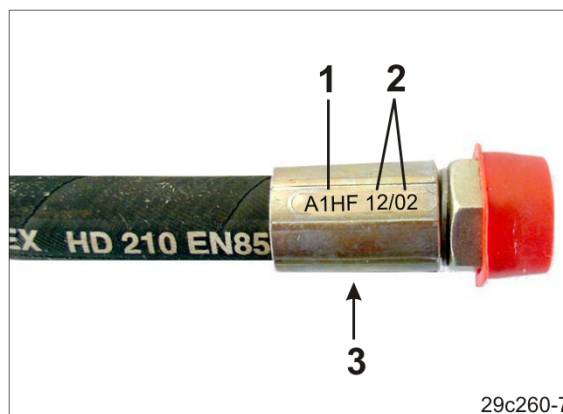


Fig. 335

12.5.16.2 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.

12.5.16.3 Inspection criteria for hydraulic hose lines



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

Replace hydraulic hose lines, on determining any of the following during the inspection:

- 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 depressurized and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
- Leak points.
- Damage or deformation of the hose assembly (sealing function restricted); minor surface damage is not a reason for replacement.
- Movement of the hose out of the valve chest.
- Corrosion of valve chest, reducing the function and strength rating.
- Installation requirements not complied with.
- Life span of 6 years has been exceeded.

The date of manufacture of the hydraulic hose line on the valve chest plus six years is decisive. If the date of manufacture on the assembly is "2012", then the hose should not be used after February 2018. For more information, see "Labelling of hydraulic hose lines".

12.5.16.4 Installation and removal of hydraulic hose lines



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

- Only use original AMAZONE hydraulic hose lines.
- Ensure cleanliness.
- You must always install the hydraulic hose lines so that, in all states of operation:
 - 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 over-tensioned.
- Fix the hydraulic hose lines to the intended fixing points. There, avoid hose clips, which impair the natural movement and length changes of the hose.
- It is forbidden to paint over hydraulic hose lines!

12.5.17 Checking the brake drum for dirt (specialist workshop)



CAUTION

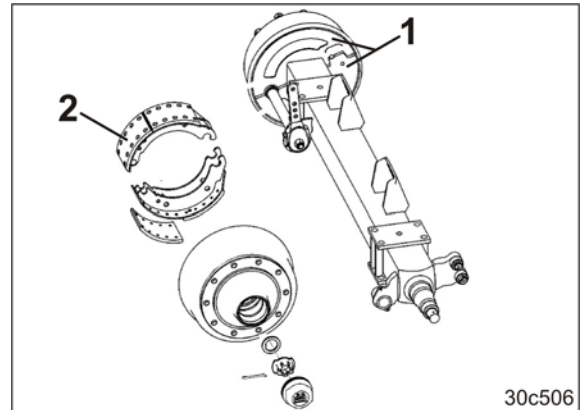
Penetrating dirt may clog the brake linings (Fig. 336/2), which considerably reduces the braking power.

Danger of accident!

If there is dirt in the brake drum, the brake linings must be checked by a specialist workshop.

For this purpose, the wheel and brake drum must be detached.

1. Unscrew the two cover plates (Fig. 336/1) on the inside of the brake drum.
2. Remove any dirt and plant residue.
3. Refit the cover plates.



30c506

Fig. 336

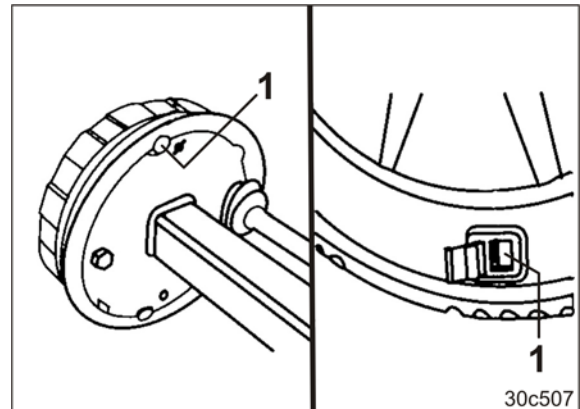
12.5.18 Brake lining inspection (specialist workshop)

Replace the brake lining when the remaining lining thickness is

- 5 mm for riveted linings.
- 2 mm for bonded linings.

