

Operating Manual

AMAZONE

Seed drills

AD 2500/3000 Special

AD 3000/3500/4000 Super



MG3818
BAH0042-3 08.14

Please read this operating
manual before
commissioning.
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 should go into the mind of a thing or make himself familiar with every part of the machine and to get acquainted with its handling. Only this way, you would be satisfied both with the machine as also with yourself. To achieve this is the purpose of this instruction manual.

Leipzig-Plagwitz 1872. Rud. Stark.

Identification data

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

Implement ID No.:
(10-digit)

Type:

AD

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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Dear Customer,

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

On receiving the 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 signalled immediately.

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

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

Should you have problems or queries, please consult this operating manual or give us a call.

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

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1 User Information

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

1.1 Purpose of the document

This operating manual

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

1.2 Locations in the operating manual

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

1.3 Diagrams

Instructions and responses

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

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

Lists

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

- Point 1
- Point 2

Item numbers in diagrams

Numbers in round brackets refer to the item numbers in the diagrams. The first number refers to the diagram 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 been instructed 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.

If you still have queries, please contact the manufacturer.

Obligations of the user

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

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

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

Risks in handling the implement

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

- the health and safety of the user or third parties,
- the implement,
- 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 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 Representation of safety symbols

Safety instructions are indicated by the triangular safety symbol and the highlighted signal word. The signal word (danger, warning, caution) describes the severity of the risk, and carries the following meaning:

**DANGER**

Indicates an immediate high risk which will result in death or serious physical injury (loss of body parts or long term damage) if not avoided.

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

**WARNING**

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

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

**CAUTION**

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

**IMPORTANT**

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

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

**NOTE**

Indicates handling tips and particularly useful information.

These instructions will help you to use all the functions of your machine 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 machine is operated.
- Must always be easily accessible for the user and maintenance personnel.

Check all the available safety equipment regularly.

2.4 Safety and protection equipment

Before 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 machine. The operator must clearly specify the responsibilities of the people charged with operation and maintenance work.

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

| Person Activity | Person specially trained for the activity ¹⁾ | Trained person ²⁾ | Persons 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⁾ People with specialist technical training shall be considered as a specialist. Due to their specialist training and their knowledge of the appropriate regulations, they can evaluate the work with which they have been charged and detect possible dangers.

Comment:

A qualification equivalent to specialist training can be obtained 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 "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 assemblies to lifting gear when carrying out replacement work.

Check all the screw connections for firm seating. 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 modification 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 support 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 approved 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 with solvents.

2.12 User workstation

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

2.13 Warning symbols and other labels on the implement



Always keep all the warning pictograms of the implement clean and in a legible state. Replace illegible warning pictograms. Order warning pictograms from the dealer using the relevant 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. Risk avoidance instructions.

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

Order number and explanation

Warning pictograms

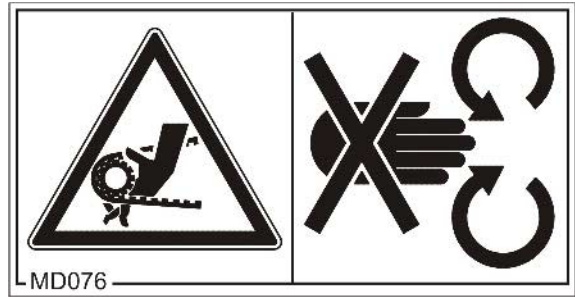
MD 076

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

This hazard can cause extremely serious injuries resulting in the loss of limbs.

Never open or remove protective equipment,

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

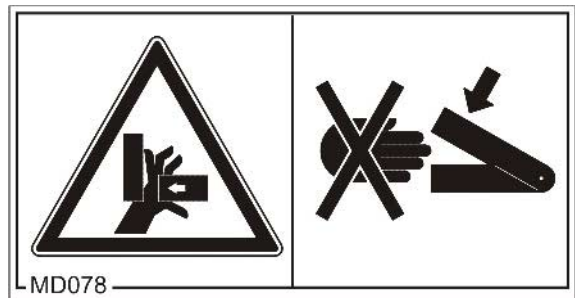


MD 078

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

This hazard can cause extremely serious injuries resulting in the loss of limbs.

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



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.



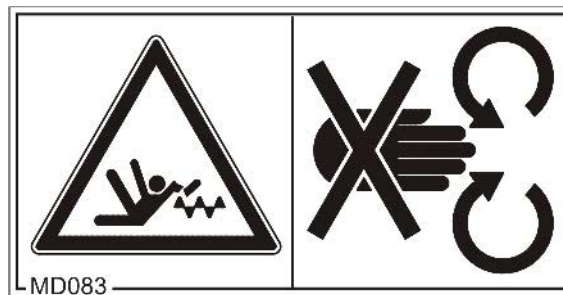
General Safety Instructions

MD 083

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

This hazard can cause extremely serious injuries resulting in the loss of limbs.

Never open or remove protective devices while the tractor engine is running with the PTO 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.

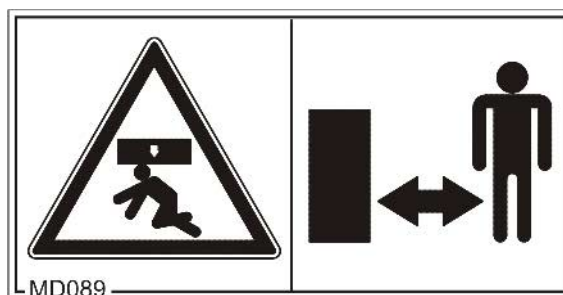


MD 089

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.

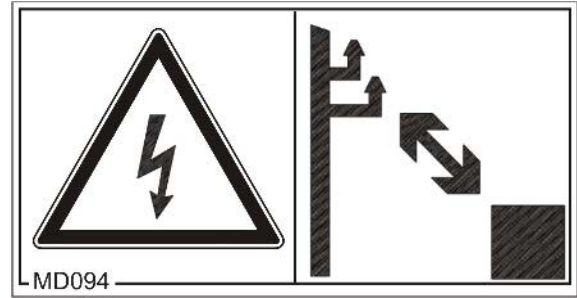


MD 094

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.

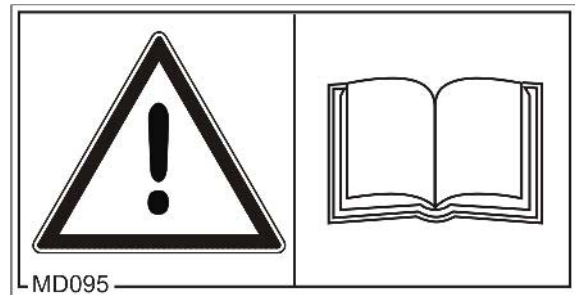


| Nominal voltage | Safety distance from transmission lines |
|-----------------|---|
|-----------------|---|

| | |
|-----------------------|-----|
| 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

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

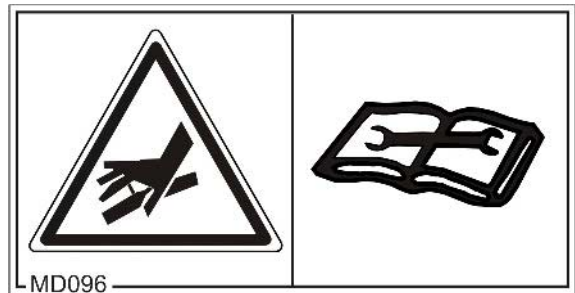


MD 096

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.

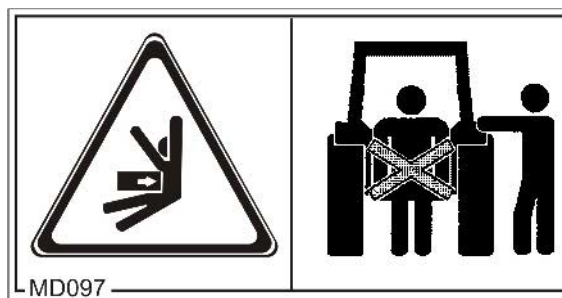


MD 097

Risk of crushing the entire body due to standing in the stroke area of the three-point suspension when the three-point hydraulic system is actuated.

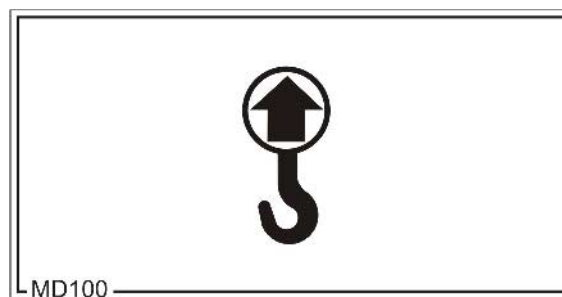
Causes serious, potentially fatal injuries anywhere on the body.

- Personnel are prohibited from entering the stroke area of the three-point suspension when the three-point hydraulic system is actuated.
- Only actuate the operator controls for the tractor's three-point hydraulic system:
 - From the intended workstation.
 - Under no circumstances if you are in the stroke area between the tractor and implement.



MD 100

This symbol indicates the attachment points for lifting gear for loading the implement.



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.



MD 154

Danger of cutting or penetration for other road users caused by transport with unguarded, sharp harrow tines of the seed harrow!

Causes serious, potentially fatal injuries anywhere on the body.

Transportation without a correctly fitted transport guard rail is forbidden.

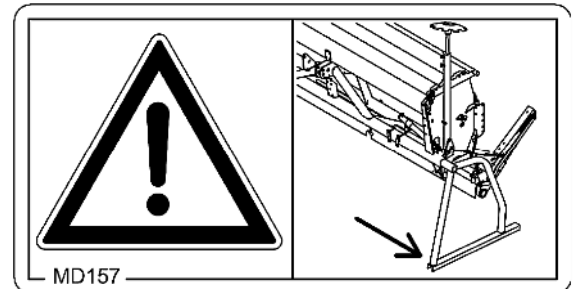
Install the road safety bar provided before starting transportation.



MD 157

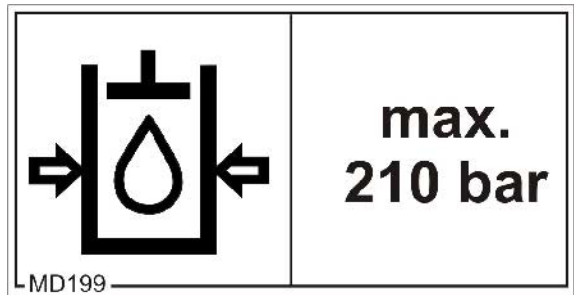
The stability of the machine is guaranteed only if the empty machine is supported on the parking supports.

Always set the empty machine down so that it is stable, on a horizontal parking area with a firm base.



MD 199

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



2.13.1 Positions of warning symbols and other labels

Warning pictograms

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



Fig. 1

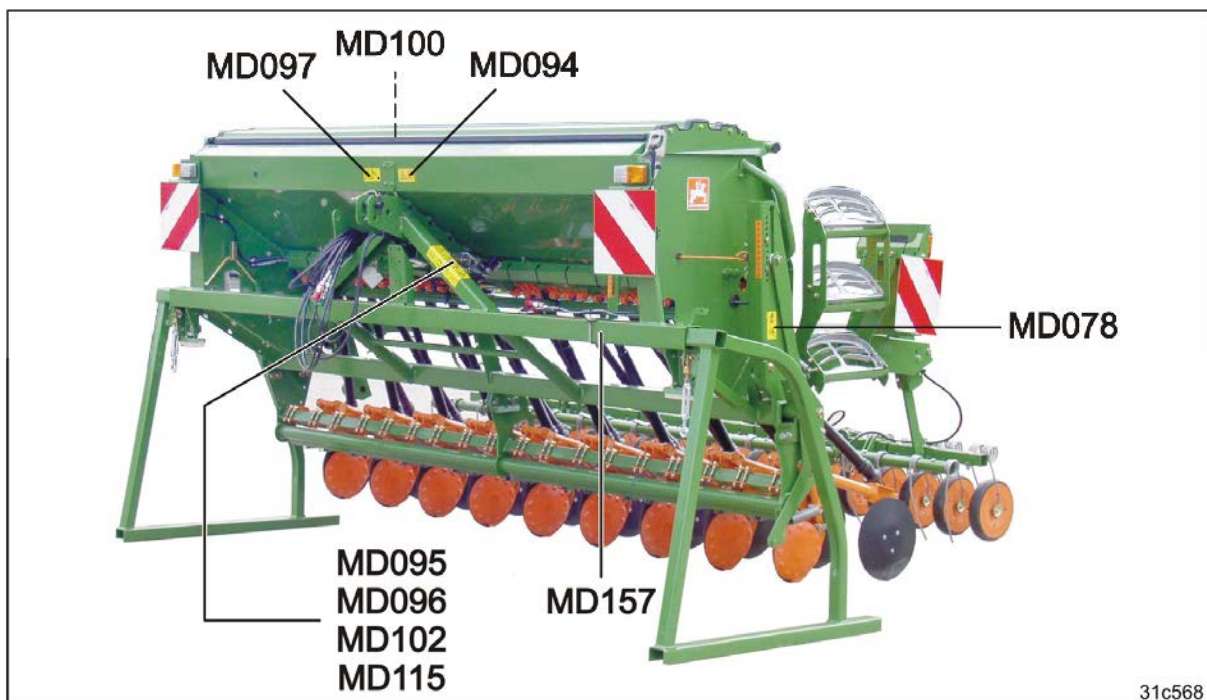


Fig. 2

2.14 Potential risks from not observing the safety instructions

Non-compliance with the safety information

- 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

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

Comply with the accident prevention instructions on the warning symbols.

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

2.16 Safety information for 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.

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 and information signs attached on the implement provide important instructions for safe operation of the implement. 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 connecting 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 approved total tractor weight
 - The approved tractor axle loads
 - The approved load capacities of the tractor tyres
- secure the tractor and the implement against unintentional rolling before coupling or uncoupling the machine.
- It is forbidden for people to stand between the implement to be coupled and the tractor while the tractor is approaching the implement.
Any helpers may only act as guides standing next to the vehicles, and may only move between the vehicles when both are at a standstill.
- Secure the operating lever of the tractor hydraulic system so that

unintentional raising or lowering is impossible, before connecting the implement to or disconnecting the implement from the tractor's three-point hydraulic system.

- When coupling and uncoupling implements, move the support equipment (if available) to the appropriate position (stability).
- When actuating the support equipment, there is a danger of injury from contusion and cutting points!
- Be particularly careful when coupling the implement to the tractor or uncoupling it from the tractor! There are contusion and cutting points in the area of the coupling point between the tractor and the implement.
- It is forbidden to stand between the tractor and the implement when actuating the three-point 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, familiarise yourself with all equipment and operating elements of the implement as well as their functions. It is too late to do this during work implementation!
- 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 approved axle and support loads of the tractor. If necessary, drive only with a partially filled tank.
- 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 parking brake
 - Switch off the tractor engine
 - Remove the ignition key.

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
 - The brake and hydraulic system for visible damage
 - That the parking brake is completely released
 - the function of the brake system
- Ensure that the tractor has sufficient steering and braking power.
Any implements and front/rear weights connected to the tractor influence the driving behaviour and the steering and braking power of the tractor.
- If necessary, use front weights.
The front tractor axle must always be loaded with at least 20% of the empty tractor weight, in order to ensure sufficient steering power.
- Always fix the front or rear weights to the intended fixing points according to regulations.
- Comply with the maximum load of the connected implement and

the approved axle and support loads of the tractor.

- The tractor must guarantee the prescribed brake delay for the loaded vehicle combination (tractor plus connected implement).
- Check the brake power before moving off.
- When turning corners with the implement connected, take the broad load and balance weight of the implement into account.
- Before moving off, ensure sufficient side locking of the tractor lower links, when the implement is fixed to the three-point hydraulic system or lower links of the tractor.
- Before moving off, move all the swivel implement parts to the transport position.
- Before moving off, secure all the swivel implement parts in the transport position against risky position changes. Use the transport locks intended for this.
- Before transporting, secure the operating lever of the three-point hydraulic system against the unintentional raising or lowering of the connected/hitched implement.
- Check that the transport equipment, e.g. lighting, warning equipment and protective equipment, is correctly mounted on the implement.
- Before transportation, carry out a visual check that the top and lower link bolts 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 moving off, always switch off the independent wheel braking (lock the pedals).

2.16.2 Hydraulic system

- The hydraulic system is under a high pressure.
- Ensure that the hydraulic hose lines are connected correctly.
- When connecting the hydraulic hose lines, ensure that the hydraulic system is depressurised on both the implement and tractor sides.
- It is forbidden to block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements which:
 - 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 parking brake
 - Take out the ignition key.
- Have the hydraulic hose lines checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is damaged or worn. Only use 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 ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
- Never attempt to plug leaks in hydraulic hose lines with 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.

2.16.3 Electrical system

- When working on the electrical system, always disconnect the battery (negative terminal).
- Only use the prescribed fuses. If fuses are used that are too highly rated, the electrical system will be destroyed – risk of fire.
- Ensure that the battery is connected correctly - firstly connect the positive terminal and then connect the negative terminal. When disconnecting the battery, disconnect the negative terminal first, followed by the positive terminal.
- Always place the appropriate cover over the positive battery terminal. If there is accidental earth contact, there is a 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 followed.
 - If retrofitting electrical units and/or components on the implement with a connection to the on-board power supply, the user is responsible for checking whether the installation might cause faults on the vehicle electronics or other components.
 - Ensure that the retrofitted electrical and electronic components comply with the EMC Directive in the appropriate version and carry the CE mark.

2.16.4 Attached tools

- When attaching to the three-point linkage, the linkage categories on tractor and implement must be compatible or an adapter must be used!
- Take note of the manufacturer's instructions.
- Before attaching implements to or removing them from the three-point suspension, shift the operating equipment to a position in which unintended raising or lowering is impossible.
- There is a danger of crushing or shearing injury around the three-point linkage.
- The implement may be transported and towed only by the tractors intended for this purpose.
- There is a risk of injury when implements are coupled to and uncoupled from the tractor.
- Do not step between tractor and implement when operating the external control for the three-point attachment!
- There is a danger of crushing and shearing injury when operating the support devices.
- When mounting implements at the front or rear of a tractor, do not exceed
 - The approved total tractor weight
 - The approved tractor axle loads
 - The approved load capacities of the tractor tyres.
- Observe the max. working load of the mounted implement and the permissible axle loads of the tractor!
- Always ensure that the tractor lower links are adequately locked against sideways movement before transporting the implement.
- The operating lever for the tractor lower links must be secured against lowering when the implement is being towed on the road.
- Shift all equipment into the transport position before travelling on the road.
- Any mounted implements and ballast weights affect the handling, steering and braking of the tractor!
- The front tractor axle must always be loaded with at least 20% of the empty tractor weight, in order to ensure sufficient steering power. Apply front weights if necessary!
- Only ever carry out any servicing, maintenance or cleaning operations or remedy malfunctions with the ignition key removed.
- Leave safety devices attached and always position them in the protective position.

2.16.5 Operation of the seed drill

- Observe the permissible fill levels of the seed box (capacity of the seed box).
- Only use the steps and the platform when filling the seed box. 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 transportation, remove the thrust collars of the tramline marker.
- Do not place any parts in the seed box.
- Lock the track marker (construction-dependent) in the transport position before transportation.

2.16.6 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 key 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 by using genuine AMAZONE spare parts!

3 Loading and unloading

3.1 Loading by crane



DANGER

It is forbidden to stand under the raised implement.

Attach the seed drill to a crane hook for loading and unloading with the seed box lid open.

Hang the crane hook in one of the two slots (Fig. 3/1) depending on the equipment and centre of gravity of the seed drill.

The seed hopper must not be filled.

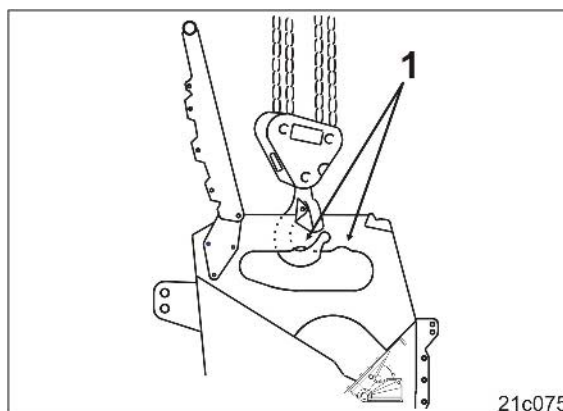


Fig. 3

The symbol identifies the attachment point for the crane hook or belt for loading on the crane.

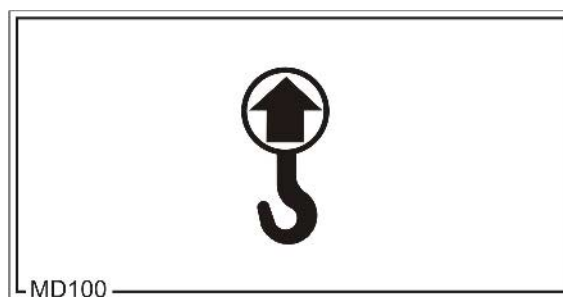


Fig. 4

4 Product description

This section

- provides a comprehensive overview of the implement structure.
- provides the names of the individual modules and controls.

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

Main assemblies of the implement

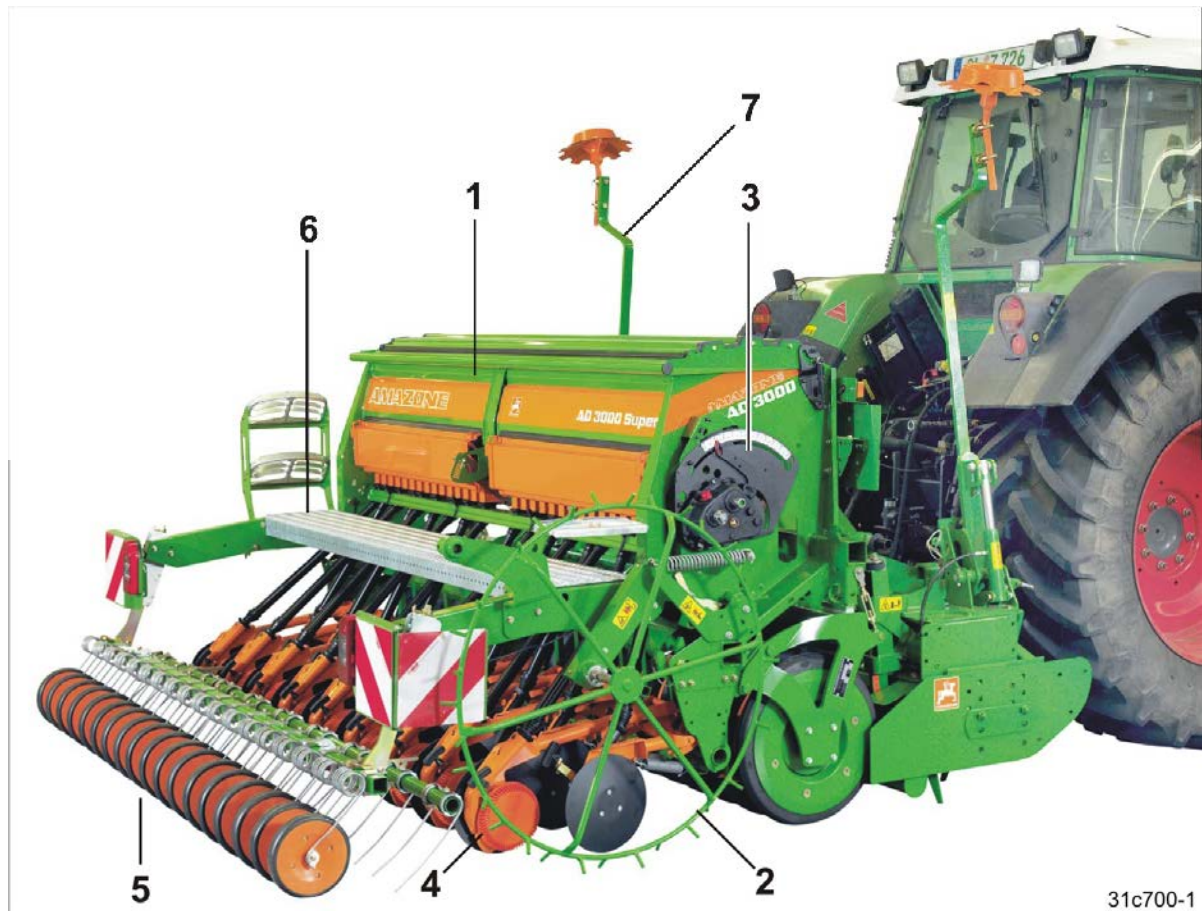


Fig. 5

Fig. 5

- | | |
|--------------------------------------|--|
| (1) Seed box | (4) Coulters (WS coulters or RoTeC Control coulters) |
| (2) Star wheel | (5) Roller harrow |
| (3) Vario gearbox with gearbox lever | (6) Loading board |
| | (7) Track marker |

4.1 Main assemblies of the implement

Fig. 6

- (1) Case for stowing
- o the operating manual
 - o the calculating disc rule to determine the gearbox setting



Fig. 6

Fig. 7

electric AMACO hectare counter (optional)

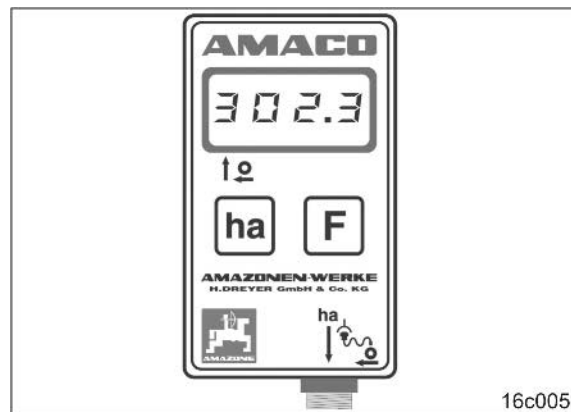


Fig. 7

Fig. 8

AMALOG+ control terminal (optional)



Fig. 8

Fig. 9

AMADRILL+ control terminal (optional)



Fig. 9

Fig. 10
AMATRON+ control terminal (optional)



Fig. 10

Fig. 11
(1) Track marker shuttle valve

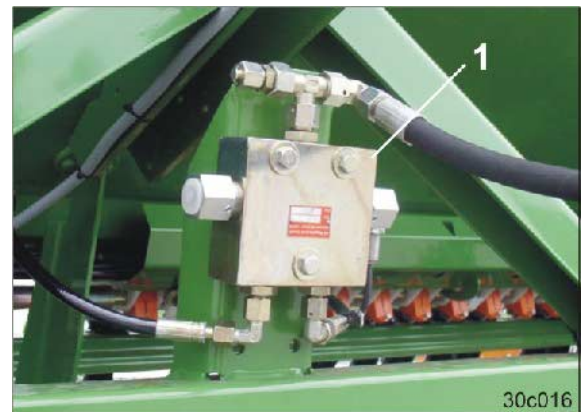


Fig. 11

Fig. 12
(1) Normal seed metering wheel / fine seed metering wheel (adjustable for seed metering)
(2) Seeding shaft
(3) Seed housing
(4) Shutter slide
(5) Bottom flap
(6) Bottom flap shaft

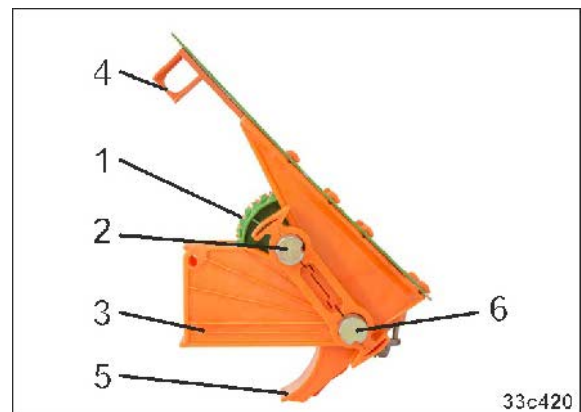


Fig. 12

Fig. 13
(1) Lay shaft to drive the tramline seed metering wheels
(2) Lay shaft bearing
(3) Wrap spring clutch
(4) Spur gear



Fig. 13

Product description

Fig. 14

- (1) Calibration crank



Fig. 14

Fig. 15

- (1) Fill level indicator
(optional digital filling level indicator available for the on-board computer)
- (2) Dashboard
to actuate the tramline seed metering wheels and the tramline marker (not required on implements with on-board computer)

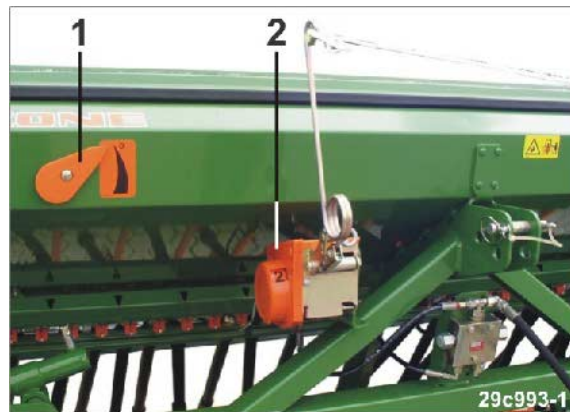


Fig. 15

Fig. 16

- (1) Agitator shaft



Fig. 16

Fig. 17

- (1) Rapeseed insert



Fig. 17

Fig. 18
WS coulters



Fig. 18

Fig. 19
Band sowing shoe II
for WS coulters

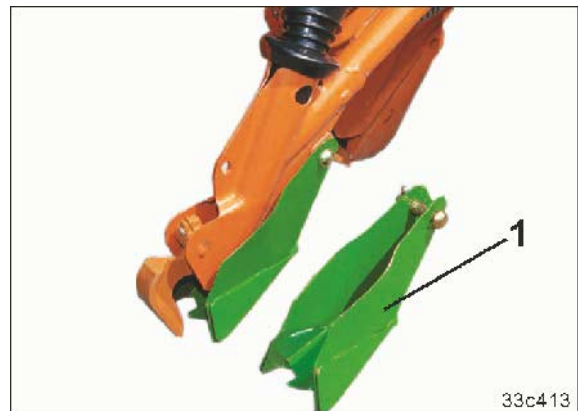


Fig. 19

Fig. 20
(1) RoTeC Control coulters



Fig. 20

Fig. 21
(1) Drag tine harrow

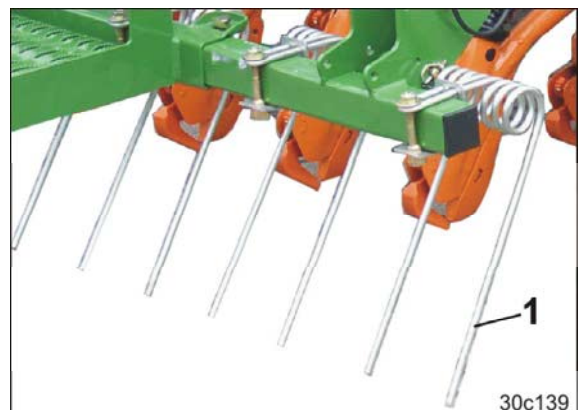


Fig. 21

Product description

Fig. 22

Tramline marker



Fig. 22

Fig. 23

Track marker
with hydraulic cylinder actuation
(can either be attached to the seed drill or
the soil tillage implement)



Fig. 23

4.2 Safety and protection equipment

Fig. 24

- (1) Linch pin,
to attach the track marker
- (2) Rubber block (visual indicator)
The track marker is not vertical, i.e. the
track marker has not been secured with the
linch pin (above).



