

Operating manual

AMAZONE

Pack top seed drill

AD 3000 Super Classic Line



MG6820
BAH0107-0 02.20

**Please read and observe this
operating manual before initial
operation of the implement!
Keep it in a safe place for future use!**

en





Identification data

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

Type: AD 3000 Super Classic Line

Implement number (ten digits): _____

Year of manufacture: _____

Permissible total weight [kg]: _____

Manufacturer address

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

Spare Parts Order

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

Type: AD 3000 Super Classic Line

Document number: MG6820

Compilation date: 02.20

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Foreword

Dear Customer,

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

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

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

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

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

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

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1 User information

The User information section provides information concerning the operating manual.

This operating manual is valid for all versions of the implement.

Figures serve as a reference and are to be understood as representations of the principle.

All of the equipment is described without indicating it as special equipment. A description may be provided for equipment that is not fitted on the implement or is only available in certain markets. The sales documents provide information on the equipment of your implement or consult your service partner for more detailed information.

All information in this operating manual corresponds to the state of knowledge at the time of publication. Due to ongoing development of the implement, deviations are possible between the implement and the information in this operating manual. No claims can be made based on differences in the specifications, figures or descriptions.

If you want to sell the implement, ensure that the operating manual is supplied with the implement.

The operating manual

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

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

1. Instruction 1

→ Reaction of the implement to handling instruction 1

2. Instruction 2

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

Example:

- Point 1
- Point 2

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

Example: (Fig. 3/6) = Figure 3 / Position 6

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

2 General Safety Instructions

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

2.1 Obligations and liability

Comply with the instructions in the operating manual

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

Obligations of the operator

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

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

The operator is obliged

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

Obligations of the user

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

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

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



General Safety Instructions

Risks in handling the implement

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

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

Only use the implement

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

Eliminate any faults immediately which could impair safety.

Guarantee and liability

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

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

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

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



WARNING

Indicates a 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 implement handling.

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



NOTICE

Indicates handling tips and particularly useful information.

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

2.3 Organisational measures

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

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



The operating manual

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

Check all the available safety equipment regularly.

2.4 Safety and protective equipment

Before starting up the implement each time, all the safety and protection equipment must be properly attached and fully functional. Check all safety and protection equipment regularly.

Faulty safety equipment

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

2.5 Informal safety measures

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

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

2.6 User training

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

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

Person Activity	Person specially trained for the activity ¹⁾	Trained operator ²⁾	Persons with specialist training (specialist workshop) ³⁾
Loading/Transport	X	X	X
Initial operation	—	X	—
Set-up, tool installation	—	—	X
operation	—	X	—
Maintenance	—	—	X
Troubleshooting and fault elimination	—	X	X
Disposal	X	—	—

Key: X..permitted —..not permitted

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

Comment:

A qualification equivalent to specialist training can be obtained from several years' experience in the relevant field.



Only a specialist workshop may carry out maintenance and repair work on the implement, if such work is additionally marked "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 operator. You can find detailed information in the relevant sections of this operating manual.

2.9 Maintenance and repair work, fault elimination

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

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

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

Check all the bolted connections for tightness. On completion of the maintenance work, check the function of the safety and protective 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 extension or conversion work shall require the written approval of AMAZONEN-WERKE. Only use conversion and special equipment parts approved by AMAZONEN-WERKE so that the operating permit, for example, remains valid in accordance with national and international regulations.

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



WARNING

Risk of crushing, cutting, being trapped or drawn in, or impact through the failure of support parts.

It is strictly forbidden to

- drill holes in the frame or on the running gear
- increase the size of existing holes on the frame or the running gear
- weld on load-bearing parts.

2.10.1 Spare and wear parts and aids

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

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

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

2.11 Cleaning and disposal

Handle and dispose of any materials used carefully, in particular

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

2.12 Workstation of the operator

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

2.13 Warning symbols on the implement



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

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

Shows the danger in a triangular safety symbol.

Field 2

Shows instructions for avoiding the danger.



Explanatory text beside the warning symbol

The text beside the warning symbol describes

1. The dangers, e.g.:
Laceration or amputation hazard.
2. The consequence of non-compliance with the risk avoidance instructions, e.g.:
This danger can cause serious injuries to fingers or hands.
3. Instructions for avoiding the risk, e.g.:
Touch machinery parts only when they have come to a complete stop.

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 universal joint shaft or hydraulic/electronic system connected.
- if the ground wheel drive is moving.