Remove the rubber plug (Fig. 337/1) in the inspection hole.

Then reinsert the rubber plug.



30c507

Fig. 337

12.5.19 Adjusting the wheel brake on the slack adjuster (specialist workshop)

Measuring the stroke of the long-stroke diaphragm cylinder push rod:

1. Manually actuate the slack adjuster (Fig. 338) in the push direction.
2. Measure the stroke (Fig. 338/a) of the long-stroke diaphragm cylinder push rod.

The stroke (Fig. 338/a) can be a maximum of 35 mm.

Readjust the wheel brake if the stroke is longer than 35 mm.

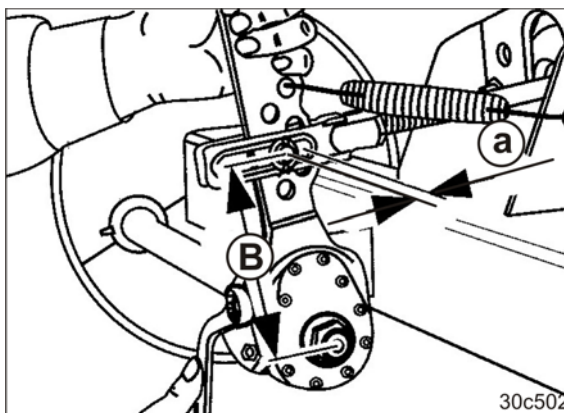


Fig. 338

Adjusting the wheel brake on the slack adjuster:

Adjust the wheel brake via the slack adjuster's hexagon nut (Fig. 339/1).

Adjust the stroke (Fig. 338/a) to 10-12 % of the brake lever length (Fig. 338/B).

Example:

Lever length B	=	150 mm
Stroke a	=	15-18 mm

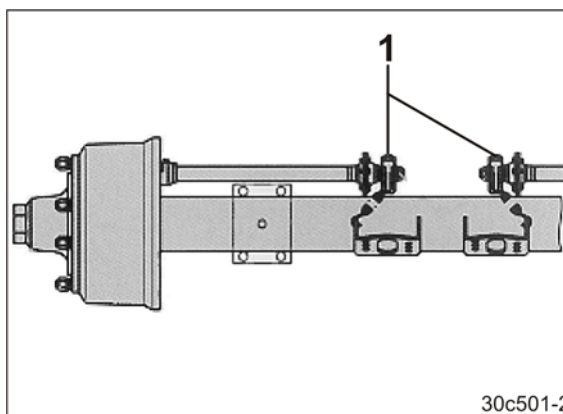


Fig. 339

12.5.20 Checking/adjusting the bearing clearance of the wheel hubs (specialist workshop)

Checking the bearing clearance of the wheel hubs:

1. Raise the axle until the tyres come free.
2. Release the brake.
3. Place two levers between the tyre and the ground and check the bearing clearance.
4. Adjust the bearing if there is a noticeable bearing clearance.

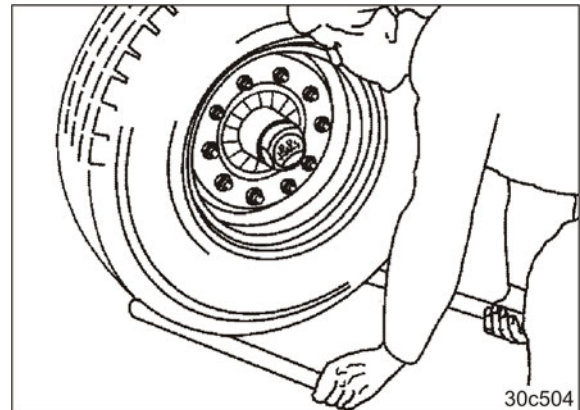


Fig. 340

Adjusting the bearing clearance of the wheel hubs:

1. Remove the dust or hub cap.
2. Remove the cotter pin from the axle nut.
3. Tighten the wheel nut by simultaneously turning the wheel until the run of the wheel hub is lightly braked.
4. Turn the axle nut back to the next possible lynch pin hole. If there is congruence, to the next hole (max. 30°).
5. Replace the cotter pin with an identical one.
6. Insert the cotter pin and bend it up slightly.
7. Replenish the dust cap with some long-term grease and pound or screw it into in the wheel hub.