Fig. 24

Fig. 25

- (1) Chain guard

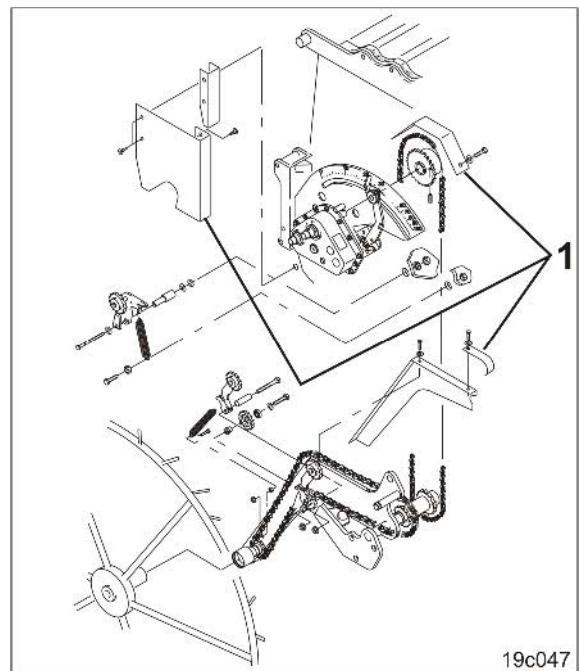


Fig. 25

4.3 Overview – Supply lines between the tractor and the implement

Fig. 26

(1) Hydraulic hose lines

Depending on equipment provided

Connection cable for implement lighting

Implement plug with computer cable



Fig. 26

4.4 Transportation equipment

Fig. 27

- (1) 2 rear lights
- (2) 1 number plate holder (optional)
- (3) 2 rear-facing warning signs
- (4) 2 side-facing warning signs
(not permitted in Germany and several other countries)



Fig. 27

Fig. 28

- (1) 1 transport safety bar



Fig. 28

Fig. 29

- (1) 2 forwards-facing side lights
- (2) 2 forwards-facing turn indicators
- (3) 2 forwards-facing warning signs

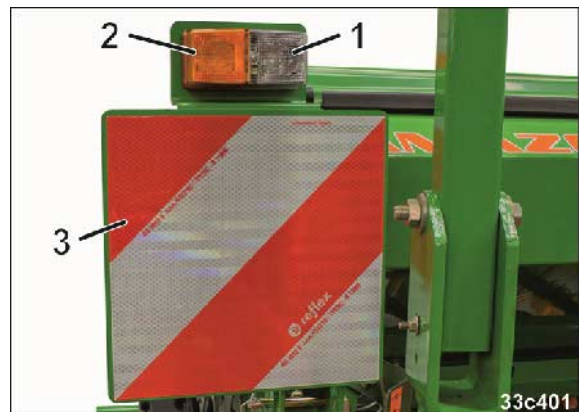


Fig. 29

4.5 Intended use

The implement

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

Slopes can be travelled

- Along the contours
Direction of travel to the left 10 %
Direction of travel to the 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 genuine AMAZONE spare parts.

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

For any damage resulting from improper use

- the operator bears the sole responsibility.
- AMAZONEN-WERKE accepts no liability.

4.6 Danger areas and danger points

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

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

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

No-one may stand in the implement danger area:

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

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

Danger points exist:

- between the tractor and the implement when coupling and uncoupling
- in the area of the swivelling track markers.

4.7 Rating plate and CE mark

The figure shows the arrangement of the rating plate and the CE mark on the implement.

The CE marking on the indicates compliance with the stipulations of the valid EU directives.



Fig. 30

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

- (1) Machine ID no.
- (2) Type
- (3) Basic weight kg
- (4) Max. load kg
- (5) Factory
- (6) Model year
- (7) Year of manufacture

| | | | | |
|---|---|--|---------|----------|
| AMAZONEN-WERKE | | | | 32c728-2 |
| D-49205 Hasbergen / BBG D-04249 Leipzig | | | | |
| Masch.-ident-Nr. | 1 | | Barcode | |
| Typ | 2 | | | |
| Grundgewicht kg | 3 | Werk | 5 | |
| Max. Zuladung kg | 4 | Modelljahr | 6 | |
| CE | | Baujahr Année de fabrication year of construction Дата изготовления | | 7 |

Fig. 31

4.8 Technical data

4.8.1 AD SPECIAL seed drill

| Seed drill | | | AD 2500 SPECIAL | AD 3000 SPECIAL |
|-----------------------------------|----------------------|---------|---------------------------------------|---------------------------------------|
| Working width | | [m] | 2.50 | 3.00 |
| Transport width | without track marker | [m] | 2.54 | 3.04 |
| | with track markers | [m] | 2.60 - 2.80 | 3.10 - 3.30 |
| Net weight ¹⁾ | with WS coulters | [kg] | 632 | 668 |
| | with RoTeC coulters | [kg] | 675 | 747 |
| Content of seed box | without extension | [l] | 360 | 450 |
| | with extension | [l] | - | 850 |
| WS coulters | No. of rows | | 15 / 20 | 18 / 24 |
| | Row spacing | [cm] | 12.5 / 16.6 | 12.5 / 16.6 |
| RoTeC coulters | No. of rows | | 15 / 20 | 18 / 24 |
| | Row spacing | [cm] | 12.5 / 16.6 | 12.5 / 16.6 |
| Working speed | | [km/h] | 6 to 10 | 6 to 10 |
| min. oil flow rate | | [l/min] | 10 | 10 |
| max. working pressure (hydraulic) | | [bar] | 210 | 210 |
| Electrical system | | [V] | 12 (7-pin) | 12 (7-pin) |
| Transmission/hydraulic fluid | | | Transmission/hydraulic fluid HLP68 | Transmission/hydraulic fluid HLP68 |

¹⁾ Mounted seed drill (row spacing 12.5 cm) with mechanical coulter pressure adjustment, exact harrow, loading board and track markers.

Product description

4.8.2 AD SUPER seed drill

| Seed drill | | | AD 3000 SUPER | AD 3500 SUPER | AD 4000 SUPER |
|-----------------------------------|----------------------|---------|------------------------------------|------------------------------------|------------------------------------|
| Working width | | [m] | 3.00 | 3.43 / 3.50 | 4.00 |
| Transport width | without track marker | [m] | 3.04 | 3.54 | 4.25 |
| | with track markers | [m] | 3.10 - 3.30 | 3.60 - 3.80 | 4.25 |
| Net weight ¹⁾ | with WS coulters | [kg] | 771 | 905 | 1047 |
| | with RoTeC coulters | [kg] | 850 | 997 | 1153 |
| Content of seed box | without extension | [l] | 600 | 720 | 830 |
| | with extension | [l] | 1000 | 1200 | 1380 |
| WS coulters | No. of rows | | 18 / 24 | 21 / 28 | 24 / 32 |
| | Row spacing | [cm] | 12.5 / 16.6 | 12.5 / 16.6 | 12.5 / 16.6 |
| RoTeC coulters | No. of rows | | 18 / 24 | 21 / 28 | 24 / 32 |
| | Row spacing | [cm] | 12.5 / 16.6 | 12.5 / 16.6 | 12.5 / 16.6 |
| Working speed | | [km/h] | 6 to 10 | 6 to 10 | 6 to 10 |
| min. oil flow rate | | [l/min] | 10 | 10 | 10 |
| max. working pressure (hydraulic) | | [bar] | 210 | 210 | 210 |
| Electrical system | | [V] | 12 (7-pin) | 12 (7-pin) | 12 (7-pin) |
| Transmission/hydraulic fluid | | | Transmission/hydraulic fluid HLP68 | Transmission/hydraulic fluid HLP68 | Transmission/hydraulic fluid HLP68 |

¹⁾ Mounted seed drill (row spacing 12.5 cm) with mechanical coulters pressure adjustment, exact harrow, loading board and track markers.

4.8.3 Technical data for calculating the tractor weight and the tractor axle loads

The technical data in this section are needed to calculate the tractor weights and tractor axle loads (see Seite 79).

Distance "d"

| | | |
|--------------|------|--|
| Distance "d" | 0.9m | Distance between the centre of the lower link ball and the centre of gravity of the rear machine combination |
|--------------|------|--|

Total weight (G_H)

The permissible **total weight (G_H)** of the rear implement combination is the sum of the weights of the

- basic weight of the seed drill
- payload of the seed drill
- soil tillage implement incl. roller

| Seed drill ¹⁾ | | AD 2500 Special | AD 3000 Special | |
|---|------|--------------------|--------------------|--|
| Basic weight of the seed drill with WS coulter | [kg] | 632 | 668 | |
| Basic weight of the seed drill with RoTeC coulter | [kg] | 675 | 747 | |
| Roller harrow | [kg] | + 20 | + 30 | |
| Payload without extension ²⁾ | [kg] | 300 | 360 | |
| Payload with extension ²⁾ | [kg] | - | 680 | |
| Total weight of the seed drill | [kg] | | | |
| Soil tillage implement ³⁾ | [kg] | | | |
| Coupling parts (= 20 % of the soil tillage implement) | [kg] | | | |
| Total weight (G_H) = Total weight of the seed drill + soil tillage implement + coupling parts | [kg] | | | |

| Seed drill ¹⁾ | | AD 3000 Super | AD 3500 Super | AD 4000 Super |
|---|------|------------------|------------------|------------------|
| Basic weight of the seed drill with WS coulter | [kg] | 771 | 905 | 1041 |
| Basic weight of the seed drill with RoTeC coulter | [kg] | 850 | 997 | 1153 |
| Roller harrow | [kg] | + 20 | + 30 | + 25 |
| Payload without extension ²⁾ | [kg] | 500 | 600 | 700 |
| Payload with extension ²⁾ | [kg] | 850 | 1000 | 1150 |
| Total weight of the seed drill | [kg] | | | |
| Soil tillage implement ³⁾ | [kg] | | | |
| Coupling parts (= 20 % of the soil tillage implement) | [kg] | | | |
| Total weight (G_H) = Total weight of the seed drill + soil tillage implement + coupling parts | [kg] | | | |

¹⁾ Mounted seed drill with RoTeC coulters, row spacing 12.5 cm; with mechanical coulter pressure adjustment, exact harrow, loading board, track marker and tramline control.

²⁾ Reference value; the actual load depends on the seed

³⁾ Depends on the equipment, see operating instructions for the soil tillage implement



4.9 Necessary tractor equipment

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

Tractor engine power

| | |
|----------------------------------|--------------|
| AD 2500 Special ¹⁾ | above 50 kW |
| AD 3000 Special ¹⁾ | above 70 kW |
| AD 3000/3500 Super ¹⁾ | above 80 kW |
| AD 4000 Super ¹⁾ | above 100 kW |

¹⁾ With AMAZONE rotary cultivator and wedge ring roller KW

Electrical system

| | |
|------------------|--------------|
| Battery voltage: | 12 V (volts) |
| Lighting socket: | 7-pin |

Hydraulic system

| | |
|-----------------------------|---|
| Maximum operating pressure: | 210 bar |
| Tractor pump power: | At least 10 l/min at 150 bar |
| Implement hydraulic fluid: | Transmission/hydraulic fluid HLP68 The implement hydraulic/transmission fluid is suitable for the combined hydraulic/transmission fluid circuits of all standard makes of tractor. |
| Control unit 1: | single-acting control unit |
| Control unit 2: | single-acting control unit |
| Control unit 3: | single-acting control unit |

5 Structure and function

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

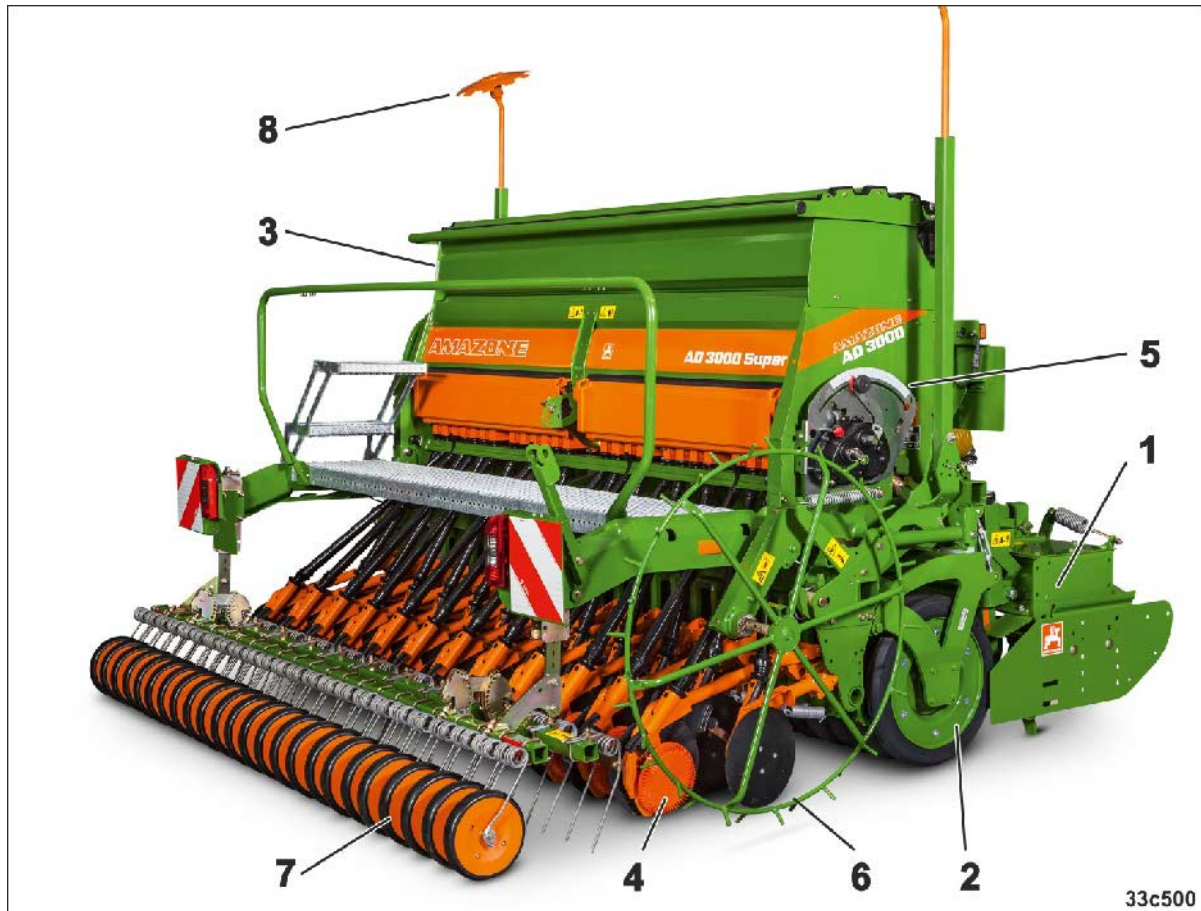


Fig. 32

The AD 03 mounted seed drill allows precise seed placement, even placement depth and coverage of the seed and a track-free, well-structured field after tilling.

The seed is carried in the seed hopper (Fig. 32/3).

The seed metered by the seed metering wheels in the seed housings falls into the seed furrow created by the coulters (Fig. 32/4). The seed metering wheels are driven via the Vario gearbox (Fig. 32/5) by the star wheel (Fig. 32/6).

The seed is covered with loose soil by the exact following harrow (Fig. 32/7), roller harrow or drag tine harrow.

The field connection run is marked in the centre of the tractor by the track markers (Fig. 32/8).

Even on fields with large quantities of straw and plant residues, mulch seeding is possible with RoTeC+ coulters (Fig. 32/4). The seed furrow is formed and the coulter is guided through the soil perfectly by the seeding disc on the one side and a robust cast seed shoe on the other. The elastic depth control disc prevents soil from sticking to the seeding disc and helps to form the seed furrow. The high coulter pressure and support on the depth control disc allow the coulter to run steadily and enable a precise seed placement depth.

The AMAZONE mounted seed drill AD 03 is used as part of a cultivation combination with the soil tillage implement

- AMAZONE rotary cultivator (Fig. 32/1) or
- AMAZONE rotary harrow

and wedge ring roller (Fig. 32/2) or tooth packer roller.

This cultivation combination optimises loosening of the soil, recompact and precise drilling in a single operation.

5.1 Seed box and loading board

The loading board is used to fill the seed box from the rear of the seed drill.



Fig. 33

5.1.1 Fill level indicator (option)

When the seed box lid is closed, the fill level indicator (Fig. 34/1) shows the filling level in the seed box.



Fig. 34

5.1.2 Digital fill level monitoring (optional)

A filling level sensor (Fig. 35/1) monitors the seed level in the seed box.

If the seed level reaches the level sensor, the on-board computer receives an impulse and a warning message appears. An alarm signal sounds at the same time. This alarm signal is intended to remind the tractor driver to fill up the seeds again.

The height of the level sensor is adjustable.



Fig. 35

5.1.3 Rape insert (option)

The rapeseed insert (Fig. 36/1) reduces the holding capacity of the seed box.

The rapeseed insert is used for readily flowing seed, such as rapeseed and turnips, which are sown at low seed densities.

The agitator shaft must not rotate if the rapeseed insert is fitted in the seed box.



Fig. 36



Reconnect the agitator shaft to the drive once the rapeseed insert has been removed.

Seed blockages may occur in the seed box resulting in an incorrect seeding pattern, especially when sowing seed with chaff and with the agitator shaft not rotating.

5.1.4 Seed box partition (optional)

When driving on slopes, the seed in the seed box may slide around so that the seed metering wheels are not being supplied with sufficient or any seed.

The partition (Fig. 37/1) prevents the seed from sliding around in the seed box.



Fig. 37

5.2 Threaded cartridge

The threaded cartridges (Fig. 38/1) include

- the accessories kit with the operating manual.



Fig. 38

5.3 Application rate adjustment

The gearbox lever (Fig. 39/1) of the Vario gearbox is used to set the required application rate.

This sets the speed of the metering wheels. The speed of the metering wheels determines the application rate.

The higher the number the gearbox lever points to on the scale (Fig. 39/2),

- the greater the speed of the metering wheels
- the greater the seeding rate.

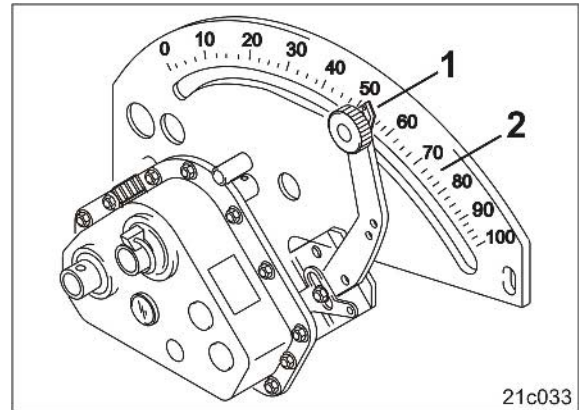


Fig. 39

The speed of the seed metering wheels

- determines the seeding rate
- can be adjusted on the Vario gearbox.

The star wheel (Fig. 40/1) drives the seed metering wheels via the Vario gearbox.

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

When the star wheel is raised and stopped, the soil is worked without seeding.

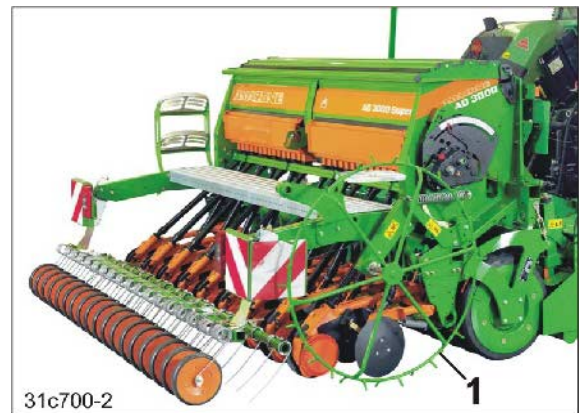


Fig. 40

The required seeding rate is set on the Vario gearbox.

If the seed drill does not have an electronic seed rate adjustment, 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. 41/1) for all seeding rates above 30 kg/ha
- An inner white scale (Fig. 41/2) for all seeding rates below 30 kg/ha.
- A coloured scale (Fig. 41/3) with all gearbox settings from 1 to 100.

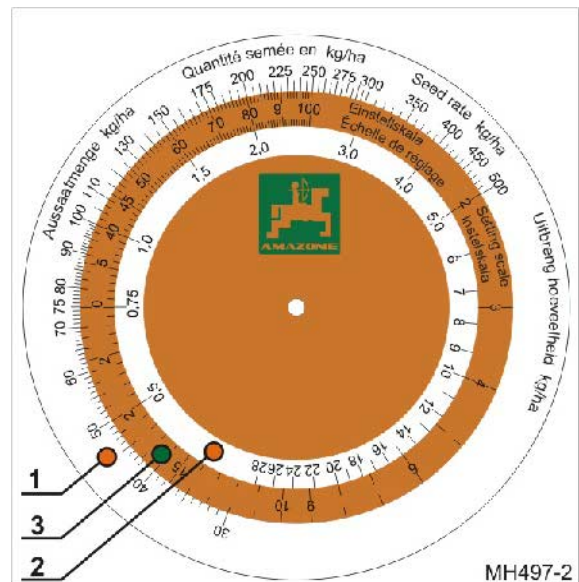


Fig. 41

Seed rate remote control, hydraulically actuated (optional)

The seeding rate can be increased during drilling when the soil changes from normal to heavy, thus adapting it to the soil.

The gearbox lever (Fig. 42/1) is used to set the seeding rate on normal soil.

The increased seeding rate is set on the control element (Fig. 42/2) before starting work.

A hydraulic cylinder actuates the gearbox lever to increase the seeding rate.

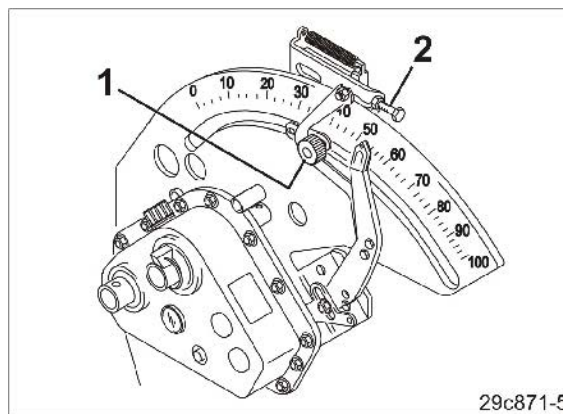


Fig. 42

The hydr. actuated seed rate remote control is connected to control unit 2 together with the hydr. coulter pressure adjustment (optional) and the hydr. exact harrow adjustment(optional).

Increasing the seeding rate automatically increases the coulter pressure and the exact harrow pressure increases.

Seed rate remote control, electronically controlled (optional)

An electric setting motor (Fig. 43/1) sets the gearbox lever (Fig. 43/2) to the desired seeding rate.

The on-board computer controls the gearbox position based on the calibration sample.

The on-board computer shows the scale setting of the gearbox lever.

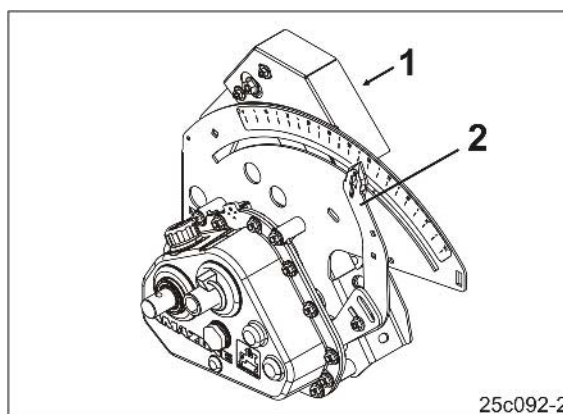


Fig. 43

5.3.1 Metering wheels

The seed is metered by the seed metering wheels (Fig. 44/2) in the seed housings (Fig. 44/1).

The seed metering wheels convey the seed to the edge of the bottom flaps (Fig. 44/3).

Once metered, the seed moves through the seed tubes to the seeding coulter.

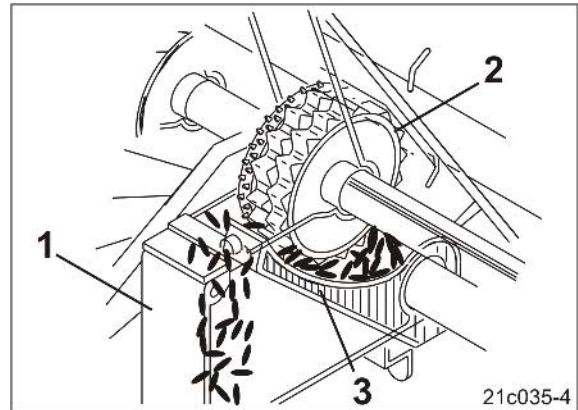


Fig. 44

The seed metering wheel consists of

- Normal seed metering wheel (Fig. 45/1) and
- Fine seed metering wheel (Fig. 45/2).

For seeding

- with the normal seed metering wheel, the normal and fine seed metering wheel are linked to each other and both rotate
- with the fine seed metering wheel, the connection between the normal and the fine seed metering wheel is disconnected. Only the fine seed metering wheel rotates.

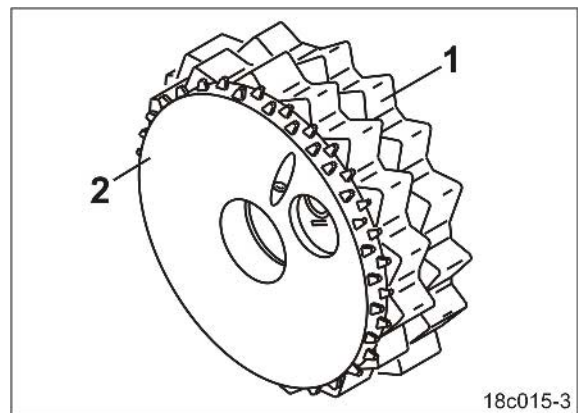


Fig. 45

As an option, large beans can be metered in the metering housings by bean seed metering wheels (Fig. 46) in a similar way to the seed.

So as not to damage the beans, they are transported by bean seed metering wheels with elastic lobes made of high quality plastic. The elastic lobes on the bean metering wheels are long enough to reach the bottom flaps and ensure uniform seed delivery.

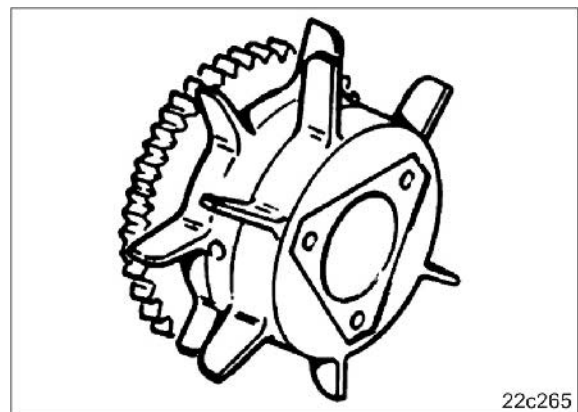


Fig. 46

5.3.2 Shutter slide

The shutter slides (Fig. 47) are used to adjust the opening between the seed box and the metering housing depending on the seed.

The shutter slides (Fig. 124) lock into one of the three positions:

- A = closed**
- B = 3/4 open**
- C = open**

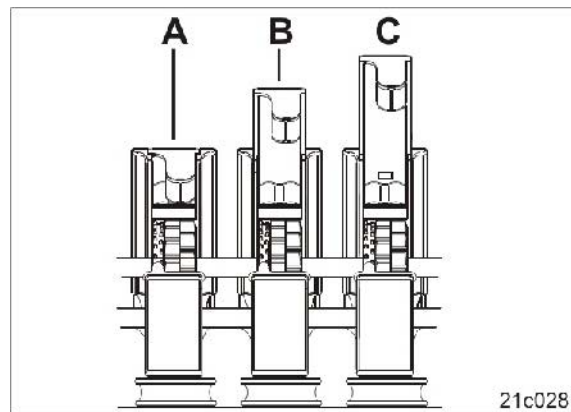


Fig. 47

5.3.3 Agitator shaft

The agitator shaft (Fig. 48/1) in the seed box prevents the build-up of seed blockages, which in turn cause incorrect seeding.

The agitator shaft must be disabled when seeding certain types of seed. The intense agitation by the agitator shaft can cause e.g. rapeseed to stick together.



Fig. 48

5.3.4 Bottom flaps

The gap between the seed metering wheel and the bottom flap (Fig. 49/1) depends on the size of the seed.

The bottom flap lever (Fig. 49/2) is used to make adjustments.

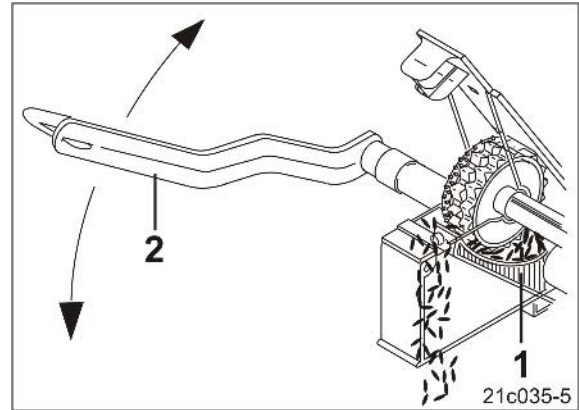


Fig. 49

The bottom flap lever can lock into one of 8 positions into a group of holes.

The bottom flap has a spring bearing and can deflect on debris in the seed.

To empty the seed housing, turn the bottom flap lever beyond the group of holes.



Fig. 50

5.3.5 Calibration test

The calibration test is used to

- emulate driving across the field by turning the drive wheel (Fig. 51)
- check whether the pre-set and actual seeding rates are equivalent.



Fig. 51

The winch (Fig. 52/1) is in parking position in the transport bracket underneath the seed box.



Fig. 52

The calibration trays (Fig. 53/1) are used to collect the calibrated seed.

While working, the calibration trays protect the metering system from moisture.



Fig. 53

5.4 AMACO hectare counter (optional)

By briefly pressing the 'ha' key, the AMACO electronic hectare counter displays the worked area.

The implement-specific data is entered using the 'ha' key and the F key.



Fig. 54

5.5 AMALOG⁺ control terminal (optional)

The AMALOG+ on-board computer consists of

- the control terminal
- the basic equipment (cable and fastening material).

The AMALOG+ on-board computer

- is intended for entering implement-specific data before beginning work.
- measures the covered part area [ha].
- stores the cultivated total area [ha]
- indicates the forward speed [km/h].
- controls the tramline control and the tramline marker
- shows the position of the tramline counter
- monitors the lay shaft drive (tramline control)
- indicates the position of the hydraulically actuated track markers
- triggers an alarm if the seed level in the seed box falls below the set minimum fill level.
Digital fill level monitoring (optional) is required.



Fig. 55

Rotary cultivator operation

The AMALOG+

- monitors the function of the overload clutch.
Acoustic alarm in event of tool carrier standstill.