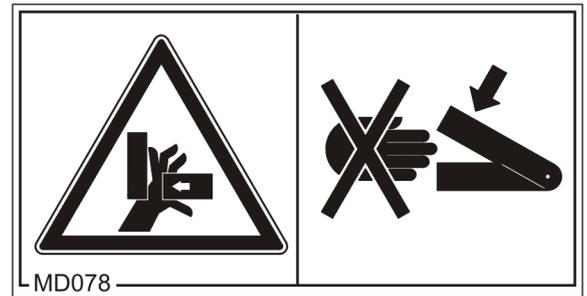


MD 078

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

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

Never reach into the danger area when the tractor engine is running with the universal joint shaft or hydraulic / electronic 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.

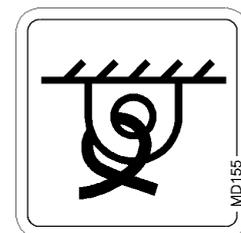
Make sure that nobody is riding on the implement.



MD 155

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

- Only attach the lashing belts at the marked lashing positions for transporting the machine.

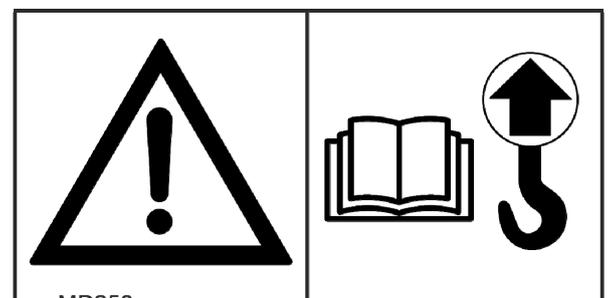


MD 256

Risk of accidents due to improperly attached slings for lifting!

If the slings are attached to unsuitable lashing points for lifting, the implement can be damaged during lifting and endanger safety.

- Only attach the slings for lifting at the suitable lashing points.
- The suitable lashing points can be found in the operating manual, see Transporting the implement.
- To determine the required load-bearing capacity of the slings, observe the specifications in the following table.

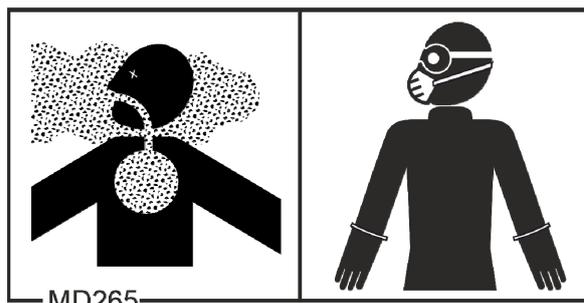


General Safety Instructions

MD 265

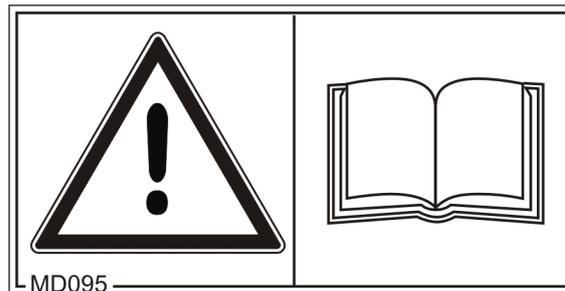
Risk of chemical burns by dressing dust!

- Do not breathe in the harmful substance.
- Avoid contact with eyes and skin.
- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.
- Follow the manufacturer's safety instructions for handling harmful substances.



MD 095

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

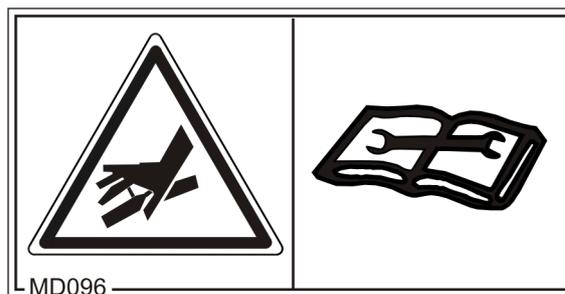


MD 096

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

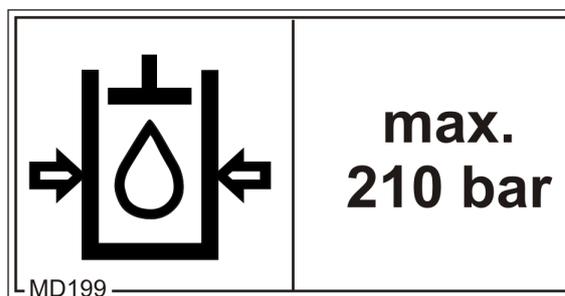
This danger may cause serious injuries, perhaps even resulting in death, if escaping high-pressure hydraulic fluid passes through the skin and into the body.

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



MD 199

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



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 away!

These dangers can cause extremely serious and potentially fatal injuries.