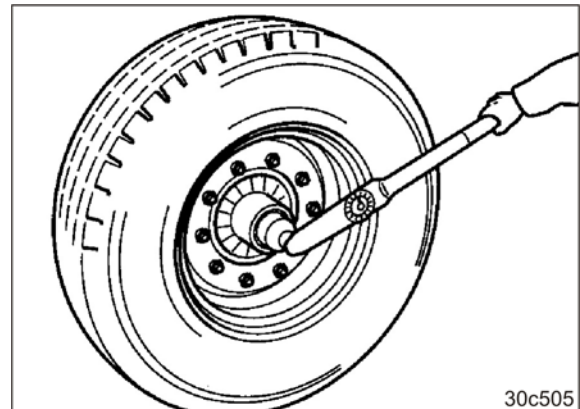


Fig. 341

12.5.21 Lubricating the axles

Fig. 342/...	Description	No.	Lubri- cation interval
1	Brake shaft bearings	4	200
2	Automatic slack adjuster	2	1000
3	Renew the wheel hub bearing grease (Check for wear on the taper roller bearings)	2	1000

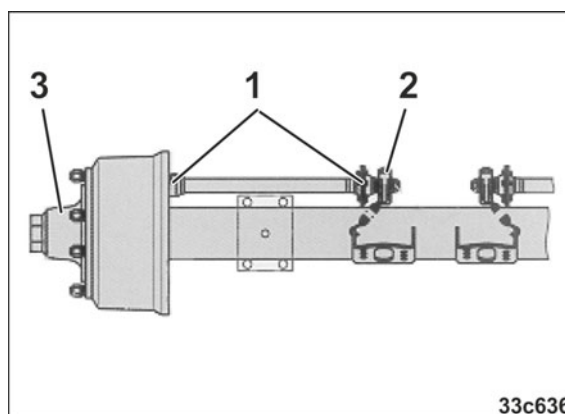


Fig. 342



Use only lithium-soap-based grease with a drop point above 190° C.



DANGER

Grease and oil must not get into the brake.

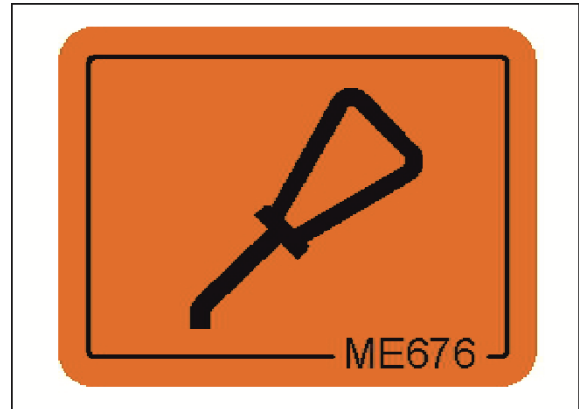
The cam bearing for the brake is, depending on the series, not sealed.

12.5.22 Roller chains and chain cogs

The roller chain lubrication points on the implement are marked with a sticker.

On all roller chains, at the end of the planting season

1. Cleaning (including the chain cogs and the chain tensioner).
2. Condition checked.



Please observe the following points when lubricating the chains:

- Lubricate the chain links, especially in the area of deflection.
- Do not apply extra "top-up" lubrication to the chain with tough lubricants since the joints are "sealed" against re-lubrication and dirt particles increasingly accumulate on the chain.
- If possible, release the tension on the chain during the lubrication and move it in the links.
- Lubricate in doses, do not allow large quantities of the lubricant to drop from the chain.
- Clean the soiled chain with diesel, petrol or cleaning spirit using a brush.
- Use low-viscosity oils for the relubrication (SAE10 or SAE15).
- Do not use high-pressure cleaners.

12.6 Visual inspection of the tensioned crosspiece



WARNING

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

Check the tensioned crosspiece and the drawbar for visible defects whenever the implement is coupled. Have any visible defects fixed without delay in a specialist workshop.

Fig. 343/...

- (1) Thorough visual inspection of the drawbar for the beginning of cracks.