The AMADRILL+ on-board computer consists of

- ## The AMADRILL+ on-board computer

-

Fig. 56

The AMADRILL+

- AD BAH0042-3 08.14

5.7 AMATRON 3 control terminal (optional)

The AMATRON 3 is an operating terminal for fertiliser spreaders, field sprayers and seed drills.

The AMATRON 3 consists of

- the control terminal
- the basic equipment (cable and fastening material)
- the job computer on the implement.

The AMATRON 3 is equipped with

- ISOBUS implement operation
- AMABUS implement operation.



Fig. 57

The AMATRON 3 is used

- to input implement-specific data
- to input the job-related data
- to monitor and control implement functions
 - for tramline control (electronic operation is required)
- to change the seeding rate during seeding operations
Vario gearbox with electronic seeding rate adjustment (optional) is required.

The AMATRON 3 indicates

- the current forward speed [km/h]
- the current application rate [kg/ha]
- the current seed box content [kg]
- the remaining distance [m] until the seed box is empty
- the track marker working position
- the position of the tramline counter and the pre-emergence marker.

For a commenced order, the AMATRON 3 stores

- the daily and total volume output [kg]
- the day and total area cultivated [ha]
- the day and total sowing time [h]
- the average work performance [ha/h]

The AMATRON 3 issues an alarm

- if the seed level in the seed box falls below the set minimum fill level.
Digital fill level monitoring (optional) is required.

Rotary cultivator operation

The AMATRON 3

- monitors the function of the overload clutch.
Acoustic alarm in event of tool carrier standstill.

5.8 WS coulters

Seed drills with WS coulters are used for plough seeding.

A guide funnel (Fig. 58/1) delivers the seed immediately behind the share tip (Fig. 58/2). A precise and uniform placement depth is achieved.

The hinged coulters support (Fig. 58/3) prevents the coulters outlet clogging when the seed drill is set down.

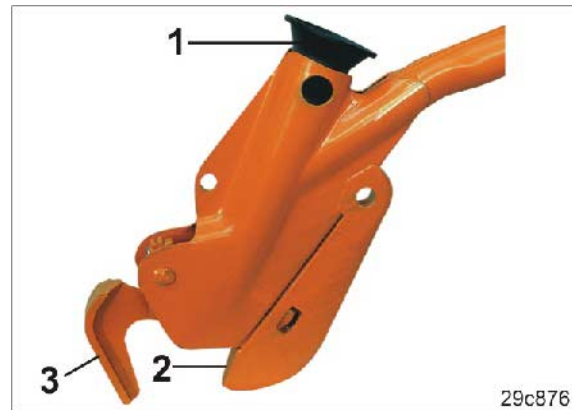


Fig. 58

5.8.1 Band sowing shoe (optional)

WS coulters can be equipped with band seeding shoes.

Band sowing improves the competition conditions for the growing wheat plants. The precondition is a well-tilled seed bed.

Band sowing shoe is particularly well-suited to light to medium soils.

The inclined sole compresses the planting area and reduces the placement depth.

The exact harrow is required to cover the seed.

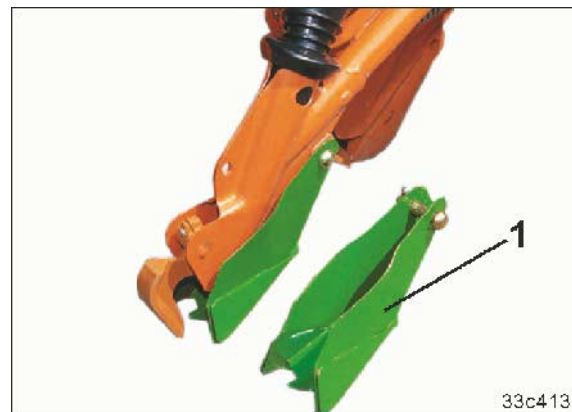


Fig. 59

5.9 RoTeC Control coulter

Seed drills with RoTeC Control coulters are suitable for plough seeding and mulch sowing.

The flexible depth control disc (Fig. 60/1)

- limits the seed placement depth
- cleans the rear side of the steel disc (Fig. 60/2)
- improves the drive of the steel disc by gripping the soil.

The depth control disc can be adjusted or removed without using tools by actuating the handle (Fig. 60/3).

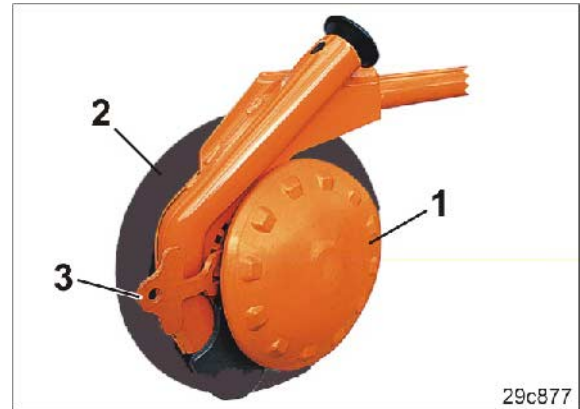


Fig. 60

The steel disc (Fig. 60/2), which is positioned at an angle of only 7° to the direction of travel, does not move much soil at high forward speeds.

The steady coulter ride and the precise seed placement result from the high coulter pressure (up to 30 kg) and the support of the coulter on the depth control disc.

| | RoTeC Control coulter |
|-----------------------|-----------------------|
| seeding disc diameter | Ø 320 mm |
| Coulter pressure | up to 30 kg |

Fig. 61

Structure and function

To limit the seed placement depth (Fig. 62/1 - 4),
The depth control disc can be fitted in three
positions or it can be removed.

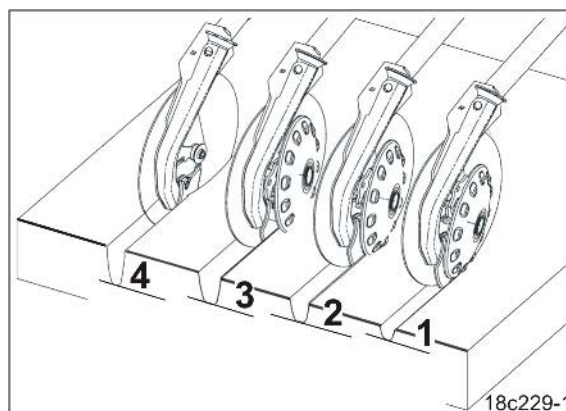


Fig. 62

Very shallow seeding, e.g. on particularly light
sandy soils, is made possible by the depth
control roller (Fig. 63), which can be fitted in
place of the depth guide disc as required.



Fig. 63

5.9.1 Coulter pressure and seed placement depth

The seed placement depth depends on

- the soil condition
- the coulter pressure
- the forward speed.

The coulter pressure is adjusted centrally.

Central coulter pressure adjustment

The coulter pressure is adjusted centrally with the calibration crank.



Fig. 64

Hydraulic coulters pressure adjustment (optional)

The coulters pressure can be increased by actuating tractor control unit 2. The seed rate remote control and the exact harrow pressure adjustment are connected to the same control unit.

If the seeding rate is increased using the seed rate remote control, there is automatically more coulters pressure and the exact harrow pressure increases.

The coulters pressure can be adapted to the soil during operation in the event of a change from normal soil to heavy soil.

Two bolts (Fig. 65/1) in an adjuster segment act as the stop for the hydraulic cylinder.

If pressure is applied at the tractor control unit, the coulters pressure increases and the stop is in contact with the upper pin. In the floating position the stop is in contact with the lower bolt.

The numbers on the scale (Fig. 66/1) are provided for guidance. The higher the number indicated on the display, the greater the coulters pressure.

The tractor driver reads the coulters pressure on a second scale (Fig. 66/1) during work.

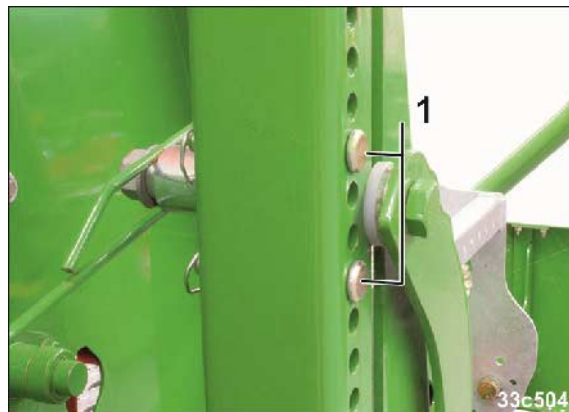


Fig. 65



Fig. 66

5.10 Exact harrow (optional)

The exact harrow (Fig. 67/1) evenly covers the seeds deposited in the seed furrows with loose earth and smoothes the ground.

The following are adjustable

- the position of the exact harrow tines
- the exact harrow pressure.

The exact harrow pressure determines the working intensity of the exact harrow and is independent of the soil type.

Set the exact harrow pressure so that no earth bank remains on the field after seed covering.



Fig. 67

When properly adjusted, the exact harrow tines should

- lie horizontally on the ground and
- have 5 - 8 cm clearance beneath.

| | |
|--------------|---------------|
| Distance "A" | 230 to 280 mm |
|--------------|---------------|

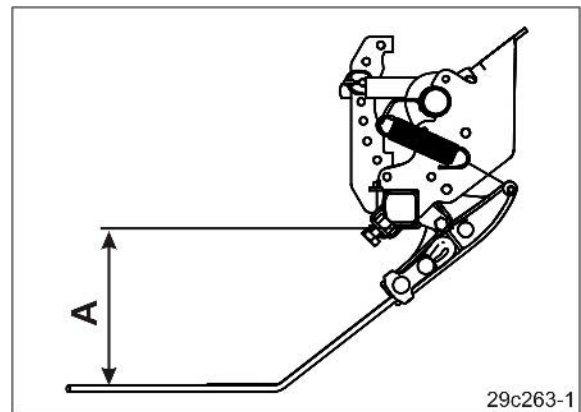


Fig. 68

5.10.1 Reverse safety

Always lift the seed drill before reversing with the tractor.

If a slight collision occurs when travelling in reverse, the exact harrow tines deflect downwards from the obstacle (see Fig. 69).

When travelling forwards, the exact harrow tines return to working position.



Fig. 69

5.10.2 Central exact harrow pressure adjustment

The exact harrow pressure is generated by tension springs that are tensioned using a lever (Fig. 70/1).

The lever is in contact with a bolt (Fig. 70/2) in the adjuster segment. The higher the pin is inserted in the group of holes, the greater the exact harrow pressure.



Fig. 70

5.10.3 Hydraulic exact harrow pressure adjustment (optional)

The exact harrow pressure can be adapted to the soil during drilling in the event of a change from normal soil to heavy soil and vice versa.

The exact harrow pressure is centrally adjusted with a hydraulic cylinder, which is connected to control unit 2 together with the hydr. seed rate remote control (optional) and the hydr. coulter pressure adjustment (optional).

If the seeding rate is increased using the seed rate remote control, there is automatically more coulter pressure and the exact harrow pressure increases.

Two pins (Fig. 71/1) in an adjuster segment act as the stop for the lever (Fig. 71/2). If pressure is applied at control unit 2, the exact harrow pressure increases and the lever is in contact with the upper pin. In the floating position the lever is in contact with the lower pin.

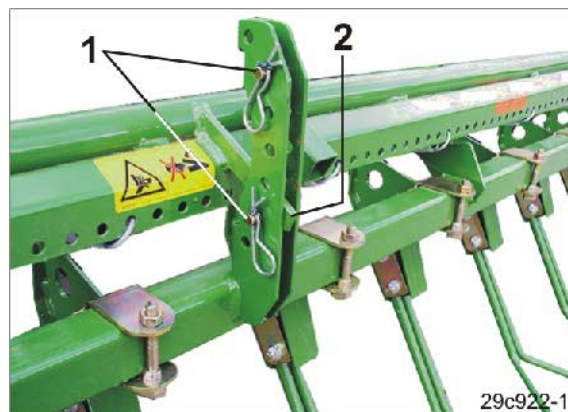


Fig. 71

5.11 Roller harrow (optional)

The roller harrow consists of

- Harrow tines (Fig. 72/1)
- Press rollers (Fig. 72/2).

The harrow tines close the seed furrows.

The press rollers press the seeds into the furrows. Better soil contact means more humidity is available for germination. Voids are closed and obstruct snails' access to the seed.

The following are adjustable

- the roller pressure on to the ground
- the vertical position of the harrow tines
- the working intensity of the harrow tines.



Fig. 72

5.12 Drag tine harrow (optional)

The drag tine harrow (Fig. 73/1) covers the seed placed in the seed furrows with loose soil.

The drag tine harrow is used on ploughed ground.

The vertical position of the harrow tines can be adjusted.

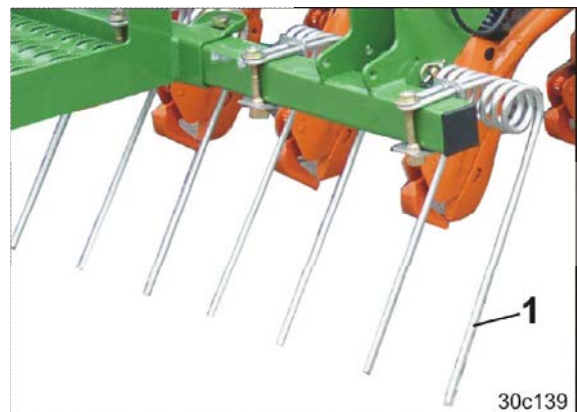


Fig. 73

5.13 Track markers

The track markers are either attached to the seed drill (see Fig. 74) or to the soil tillage implement (see Fig. 75).

The hydraulically-actuated markers dig into the ground alternately on the left and the right of the implement.

In so doing, the active track marker creates a mark. This mark serves as an orientation aid for the next run after turning.

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



Fig. 74



Fig. 75

When the tractor control valve is actuated

- the track marker is lowered into the working position when work starts
- the active track marker is raised at the end of the field
- the opposite track marker is lowered into the working position after turning.

It is possible to set:

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

5.14 Tramline marker (optional)

When tramlines are being created, the track discs (Fig. 76) lower automatically and mark the tramline that has just been created. Due to this the tramlines already become visible before the seed has been sown.

It is possible to set:

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

The track discs are raised if no tramline is created.



Fig. 76

5.14.1 Tramline control - setup and function

To set up a specific tramline distance,

- the dashboard must be equipped with the suitable dividing wheel (Fig. 77/1)
- the proper tramline control needs to be selected in the on-board computer.

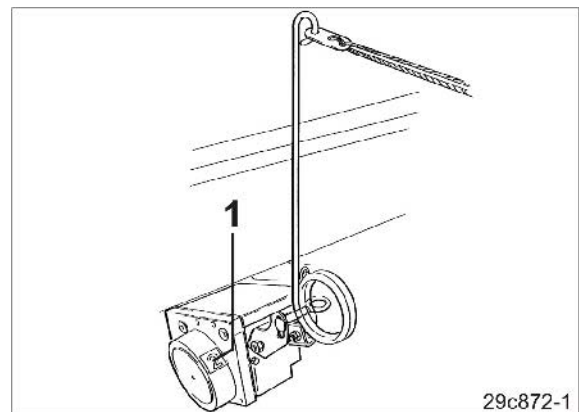


Fig. 77

When creating the tramlines

- the tramline counter shows the tramline number "0"
 - on the dashboard
 - of the computer display
- the coupling (Fig. 78/2) is actuated using one lever (Fig. 78/3)
- the drive shaft (Fig. 78/1) of the tramline wheels does not move
- The tramline coulters do not deposit any seeds on the ground.

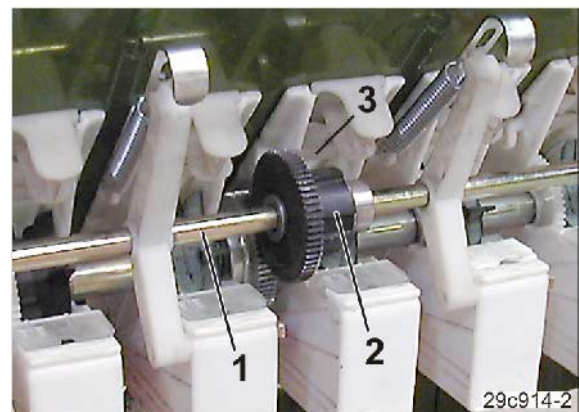


Fig. 78

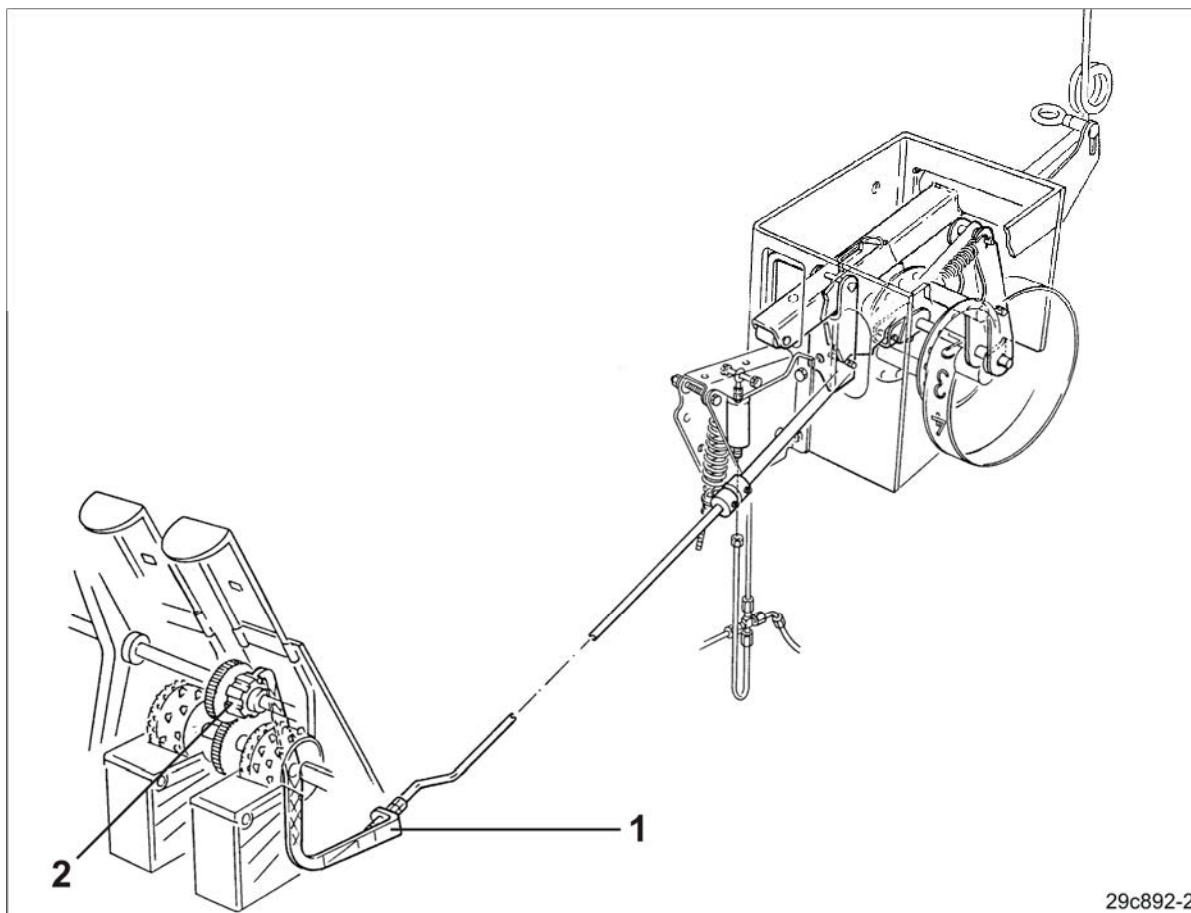


Fig. 79

The drive of the lay shaft for the tramline wheels is activated or deactivated using a coupling. A lever (Fig. 79/1) actuates the coupling (Fig. 79/2)

The lever is actuated by a hydraulic cylinder (Fig. 80/1) in the dashboard.

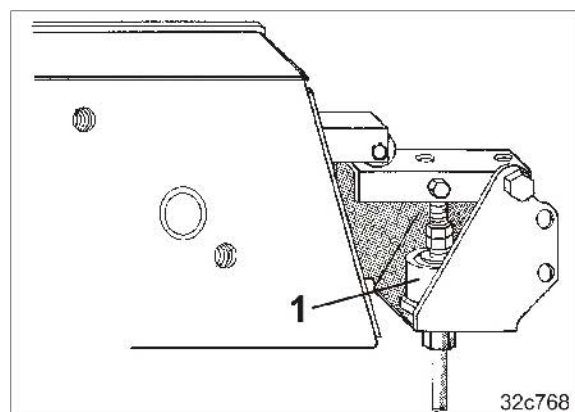


Fig. 80

The dividing wheel (Fig. 81/1) in the dashboard shows the tramline number.

The tramline number is set by pulling the operating lever (Fig. 81/2).

The rope (Fig. 81/3) is used to actuate the operating lever from the tractor cab.

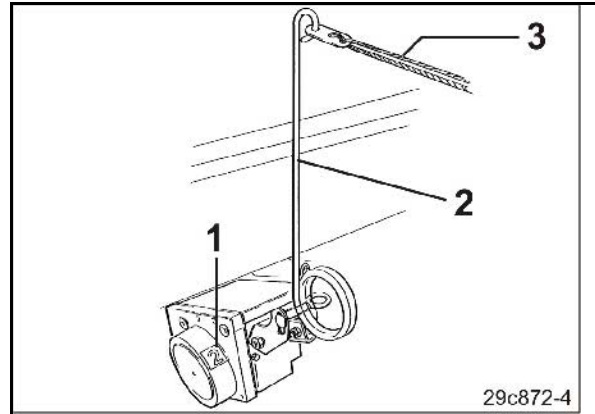


Fig. 81

Electronic actuation

The drive of the lay shaft for the tramline wheels is activated or deactivated using a coupling.

A lever on the solenoid (Fig. 82/2) actuates the clutch (Fig. 82/1).

The on-board computer controls the solenoid.

The on-board computer issues an alarm if the lay shaft that drives the tramline seed metering wheels is not working properly. Seeding shaft monitoring is required (optional).

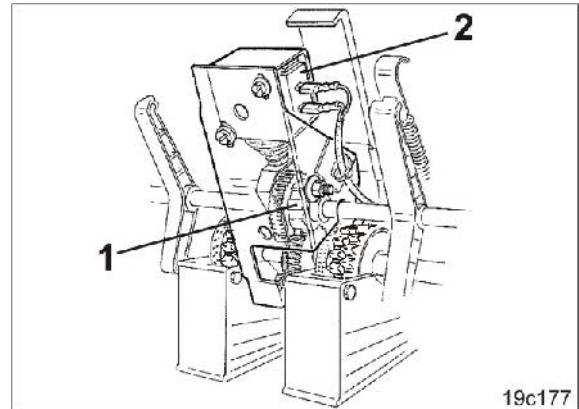


Fig. 82

5.14.2 Half-sided seeding shaft shut-off

With the seeding shaft disengagement clutch (Fig. 83), the left hand side of the seeding shaft can be shut off and seed delivery to the coulters can be interrupted.



If the tramline wheels should also not seed, the shutter slides for the tramline wheels must be closed.

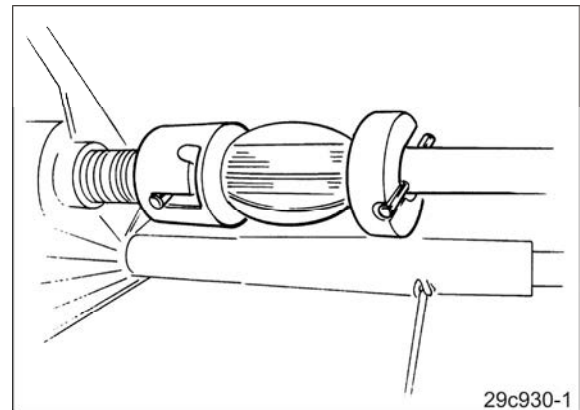


Fig. 83

6 Start-up

This section contains information

- on initial operation of your implement
- On checking how you may couple 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 the implement and transport it with a tractor that 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 which:

- 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, in particular:

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

You can find this data on the identification plate or in the vehicle documentation and in the tractor operating manual.

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

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

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



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

- Tractor empty weight
- ballast weight and
- total weight of the attached implement or noseweight of the hitched implement.



This notice applies only to Germany.

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

6.1.1.1 Data required for the calculation (attached implement)

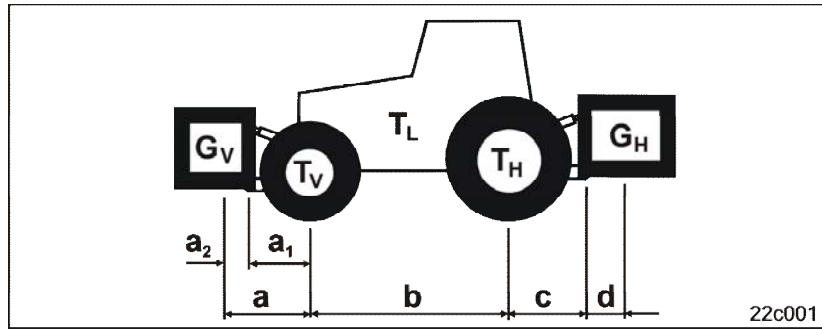


Fig. 84

| | | | |
|-------|------|---|---|
| T_L | [kg] | Tractor empty weight | See tractor operating manual or vehicle documentation |
| T_V | [kg] | Front axle load of the empty tractor | |
| T_H | [kg] | Rear axle load of the empty tractor | |
| G_H | [kg] | Total weight of rear-mounted implement or rear ballast | See section "Technical data for calculating the tractor weight and the tractor axle loads", Seite 48, or rear ballast |
| G_V | [kg] | Total weight of front-mounted implement or front ballast | See technical data for front-mounted implement or front ballast |
| a | [m] | Distance between the centre of gravity of the front implement mounting 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 |
| d | [m] | Distance between the centre of the lower link connection point and the centre of gravity of the rear-mounted implement or rear ballast (centre of gravity distance) | See section "Technical data for calculating the tractor weight and the tractor axle loads", Seite 48 |

Start-up

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

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

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

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

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

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

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

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

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

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

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

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

6.1.1.6 Tractor tyre load-bearing capacity

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

6.1.1.7 Table

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



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



WARNING

Risk of contusions, cutting, catching, drawing in and impact 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 ($G_{V \min}$).



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

6.2 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 machine.

It is forbidden to tamper with the implement in any way, such as installation, adjustment, troubleshooting, cleaning, maintenance and repairs

- while the implement is being driven.
- as long as the tractor engine is running with the connected hydraulic system.
- o if the ignition key is inserted in the tractor and the tractor engine can be started unintentionally with the hydraulic system connected
- if the tractor is not secured against unintentional rolling using its parking brake
- if moving parts are not blocked against unintentional movement.

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

1. Always park the tractor and the implement on firm, flat ground.

Lower the raised, unsecured implement / raised, unsecured implement parts.

→ This is how to prevent unintentional lowering.

2. Shut down the tractor engine.
3. Remove the ignition key.
4. Apply the tractor's parking brake.

6.3 Initial installation of the holders for the road safety bar

Screw the two holders (Fig. 85/1) onto the exact harrow (Fig. 85/2).

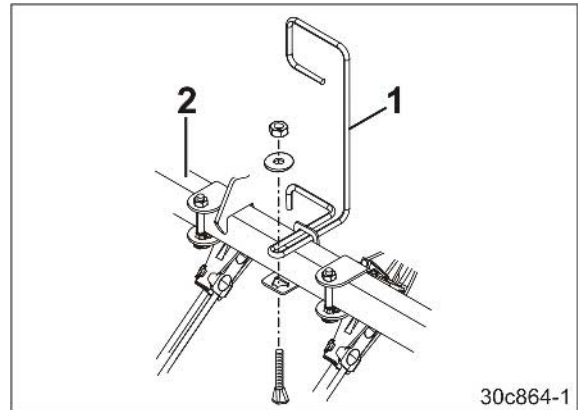


Fig. 85



During work, fasten the road safety bars (Fig. 86/2) to the holders (Fig. 86/1).

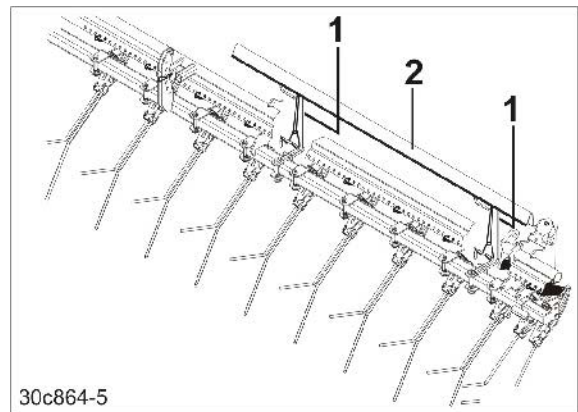


Fig. 86

6.4 Installing the on-board computer control terminal for the first time

Install the control terminal of the on-board computer in the tractor cab using the corresponding operating manual.

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 unintentional movement of implement components when wheel is moved.



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.



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.

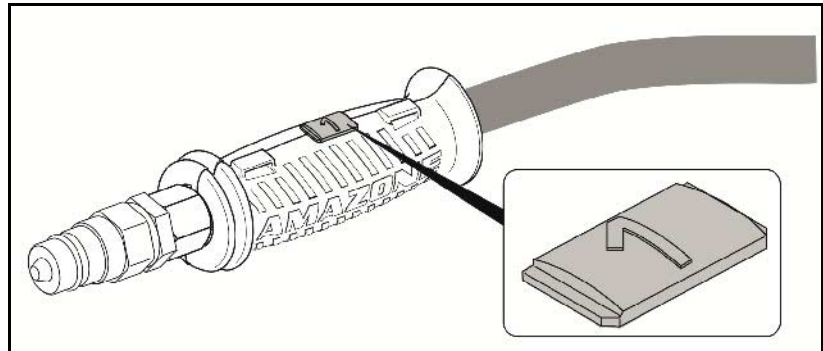
If you are injured by hydraulic fluid, contact a doctor immediately.

7.1 Making connections

7.1.1 Hydraulic hose lines




All hydraulic hose lines are equipped with handles.

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




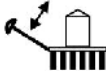


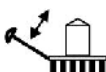





Stickers are applied on the implement for the markings that illustrate the respective hydraulic functions.

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

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

1. Actuate tractor *blue* control unit
→ Increase the coulter pressure.

Coupling and uncoupling the implement

| Marking | | Function | | | Tractor control unit | |
|---------|---|---|----------------------------|------------------|----------------------|---|
| Yellow |  | Track marker attachment to AD seed drill | | | | |
| | |  | Track marker ¹⁾ | lift left | single-acting |  |
| | | | | lift right | | |
| | | Dashboard ¹⁾ | | Increase counter | | |
| | | Tramline marking ¹⁾ | | tilt | | |
| Yellow |  | Track marker attachment on the KE/KG soil tillage implement | | | | |
| | |  | Track markers | lift left | single-acting |  |
| | | | | lift right | | |
| | | Dashboard ¹⁾ | | Increase counter | | |
| | | Tramline marking ¹⁾ | | tilt | | |
| Green |  | Coulter pressure | | increase | single-acting |  |
| | | Exact harrow pressure | | | | |
| | | Seed quantity | | | | |
| Blue |  | Star wheel | | Elevation | single-acting |  |

¹⁾ Hose extensions are required if the seed drill is operated in conjunction with a soil tillage implement.