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



General Safety Instructions

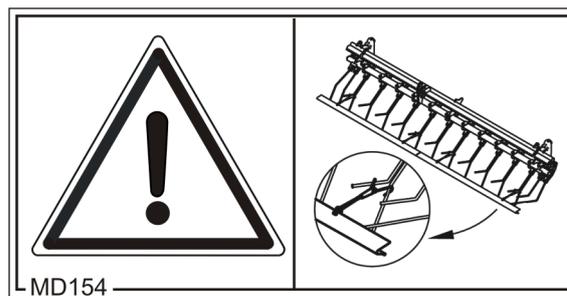
MD 154

Danger of cuts 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 road safety bar is forbidden.

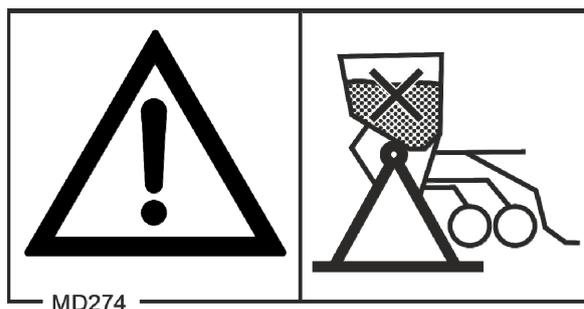
Install the road safety bar provided before starting transportation.



MD 274

Risk of crushing due to the implement falling over!

- Empty the seed hopper.
- Before you park the empty pack top implement, install the parking supports.



2.13.1 Position of warning symbols

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



Fig. 1

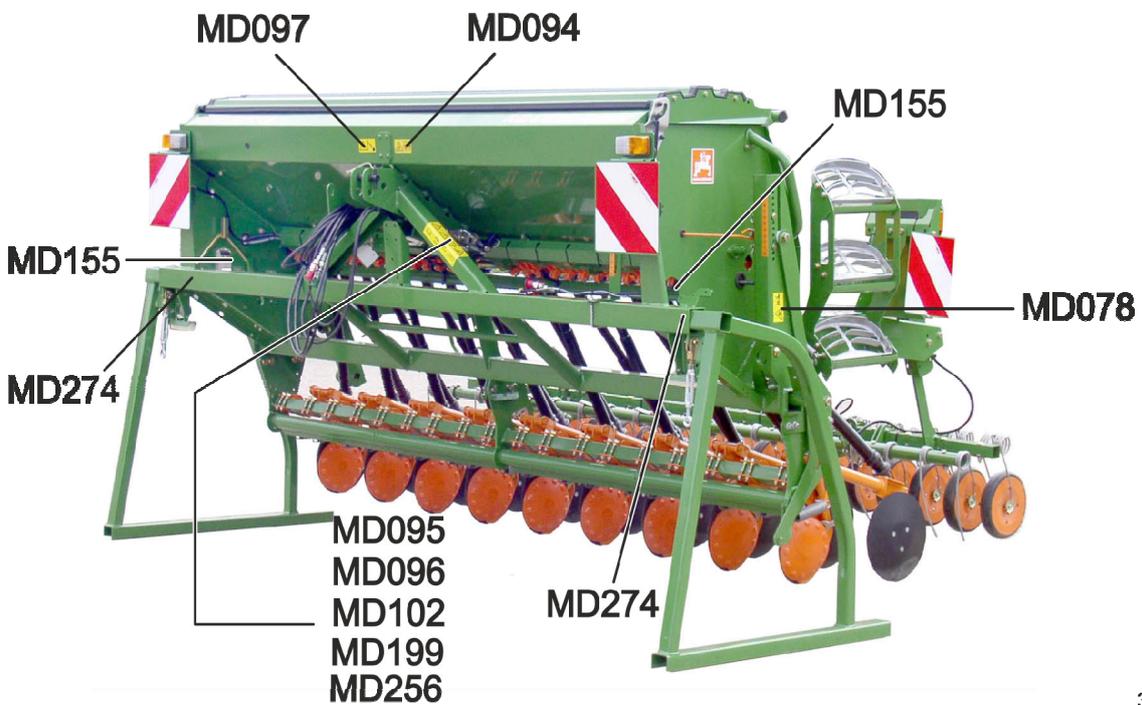


Fig. 2

31c568-2



Fig. 3



Fig. 4

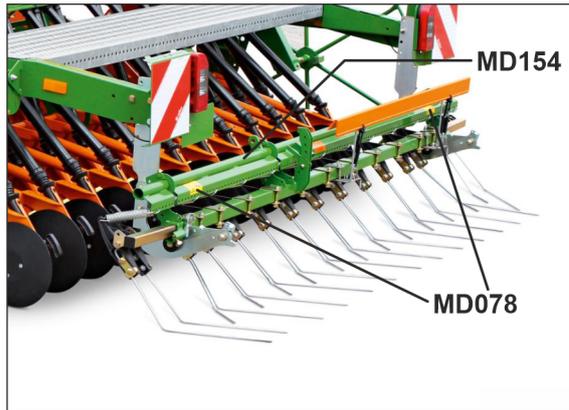


Fig. 5



Fig. 6

2.14 Dangers in case of non-compliance with the safety instructions

Non-compliance with the safety information

- can pose both a danger to people and to the environment and implement
- can result in the loss of an claims for damages.