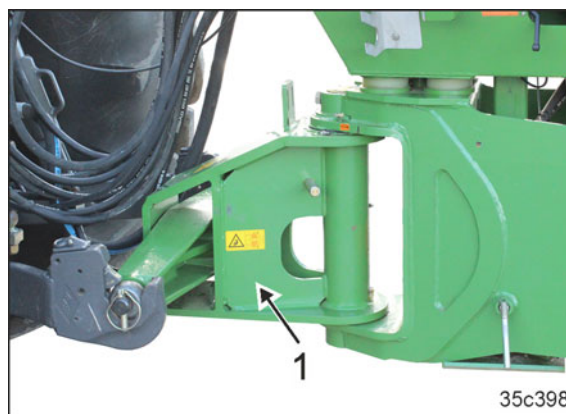


Fig. 343

12.7 Service brake system (all variants)

valid for

- Dual-circuit pneumatic service brake system
- Hydraulic service brake system

12.7.1 General visual inspection of the service brake system

Perform the general visual inspection at regular intervals (see the section Maintenance schedule – overview, Seite 213)

Test points:

- Piping, hose lines and coupling heads must not be externally damaged or rusted.
- Connecting rods, e.g. on fork heads, must be properly secured, easy to move, and not worn out.
- Ropes and cables
 - must be properly run
 - must have no visible cracks
 - may not be knotted.
- Check the brake cylinder piston stroke.

12.7.2 Checking the service brake system for safe operating condition (specialist workshop)

Have the service brake system checked for safe operating condition by a specialist workshop at regular intervals (see the section Maintenance schedule – overview, Seite 213).



In Germany Section 57 of the regulation BGV D 29 of the industrial injuries mutual insurance organisation requires as follows: the keeper has to have vehicles tested as required, however at least once annually, by an expert as to their safe operating condition.

Observe the legal regulations for all service work. Only genuine spare parts may be used.

12.8 Dual-circuit pneumatic service brake system

12.8.1 Exterior inspection of the compressed air tank

If the compressed air tank moves in the tensioning belts (Fig. 344/1)

→ tension or replace the compressed air tank.

If the compressed air tank has any external corrosion damage or is damaged

→ replace the compressed air tank.

If the rating plate (Fig. 344/2) is rusty, loose or the rating plate is missing from the compressed air tank:

→ replace the compressed air tank.



Fig. 344



The compressed air tank may be replaced in a specialist workshop only.

12.8.2 Checking the pressure in the compressed air tank (specialist workshop)

1. Connect a pressure gauge to the test connection on the compressed air tank.
2. Run the tractor engine (approx. 3 mins.) until the compressed air tank has filled.
3. Check whether the pressure gauge is displaying the setpoint range 6.0 to 8.1 bar.
4. If the setpoint range is exceeded, go to a specialist workshop.

12.8.3 Leak tightness check (specialist workshop)

Checklist and steps for action:

- Test all connections, pipe, hose and screw unions for seal-tightness.
- Eliminate any abrasion points on pipes and hoses.
- Replace any porous or damaged hoses via a specialist workshop
- The dual-circuit pneumatic service brake system is considered free of leaks if the pressure drop within 10 minutes with the engine switched off is no greater than 0.10 bar, i.e. about 0.6 bar per hour.

If the values are exceeded, go to a specialist workshop.

12.8.4 Cleaning the line filter

The dual-circuit pneumatic braking system has a line filter (Fig. 345/3) for the brake and supply line in each of the coupling heads.

Cleaning the line filters:

1. Remove the bolts (Fig. 345/1) and dust cap
2. Remove the bolts (Fig. 345/2), open the coupling head
3. Remove the gasket and filter insert, clean the filter insert with petrol or thinner (rinse out) and dry with compressed air.
4. Reassemble in the inverse sequence and make sure that the O-ring seal is not twisted.
5. Observe the tightening values of the bolts!
Fig. 345/2, 2 Nm
Fig. 345/1: 5 Nm

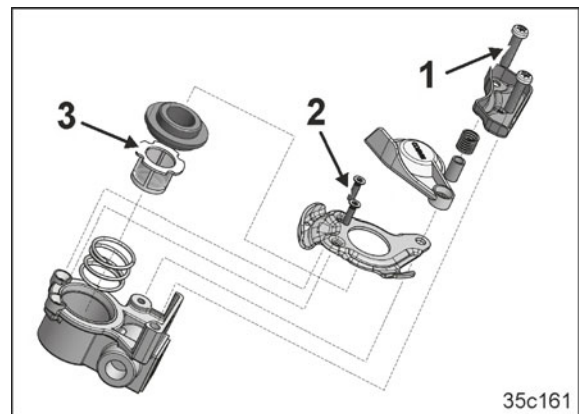


Fig. 345

12.9 Hydro-pneumatic pressure reservoir (specialist workshop)



WARNING

Risk of injury when working on the hydraulic system with pressure reservoir.