During work, the *yellow* tractor control unit is actuated more frequently than all other control units. Assign the connections of the *yellow* control unit to an easily accessible control unit in the tractor cab.

7.1.1.1 Coupling the hydraulic hose lines



WARNING

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

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



- Check the compatibility of the hydraulic fluids before connecting the 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.
- Clean the hydraulic couplings before connecting them to the tractor. Minor oil impurities from particles can cause a failure of the hydraulic system.
- 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 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).

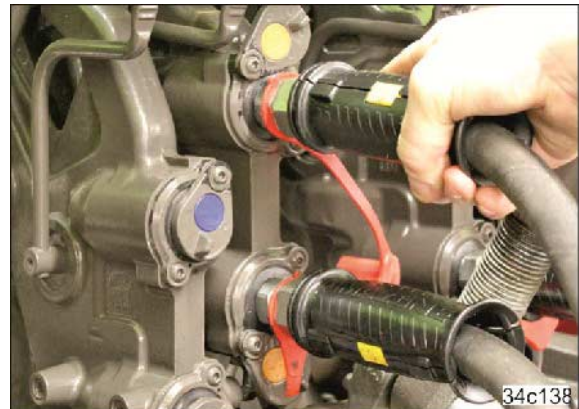


Fig. 87

7.1.1.2 Uncoupling the hydraulic hose lines

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



Fig. 88

7.1.2 Making further connections

1. Implement plug ¹⁾ for AMACO, AMALOG⁺, AMATRON⁺ on-board computers
2. Connector for road traffic lighting system (7-pin)
3. Only dashboard: Lay the rope (Fig. 89/1) to operate the operating lever (Fig. 89/2) in the tractor cab.

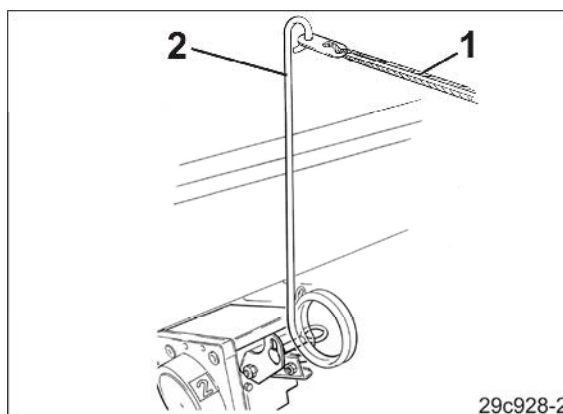


Fig. 89

- ^{1.)} Connect the implement plug to the control terminal in the tractor cab as described in the on-board computer operating manual.



Check the function of the braking and lighting system.

7.2 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 77.



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 establish connections from one implement to another properly.
- Whenever you couple the implement, check the coupling parts, such as the top link pin, for visible defects. Replace the coupling parts in the event of clearly visible wear.
- Secure coupling parts such as the top link bolt with a linch pin so that they do not accidentally detach.



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.

7.2.1 Mounting a mounted seed drill on combinations with tooth packer roller PW 500 and wedge ring roller KW 520

The mounted seed drill is equipped with

- two link plates (Fig. 90/1) for use with packer roller PW 500
- two carriers (Fig. 90/2) for use with wedge ring roller KW 520.

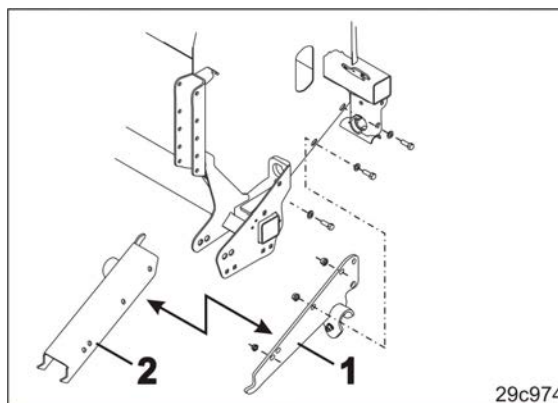


Fig. 90

The rollers PW 500 and KW 520 are equipped with two bearing brackets (Fig. 91/1).

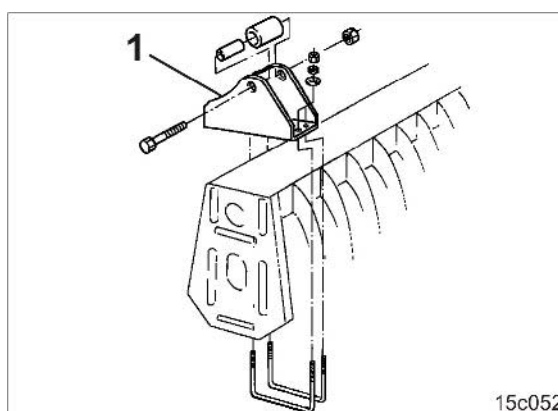


Fig. 91

1. Instruct persons to get out of the danger area between the combination and the implement.
2. Drive the combination in reverse towards the mounted seed drill standing on the parking supports.
3. Using the catching sockets (Fig. 92/1), attach the bearing sleeves (Fig. 92/2).
4. Apply the handbrake, switch the tractor engine off and remove the ignition key.
5. Lock the connection with bolts (Fig. 92/3).

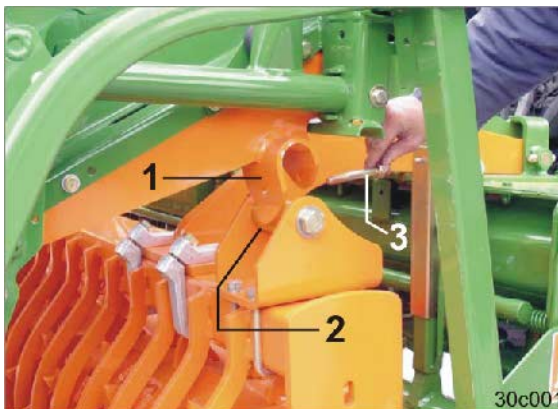


Fig. 92

6. Fix the top link (Fig. 93/1) with Cat. II top link pins onto the soil tillage implement and the mounted seed drill.
7. Secure the top link pins (Fig. 93/2) with linch pins.

**Fig. 93**

8. Raise the combination and remove the parking supports (Fig. 94/1).
9. Lower the combination, apply the handbrake, switch the engine off and remove the ignition key.
10. Align the top-mounted seed drill until straight by adjusting the top link (Fig. 93/1).
11. Couple the supply lines.

**Fig. 94**

7.2.2 Mounting a mounted seed drill on combinations with tooth packer roller PW 600, wedge ring roller KW 580 and Crack-Disc roller CDW 550

The mounted seed drill is equipped with

- two plastic bearings (Fig. 95/1)

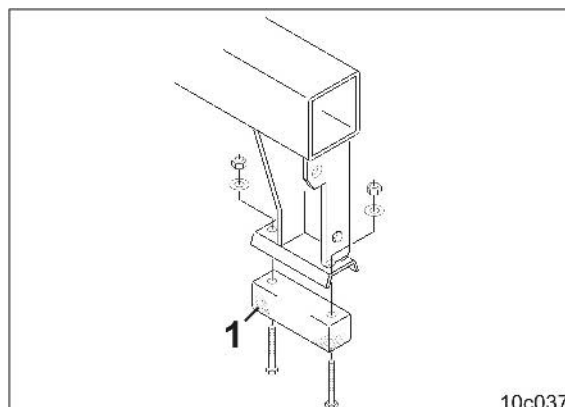


Fig. 95

- two bearing sleeves (Fig. 96/1)

With PW 600 and KW 580 equipment, the bearing sleeves are mounted in hole 2 (Fig. 96/2).

With CDW 550 equipment, the bearing sleeves are mounted in hole 3 (Fig. 96/3).

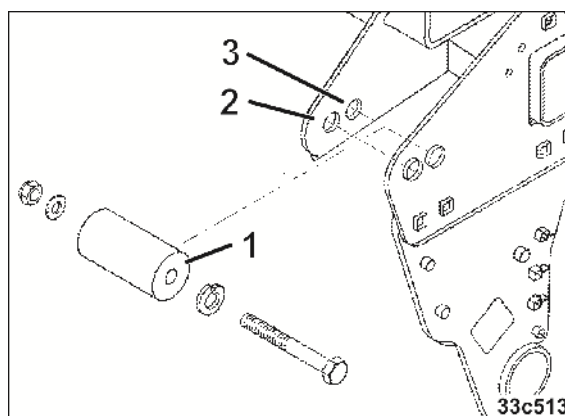


Fig. 96

The rollers PW 600, KW 580 and CDW 550 are equipped with catching sockets (Fig. 97/1).

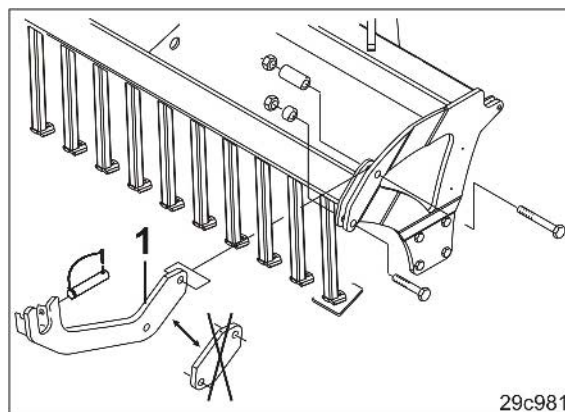


Fig. 97

1. Instruct persons to get out of the danger area between the combination and the implement.
2. Drive the combination in reverse towards the mounted seed drill standing on the parking supports.
Guide the catching sockets (Fig. 98/1) carefully through underneath the square tube (Fig. 98/2) of the mounted seed drill.



Fig. 98

3. Place the bearing sleeves (Fig. 99/2) in the catching sockets (Fig. 99/1).
4. Fix the connection with pins (Fig. 99/3) and secure with an R' clip.

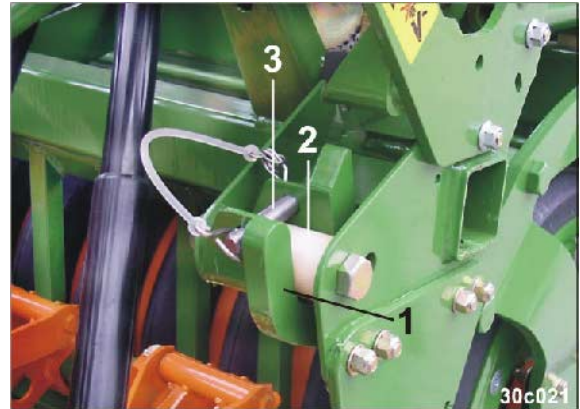


Fig. 99

5. Attach the mounted seed drill to the roller with 2 turnbuckles (Fig. 100/1).
6. Secure each pin (Fig. 100/2) with a cotter pin.
7. Tighten and lock the turnbuckles (lock nut).



Fig. 100

Coupling and uncoupling the implement

8. Connect the track marker hydraulic pipes (Fig. 101/1).
9. Connect the track marker sensor cable together (Fig. 101/2).



Only required when the track markers are attached to the soil tillage implement.

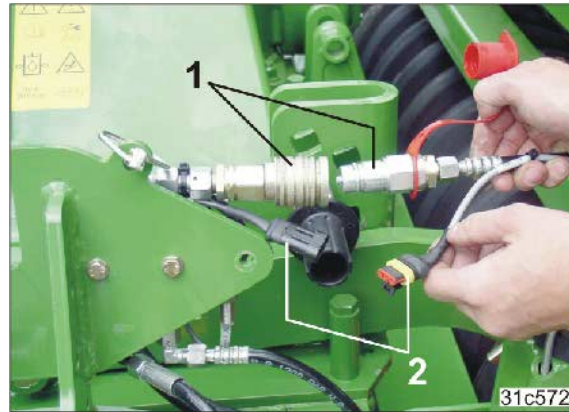


Fig. 101

10. Raise the combination and remove the parking supports (Fig. 102/1).



Fig. 102

11. Lower the combination onto the ground.
12. Apply the handbrake, switch the tractor engine off and remove the ignition key.
13. Fix the top link (Fig. 103/1) with Cat. II top link pins onto the soil tillage implement and the mounted seed drill.
14. Secure the top link pins (Fig. 103/2) with linch pins.
15. Align the top-mounted seed drill until straight by adjusting the top link (Fig. 103/1).



Fig. 103

16. Pull out the top carrying arm pin (Fig. 104/1). Adjust the top link (Fig. 103/1) if the carrying arm pin cannot be loosened.



Fig. 104

17. Put the carrying arm pin (Fig. 105/1) into parking position and secure with a linch pin.
18. Repeat the procedure for the second carrying arm.



The mounted seed drill can move freely on the parallelogram suspension after removing the top carrying arm pins.

19. Connect the supply lines.

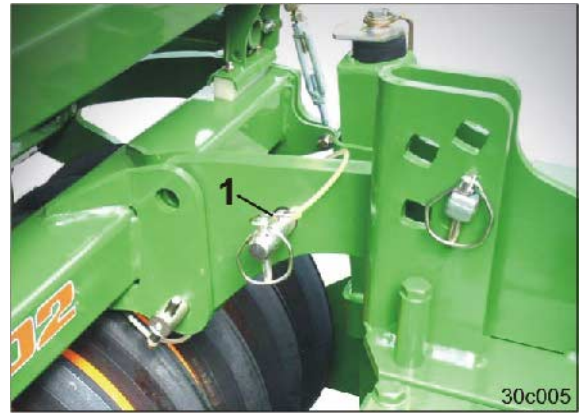


Fig. 105

7.3 Disconnecting the mounted seed drill



WARNING

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

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

1. Put the track markers into transport position and secure them (see section 8.6 Seite 125).
2. Put the star wheel into transport position and secure it (see section 8.1, Seite 100).
3. Empty the seed hopper (see section 8.4, Seite 112).

4. Disconnect the track marker sensor cable (Fig. 106/2).
5. Disconnect the track marker hydraulic pipes (Fig. 106/1).



Only required when the track markers are attached to the soil tillage implement.

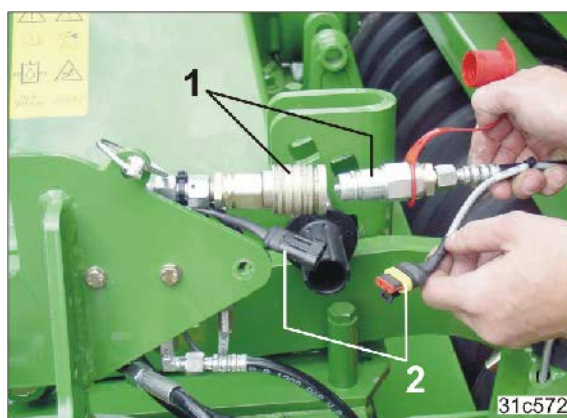


Fig. 106

7.3.1 Disconnecting the mounted seed drill with tooth packer roller PW 500 and wedge ring roller KW 520

1. Lower the combination onto the ground and put all control units into float position.
2. Apply the handbrake, switch the tractor engine off and remove the ignition key.
3. Disconnect the supply lines of the seed drill.
4. Close the hydraulic connectors with protective caps.
5. Raise the combination and insert the parking supports (Fig. 94/1) into the square tubes of the mounted seed drill.
6. Remove the bolts (Fig. 107/1) on the two catching sockets.
7. Lower the combination until the mounted seed drill is standing on the parking supports (Fig. 94/1).
8. Apply the handbrake, switch the tractor engine off and remove the ignition key.
9. Remove the top link (Fig. 93/1).
10. Carefully raise the soil tillage implement and pull it forwards without touching the mounted seed drill.



Fig. 107

7.3.2 Disconnecting/mounting the mounted seed drill with tooth packer roller PW 600, wedge ring roller KW 580 and Crack-Disc roller CDW 550

1. Lower the combination onto the ground and put the control units into float position.
2. Apply the handbrake, switch the tractor engine off and remove the ignition key.
3. Disconnect the supply lines of the seed drill.
4. Close the hydraulic connectors with protective caps.
5. Fix the carrying arms with the top carrying arm pins (Fig. 108/1). Line up the holes by adjusting the top link (Fig. 103/1).
6. Secure the carrying arm pins with linch pins.
7. Remove the top link (Fig. 103/1).
8. Raise the combination and insert the parking supports (Fig. 102/1) into the square tubes of the mounted seed drill.
9. Remove the pins (Fig. 109/1) from the two catch hooks.



Fig. 108



Fig. 109

10. Loosen the lock nuts and relieve the turnbuckle (Fig. 110/1).
11. Remove the two pins (Fig. 110/2).
12. Repeat the procedure on the second turnbuckle.
13. Lower the combination onto the parking supports.
14. Lower the soil tillage implement and carefully pull forwards.



Fig. 110

8 Settings



DANGER

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact 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 mounted implement against unintentional start-up and rolling before you make any adjustments to the implement, (see section 6.2, Seite 82).



WARNING

Couple the seed drill to the tractor before making adjustments.

8.1 Moving the star wheel into transport/operational position



WARNING

Before actuating the tractor spool valve for the star wheel actuation, direct people out of the danger area.

8.1.1 Moving the star wheel to the working position

15. Pull the star wheel out of the transport bracket (Fig. 115/1). The star wheel is secured with a linch pin (Fig. 115/2).



Fig. 111

16. Insert the star wheel in the drive and secure it with a linch pin (Fig. 114/1)



Fig. 112

8.1.2 Move the star wheel to the transport position

1. Raise the star wheel (optionally by actuating control unit 3).
2. Swivel the bar (Fig. 113/1).



Fig. 113

3. Fix the star wheel of the seed drill with 3.0 m working width onto the transport bracket.
- 3.1 Loosen the linch pin (Fig. 114/1) and pull the star wheel off of the drive.



Fig. 114

- 3.2 Fix the star wheel onto the transport bracket (Fig. 115/1) and secure it with the linch pin (Fig. 115/2).



Fig. 115



Never actuate the hydr. star wheel elevation when the star wheel is fixed in the transport bracket.

Otherwise, the components collide with the star wheel.



Put the star wheel into working position in the reverse sequence.

8.2 Adjusting the implement to type of seed



Always check settings with a calibration test.

Adjustments for seed metering

- Connect normal seed metering wheel or fine seed metering wheel to the gearbox drive
- Shutter slide position
- Bottom flap position
- Agitator shaft
 - connect to the gearbox drive
 - disconnect from gearbox drive
- Calibration test

You will find the required values in Seed setting values table ().



The values in the table depend on the seed to be metered.

If the seed to be metered is not in the table, then use the values from another type of seed of a similar grain size and shape.

Each setting must be checked with a calibration test.

8.2.1 seeding with the normal or fine seed metering wheel



These settings affect the seeding rate.

Check settings with a calibration test.

1. Pull the calibration trays (Fig. 116) up out of the brackets before making any settings and then insert them again.



Fig. 116

2. Raise the star wheel, (see section „Moving the star wheel into transport/operational position“, Seite 100).
3. Apply the handbrake, switch the tractor engine off and remove the ignition key.
4. Insert the calibration crank (Fig. 117/1) into the square tube of the star wheel.



Fig. 117

5. Turn the star wheel to the right until the holes (Fig. 118/1) of the fine seed metering wheels are visible.

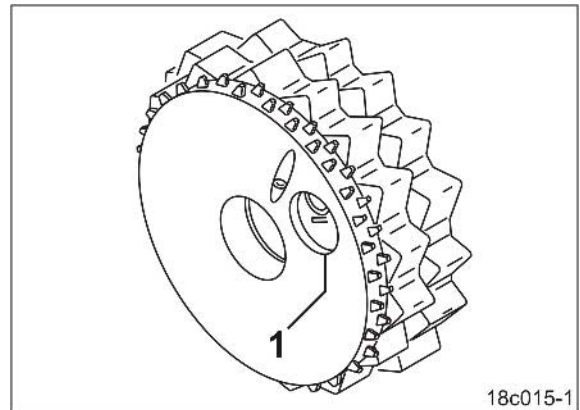


Fig. 118

Seedin with normal seeding wheels

1. Turn the normal seed metering wheel on the seeding shaft by hand until the pin (Fig. 119/1) is visible in the hole.

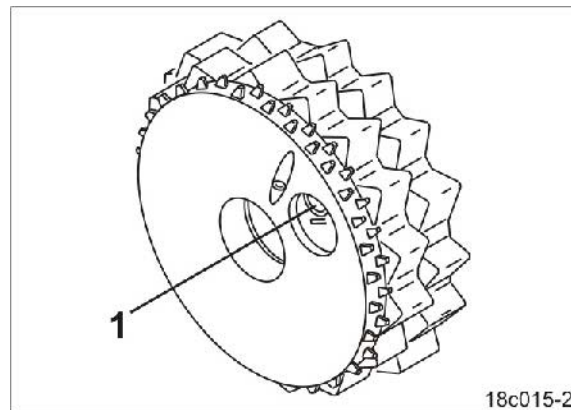


Fig. 119

2. Press the pin against the fine seed metering wheel using the supplied key (Fig. 120/1).
3. Check the connection.
4. Make the same settings on all seed metering wheels.

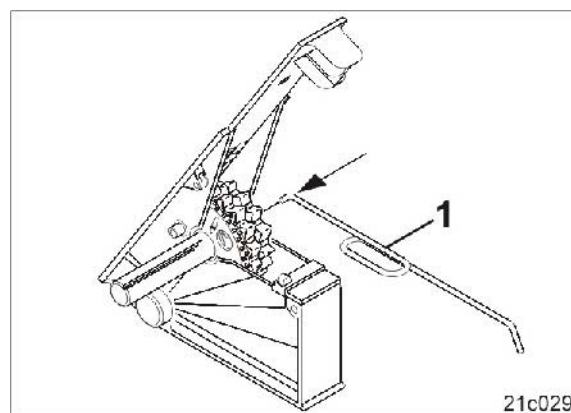


Fig. 120

Seeding with fine seeding wheels

1. Use the supplied key (Fig. 121/1) to press the pin into the normal seed metering wheel behind the hole until it reaches the stop.
2. Check whether the normal seed metering wheel is able to turn freely on the seeding shaft.
3. Make the same settings on all seed metering wheels.

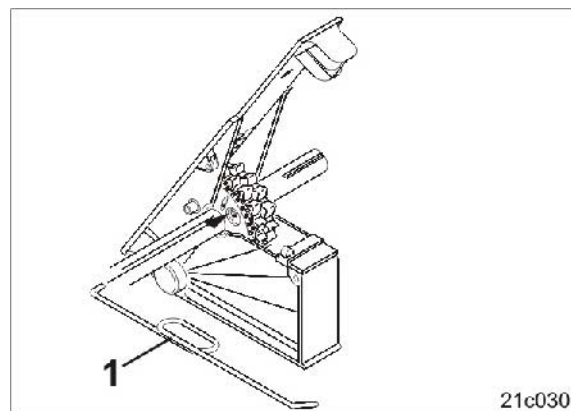


Fig. 121

8.2.2 Seeding with bean seed metering wheels (optional)



These settings affect the seeding rate.

Check settings with a calibration test.

The bean seed metering wheels

- can be replaced by the normal or fine seed metering wheel after removing the showing shaft or
- can be mounted together with a second seeding shaft.

Always have the bean seed metering wheels installed in a specialist workshop (see section "Installing bean seed metering wheels", Seite 178).

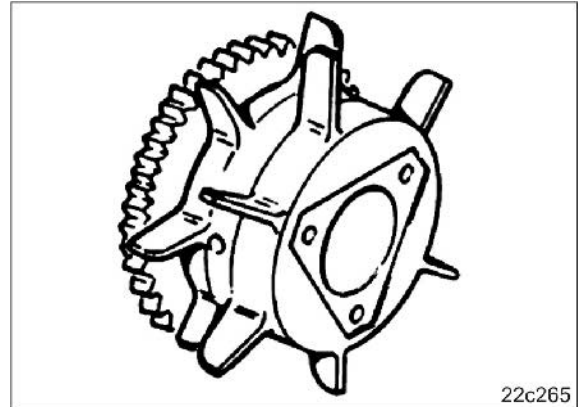


Fig. 122

8.2.3 Adjusting the shutter slides



This setting affects the seeding rate.

Check the setting with a calibration test.

1. Pull the calibration trays (Fig. 46) up out of the brackets before making any settings and then insert them again.



Fig. 123

2. Adjust the shutter slides (Fig. 124) based on the "Setting values" table ().

The shutter slides (Fig. 124) lock into one of the three positions:

- A = closed**
- B = 3/4 open**
- C = open**

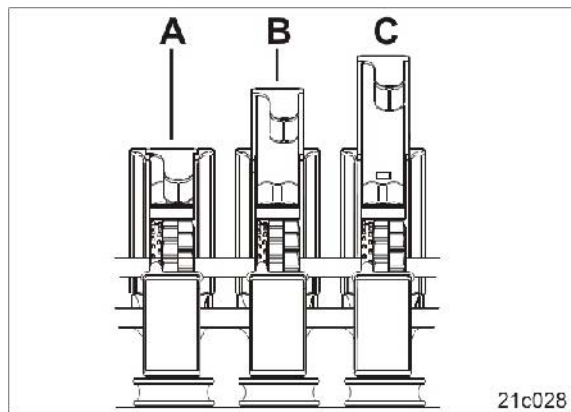


Fig. 124

3. Close the shutter slides to the seed housings which are not needed.

8.2.4 Setting the bottom flap lever



These settings affect the seeding rate.

Check settings with a calibration test.

1. Lock the bottom flap lever (Fig. 125/1) into one of the 8 positions.
2. Secure the bottom flap lever with a linch pin (Fig. 125/2).

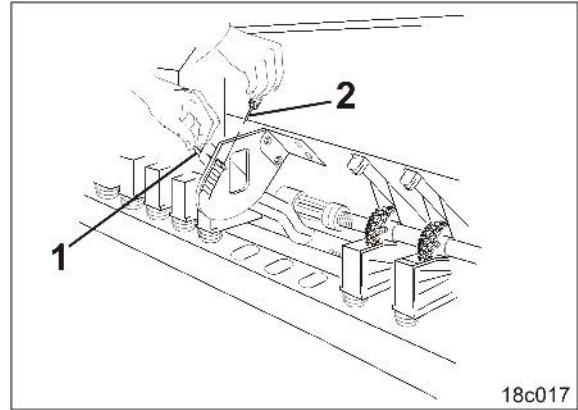


Fig. 125

8.2.5 Setting the digital filling level sensor



You can only adjust the height of the filling level sensor when the seed box is empty.

The filling level sensor may not touch the wall of the box.

You can only adjust the height of the filling level sensor when the seed box is empty.

1. Adjust the height of the level sensor (Fig. 126/1) to the required seed volume.
2. Tighten the thumb nut (Fig. 126/2).



Fig. 126

8.2.6 Mounting the rapeseed insert



Switch off the agitator shaft drive before installing the rapeseed insert in the seed box.

1. Switch off the agitator shaft drive (see section "Switching the agitator shaft drive on and off", Seite 109).
2. Put the stirrers (Fig. 127/2) of the agitator shaft in a vertical position.
3. Attach the rapeseed insert profiles (Fig. 127/1) in the seed box using clamps (Fig. 127/3) [see assembly diagram (Fig. 128)].

The rapeseed insert profiles are supported by the agitator shaft.

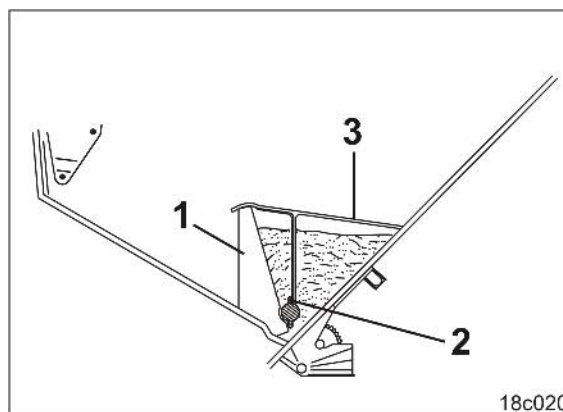
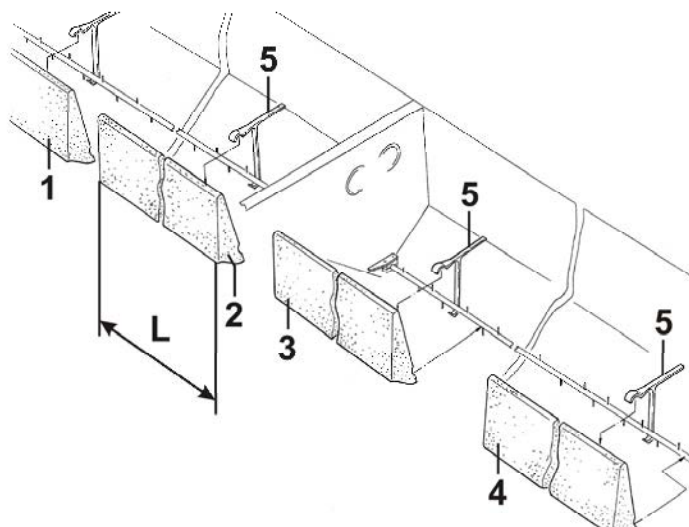


Fig. 127



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| | | | AD 2500 | AD 3000 | AD 3430/3500 | AD 4000 |
|---|--------------------|----------|---------|---------|--------------|---------|
| 1 | Profile length "L" | [mm] | 1025 | 1025 | — | 1025 |
| 2 | | [mm] | — | 255 | — | 755 |
| 3 | | [mm] | 1025 | 1025 | 1025 | 1025 |
| 4 | | [mm] | — | 255 | — | 755 |
| 5 | Clamps | [number] | 6 | 8 | 9 | 10 |

Fig. 128

8.2.7 Switching the agitator shaft drive on and off



This setting will affect the seeding rate.
Check the setting with a calibration test.

The agitator shaft is driven,
when the linch pin (Fig. 129/1) is inserted in the
hole on the hollow drive shaft.

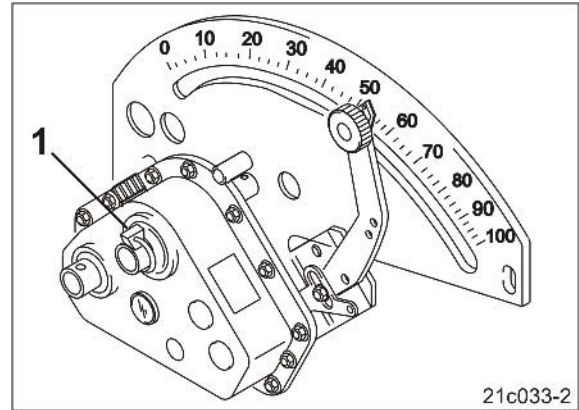


Fig. 129

The agitator shaft stops,
when the linch pin is pulled out of the hole in the
hollow drive shaft.

When parking, insert the linch pin (Fig. 130/1)
into the hole on the auxiliary shaft.