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
- Environmental hazard through leakage of hydraulic fluid.

2.15 Safety-conscious working

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

Comply with the risk 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 each time, always check their traffic and operational safety.



CAUTION

Before adjustment, maintenance and repair work

- couple the seed drill and the soil tillage implement
- lower the implement combination onto level solid ground
- apply the tractor parking brake
- switch off the control terminal
- switch off the tractor engine
- remove the ignition spanner
- disconnect the power supply between the tractor and the implement. Disconnect the implement plug.
Risk of accident due to unintentional activation of the metering units or other implement components caused by Star wheel movement

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 symbols 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 implement or use it as a means of transport.
- Drive in such a way that you always have full control over the tractor with the attached 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.

Coupling and uncoupling the implement

- Only connect and transport the implement with tractors suitable for the task.
- When coupling implements to the tractor's three-point hydraulic system, the mounting categories of the tractor and the implement must always be compatible.
- Connect the implement to the prescribed equipment in accordance with the specifications.
- When coupling implements to the front or the rear of the tractor, the following may not be exceeded:
 - the permissible total tractor weight
 - the permissible tractor axle loads
 - the permissible load-bearing capacities of the tractor tyres
- Secure the tractor and the implement against unintentional rolling away before coupling or uncoupling the implement.
- It is forbidden for people to stand between the implement to be coupled and the tractor while the tractor is 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.
- Before the implement is connected to or disconnected from the tractor's three-point hydraulic system, secure the operating lever of the tractor hydraulic system so that unintentional raising or lowering is impossible.
- When coupling and uncoupling implements, move the support equipment (if equipped) to the appropriate position (stability).
- When actuating the support equipment, there is a danger of injury from crushing and shearing points.
- Be particularly careful when coupling the implement to the tractor or uncoupling it from the tractor. There are crushing and shear points in the area of the coupling points 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
 - may 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 always parked in a stable position.



General Safety Instructions

Use of the implement

- Before starting work, make sure that you understand all the equipment and control elements of the implement and their functions. It is too late for this when the implement is already in operation.
- Wear tight-fitting clothing. There is an increased risk of loose clothing getting caught or entangled on drive shafts.
- Only put the implement into operation after all protective devices have been attached and are in protective position.
- Comply with the maximum load of the mounted/towed implement and the permissible axle and drawbar 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 operate implement parts actuated by external force if bystanders are maintaining an adequate safety distance to the implement.
- Secure the tractor against unintentional start-up and rolling away before you leave the tractor.
For this:
 - o lower the implement onto the ground
 - o apply the tractor parking brake
 - o Switch off the tractor engine.
 - o remove the ignition spanner.

Implement transportation

- When using public roads, national road traffic regulations must be observed.
- Switch off the control terminal before road transport.
- Before road transport, check
 - that the supply lines are connected correctly
 - the lighting system for damage, function and cleanliness
 - the brake and hydraulic system for visible damage
 - that the tractor parking brake is released completely
 - the function of the brake system.
- Always ensure that the tractor has sufficient steering and braking power.

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

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

2.16.2 Hydraulic system

- The hydraulic system is under high pressure.
- Ensure that the hydraulic hose lines are connected correctly.
- When connecting the hydraulic hose lines, ensure that the hydraulic system is depressurized on both the implement and tractor sides.
- It is forbidden to block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:
 - are continuous 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
 - depressurize the tractor's hydraulic system
 - switch off the tractor engine
 - apply the tractor parking brake
 - take out the ignition spanner.
- Have the hydraulic hose lines checked for proper functioning by a specialist at least once a year.
- Replace the hydraulic hose lines if they are damaged or worn. Use only original AMAZONE hydraulic hose lines.
- The hydraulic hose lines should not be used for longer than six years, including any storage time of maximum two years. Even with proper storage and approved use, hoses and hose connections are subject to natural aging, thus limiting the duration of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose lines made of thermoplastics, other guide values may be decisive.
- Never attempt to plug leaks in hydraulic hose lines using your hand or fingers.
Escaping high-pressure fluid (hydraulic fluid) can penetrate into the body through the skin and cause serious injuries.
If you are injured by hydraulic fluid, contact a doctor immediately. Risk of infection.
- When searching for leaks, 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 – first 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 can be influenced by electromagnetic radiation from other devices. Such interference can pose risks to people, if the following safety information is not observed.
 - In the case of retrofitting electrical units and/or components on the implement, with a connection to the on-board power supply, the operator is responsible for checking whether the installation might cause faults on the vehicle electronics or other components.
 - Ensure that the retrofitted electrical and electronic components comply with the EMC Directive in the appropriate version and carry the CE mark.