Work on the hydraulic block and hydraulic hoses with the pressure accumulator connected may only be performed by specialist personnel.

Before dismounting hydraulic components, relieve the pressure in the pressure accumulator.

The implement can have a pressure tank that is fitted with the hydraulic service brake system.

In the event of a repair observe the following:

The hydraulic system and the pressure tank (Fig. 346/1) connected to it are under a constant high pressure (approx. 50 bar).

In the event of repairs, the following tasks may only be performed in a specialist workshop with suitable tools:

- Removing the hydraulic hose lines or unscrewing or opening the pressure tank (Fig. 346/1)
- Repair work on the electro-hydraulic control block.

For all work on the pressure tank and the hydraulic system connected to it observe the standard EN 982 (safety requirements for fluid systems).

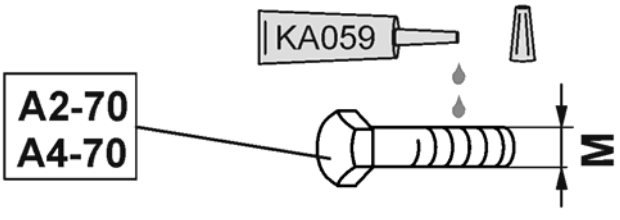



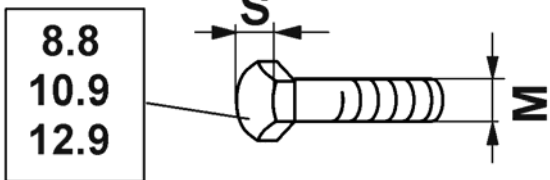
Fig. 346

Maintenance work on the pressure reservoir:

- Check the pre-charge pressure of the refillable pressure reservoir.
(every 2 years, safety-relevant pressure reservoir: every year)
- Visual check of the connections for firm seating and leaks, check fastening elements.
(every 2 years, safety-relevant pressure reservoir: every year)

12.10 Bolt tightening torques

												
M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
	2.3	4.6	7.9	19.3	39	66	106	162	232	326	247	314

				
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



Tightening torques of the wheel and hub screws [see Table (Fig. 326), Seite 224].

13 Hydraulic diagram

13.1 Hydraulic diagram for EDX 9000-TC

Fig. 347/...	Description	Fig. 347/...	Designation
0010	Tractor hydraulics	0300	Rear distributor
0020	2 cable ties, yellow	0310	ED coulter pressure left
0030	1 cable tie, yellow	0320	Fertiliser coulter pressure left
0040	2 cable ties, blue	0330	Metering unit height adjustment left
0050	1 cable tie, green	0340	Metering unit height adjustment left
0060	2 cable ties, green	0350	Throttle check valve
0070	1 cable tie, red	0360	Track marker, left 1
0080	2 cable ties, red	0370	Throttle check valve
0090	Blower fan drive 11 ccm	0380	Track marker, left 2
0100	Control block folding - coulter pressure	0390	Control block folding - coulter pressure II
0120	Control valve right	0400	Section pressure
0130	Control block - track marker	0410	ED coulter pressure
0140	Star wheel lifting	0420	Fertiliser coulter pressure
0141	Relief valve (only for 16-20 rows)	0430	Section pressure - loading board
0150	Load-lowering brake valve	0440	ED coulter pressure - loading board
0160	Lift-out, 12-14 rows GA220, 16-20 rows GA210	0450	Fertiliser coulter pressure - loading board
0170	Lamp folding control valve / check valve	0460	Ventilation filter
0180	Lamp folding control valve	0470	Return filter
0190	Manual directional valve	0480	Radiator
0200	Throttle check valve	0490	Oil tank
0210	Track marker, right 1	0500	PTO pump
0220	Throttle check valve	0510	Blower fan drive
0230	Track marker, right 2	0600	Filling auger
0240	Metering unit height adjustment right	0610	Throttle
0250	Metering unit height adjustment right	0620	Lamp folding control valve
0260	Fertiliser coulter pressure right	0630	Swivel auger in / out
0270	ED coulter pressure right	0640	Throttle
0280	Throttle non-return valve, folding	0650	Throttle
0290	Section folding system	0660	Swivel locking block in / out
		0670	Auger drive