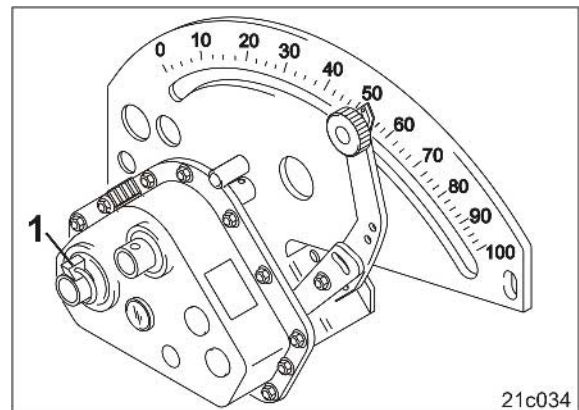


Fig. 130



After seeding, connect the agitator shaft to the drive again.

Seed blockages may occur in the seed box resulting in an incorrect
seeding pattern when sowing seed with chaff and with the agitator
shaft not rotating.

8.3 Filling the seed box



DANGER

- Before filling the seed box, couple the seed drill to the tractor.
- Observe the approved filling levels and total weights.

1. Unlock the steps.

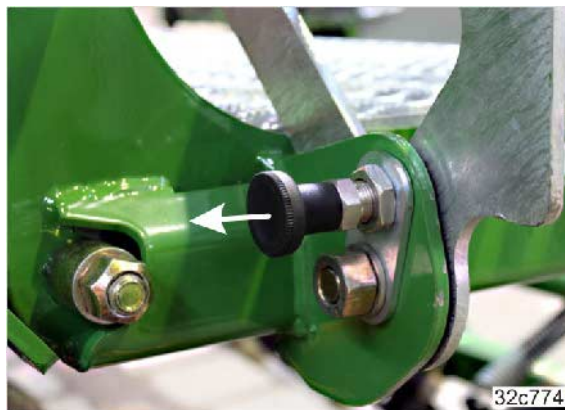


Fig. 131

2. Fold the steps (Fig. 132/1) down.
3. Climb up the steps onto the loading board.



Fig. 132

4. Use the handle to open the lid of the seed box. The loading aid (Fig. 133/1) is available as an option.


Fig. 133

5. Adjust the height of the filling level sensors (Fig. 134) for the desired residual seed quantity.


Fig. 134

6. Fill the seed box.



When filling the seed box, do not place any heavy objects onto the float of the fill level indicator.

Before closing the seed box lid, make sure that the float is on the seed.


Fig. 135

8.4 Emptying the seed box and seed housing



DANGER

Dressing dust is toxic and must not be inhaled or come into contact with body parts.

Wear a protective suit, face mask, safety goggles and gloves when emptying the seed box and seed housing or removing dressing dust, e.g. with compressed air.



DANGER

Before emptying the seed box, couple the seed drill to the tractor.



31c702-2

Fig. 136

1. Couple the seed drill to the tractor.
2. Secure the tractor and implement against unintentional start-up and rolling.
3. Empty the seed box as described in section "Setting the seeding rate with a calibration test", Seite 114.

4. Place the calibration trays (Fig. 137/1) on the funnel rail.
5. Put the bottom flap lever in hole 1.
6. Open all shutter slides.
7. Rotate the bottom flap lever across the group of holes.
 - Open the bottom flaps
 - The seed flows into the calibration trays.
8. Put the bottom flap lever in hole 1 as soon as the calibration trays have been filled.
9. Empty the calibration trays.
10. Repeat the process until the seed box is empty.
11. Fill the seed housings (Fig. 138/1) by turning the star wheel with the calibration crank repeatedly until the seed housings are emptied.
12. Clean the seed box and the metering unit.
13. Lock the bottom flap lever in hole 8 if the implement will be parked for a longer period.
14. Attach the calibration trays to the seed box.
15. Push the funnel rail up until it audibly clicks into place.

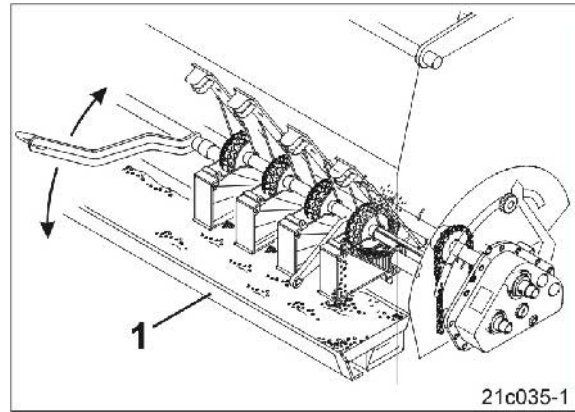

Fig. 137

Fig. 138


Open the bottom flaps if the seed drill is not to be used for a longer period.

If the bottom flaps are left shut, there is the risk of mice trying to get into the hopper because it still smells like grain even when the hopper is empty. If the bottom flaps are closed, the animals may try to nibble at the bottom flaps.

8.5 Setting the seeding rate with a calibration test

The calibration test checks whether the pre-set and actual seeding rates are equivalent.

Always perform the calibration test

- when the seed type is changed
- if the seed type is identical, but the grain size, grain shape, specific weight and dressing are different
- when changing from the normal seed metering wheel to the fine seed metering wheel or bean seed metering wheel and vice versa
- after adjusting the
 - o Bottom flaps
 - o shutter slide
- after switching the agitator shaft on or off.

1. Couple the seed drill to the tractor.
2. Secure the tractor against unintentional start-up and rolling.
3. Fill at least 1/3 of the seed box with seed (accordingly less for fine seed).
4. Pull the spring-loaded lever (Fig. 139/1) sideways out of the locking device.

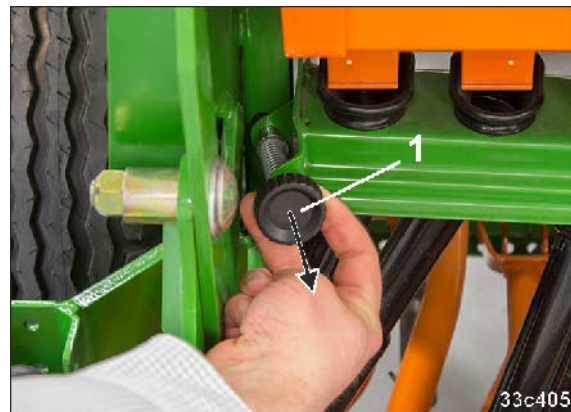


Fig. 139

5. Lower the funnel rail (Fig. 140/1).



Fig. 140

6. Pull the calibration trays up out of the brackets.



Fig. 141

7. Place the calibration trays on the funnel rail.



Fig. 142



The tramline counter may not display "0" during the calibration test. If necessary, advance the tramline counter.

If the tramline counters is on "0"

- no seed is delivered by the tramline seed metering wheels.
- an incorrect gearbox position is determined through incorrect calibration values.

8. If the tramline counters shows "0"
 - o pull the operating lever (Fig. 143/1) once
 - o set the tramline counter in the on-board computer to "1".

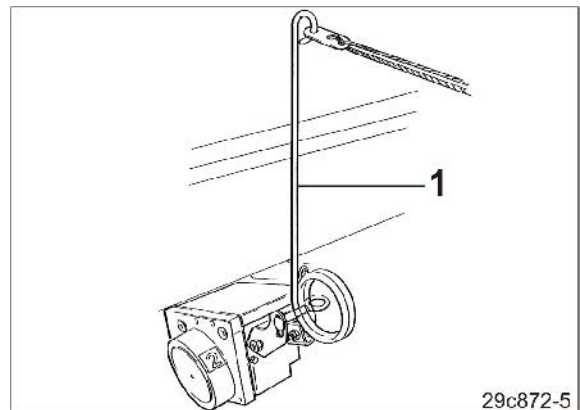


Fig. 143

Settings



If the seed drill is equipped with electrical seed quantity adjustment, then make all the other settings as described in the on-board computer operating manual.



The section "Adjusting the hydr. seed rate remote control, Seite 123 describes the adjustment of the gearbox lever, if equipped correspondingly.

9. Undo the locking knob (Fig. 144/1).
10. Consult the table (Fig. 145, unterhalb) for the gearbox setting value for the first calibration test.
11. Set the pointer (Fig. 144/2) of the gearbox lever **from below** to the gearbox setting value.
12. Tighten the locking knob.

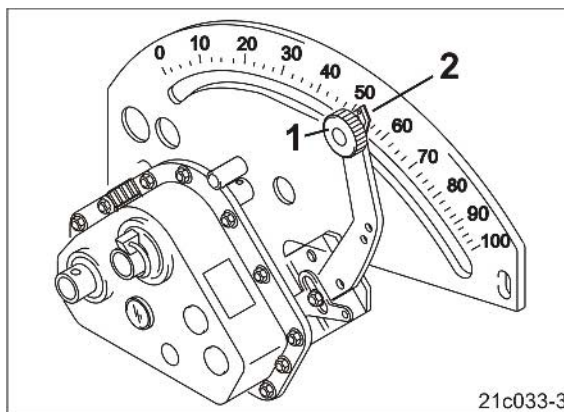


Fig. 144

Gearbox setting values for the first calibration test

| | |
|---|----------------------|
| Seeding with normal seed metering wheels: | Gearbox setting "50" |
| Seeding with fine seed metering wheels: | Gearbox setting "15" |
| Seeding with bean seed metering wheels: | Gearbox setting "50" |

Fig. 145

13. Raise the star wheel.
14. Apply the handbrake, switch the tractor engine off and remove the ignition key.
15. Insert the calibration crank into the square tube of the star wheel (Fig. 146).
16. Turn the seed drill wheel until the seed falls out of all seed housings into the calibration trays.
17. Fill the calibration trays twice by turning the calibration crank (with fine seed, approx. 200 crank rotations will be enough).



Fig. 146



Preturning creates the same conditions as when driving on the field later on.

18. Empty the calibration trays into the seed box and place them on the funnel rails again.
19. Turn the star wheel to the right with the number of crank turns specified in the table (Fig. 148).
20. Weigh the seed collected in the calibration trays.



Check the scales to ensure the display is accurate, taking the container weight into consideration.

21. Calculate the seeding rate [kg/ha] from the weight of seed collected (see below)
 - o by a factor of 40 (for 1/40 ha) or
 - o by a factor of 10 (for 1/10 ha).

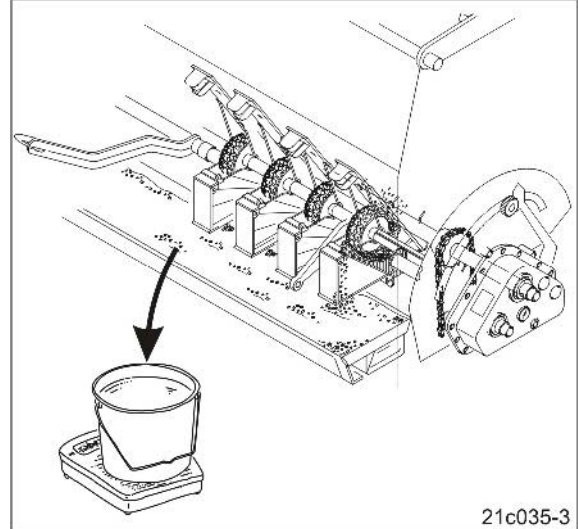


Fig. 147

Calibrating on 1/40 ha:

| | | |
|-----------------------------|----------|--|
| Seeding rate [kg/ha] | = | calibrated seed quantity [kg/ha] x 40 |
|-----------------------------|----------|--|

Calibrating on 1/10 ha:

| | | |
|-----------------------------|----------|--|
| Seeding rate [kg/ha] | = | volume of seed in test [kg/ha] x 10 |
|-----------------------------|----------|--|

Example:

calibrated seed quantity: 3.2 kg on 1/40 ha

$$\text{Seeding rate [kg/ha]} = 3.2 \text{ [kg/ha]} \times 40 = 128 \text{ [kg/ha]}$$



The correct gearbox setting can be determined using the calculating disc rule using the calculated value from the first calibration test (see section "Determining the gearbox setting using the calculating disc rule", Seite 119).

Settings

22. Repeat the calibration test until the desired seeding rate is achieved.
23. Attach the calibration trays to the seed box.
24. Slide the funnel rails upwards and lock them into place.
25. Clip the calibration crank into its transport bracket.



Repeat the calibration test again after approx. 2 ha.

The number of crank turns on the star wheel depends on the seed drill working width (1).

The number of wheel revolutions (2) relates to an area of

- 1/40 ha (250 m²) or
- 1/10 ha (1000 m²).

The usual area for the calibration test is 1/40 ha. With extremely small seeding rates, e.g. with rape, it is advisable to perform the calibration test for 1/10 ha.

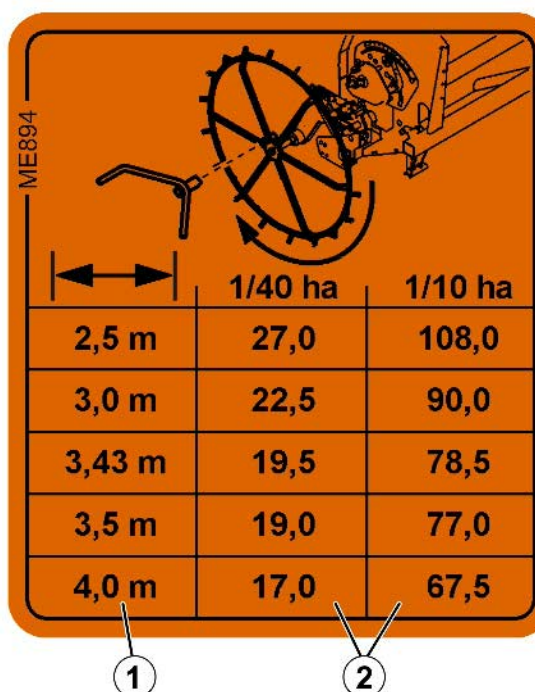


Fig. 148

8.5.1 Determining the gearbox setting using the calculating disc rule

Example:

Values from the calibration test

computed seeding rate:175 kg/ha

gearbox setting:70

Desired seeding rate:125 kg/ha.

1. Line up the values from the calibration test
 - o Computed seeding rate
175 kg/ha (Fig. 149/A)
 - o Gearbox setting 70 (Fig. 149/B)
 opposite one another on the calculating disc rule.
 2. Read the gearboX setting for the desired seeding rate of 125 kg/ha (Fig. 149/C) from the calculating disc rule.
- Gearbox setting 50 (Fig. 149/D).
3. Set the gearbox lever to the value read from the disc.
 4. Check the gearbox setting with a calibration test.

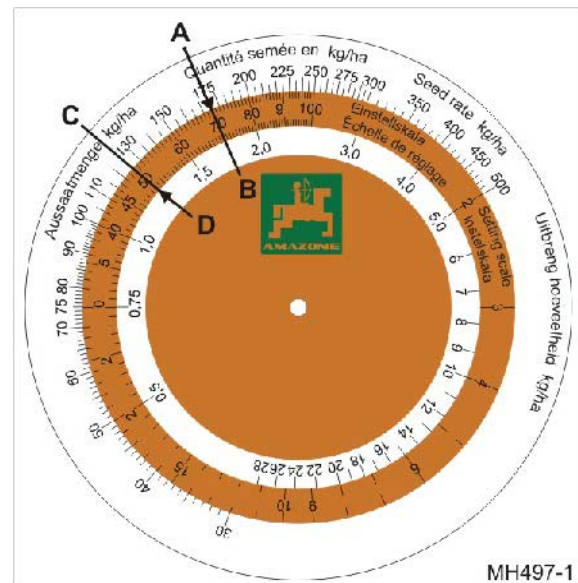


Fig. 149

8.5.2 Seeding peas

Seeding with normal seed metering wheels:

For peas with a thousand grain weight (TGW) under 440, seed using the normal seed metering wheels. Do not exceed the maximum working speed of 6 km/h.

Seeding with bean seed metering wheels:

Peas with a TGW of more than 440 can only be sown with bean seed metering wheels.

Peas with the shape and size as shown in the figure (Fig. 150) have a good flow rate. The agitator shaft can be shut down while seeding.

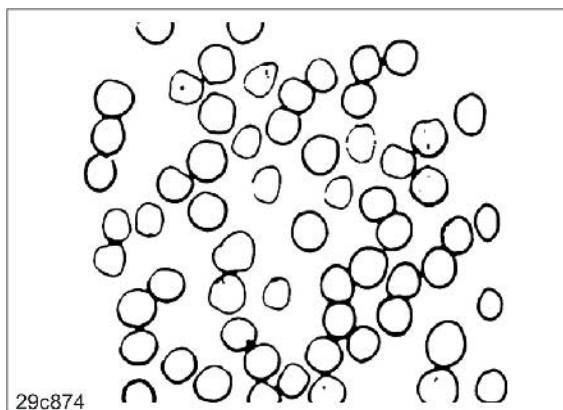


Fig. 150

When seeding square-shaped peas with the shape and size as shown in the figure (Fig. 151), the agitator shaft must be turning.

Otherwise the peas will not flow well and will tend to bridge in the seed box.

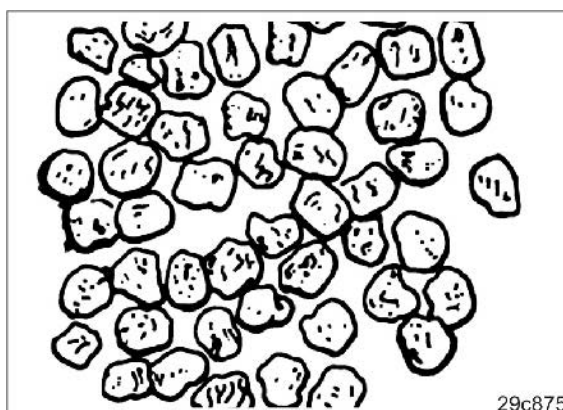


Fig. 151

In exceptional cases, peas that have been treated with certain types of seed dressing and have an unfavourable shape are not thrown out of the seed metering wheel but find their way back into the seed box.

This can be remedied by installing the fine seed metering wheel brushes (Fig. 152/1) on all seed housings.



Fig. 152

8.5.3 Seeding beans

Seeding beans up to a TGW of approx. 400

Beans with a 1000 grain weight (TGW) of approx. 400 g, of the shape and size shown in figure (Fig. 153), can be sown with normal seed metering wheels without any problems.

The agitator shaft needs to keep running while seeding.



Fig. 153

Seeding beans with a TGW of more than 400 g

To sow large beans (TGW more than 400 g), of the shape and size shown in figure (Fig. 154), the seed drill needs to be equipped with the bean seed metering wheel.

The agitator shaft needs to keep running while seeding.

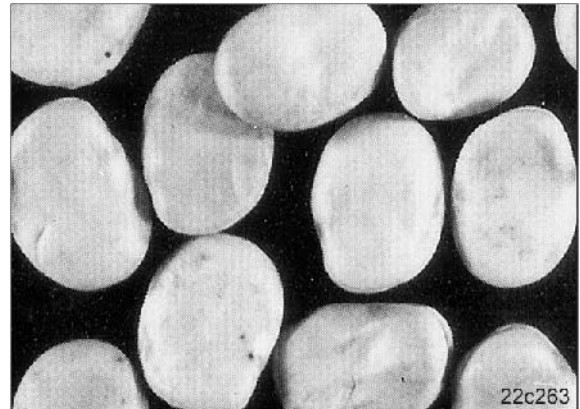


Fig. 154

8.5.4 Seed setting values table

| Seed | Seed wheel | Shutter slide position | Bottom flap position | | Agitator shaft |
|--|----------------------------|------------------------|---|--------------|----------------|
| | | | less than 6 g (rapeseed) 50 g (cereals) | greater than | |
| Rye | Normal seed metering wheel | open | 1 | 2 | driven |
| Triticale | Normal seed metering wheel | open | 1 | 2 | driven |
| Barley | Normal seed metering wheel | open | 1 | 2 | driven |
| Wheat | Normal seed metering wheel | open | 1 | 2 | driven |
| Spelt | Normal seed metering wheel | open | 2 | | driven |
| Oats | Normal seed metering wheel | open | 2 | | driven |
| Rapeseed | fine seed wheel | $\frac{3}{4}$ open | 1 | 2 | standstill |
| Caraway | fine seed wheel | $\frac{3}{4}$ open | 1 | | standstill |
| Mustard/Oilseed radish | fine seed wheel | $\frac{3}{4}$ open | 1 | | standstill |
| Phacelia | Normal seed metering wheel | $\frac{3}{4}$ open | 1 | | driven |
| Phacelia | fine seed wheel | $\frac{3}{4}$ open | 1 | | driven |
| Turnips | fine seed wheel | $\frac{3}{4}$ open | 1 | | standstill |
| Grass | Normal seed metering wheel | open | 2 | | driven |
| Beans, small (TGW less than 400 g) | Normal seed metering wheel | $\frac{3}{4}$ open | 4 | | driven |
| Beans, large (TGW up to 600 g) | Bean seed metering wheel | $\frac{3}{4}$ open | 3 | | driven |
| Beans, large (TGW over 600 g) | Bean seed metering wheel | $\frac{3}{4}$ open | 4 | | driven |
| Peas (TGW up to 440 g) | Normal seed metering wheel | $\frac{3}{4}$ open | 4 | | driven |
| Peas (TGW over 440 g) | Bean seed metering wheel | $\frac{3}{4}$ open | 4 | | driven |
| Flax (dressed) | Normal seed metering wheel | $\frac{3}{4}$ open | 1 | | driven |
| Millet | Normal seed metering wheel | $\frac{3}{4}$ open | 1 | | driven |
| Lupins | Normal seed metering wheel | $\frac{3}{4}$ open | 4 | | driven |
| Alfalfa | Normal seed metering wheel | $\frac{3}{4}$ open | 1 | | driven |
| Alfalfa | fine seed wheel | $\frac{3}{4}$ open | 1 | | driven |
| Oil linen (moist dressing) | Normal seed metering wheel | $\frac{3}{4}$ open | 1 | | standstill |
| Oil linen (moist dressing) | fine seed wheel | $\frac{3}{4}$ open | 1 | | standstill |
| Red clover | fine seed wheel | $\frac{3}{4}$ open | 1 | | standstill |
| Soya | Normal seed metering wheel | $\frac{3}{4}$ open | 4 | | driven |
| Sunflowers | Normal seed metering wheel | $\frac{3}{4}$ open | 2 | | driven |
| Vetches | Normal seed metering wheel | $\frac{3}{4}$ open | 2 | | driven |
| Rice | Normal seed metering wheel | open | 3 | | driven |

8.5.5 Adjusting the hydr. seed rate remote control



WARNING

Instruct people to stay out of the operating area of the hydraulic cylinders.

If the tractor control valve is actuated, these hydraulic cylinders will also be working

- Vario gearbox
- Coulter pressure
- Exact harrow pressure.

Setting the normal seeding rate

1. Shift control valve 2 to the float position.
2. Apply the handbrake, switch the tractor engine off and remove the ignition key.
3. Undo the locking knob (Fig. 155/1).
4. Consult the table (Fig. 145, Seite 116) for the gearbox setting value.
5. Set the pointer (Fig. 155/2) of the gearbox lever **from below** to the gearbox setting value.
6. Tighten the locking knob.
7. Determine the gearbox setting required for the desired seeding rate (see section "Setting the seeding rate with a calibration test", Seite 114).

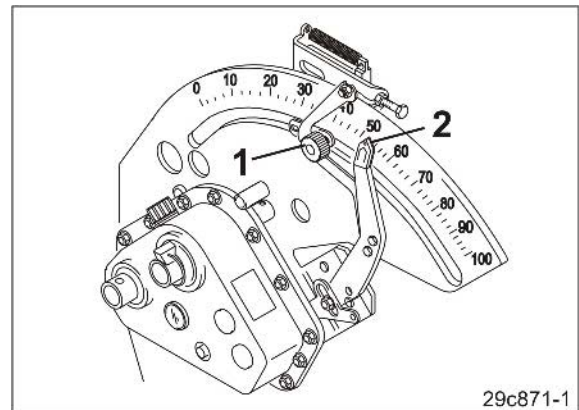


Fig. 155

Settings

Setting the elevated seeding rate

1. Actuate control valve 2.
- Apply pressure to the hydraulic cylinder.
2. Apply the handbrake, switch the tractor engine off and remove the ignition key.
3. Use the adjusting screw (Fig. 156/1) to set the pointer (Fig. 156/2) of the gearbox lever to the desired gearbox setting for the elevated seeding rate.

Unscrew adjusting screw (Fig. 156/1):
increase seeding rate.

Screw in adjusting screw (Fig. 156/1):
reduce seeding rate.

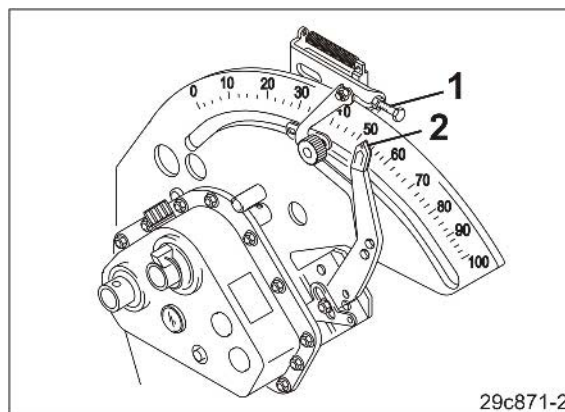


Fig. 156

4. Determine the elevated seeding rate with a calibration test (see section "Setting the seeding rate with a calibration test", Seite 114).
5. Shift control valve 2 to the float position.

Deselecting the elevated seeding rate

Actuating control valve 2 should increase the coulter pressure and the exact harrow pressure, but not the seeding rate.

To do so, screw the adjustment bolt (Fig. 157/1) all the way in.

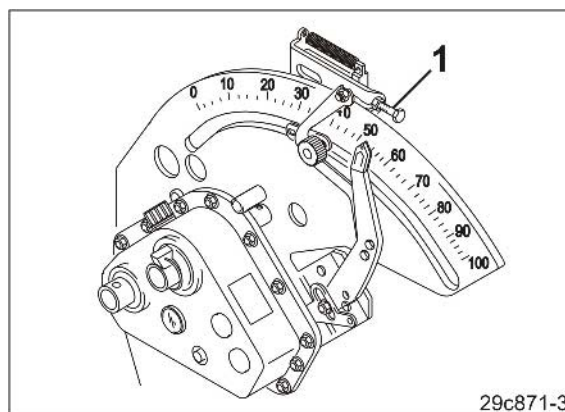


Fig. 157

8.6 Moving the track marker to the working / transport position



DANGER

The track markers

- can lower unexpectedly if they are not secured. This also applies during road transport.
- must be put into transport position and secured with linch pins immediately after work on the field
- should only be unlocked (loosen the linch pin) just before starting work in the field.
- have a swivel range that must not be entered
- should only be adjusted when the parking brake is applied, the engine switched off and the ignition key removed.

Not following these instructions may result in serious injuries with incalculable consequences.

8.6.1 Move track marker to working position

1. Position the implement on the field.
2. Unlock both track markers.
 - 2.1 Apply the tractor parking brake, switch off the engine and remove the ignition key.
 - 2.2 Press the track marker boom against the rubber block.
- 2.3 Pull out the linch pin (Fig. 158/1) and insert it in the parking position in the hole (Fig. 158/2).
3. Adjust the track marker length.
 - 3.1 Direct people out of the swivel area of the track marker.
 - 3.2 Lower the track marker into its working position.
 - 3.3 Apply the tractor parking brake, switch off the engine and remove the ignition key.



Fig. 158

Settings

- 3.4 Release two screws (Fig. 159/1).
- 3.5 Set the track marker length to length "A" (see table Fig. 160).
- 3.6 Turn the track marker disc to adjust the working intensity of the track markers so that they run roughly parallel to the direction of travel on light soil and are more attuned to grip on heavier soil.
- 3.7 Tighten screws (Fig. 159/1).

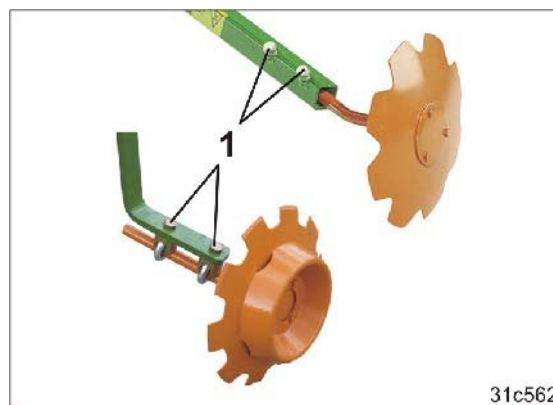


Fig. 159

| Working width | Distance "A" ¹⁾ |
|---------------|----------------------------|
| 2.50m | 2.50m |
| 3.00m | 3.00m |
| 3.43m | 3.43m |
| 3.50m | 3.50m |
| 4.00m | 4.00m |

¹⁾ Distance from the centre of the implement to the contact area of the track marker disc

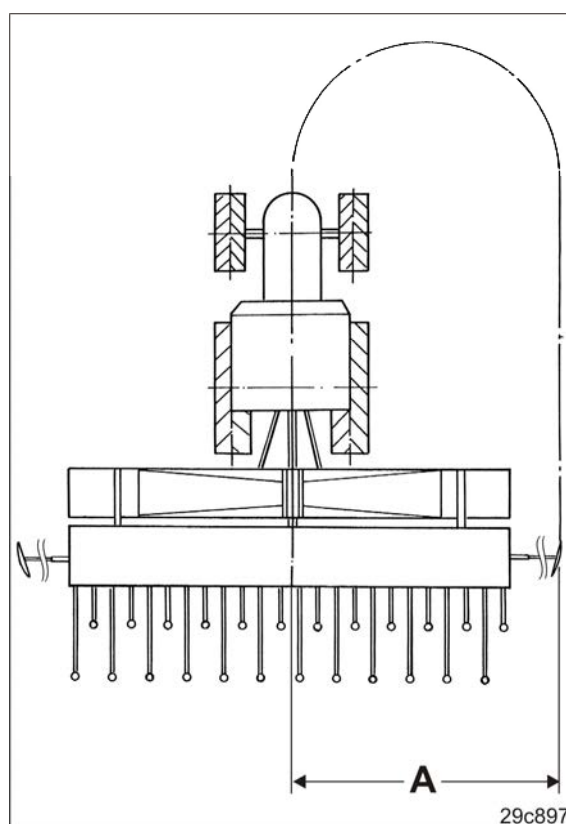


Fig. 160

8.6.2 Move track marker to transport position

1. Direct people out of the swivel area of the track marker.
2. Actuate control valve 1.
 - Raise both track markers like when turning at the end of the field (see Fig. 161).
3. Apply the handbrake, switch the tractor engine off and remove the ignition key.



Fig. 161

4. Secure both track markers with linch pins.
 - 4.1 Press the track marker boom against the rubber block and secure it with a linch pin (Fig. 162/1).



Fig. 162

8.7 Attaching the band sowing shoe to the WS coulter

Fix the band sowing shoe (Fig. 163/1) to the WS coulter with a bolt and secure with a linch pin.