2.16.4 Mounted implements

- When mounting, the mounting categories on tractor and implement must be compatible or an adapter must be used.
- Observe the manufacturer's instructions.
- Before mounting or dismounting implements on the three-point hitch, put the operating equipment to a position in which accidental raising or lowering is impossible.
- There is a danger of crushing or shearing injury in the area of 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 controls for the three-point hitch.
- 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 permissible total tractor weight
 - the permissible tractor axle loads
 - The permissible load-bearing capacities of the tractor tyres.
- Observe the max. payload 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.
- When travelling on public roads,
 - the control lever for the tractor lower links must be secured against lowering
 - the control terminal must be switched off.
- Move 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 tractor front axle must always be loaded with at least 20 % of the empty tractor weight to ensure sufficient steering power. Apply front weights if necessary.
- Repair, maintenance and cleaning work or rectifying malfunctions must always only be carried out with
 - the ignition spanner removed,
 - and the control terminal switched off.
- Leave safety devices attached and always put them in the protective position.

2.16.5 Operation of the seed drill

- Observe the permissible filling quantity of the hopper.
- Use the ladder and the loading board only for filling the hopper.
It is forbidden to ride on the implement during operation.
- When calibrating the seed rate, pay attention to the danger points from rotating and oscillating implement parts.
- Do not place any parts in the hopper.
- Lock the track marker (construction-dependent) in transport position before road transport.

2.16.6 Cleaning, maintenance and repair

- Only carry out cleaning, maintenance and repair work on the implement when:
 - the control terminal is switched off
 - the implement plug is disconnected from the tractor
e.g. ISOBUS plug
 - the drive is switched off.
 - the tractor engine is at a standstill
 - the ignition spanner has been removed.
- Regularly check the nuts and bolts for a firm seat and retighten them as necessary.
- Secure the raised implement 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 manner.
- Disconnect the cable to the tractor generator and battery before performing electrical welding work on the tractor and mounted implements.
- Spare parts must at least comply with the specified technical requirements of AMAZONEN-WERKE. This is ensured through the use of genuine AMAZONE spare parts.

3 Loading and unloading the implement upon delivery

The pictogram marks the location at which the slings for lifting the implement with a crane is to be secured.

**DANGER**

Attach the slings for loading the implement with a crane only at the marked locations.

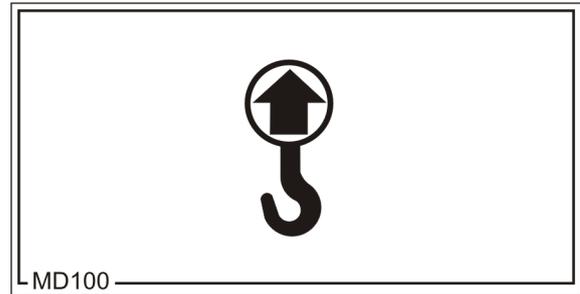


Fig. 7

**DANGER**

Compliance with this information is essential for your safety:

- Load the implement only when the hopper is empty
- Please pay attention to the required tensile strength of the sling
- Do not walk under suspended loads
- Lash the implement down on the transport vehicle in accordance with regulations.

Attach the seed drill to a crane hook for loading and unloading with the seed hopper cover open.

Hang the crane hook in one of the two slots (Fig. 8/1) depending on the equipment and centre of gravity of the seed drill.

The seed hopper must not be filled.