All position specifications in direction of travel

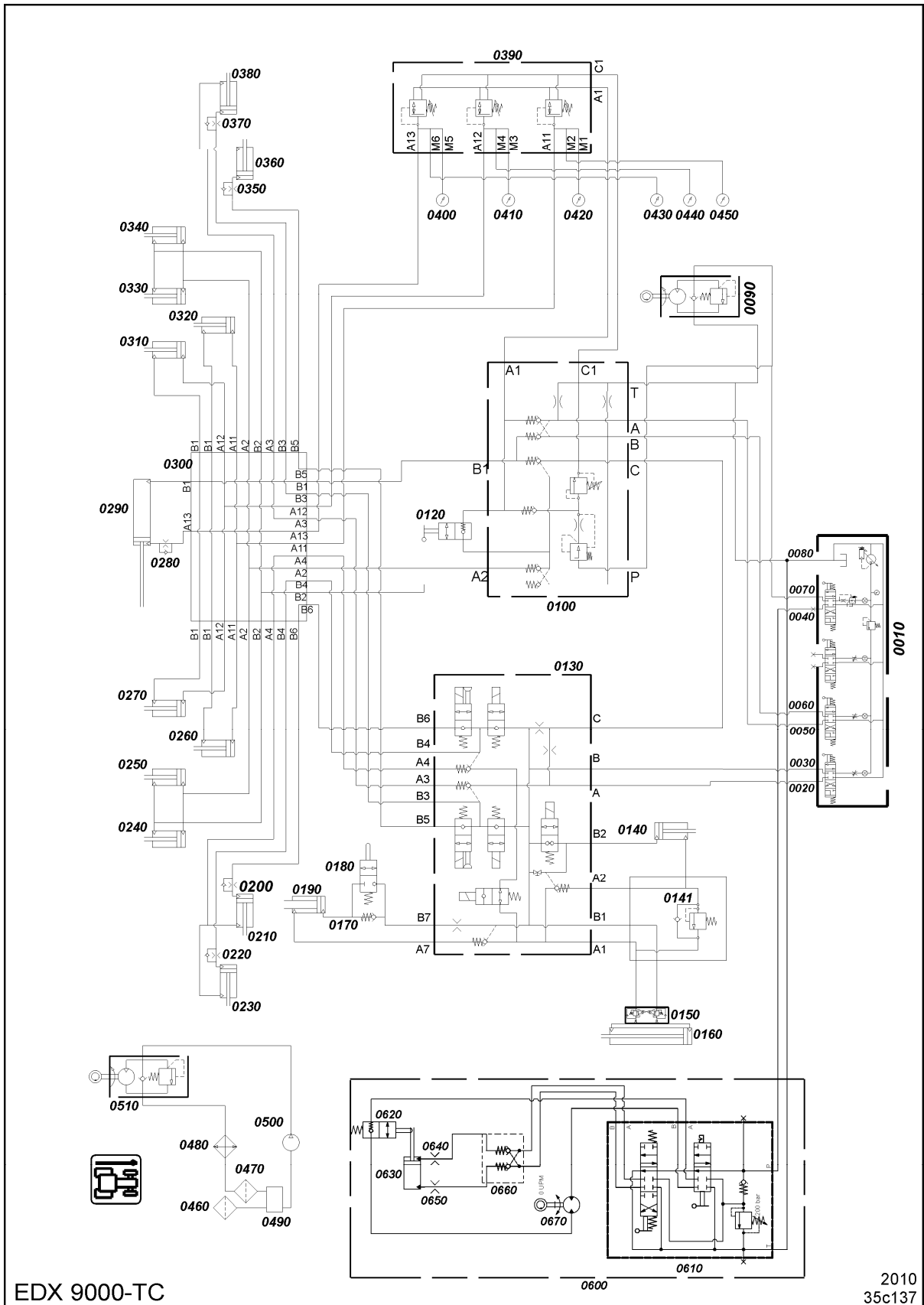


Fig. 347

14 Notes



Space for your notes:

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