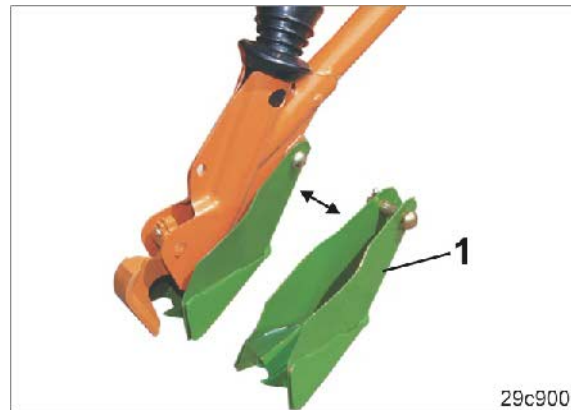


Fig. 163

8.8 Adjusting the seed placement depth / coulter pressure



This setting influences the placement depth of the seed.
Check the placement depth of the seed after each adjustment.

8.8.1 Central coulter pressure adjustment

1. Place the calibrating crank (Fig. 164) on the adjustment spindle and set the coulter pressure.

Turning the calibration crank

- anticlockwise causes shallower seed placement
- clockwise causes deeper seed placement.

2. Clip the calibration crank into its transport bracket.



Fig. 164

8.8.2 Hydr. coulter pressure adjustment



WARNING

Direct people out of the danger area of the hydraulically operated components (Vario gearbox, coulters, exact harrow).

Setting normal coulter pressure

1. Actuate control valve 2.
- Apply pressure to the hydraulic cylinder.
2. Apply the handbrake, switch the tractor engine off and remove the ignition key.
3. Insert the pin (Fig. 165/1) below the stop (Fig. 165/3) into a hole in the group of holes and secure it with a linch pin (Fig. 165/2).

Each of the holes is identified with a number.

The greater the number of holes into which the pin is inserted, the greater the coulter pressure or respectively the seed placement depth.

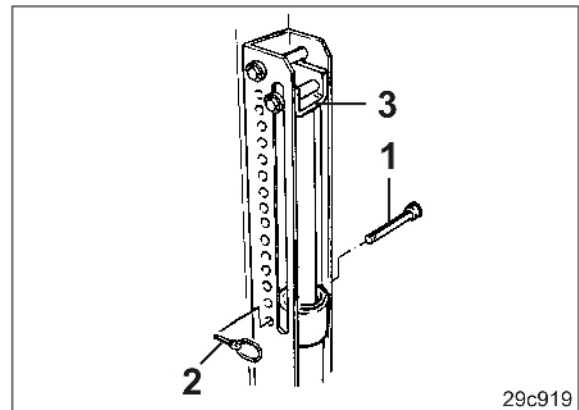


Fig. 165

4. Shift control valve 2 to the float position.

Setting the coulter pressure higher

1. Shift control valve 2 to the float position.
2. Apply the handbrake, switch the tractor engine off and remove the ignition key.
3. Insert the bolt (Fig. 166/1) above the stop (Fig. 166/3) into a hole in the group of holes and secure it with a linch pin (Fig. 166/2).

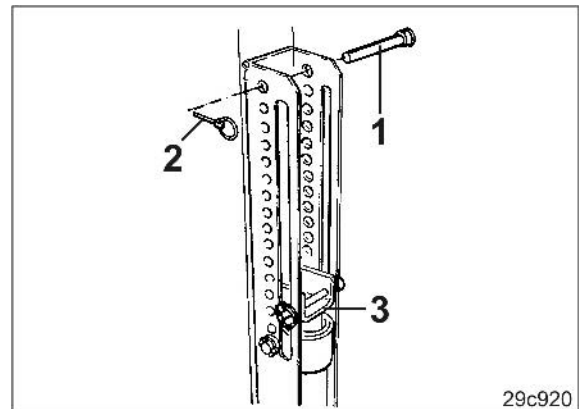


Fig. 166

8.8.3 Setting the depth control discs

If the desired placement depth cannot be achieved by adjusting the coulter pressure, adjust all depth control discs equally according to table (Fig. 167).

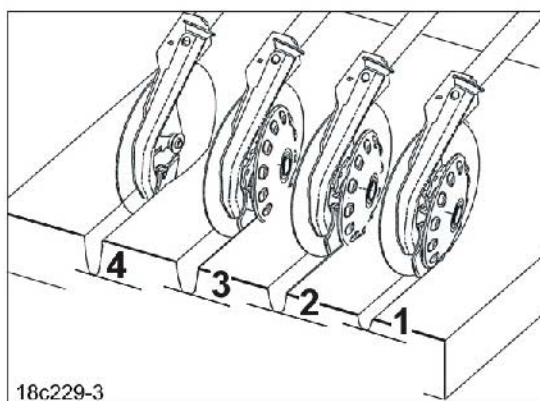
Each depth control disc can be locked in three positions on the coulter or be removed from the coulter.

Then reset the placement depth by adjusting the coulter pressure.



This setting influences the placement depth of the seed.

Check the placement depth of the seed after each adjustment.



| | | |
|---|--------------------------------------|-----------------------------------|
| 1 | Engagement position 1 | Placement depthapprox. 2 cm |
| 2 | Engagement position 2 | Placement depthapprox. 3 cm |
| 3 | Engagement position 3 | Placement depthapprox. 4 cm |
| 4 | Seeding without a depth control disc | Placement depth> 4 cm |

Fig. 167

Engagement position 1 to 3

1. Engage the handle (Fig. 168/1) in one of the 3 positions.

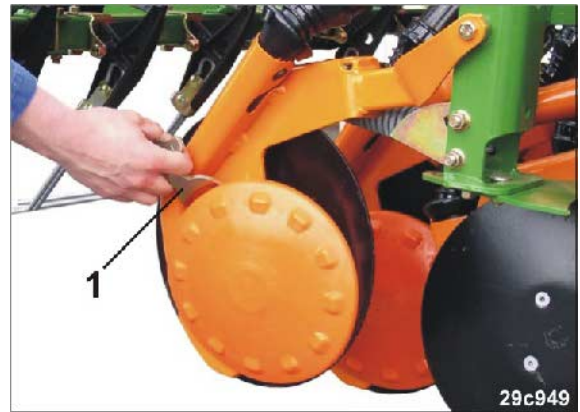


Fig. 168

Seeding without the depth control disc / roller

1. Rotate the handle past the catch (Fig. 169/1) and remove the depth control disc/roller from the coulter.



Fig. 169

Mounting the depth control disc



Attach the depth control disc with the designation

- "K" to the short coulter
- "L" on the long coulter.

1. Press the depth control disc/roller from below against the catch on the coulter.
The shoulder must grip in the slot.
2. Pull the handle to the rear and upwards beyond the notches.
A light knock on the centre of the disk helps to latch it into position.

8.8.4 Checking the seed placement depth

Check the seed placement depth

- after adjusting the coulter pressure each time
- after adjusting the outside coulter each time
- after adjusting the depth control discs each time
- when changing from a light to heavy soil, and vice-versa.

Checking the seed placement depth

1. Seed approx. 30 m at working speed.
2. Expose the seed in several places, including the area of the outside coulters.
3. Check the seed placement depth.

8.9 Working width of exact harrow

The roller and the coulters force the soil outwards to different extents depending on the forward speed and condition of the soil.

Set the outer harrow such that the soil is guided back and a trackless seed bed is created.

The greater the forward speed, the further the square tubes (Fig. 170/1) have to be pushed outwards.

Secure the square tubes with the outer harrows using clamping screws after every adjustment.



Fig. 170

8.10 Adjusting the harrow tines

8.10.1 Adjusting the height with the spindle

1. Move the implement on the field to the working position.
2. Apply the tractor parking brake, switch off the engine and remove the ignition key.
3. Adjust the exact harrow tines according to the table (Fig. 68).

The exact harrow tines are adjusted by turning the crank evenly (Fig. 171/) on all adjuster segments.

Turning clockwise:

- Distance A (Fig. 68) increases

Turning anticlockwise:

- Distance A (Fig. 68) decreases
4. Secure the adjustment by inserting a linch pin (Fig. 172/1).



Fig. 171

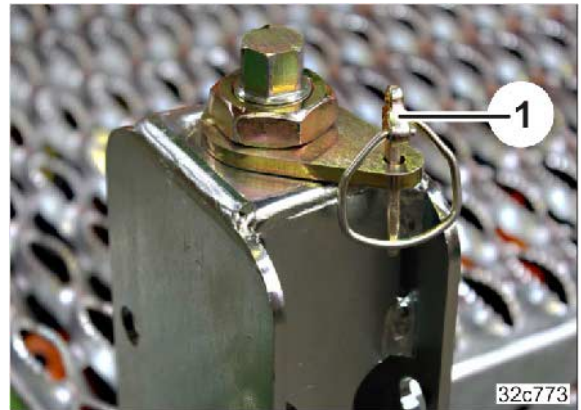


Fig. 172

8.10.2 Adjusting the height by turning

1. Move the implement on the field to the working position.
2. Apply the tractor parking brake, switch off the engine and remove the ignition key.
3. Adjust the exact harrow tines according to the table (Fig. 68).
4. The exact harrow tines are set by evenly applying the harrow brackets.
 - 4.1 Loosen the bolts (Fig. 173/1)
 - 4.2 Move holder to a new hole (Fig. 173/2)
 - 4.3 Insert bolts and tighten them

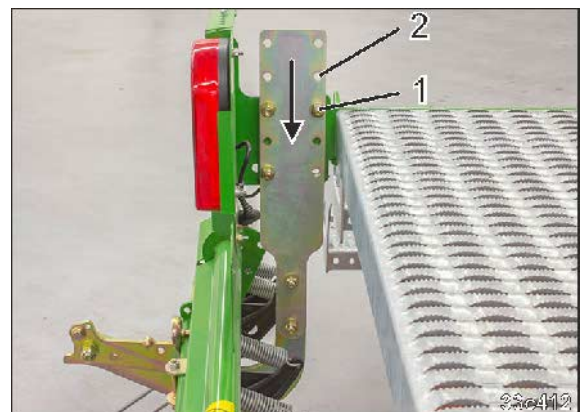


Fig. 173

8.10.3 Exact harrow pressure adjustment

When properly adjusted, the exact harrow tines should

- lie horizontally on the ground and
- have 5 - 8 cm clearance beneath.

| | |
|---------------------|----------------------|
| Distance "A" | 230 to 280 mm |
|---------------------|----------------------|

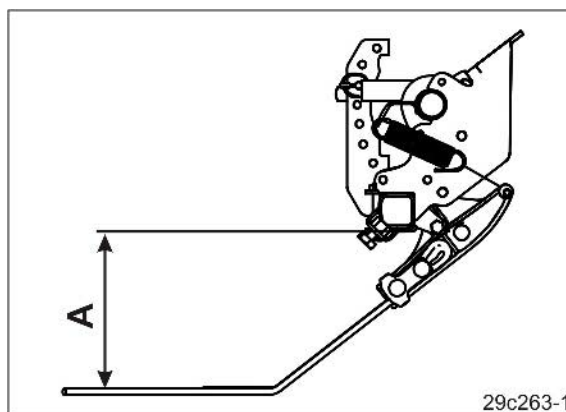


Fig. 174

1. Tension the lever (Fig. 175/1) with the calibration crank.
2. Insert the pin (Fig. 175/2) into a hole below the lever
3. Relieve the lever.
4. Secure the bolt with a safety splint.
5. Apply the same setting to all adjuster segments.



Fig. 175

8.10.4 Hydraulic exact harrow pressure adjustment

**WARNING**

Direct people out of the danger area of the hydraulically operated components (Vario gearbox, coulters, exact harrow).

Setting normal exact harrow pressure

1. Actuate control valve 2.
- Apply pressure to the hydraulic cylinder.
2. Apply the handbrake, switch the tractor engine off and remove the ignition key.
3. Insert the bolt (Fig. 176/1) in a hole beneath the lever (Fig. 176/2) and secure with a spring pin.
4. Shift control valve 2 to the float position.

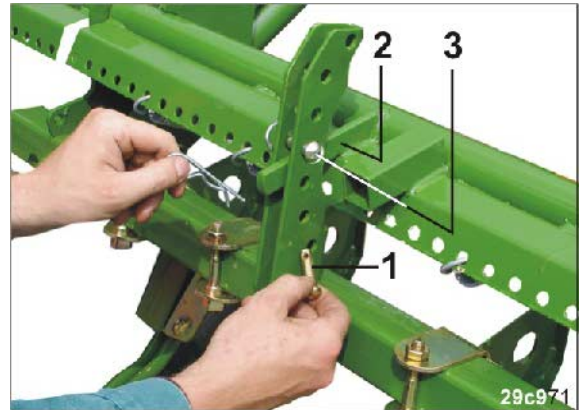


Fig. 176

Setting elevated exact harrow pressure

1. Shift control valve 2 to the float position.
2. Apply the handbrake, switch the tractor engine off and remove the ignition key.
3. Insert the second bolt (Fig. 176/3) in a hole above the lever (Fig. 176/2) and secure with a spring pin.

8.11 Adjusting the roller harrow

8.11.1 Adjusting the harrow tines

To adjust the harrow tines, raise the implement so that the harrow tines are directly above the soil but not touching it.

Apply the tractor parking brake, switch off the engine and remove the ignition key.

8.11.1.1 Adjusting the inclination of the harrow tines

1. The harrow tines are adjusted by inserting the tube clip (Fig. 177/1) below the guide bar (Fig. 177/2) in the same hole in all segments.

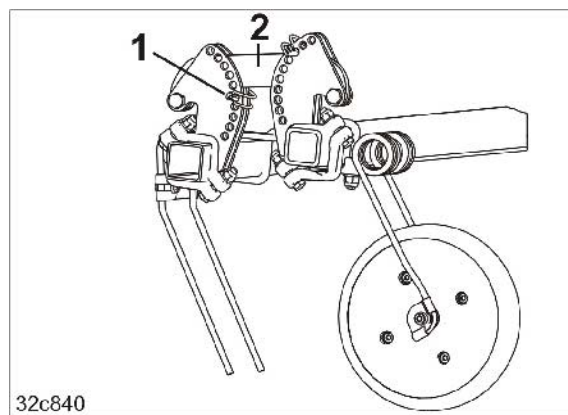


Fig. 177

8.11.1.2 Adjusting the working depth of the harrow tines

1. The working depth of the harrow tines are adjusted by inserting the tube clip (Fig. 178/1) above the guide bar (Fig. 178/2), in all segments, in the same hole.

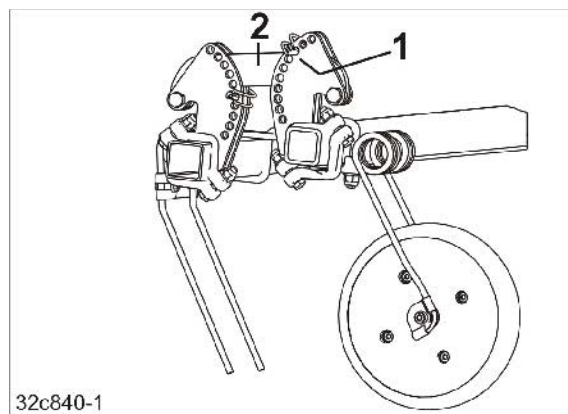


Fig. 178

8.11.2 Adjusting and testing the roller pressure

1. Move the implement on the field to the working position.
 2. The roller pressure is set by adjusting the control lever (Fig. 179/1) evenly at all four adjuster segments.
 - 2.2 Make sure that the lock lever (Fig. 179/2) is in working position (Fig. 180/1).
- Safety catch pointing down (Fig. 180/2)

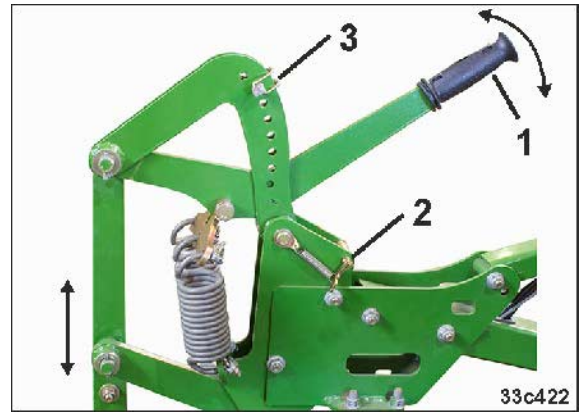


Fig. 179

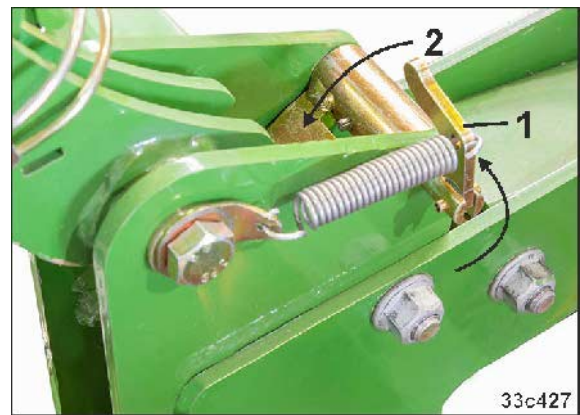


Fig. 180

3. Move adjustment lever (Fig. 179/1) in required direction
 - 3.1 Remove the linch pin (Fig. 181/1)
 - 3.2 Move the control lever (Fig. 181/2) to the rear

→ increases the roller pressure on the ground

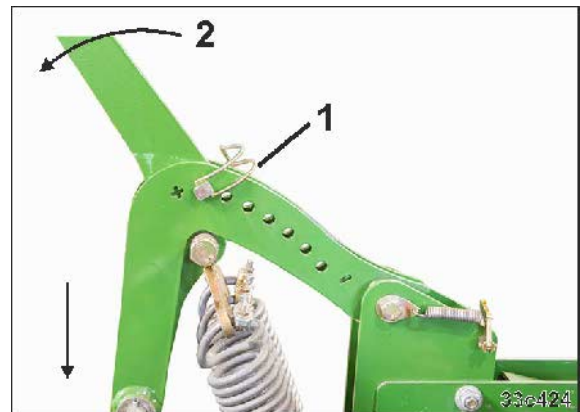


Fig. 181

- 3.3 Move the control lever (Fig. 182/2) to the front

→ decreases the roller pressure on the ground
- 3.4 Secure the adjustment by inserting a linch pin. (Fig. 182/1)

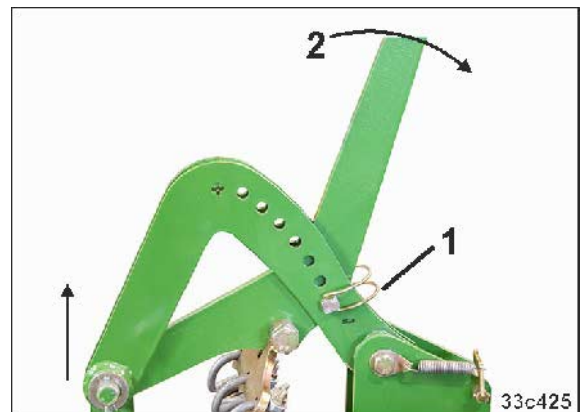


Fig. 182

4. Check the roller contact pressure to the soil using e.g. a spring scale (see Fig. 183/1).

| Roller diameter D [mm] | Roller contact pressure F [kg] |
|---------------------------|--------------------------------------|
| 250 mm | max. 20 kg |
| 330 mm | max. 35 kg |

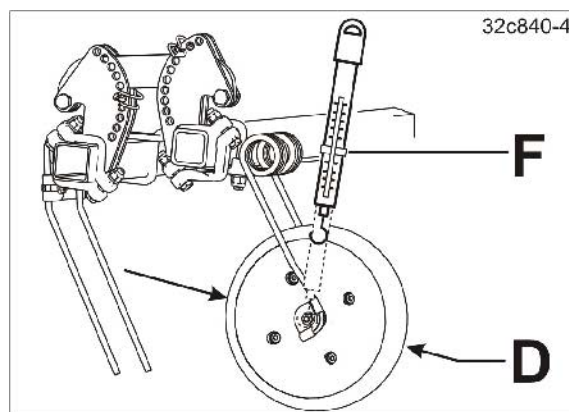


Fig. 183



The roller contact pressure "F" must not exceed the table value. Pressures greater than those specified could damage the implement.

8.11.3 Roller harrow in parking position

If the roller harrow is to be put in parking position, all adjuster segments need to be lifted out and locked.

1. Lock lever in locked position (Fig. 184/1)
- Safety catch pointing up (Fig. 184/2)

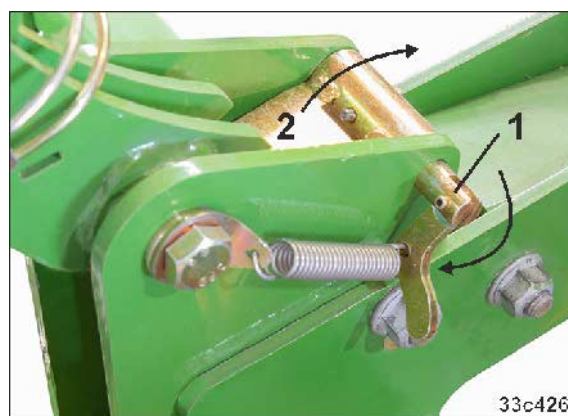


Fig. 184

2. Remove the linch pin (Fig. 185/1)

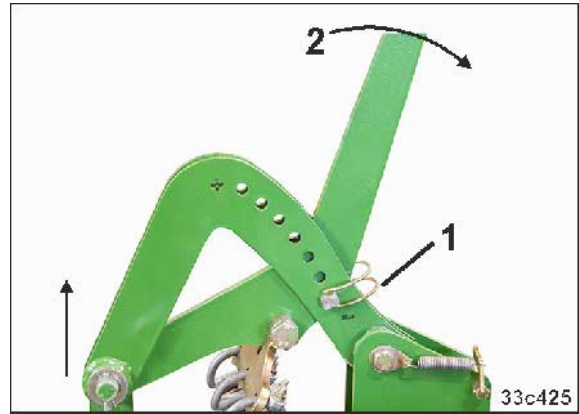


Fig. 185

3. Move the adjustment lever (Fig. 185/2) to the front until the safety catch (Fig. 186/1) clicks into place



Fig. 186

4. Secure the linch pin in the parking position (Fig. 187/2)

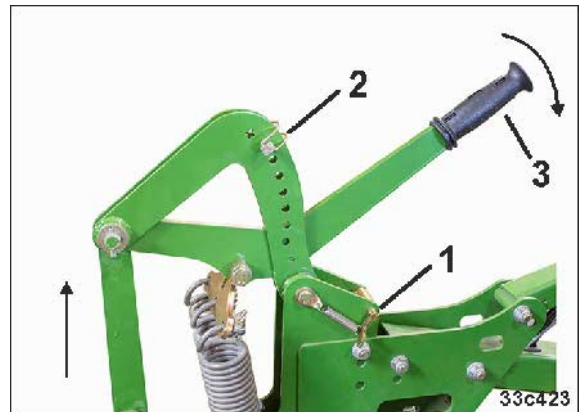


Fig. 187

8.12 Adjust tramline control

Find and set the required tramline control from the "Tramline controls" table.

Implements with on-board computer

Set the tramline control as described in the on-board computer operating manual.

Implements with a dashboard

Changing to a different tramline control in the dashboard means the dividing wheel needs to be replaced (Fig. 188/1).

For certain controls it is enough to reposition the sprockets (Fig. 188/2).

In any case, the display wheel (Fig. 188/3) needs to be replaced or the existing display wheel needs to be labelled with new tramline numbers.

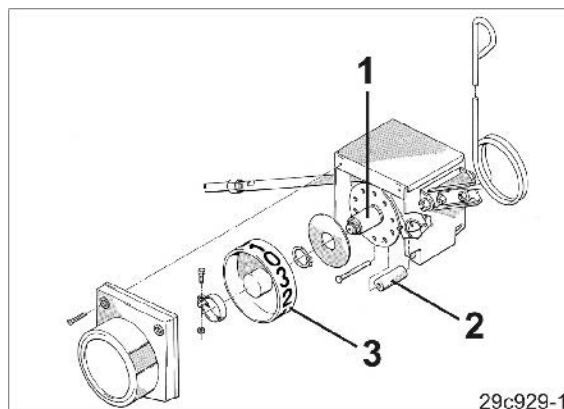


Fig. 188

8.12.1 Setting the tramline counter

You can find and set the required tramline counter in the section "Examples for setting up tramlines".

Implements with on-board computer

Set the tramline counter as described in the on-board computer operating manual.

Implements with a dashboard

The current tramline counter is displayed in the window (Fig. 189/2) of the dashboard.

Set the tramline counter by pulling on the operating lever (Fig. 189/1).



CAUTION

Only actuate the operating lever using the rope (Fig. 189/3) in the tractor cab.

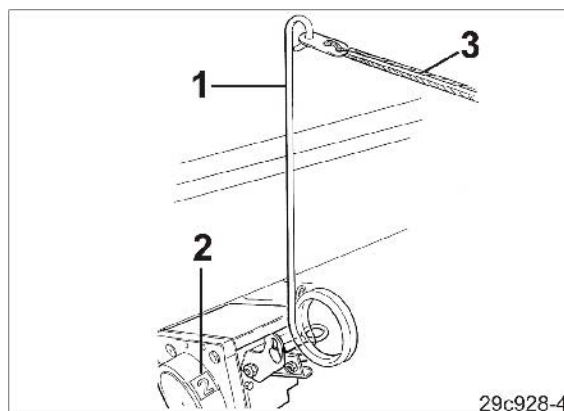


Fig. 189

8.13 Creating tramlines (Option)

With tramline control tramlines can be created at selected intervals on the field.

Tramlines are seed-free tracks (Fig. 190/A) for fertilising and plant care implements used later.

The tramline spacing (Fig. 190/b) corresponds to the working width of the cultivation implements (Fig. 190/B), e.g. fertiliser spread and/or sprayer, which are used on sown fields.

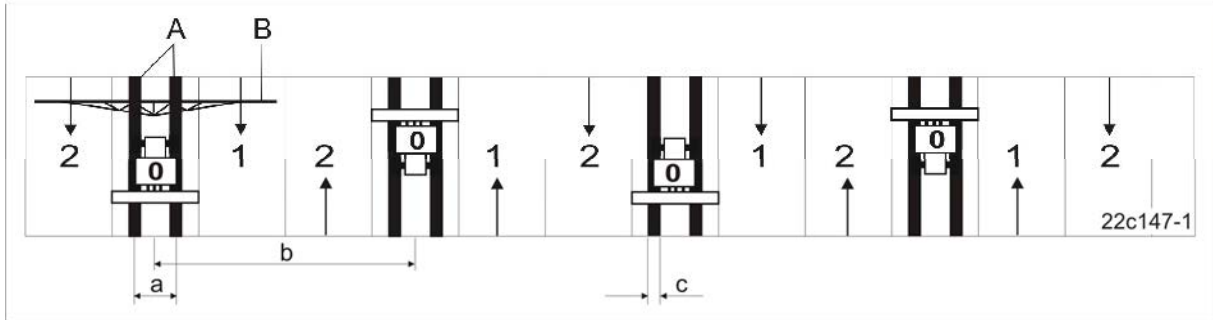


Fig. 190

The figure (Fig. 190) shows "Tramline control 3".

During work, the field passes are numbered consecutively (tramline counter). The tramline counter is displayed on the computer display or in the window of the dashboard.

While driving across the field, tramline control 3 shows the tramline counter in the following sequence: 2-0-1-2-0-1-2-0-1...etc. When creating a tramline, the tramline counter displays the tramline value "0".

The track width spacing (Fig. 190/a) of the tramline corresponds to that of the cultivating tractor and is adjustable. The track width is set by moving the spur gears on the lay shaft (see chapter "Setting the track width / wheelmark spacing (specialist workshop)", Seite 174).

The track width (Fig. 190/c) of the tramline increases with an increasing number of tramline coulters arranged next to each other (see chapter "Setting the track width / wheelmark spacing (specialist workshop)", Seite 174).

8.13.1 Table - tramline control

The required tramline control (Fig. 191) is derived from the desired tramline spacing (Fig. 190/b) and the working width of the seed drill. You will find other tramlines controls in the on-board computer operating manual.

| Tramline control | Seed drill working width | | | | | |
|-------------------|--------------------------|------|------|------|------|--------------|
| | 2.5 m | 3.0m | 3.5m | 4.0m | 4.5m | 6.0m |
| | Tramline distance | | | | | |
| 2 | 10m | 12m | — | 16m | 18m | 24 m |
| 3 | — | 9 m | — | 12m | — | 18m |
| 4 | 10m | 12m | — | 16m | 18m | 24 m |
| 5 | — | 15m | — | 20m | — | 30m |
| 6 | 15m | 18m | 21m | 24 m | 27m | 36m |
| 7 | — | 21m | — | 28m | — | 42m |
| 8 | 20m | 24 m | 28m | 32m | 36m | — |
| 9 | — | 27m | — | 36m | — | — |
| 21 | 15m | 18m | 21m | 24 m | 27m | 24 m 36 m |
| 5 / 13 right side | — | — | — | 18 m | — | — |
| 5 / 13 left side | — | — | — | | — | — |

Fig. 191

8.13.2 Examples for creating tramlines

The creation of tramlines is shown in Figure (Fig. 192) using various examples:

A = Working width of the seed drill

B = Tramline spacing (working width of fertiliser spreader / field sprayer)

C = Tramline control

D = Tramline counter
(during work, the field runs are numbered and displayed consecutively).