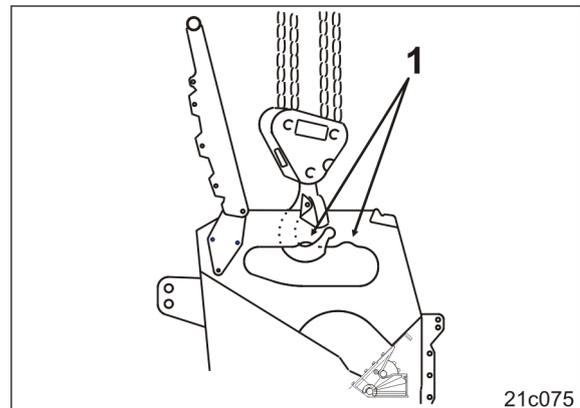


Fig. 8

**DANGER**

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

4 Product description

4.1 Components of the AMAZONE seeding combination

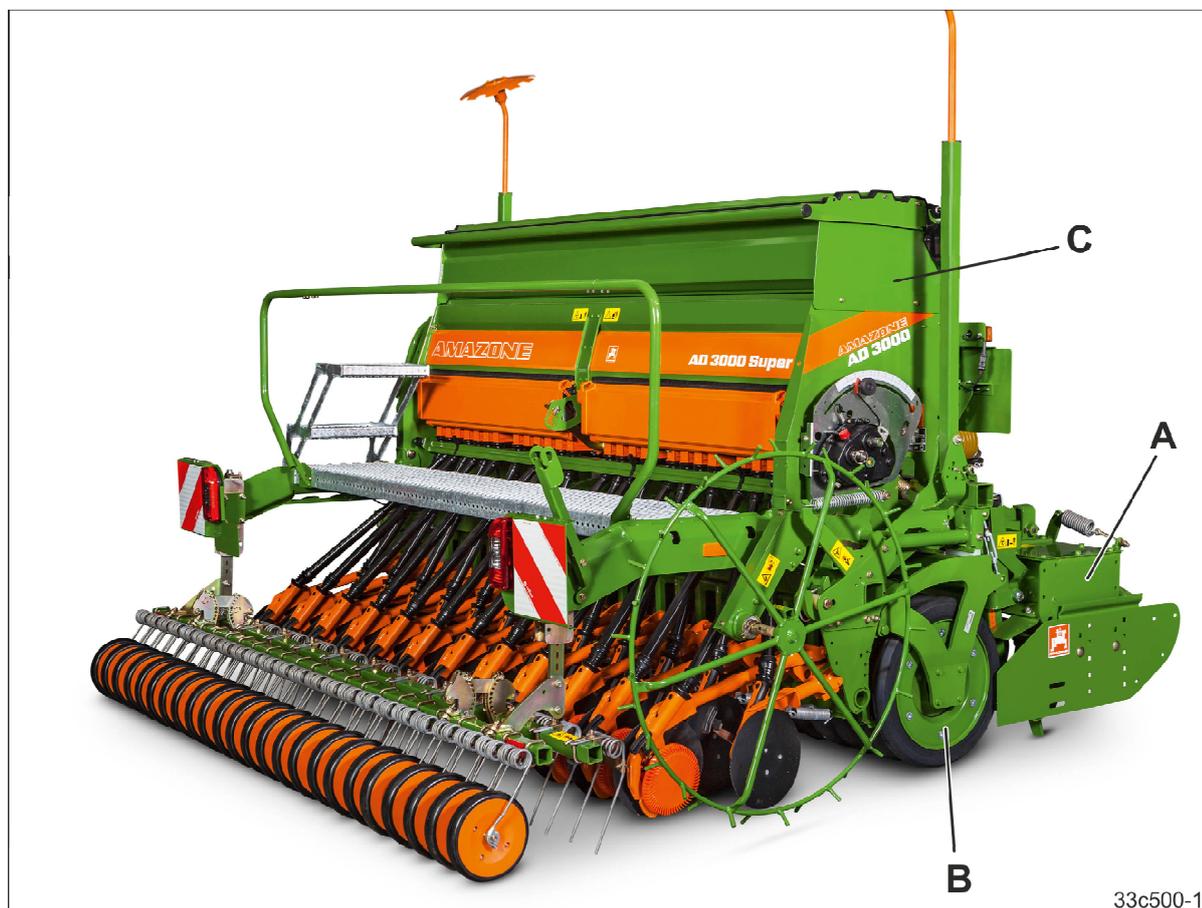


Fig. 9

- (A) AMAZONE soil tillage implement
- (B) AMAZONE roller
- (C) AMAZONE pack top seed drill AD 3000 Super

4.2 Assembly groups of the AD 3000 Super pack top seed drill

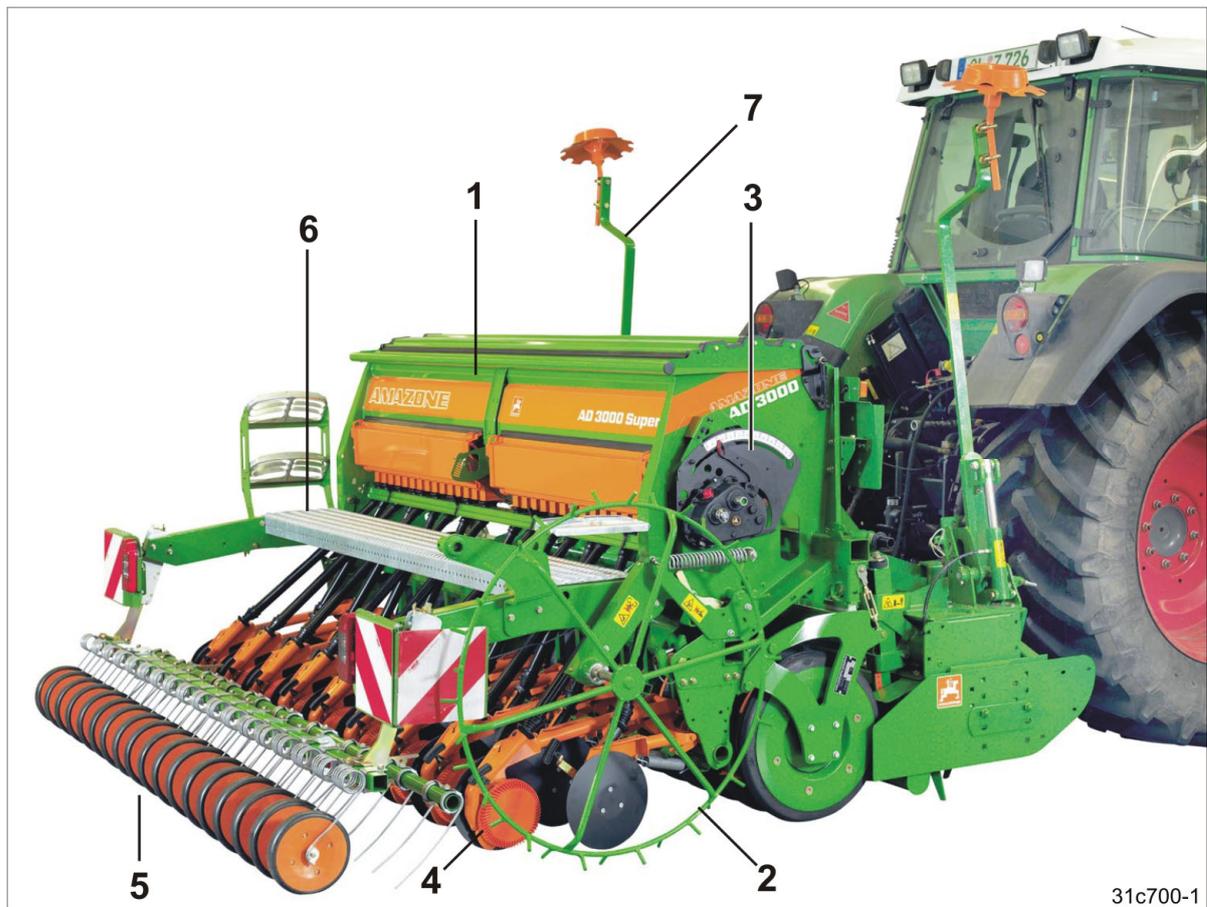


Fig. 10

- | | |
|-------------------|--|
| (1) Seed hopper | (4) RoTeC Control coulters |
| (2) Star wheel | (5) Roller harrow,
optionally exact following harrow |
| (3) Vario gearbox | (6) Loading board |
| | (7) Track marker, installed
on the soil tillage implement |

Product description

- (1) Normal seed metering wheel / fine seed metering wheel (adjustable for seed metering)
- (2) Seeding shaft
- (3) Seed housing
- (4) Sliding shutter
- (5) Bottom flap
- (6) Bottom flap shaft

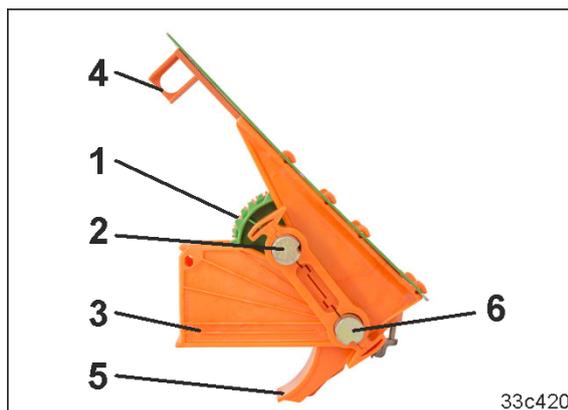


Fig. 11

- (1) Lay shaft to drive the tramline seed metering wheels
- (2) Lay shaft bearing
- (3) Lay shaft coupling with solenoid
- (4) Spur gear