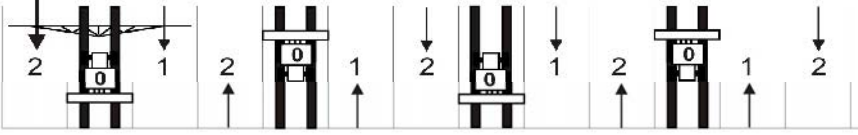
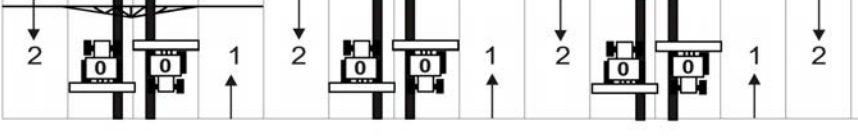
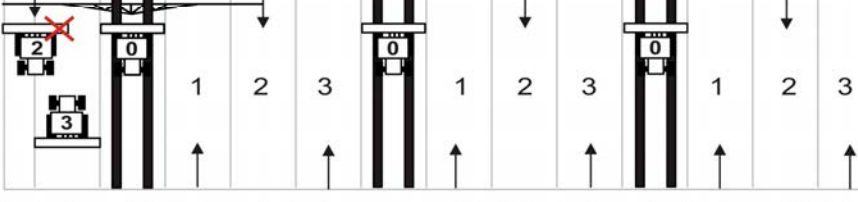
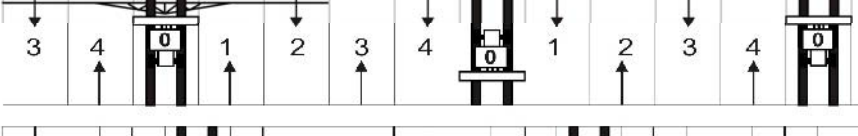
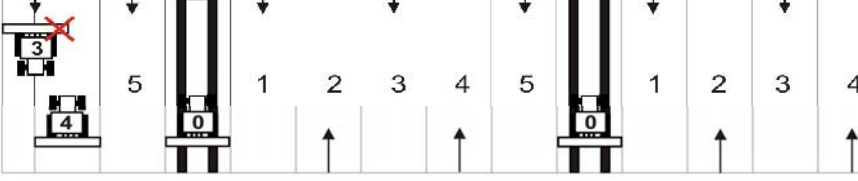
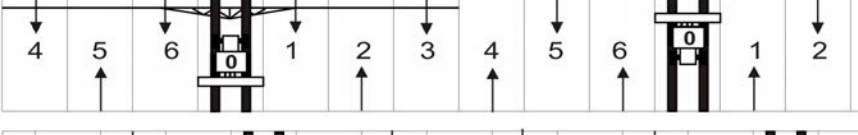
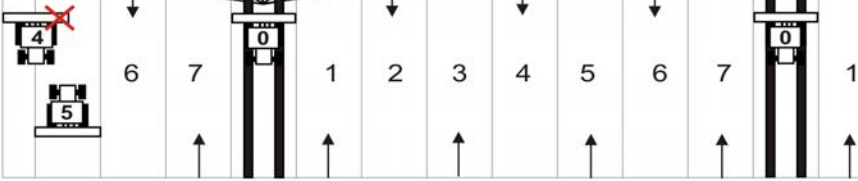
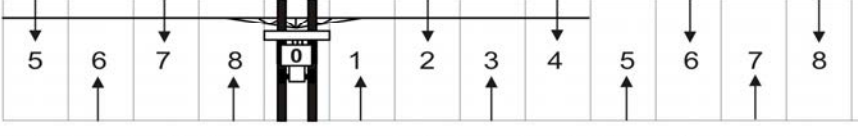
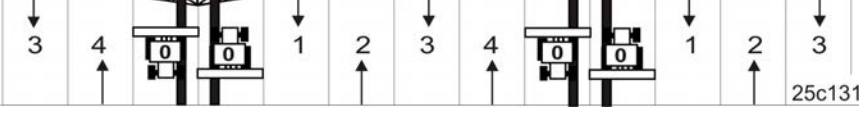
Example:

Working width - seed drill: 3m

Working width - fertiliser spreader or field sprayer: 18 m = 18 m tramline spacing

- Look in the table (Fig. 192) for the following:
in column A the seed drill's working width (3 m) and
in column B the tramline spacing (18 m).
- You can find the tramline control (tramline control 3) in the same row in column "C".
The dashboard must be equipped with the dividing wheel (Fig. 77/1) that is suitable for this purpose.
- On the same line in column "D" under the "START" heading take the reading of the tramline counter for the first field run (tramline counter 2).

Only set this value just before commencing the first field run.

| A | B | C | D |
|---|--|-----------|--|
| | | | START DÉPART |
| 3,0 m 4,0 m 6,0 m 8,0 m 9,0 m | 9 m 12 m 18 m 24 m 27 m | 3 |  |
| 2,5 m 3,0 m 4,0 m 4,5 m 6,0 m 8,0 m 9,0 m | 10 m 12 m 16 m 18 m 24 m 32 m 36 m | 2 |  |
| 2,5 m 3,0 m 4,0 m 4,5 m 6,0 m 8,0 m 9,0 m | 10 m 12 m 16 m 18 m 24 m 32 m 36 m | 4 |  |
| 3,0 m 4,0 m 6,0 m 8,0 m | 15 m 20 m 30 m 40 m | 5 |  |
| 2,5 m 3,0 m 3,5 m 4,0 m 4,5 m 6,0 m 8,0 m | 15 m 18 m 21 m 24 m 27 m 36 m 48 m | 6 |  |
| 3,00 m 3,43 m 4,00 m 6,00 m | 21 m 24 m 28 m 42 m | 7 |  |
| 2,5 m 3,0 m 3,5 m 4,0 m | 20 m 24 m 28 m 32 m | 8 |  |
| 3,0 m 4,0 m | 27 m 36 m | 9 |  |
| 2,5 m 3,0 m 3,5 m 4,0 m 4,5 m 6,0 m 8,0 m | 15 m 18 m 21 m 24 m 27 m 36 m 48 m | 21 |  |

25c131-5

Fig. 192

8.13.3 Tramline control 4, 6 and 8

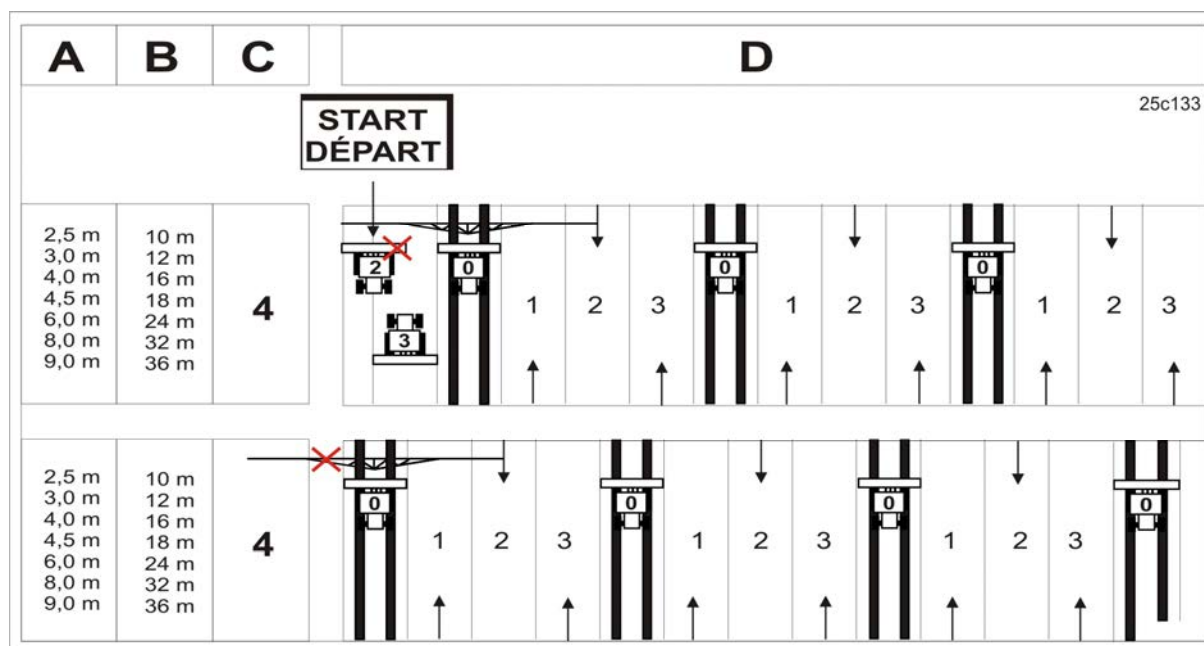


Fig. 193

Fig. (Fig. 192) shows examples for creating tramlines using tramline controls 4, 6 and 8.

The work of the seed drill at half working width (partial width) during the first field run is shown.

Another option for creating tramlines with tramline controls 4, 6 and 8 is to begin with full working width and creation of a tramline (see Fig. 193).

In this case, the cultivating implement works with half working width during the first field run.

After the first field run, restore the full implement working width.



For seeding using half the working width, switch off the seeding shaft on one side.

8.13.4 Tramline control 2 and 21

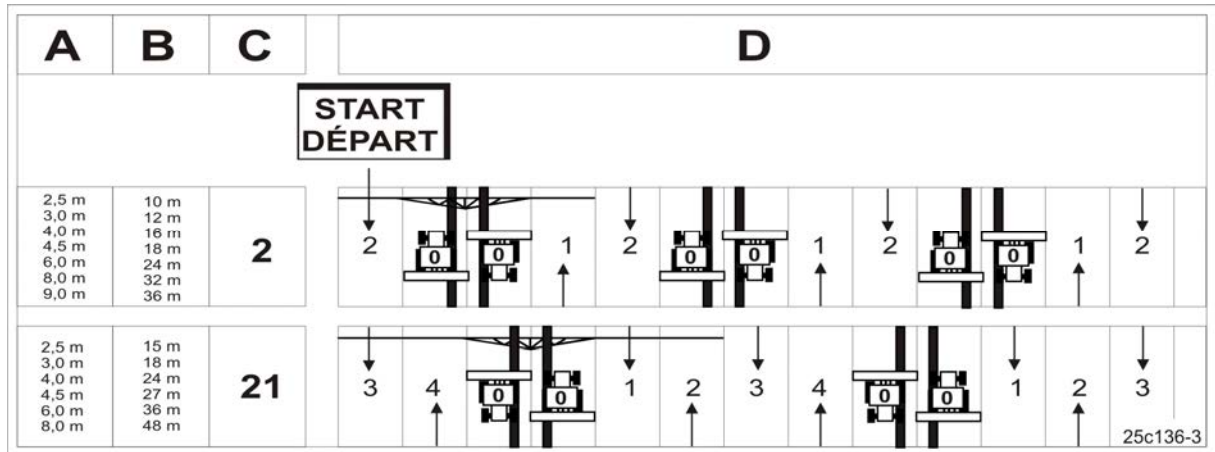


Fig. 194

(Fig. 192) shows examples of creating tramlines with tramline control 2 and 21.

When tramlines are created with the tramline control 2 and 21 (Fig. 194), tramlines are created during the trips forward and backward over the field.

On implements with

- tramline control 2, the seed feed to the tramline coulters may only be interrupted on the right side of the implement
- tramline control 21, the seed feed to the tramline coulters may only be interrupted on the left side of the implement

may only be interrupted on the left side.

Work always starts on the right hand edge of the field.

8.13.5 Creating 18 m tramlines using 4 m seed drill working width

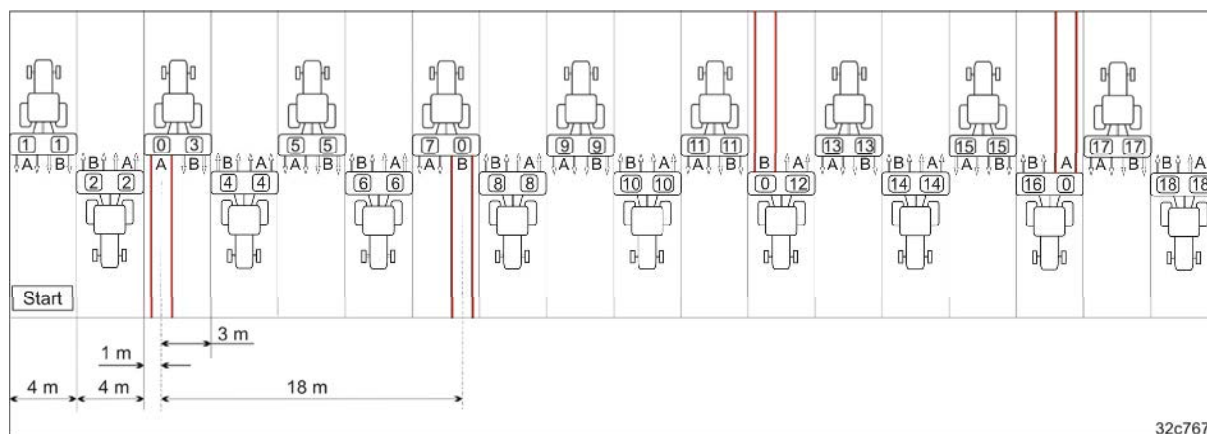


Fig. 195

Seed drills with 4 m working width and hydraulic double tramline control create tramlines at 18 m intervals.

The seed drill has two lay shafts with drive wheels for the seed metering wheels that can be switched off, each on the right and left halves of the seed drill seed box. For this, the seed drill must be equipped with the AMATRON on-board computer or two dashboards.

If the on-board computer or one of the control boxes shows the tramline value of "0", then the tramline seed wheels are deactivated.



Start work only on the left edge of the field with the tramline number "1" on both sides.

During work, both control boxes show the following switching positions (see also Fig. 195):

| | | | | | | | | | | | | | | | | | | | | |
|-----------|-------|-----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|
| Dashboard | Left | (A) | 1 | 2 | 0 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 0 | 17 | 18 |
| Dashboard | Right | (B) | 1 | 2 | 3 | 4 | 5 | 6 | 0 | 8 | 9 | 10 | 11 | 0 | 13 | 14 | 15 | 16 | 17 | 18 |

8.13.6 Switching-off the tramline control

Implements with on-board computer

Switch off tramline control as described in the on-board computer operating manual.

Implements with a dashboard

If tractor control valve 1 is actuated, the following functions are carried out at the same time:

- Track marker actuation
- Shifting on of the tramline counter
- Activation of the tramline marker with tramline number "0".

If only the track marker is to be activated, make the following settings:

1. Shift control valve 1 to the float position.
2. Pull on the operating lever (Fig. 196/1) of the dashboard if the number (Fig. 196/2) in the window of the dashboard is at "0".

The tramline counter should not show "0".

3. Unscrew the locking bolt (Fig. 196/A) and slide it down in the elongated slot and then tighten it (see Fig. 196/B).

The dashboard is locked and should not advance when the operating lever is pulled.

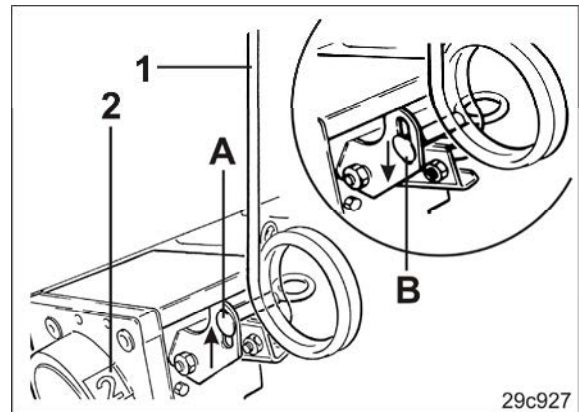


Fig. 196



The tramline counter (Fig. 196/2) should not show "0". Otherwise tramlines are continuously created.

8.13.7 Switching off the left side of the seeding shaft

1. Push the spring-loaded seeding shaft coupling to the left against the spring and turn it in the direction shown by the arrow.
2. Close the shutter slides on the tramline seed metering wheels on the left hand side of the seeding shaft.

Driven seeding shaft
(see Fig. 197)

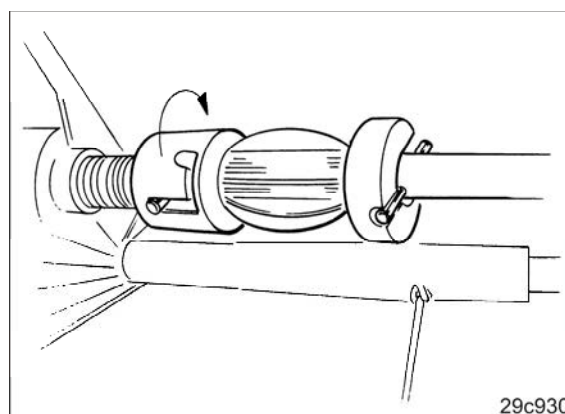


Fig. 197

Seeding shaft switched off on the left side
(see Fig. 198).

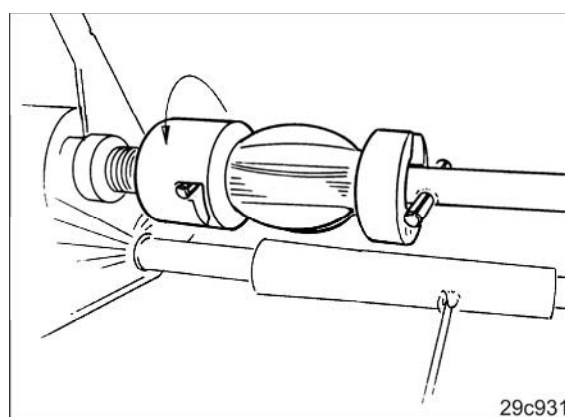


Fig. 198

8.13.8 Moving the tramline marker into working / transport position



WARNING

Instruct people to move out of the danger area of the hydraulically actuated components (track marker, tramline marker).

If the tractor control unit is actuated, the hydraulic cylinders of several functional parts are pressurized at the same time.

Only adjust the settings when the parking brake is applied, the engine switched off and the ignition key removed.

8.13.8.1 Move the tramline marker to working position

1. Hold the track disc carrier, remove the bolt (Fig. 199/1) and swivel the track disc carrier downwards. The bolt is secured with a spring pin.
2. The implement is equipped with two track discs. Repeat the process.

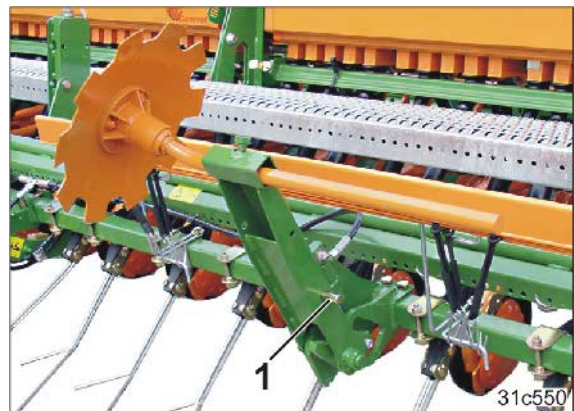


Fig. 199

3. Set the tramline counter to "0".
4. Actuate control unit 1 and lower the track discs.
5. Apply the handbrake, switch the engine off and remove the ignition key.
6. Unscrew the bolt (Fig. 200/1).
7. Set the track disc such that it marks the tramline created by the tramline coulters.
8. Adjust the work intensity to the soil by rotating the disc. Adjust the discs to run roughly parallel with the direction of travel on light soils, and with more grip on heavy soils.
9. Tighten the bolt (Fig. 200/1).
10. The implement is equipped with two track discs. Repeat the process.



Fig. 200

8.13.8.2 Move the tramline markers to the transport position

The tramline counter must not point to "0".

If necessary, advance the tramline counter. The track discs are raised while doing so.

1. Apply the handbrake, switch the engine off and remove the ignition key.
2. Secure the track disc carrier (Fig. 201/1) to the transport brackets (Fig. 201/2).
3. Secure the bolt (Fig. 201/3) with linch pins (Fig. 201/4).
4. Unscrew the fastening bolt (Fig. 201/6).
5. Pull the track disc (Fig. 201/5) out of the track disc carrier (Fig. 201/1) and take it with you in a suitable storage compartment.

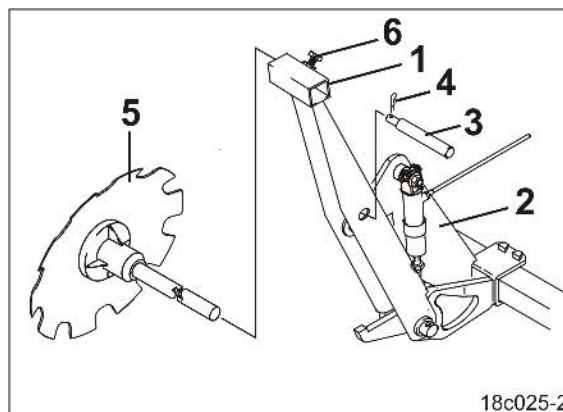


Fig. 201

8.14 Moving the transport safety bar into transport / parking position

Transportation position

1. Push the two-part transport safety bar (Fig. 202/1) over the tine tips of the exact harrow.
2. Fasten the transport safety bar with spring holders (Fig. 202/2) to the exact harrow.

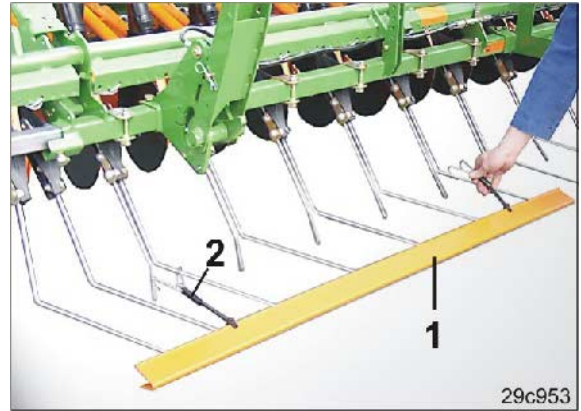


Fig. 202

Parking position

Connect the road safety bars (Fig. 203/1) into each other and attach them to the transport bracket (Fig. 203/2).

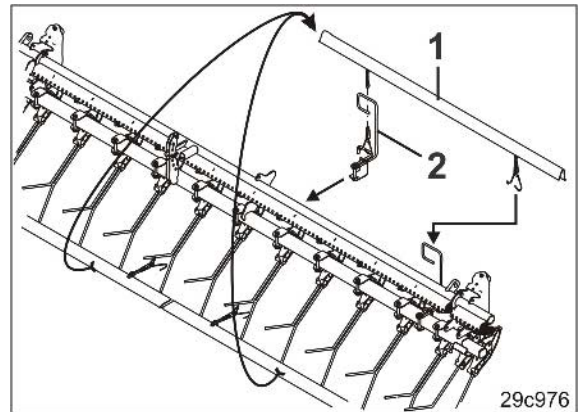


Fig. 203

9 Transportation

In Germany and in many other countries, the maximum transport width of the implement combination mounted on the tractor is 3.0 m. Transport of a implement combination over 3.0 m wide is only permitted on a transport vehicle.



DANGER

Transport implements with a working width of more than 3.0 m only on a transport vehicle.

Do not exceed the max. transport height of 4.0 m.

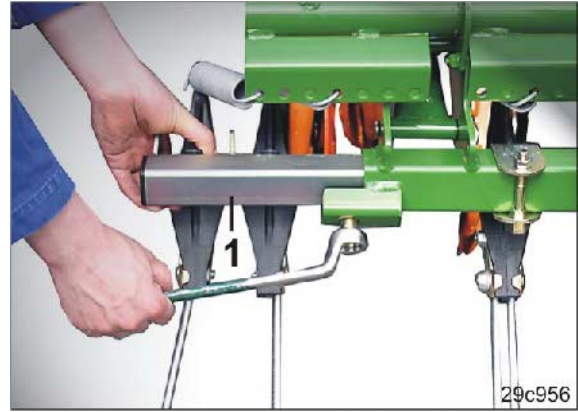
9.1 Putting seed drills into road transport position

1. Couple the seed drill to the tractor (see section 7, Seite 84).
2. Put the track markers into transport position and secure them (see section "8.6", Seite 125).
3. If necessary, advance the tramline counter. The tramline counter may not display "0".
4. Switch the on-board computer (optional) off (see on-board computer operating manual).
5. Move the tramline markers into transport position (see section 8.13.8, Seite 149).
6. Empty the seed box (see section 8.4).
7. Move the star wheel to transport position (see section 8.1, Seite 100).
8. Close the lid of the seed box.
9. Fold the steps up.
Make sure that the steps lock into place.



Fig. 204

10. Move the exact harrow into transport position (only required for seed drills with a 3.0 m working width).
 - 10.1 Unscrew the attachment bolts, insert the outer harrow element (Fig. 205/1) and tighten the attachment bolt.
 - 10.2 The implement has two outer harrow elements. Repeat the procedure.
11. Mount the transport safety bar (see section 8.14, Seite 151).
12. Disable the tractor control units.
13. Lift up the seed drill.
14. Observe the legal regulations and safety instructions in section before and during transportation.
15. Observe the legal guidelines and the safety instructions in section 9.2 before and during transportation.

**Fig. 205**

9.2 Legal regulations and safety

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.



Maximum transport width 3.0 m

In Germany and in many other countries, the maximum transport width of the implement combination mounted on the tractor is 3.0 m. Transport of a implement combination over 3.0 m wide is only permitted on a transport vehicle.

Max. permissible speed 40 km/h

In Germany and in many other countries, the maximum permissible speed for tractors is 40 km/h

- with mounted seed drill
- with a mounted seeding combination:
soil tillage implement, trailing roller and seed drill.

The implement must always be driven at much lower speeds than those specified when travelling on poor roads and unclassified roads in particular.

The maximum permitted speed for attached implements differs in the various countries according to national road traffic regulations. Ask your local importer / implement dealer about the maximum permissible speed on public roads.



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 hydraulic system for visible damage
- the tractor parking brake must be released completely
- the warning signs and yellow reflectors must be clean and undamaged.



DANGER

Put the track marker into transport position and secure it before leaving the field or before driving on roads and paths.

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

**WARNING**

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

These risks pose serious injuries or death.

Comply with the maximum load of the connected implement and the approved axle and support 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**

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 on tractors that are suitable for the purpose. For this purpose, see the section "Checking the suitability of the tractor".



DANGER

Switch off the on-board computer during transportation.



DANGER

Lock the tractor control units during travel!



WARNING

During transportation, risk of stabbing injuries to other road users from uncovered, sharp spring tines of the exact harrow!

Transportation without a correctly fitted transport guard rail is forbidden.



Switch on the rotating beacon light (if present) prior to starting a journey and check operation.

In Germany and some other countries the rotating beacon light is subject to authorisation.

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



WARNING

Risk of stabbing from transporting with outer harrow elements folded out!

When transporting, the outer harrow elements folded out protrude to the side in the area of the traffic and put other road users at risk. Moreover, the permissible transport width of 3 m is exceeded.

Push the outer harrow elements into the main tube of the exact harrow before you perform any transport journeys.

10 Use of the implement



WARNING

When using the implement, observe

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

Observing these sections is important for your safety.



WARNING

Only actuate the tractor control units from inside the tractor cab!



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.



When driving on slopes, the seed in the seed box may slide around so that the seed metering wheels are not being supplied with sufficient or any seed.

10.1 Preparing the implement for use

1. Put the transport safety bar into parking position (see section 8.14, Seite 151).
2. Put the tramline marker into working position (see section 8.13.8, Seite 149).
3. Put the track markers in working position (see section 8.6, Seite 125).
4. Set the correct tramline control
 - o on the dashboard
 - o in the on-board computer.
5. Check the agitator shaft drive (see section 8.2.7, Seite 109).
Seed blockages may occur in the seed box resulting in an incorrect seeding pattern, especially when sowing seed with chaff and with the agitator shaft not rotating.

Use of the implement

6. Move the star whe
7. Put the exact harrow into working position (only required for seed drills with 3.0 m working width).
 - 7.1 Unscrew the attachment bolt, slide the outer harrow element (Fig. 205/1) to the outside and tighten the attachment bolt.
 - 7.2 The implement has two outer harrow elements.

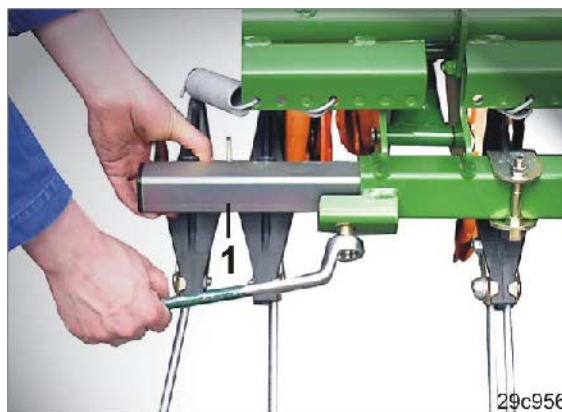


Fig. 206



The coulters on the seed drill force the soil outwards to different extents depending on the forward speed and soil conditions. Move the outer harrow element further out at higher forward speeds.

Adjust the outer harrow elements so that the soil is guided back and a trackless seed bed is produced.

Check the settings before starting work.

10.2 Starting work



DANGER

Instruct any people in the area to stand at a minimum distance of 20 m from the implement.

1. Move the machine to working position at the start of the field.
2. Instruct any people in the area to stand at a minimum distance of 20 m from the implement.
3. Actuate control unit 1
 - Lower the active track marker.
 - Advance the seed wheel tramline selection
 - with tramline number "0":
 - o Uncouple the lay shaft and stop the tramline seed metering wheels
 - o lower the tramline marker
4. Check / correct the tramline counter.
5. Start.
6. Check / correct after 30 m
 - o the placement depth of the seed in several places
 - o the work intensity of the harrow.
7. Repeat the calibration test after approx. 2 ha.



Fig. 207

10.3 During the work

10.3.1 Check the seeding rate using the "AMALOG+" on-board computer as an example

While working, the "AMALOG+" on-board computer shows the status of the seed drill.

The Vario gearbox is connected to the drive wheel by a chain. A sensor in the Vario gearbox records the rotation of the drive wheel and transmits the pulses to the on-board computer. The seeding shaft connected to the Vario gearbox also rotates. The implement sows the seed.

When the implement is sowing, a small circle flashes in the display (Fig. 208/1) under the arrow and the figure (Fig. 208/2) shows the forward speed [km/h].



Fig. 208

If seeding is interrupted, e.g.

- when the coulters are raised (when turning at end of the field.)
- if the drive chain snaps
 - o the gearbox and seeding shaft are stopped
 - o seeding is interrupted
 - o arrow and flashing circle disappear
 - o if the on-board computer shows the forward speed "0.0" [km/h], even though the seed drill is being pulled across the field.

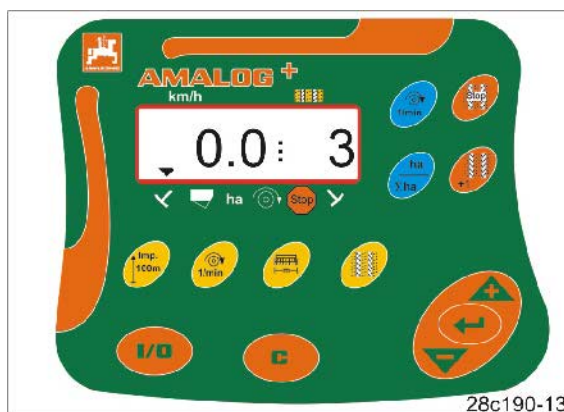


Fig. 209

10.3.2 Track markers

Raise the active track marker in the field before passing obstacles.

Raising the track marker makes the tramline counter advance. After passing the obstacle, lower the track marker and check the tramline counter. Correct it if necessary.



After actuating the tractor control unit for the track markers several times, check the tramline counter and correct it if necessary.

10.4 Fill level indicator

A fill level indicator (Fig. 210/1) shows the filling level in the seed box.



Fill the seed box before the zero mark is reached.

Even before reaching the zero mark, incorrect seeding can occur due to uneven distribution in the seed box.



Fig. 210

10.5 Turning at end of the field



The coulter and harrow must not touch the ground while turning.

1. Operate control unit 1.
 - Raise the active track marker.
2. Operate the control unit for the tractor lower link.
 - Raise the combination.
3. Turn the combination.
4. Actuate the control unit for the lower link on the tractor.
 - Lower the combination.
5. Actuate control unit 1
 - Lower the active track marker
 - Advance the tramline counter.
with tramline counter "0":
 - o Lay shaft / tramline seed metering wheels stop
 - o lower the tramline marker
6. Start the field run.

10.6 End of work in the field

When finished working, put the implement into transport position (see section "Putting seed drills into road transport position", Seite 152).

11 Faults



WARNING

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact 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 away, before you eliminate any faults on the implement (see section "Securing the tractor/implement against unintentional start-up and rolling").

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

11.1 Track marker boom shears off

If the track marker of the AD 03 Super strikes against a hard obstacle, a bolt (Fig. 211/1) shears off and the track marker folds backwards.

Only use M6 x 90 screws in property class 8.8 as replacements (see online spare parts list).

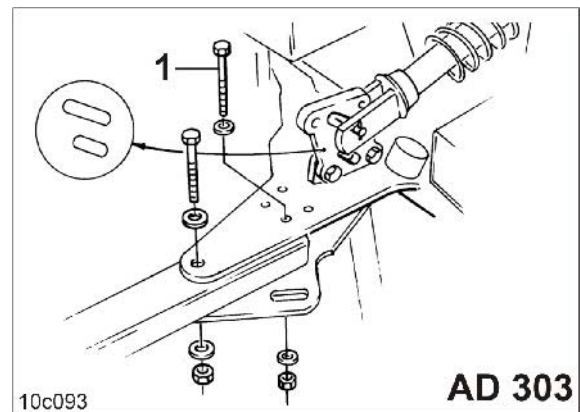


Fig. 211

Only AD 3500 and AD 4000:

Use hole "B" for the shear bolt.

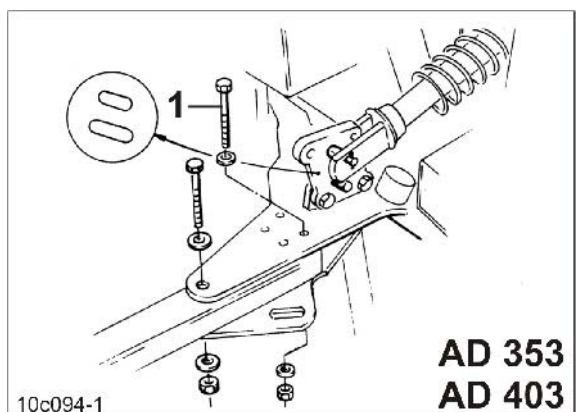


Fig. 212

11.2 Deviations between the preset and actual seeding rates

If you notice any deviations between the seeding rate set in the calibration test and the seeding rate on the field, pay attention to the following points:

- With new implements, the surface of the seed housing, the bottom flaps and seed metering wheels changes due to dressing deposits. This can affect the flow properties of the seed or the seeding rate.

After filling the seed box two or three times, the dressing will have deposited itself and an equilibrium will be established. The seeding rate will not change any more after this.

- When sowing with moist dressed seeds, deviations between the preset and actual seeding rates may occur if there is a period of less than 1 week (2 weeks recommended) between the dressing and sowing.
- If the bottom flaps are set incorrectly, this may cause an uncontrolled outflow of seed (excess quantity) while seeding. The basic setting of the bottom flaps therefore needs to be checked every six months or before every seeding period.
- The slippage of the star wheel can change during operation, e.g. when changing from light to heavy soil. Then the number of crank turns on the wheel to determine the gearbox position must be determined again.

To do this, measure 250 m² on the field. The relationship between implement working width and distance is as follows:

| | |
|------------------------|------------------|
| 2.50 m working width = | 100.0 m distance |
| 3.00 m working width = | 83.3 m distance |
| 3.43 m working width = | 72.9 m distance |
| 3.50 m working width = | 71.4 m distance |
| 4.00 m working width = | 62.5 m distance |

Count the number of crank revolutions when driving over the measured distance. Perform the calibration test with the number of crank revolutions you already determined.

12 Cleaning, maintenance and repairs

12.1 Safety



WARNING

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact 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 away, before work on the implement (see section "Securing the tractor/implement against unintentional start-up and rolling").



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.
- Never crawl under a raised, unsecured implement.

12.2 Cleaning



DANGER

Dressing dust is toxic and must not be inhaled or come into contact with the body.

Wear a protective suit, protective mask, safety glasses and gloves when emptying the seed box and seed housing or when removing toxic dressing dust, e.g. with compressed air.



- Inspect the hydraulic hose lines with particular care.
- Never treat hydraulic hose lines with petrol, benzene, kerosene 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.

Cleaning with a high-pressure cleaner / steam cleaner



Always observe the following points when using a high-pressure cleaner / steam cleaner:

- Do not clean any electrical components.
- Never aim the cleaning jet from the nozzle of the high pressure cleaner / steam jet directly on lubrication and bearing points.
- Always maintain a minimum jet distance of 300 mm between the high pressure cleaning or steam jet cleaning nozzle and the implement.
- Comply with safety regulations when working with high pressure cleaners.

12.3 Shutdown of the implement over a long period of time

1. Thoroughly clean and dry the RoTeC control coulters.
2. To prevent rust, protect the coulter (Fig. 213) with an environmentally friendly anti-corrosion agent.



Fig. 213

12.4 Maintenance schedule – overview



The time intervals, kilometre readings and maintenance intervals specified in any third party documentation supplied shall have priority over the maintenance schedule.

| | | | | |
|-------------------|---|---------------------|--|----------------|
| Initial operation | Before initial commissioning | Specialist workshop | Check and service the hydraulic hose lines. This inspection has to be recorded by the operator. | Section 12.7.1 |
| | | | Checking the oil level in the Vario gearbox | Section 12.5 |
| | After the first 10 operating hours | | Check the hydraulic hose lines and connections for visible damage. Have any defects remedied in a specialist workshop. | |
| | | Specialist workshop | Check and service the hydraulic hose lines based on the service schedule. This inspection has to be recorded by the operator. | Section 12.7.1 |
| | | Specialist workshop | Check all screw connections for a secure fit. | Section 12.9 |
| | Every day before starting work | | Check the hydraulic hose lines and connections for visible damage. Have any defects remedied in a specialist workshop. | |
| | Daily at the end of work | | Clean the implement (if required) | Section 12.2 |
| | Every week, at least every 50 operating hours | Specialist workshop | Check and service the hydraulic hose lines based on the service schedule. This inspection has to be recorded by the operator. | Section 12.7.1 |
| | | | Check all the components of the hydraulic system for tightness. Seal any leaks. | |
| | Every 2 weeks, at least every 100 operating hours | | Checking the oil level in the Vario gearbox | Section 12.5 |
| | Every 6 months out of season | Specialist workshop | Bottom flaps basic position | Section 12.8.4 |
| | | Specialist workshop | Checking roller chains and chain wheels | Section 12.6 |

12.5 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. 214/1).

There is no need to change the oil.

The oil filler neck (Fig. 214/2) is used to top up the Vario gearbox.

Refer to the table (Fig. 215) for the grade of transmission oil required.

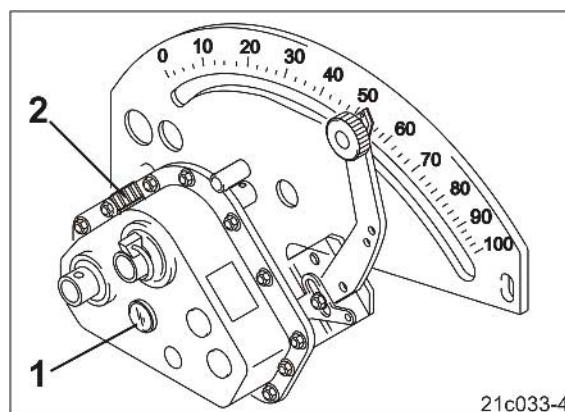


Fig. 214

| Hydraulic fluid grades and fill level of the Vario gearbox | |
|--|---|
| Total filling level | 0.9 litres |
| Transmission fluid (as required) | Wintershall Wintal UG22 WTL-HM (ex-works) |
| | Fuchs Renolin MR5 VG22 |

Fig. 215

12.6 Checking roller chains and chain wheels

On all roller chains, at the end of the planting season

- clean (including the chain wheels and chain tensioner)
- check
- lubricate with low-viscosity mineral oil.

12.7 Visual inspection of the upper and lower link pins



WARNING

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

Check the upper and lower link pins for visible defects whenever the implement is coupled. Replace the pins if there are clear signs of wear.

12.7.1 Inspection criteria for hydraulic hose lines

Have the hydraulic hoses replaced by a specialist workshop if you determine the following inspection criteria 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 depressurised and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
- Leak points.
- Damage or deformation of the hose assembly (sealing function restricted); minor surface damage is not a reason for replacement.
- Movement of the hose out of the assembly.
- Corrosion of assembly, reducing the function and tightness.
- Installation requirements not complied with.
- Life span of 6 years has been exceeded.

The date of manufacture of the hydraulic hose line on the assembly is decisive plus 6 years. If the date of manufacture on the assembly is "2013", then the hose should not be used beyond February 2019. See also "Labelling of hydraulic hose lines".



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 with 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 line if it is 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 ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
- Dispose of old oil in the correct way. If you have problems with disposal, contact your oil supplier.
- Keep hydraulic fluid out of the reach of children!
- Ensure that no hydraulic fluid enters the soil or waterways.

12.7.1.1 Labelling hydraulic hose lines

Valve chest identification provides the following information:

Fig. 216/...

- (1) Manufacturer's marking on the hydraulic hose line (A1HF)
- (2) Date of manufacture of the hydraulic hose line (13/02 = Year / Month = February 2013)
- (3) Maximum approved operating pressure (210 BAR).

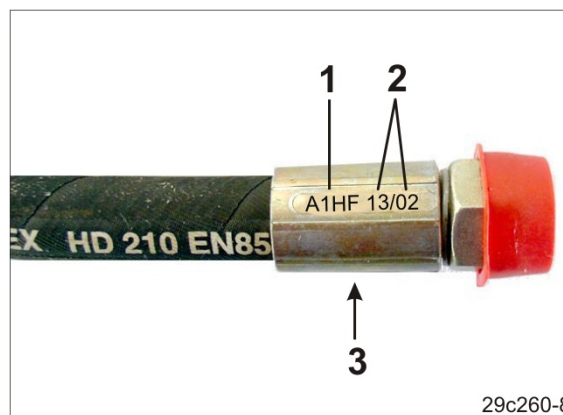


Fig. 216

12.7.1.2 Installation and removal of hydraulic hose lines



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

- Only a specialist workshop may carry out work on the hydraulic system.
- Only use original AMAZONE hydraulic hose lines
- Ensure cleanliness.
- You must always install the hydraulic 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 overtensioned.
- Fix the hydraulic hose lines to the intended fixing points. There, avoid hose clips, which impair the natural movement and length changes of the hoses.
- It is forbidden to paint over hydraulic hose lines.

12.8 Work to be performed in a specialist workshop

12.8.1 Setting the dashboard to control the tramline marker (specialist workshop)

1. Actuate the operating lever repeatedly until the number "1" appears in the window of the dashboard.
2. Loosen the set collar (Fig. 217/1).
3. Press the control valve lever (Fig. 217/1) backwards.
4. Attach the set collar.
5. Check that the tramline marker is working.

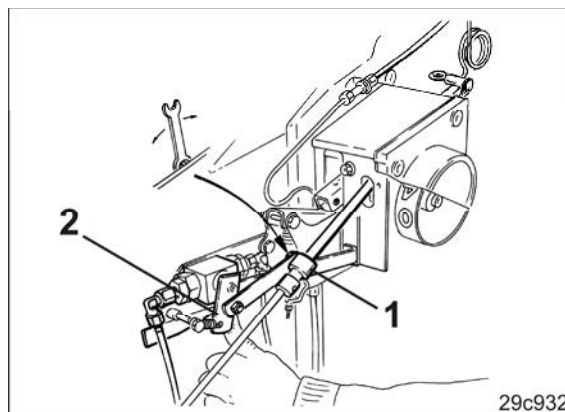


Fig. 217

12.8.2 Replacing the WS share tip

1. Press in the studs (Fig. 218/1) of the funnel into the coulter body.
2. Pull the funnel out of the coulter body.
3. Remove the bolts (Fig. 218/2) (bolt tightening torque 45 Nm).
4. Lift the share tip (Fig. 218/3) out of its mount.
5. Attach the new share tip in reverse order

When assembling it, make sure that the studs on the funnel lock into the recesses.

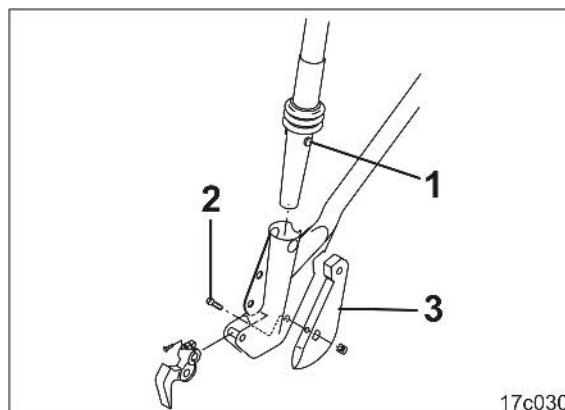


Fig. 218

12.8.3 Replacing the RoTeC Control coulters wear tip

1. Remove the depth control disc (Fig. 219/1) (see section "Setting the depth control discs", Seite 130).
2. Release the cylinder screw (Fig. 219/2) (screw tightening torque 30-35 Nm).
3. Replace the wear tip (Fig. 219/3) and install in reverse sequence.



The wear tip (Fig. 219/3) must not project beyond the edge of the seeding disc (Fig. 219/4). If necessary, replace the seeding disc.

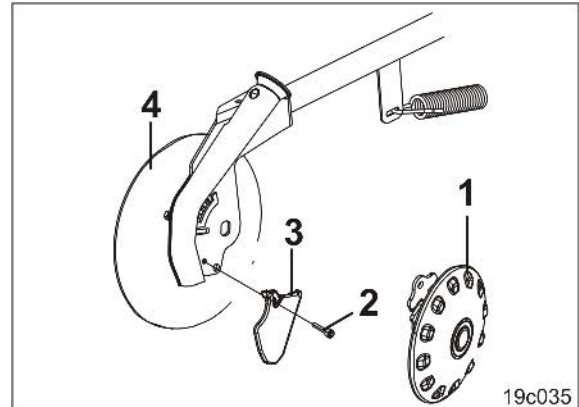


Fig. 219

12.8.4 Bottom flaps basic position

1. Empty the seed box and seed housing.
2. Check that the bottom flaps (Fig. 220/1) are easy to move.
3. Insert the bottom flap lever into hole 1 and secure it.
4. Check whether the specified distance "A" is adhered to every seed housing. While doing so, rotate the seed metering wheel to be tested by hand on the seeding shaft.

The distance "A" (Fig. 220) between the bottom flap and seed metering wheel is 0.1 mm to 0.5 mm.

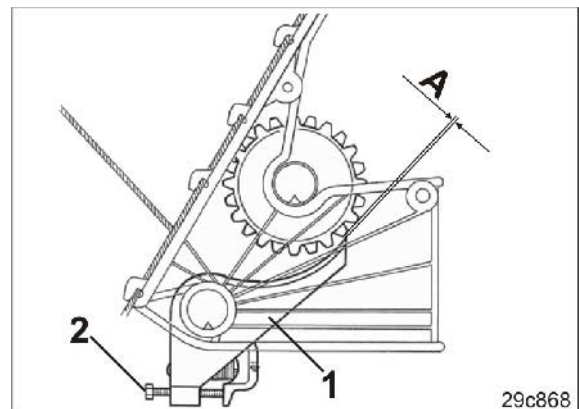


Fig. 220

5. Use the bolt (Fig. 220/2) to set it to the required distance.

12.8.5 Setting the track width / wheelmark spacing (specialist workshop)

1. Pull the calibration trays (Fig. 221) upwards out of the bracket.

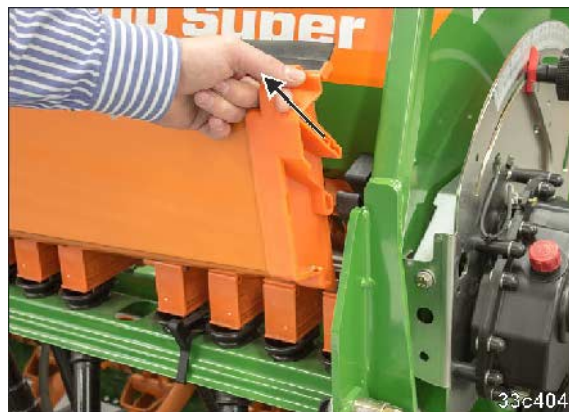


Fig. 221

2. Remove the tension springs (Fig. 222/1) on the lay shaft bearing (Fig. 222/2).



Fig. 222

3. Fold down the lay shaft (Fig. 223/1).



Fig. 223

- At the same time, a bracket (Fig. 224/1) that axially secures the lay shaft will be pulled out of the recess in the seed housing.



Fig. 224

The solenoid (if present) is folded down along with the lay shaft.



Fig. 225

4. Mark new tramline seed metering wheels by inserting the fine seed metering wheel brushes (Fig. 226/1) onto the new tramline seed housings.

Setting the track width

To create a track, switch off up to three, in exceptional cases up to 4 or 5 seed metering wheels.



Fig. 226



Only equip seed drills with switching 2 on the right side of the seed drill with tramline wheels. The distance of the tramline wheels, measured from the right outer seed drill side, is one half of a cultivating tractor track width.

Only put tramline wheels on the left side of the seed drill on seed drills with switching 21.

The distance of the tramline wheels, measured from the left outer seed drill side, is one half of a cultivating tractor track width.

Cleaning, maintenance and repairs

5. Unscrew the grub screws (Fig. 227/1) on the new tramline seed metering wheels until the new tramline seed metering wheels can turn freely on the seeding shaft.

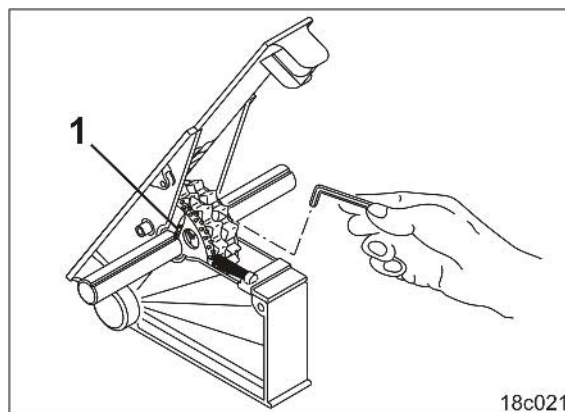


Fig. 227

6. Remove (Fig. 228/1) bolts.
7. Loosen the bolts (Fig. 228/2).
8. Push the swivel bearing and the driving pinion onto the lay shaft.
9. Screw the swivel bearing onto the new tramline seed housings.

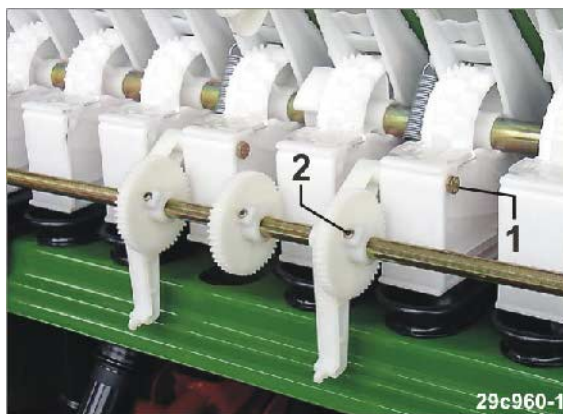


Fig. 228

10. Fasten the old tramline wheels to the seeding shaft.

Screw the grub screw (Fig. 229/1) into the fine seed metering wheel until the seed metering wheel is taken up by the shaft with slight play. If the grub screws are too tight, the seed metering wheels will be distorted.

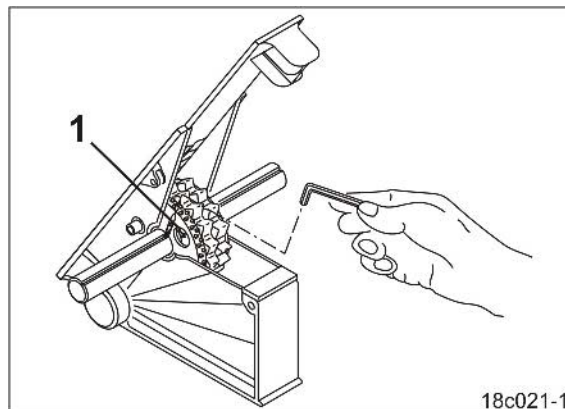


Fig. 229

11. Fold up the lay shaft.
- When doing so, insert the bracket (Fig. 230/1) that secures the lay shaft in an axial position into the recess of a seed housing.
12. Secure the bracket axially with two set collars (Fig. 230/2).

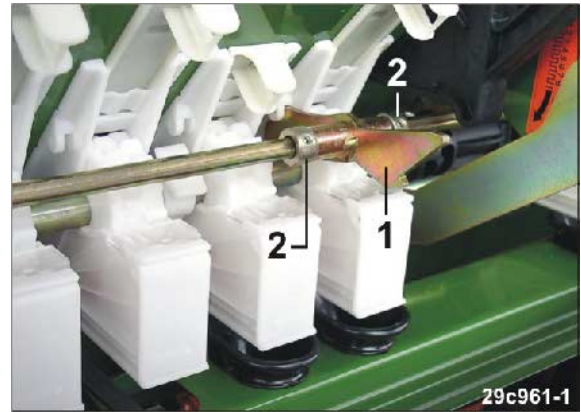


Fig. 230

13. Mesh the teeth (Fig. 231/1) of the drive pinion and the tramline fine seed metering wheels.
14. Screw the drive pinion onto the lay shaft.



Fig. 231

15. Mesh the teeth (Fig. 232/1) of the wrap spring clutch and those of the seeding shaft spur wheel.
16. Hook in the tension springs (Fig. 232/2) on the pivot bearings (Fig. 232/3).
17. Check that the seed metering wheel tramline control is working.

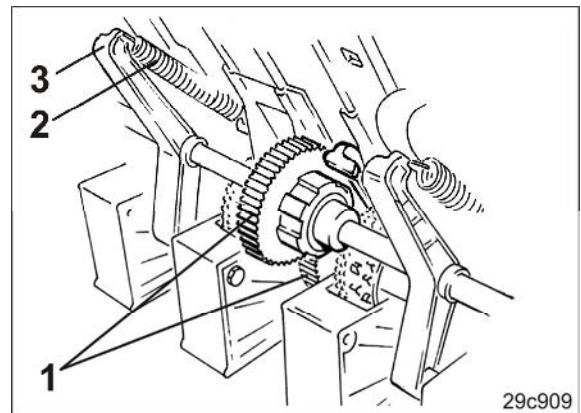


Fig. 232

12.8.6 Installing bean seed metering wheels (specialist workshop)



This setting affects the seeding rate.

Check the setting with a calibration test.

The bean seed metering wheels can be exchanged individually with the seed metering wheels or together with a second seeding shaft.

It is easier to install them if the bean seed metering wheels are pre-installed on a second seeding shaft. Then only the seeding shafts need to be exchanged.

1. Pull the calibration trays (Fig. 233) upwards out of the bracket.

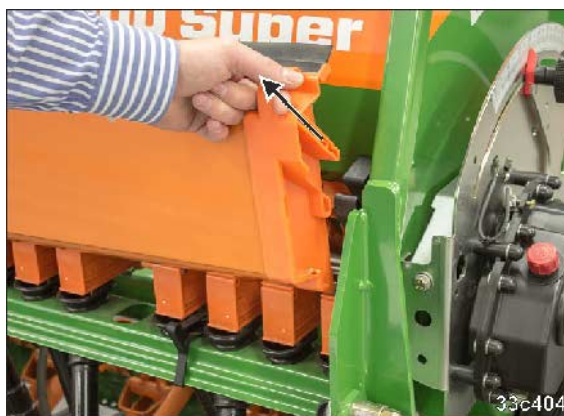


Fig. 233

2. Fold down the lay shaft (Fig. 224/1) of the seed metering wheel tramline control (if installed) (see section "Setting the track width / wheelmark spacing (specialist workshop)", Seite 174).
3. Open the seeding shaft contact pressure bearings (Fig. 234/1).

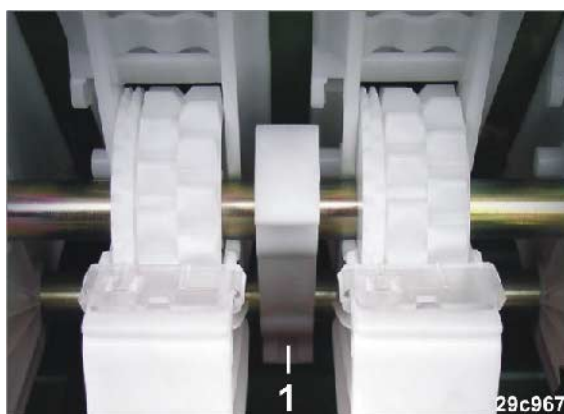


Fig. 234

4. Unscrew the bolts (Fig. 235/1).
5. Slide the connecting sleeve on the seeding shaft.
6. Lift out the seeding shaft.



Do not remove the detent plate for the bottom flaps.

7. The bean seeding shaft is installed in reverse sequence.



Fig. 235

Notes on installing the lay shaft

1. Mount the gear wheel (Fig. 236/1) onto the bean seeding shaft.
2. Remove the triangular carriers of the bean seed metering wheels for those bean seed metering wheels that are to be switched off later on to create the tramlines.

The triangular carriers of the other bean seed metering wheels grip into the recess on the seeding shaft.

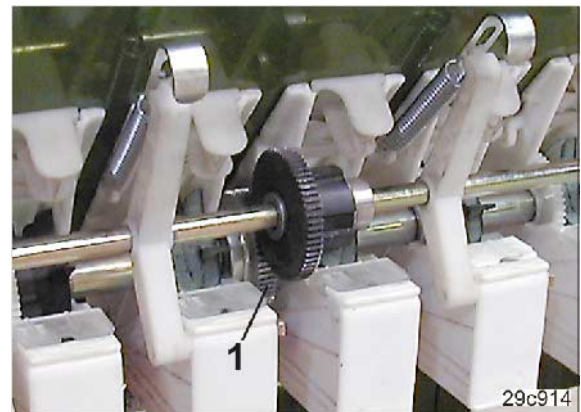


Fig. 236

3. Rotate the axial lock (Fig. 237/1) so that the short arm is supported in the recess on the seed housing.
4. Check that the seed metering wheel tramline control is working.



Fig. 237



If the seed drill is refitted with normal and fine seed metering wheels, turn the axial lock (Fig. 237/1) around and insert the long arm into the recess on the seed housing.

12.9 Bolt tightening torques

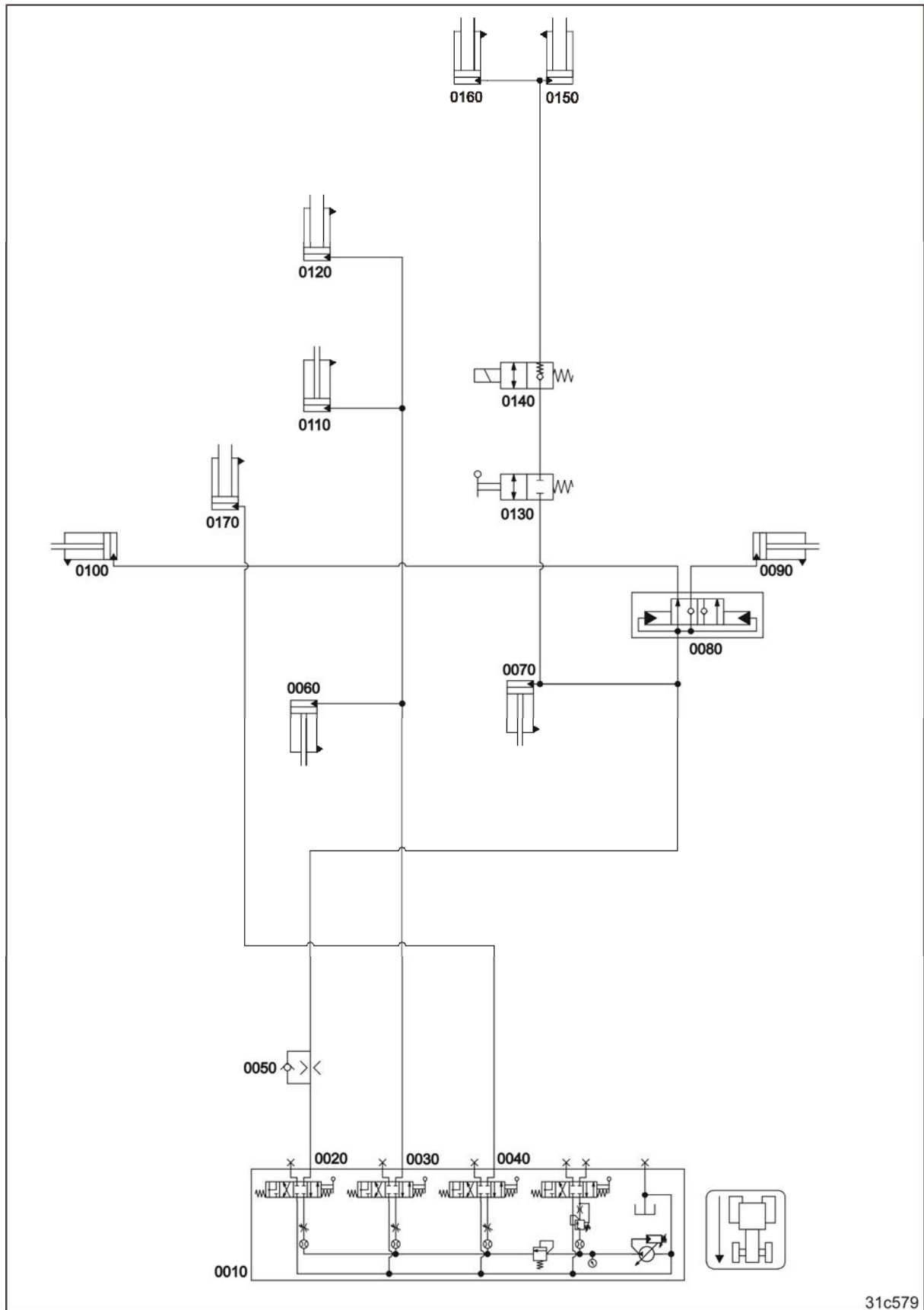
| Thread | Width across flats [mm] | Tightening torques [Nm] as a function of the bolt/nut grade | | |
|----------|-------------------------|--|------|------|
| | | 8.8 | 10.9 | 12.9 |
| M 8 | 13 | 25 | 35 | 41 |
| M 8x1 | | 27 | 38 | 41 |
| M 10 | 16 (17) | 49 | 69 | 83 |
| M 10x1 | | 52 | 73 | 88 |
| 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 |

13 Hydraulic diagrams

13.1 Hydraulic diagram - AD Super / AD Special

| Fig. 238/... | Designation | Note |
|--------------|------------------------------------|------|
| 0010 | Tractor hydraulics | |
| 0020 | Handle no. 2 yellow | |
| 0030 | Handle no. 2 green | |
| 0040 | Handle no. 2 blue | |
| 0050 | Throttle check valve | |
| 0060 | Seed rate remote control | |
| 0070 | Tramline dashboard | |
| 0080 | Track marker shuttle valve | |
| 0090 | Track marker left | |
| 0100 | Track marker right | |
| 0110 | Coulter pressure | |
| 0120 | Harrow pressure | |
| 0130 | VAM control valve (with dashboard) | |
| 0140 | VAM solenoid valve (with computer) | |
| 0150 | Tramline marker (VAM) | |
| 0160 | Tramline marker (VAM) | |
| 0170 | Star wheel lift | |

All position specifications in direction of travel



31c579

Fig. 238



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