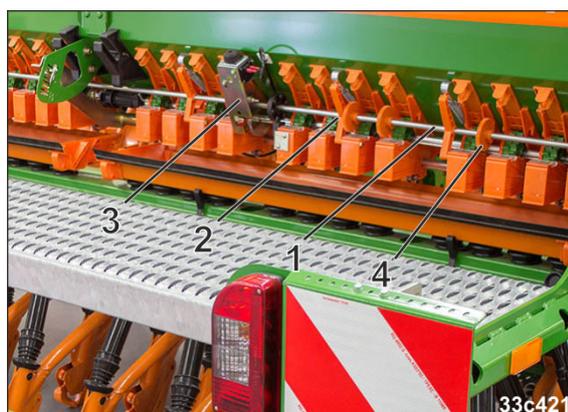


Fig. 12

Tramline marker



Fig. 13

4.3 Safety and protective equipment

(1) Handrail



Fig. 14

(1) The road safety bar covers the tines of the exact following harrow that protrude into the traffic space.

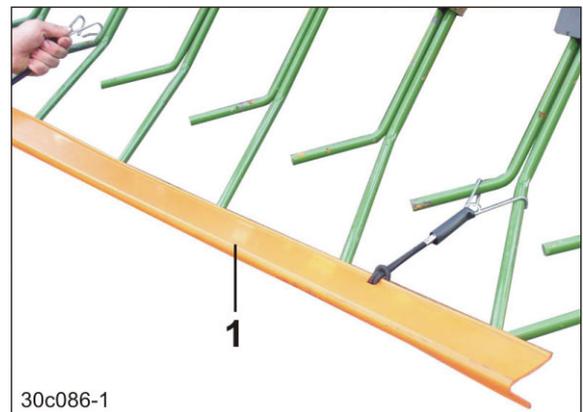


Fig. 15

4.4 Overview – Supply cable / hydraulic hose lines

4.4.1 Supply cable

Description	Function
Implement plug	Data transfer implement/job computer/control terminal
Plug (7-pin)	Connection to the lighting system for road travel

4.4.2 Identification of the hydraulic hose lines

All hydraulic hose lines have handles with coloured markings and a code number or code letter to assign the respective hydraulic function to the pressure line of a tractor control unit.

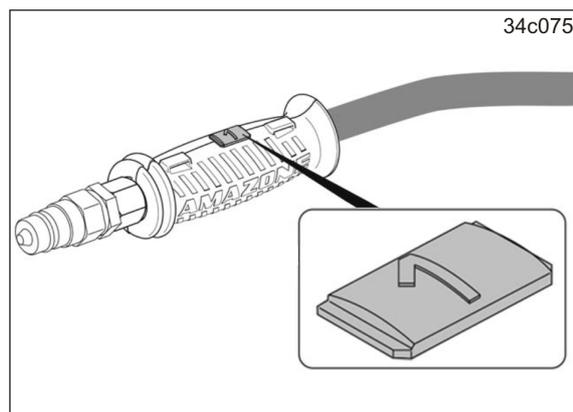


Fig. 16

4.4.3 Connection and function of the tractor control units

Identification of the hydraulic hose lines		Connection of the tractor control unit		Function when actuating the tractor control unit
yellow		Single acting	 	Track marker on the soil tillage implement Lifting and lowering, alternating Tramline marker Lifting and lowering, depending on the tramline counter
green		Single acting	 	Coulter pressure Increasing and reducing

The symbols show the type of actuation for the tractor control units.



Latched, for a permanent oil circulation



Actuated when the button is pressed, until the action is finished



Float position, free oil flow in the tractor control unit.

4.5 Transportation equipment

Fig. 17

only implements with exact following harrow:

- (1) Road safety bar, two-part



Fig. 17

Fig. 18

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



Fig. 18

- (1) Number plate holder
- (2) Licence plate lighting

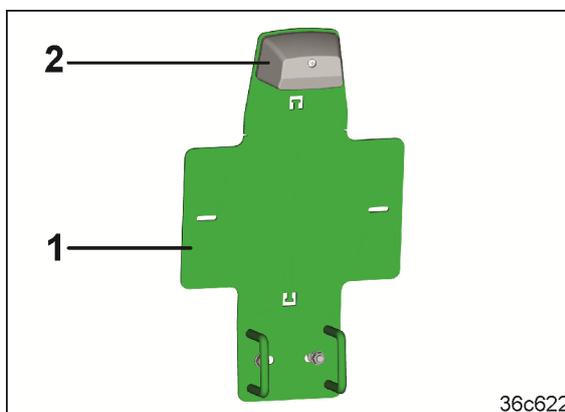


Fig. 19

Fastened on soil tillage implement:

- (1) 2 front-facing warning signs, left and right, see "Soil tillage implement" operating manual
- (2) 2 front-facing marker light.

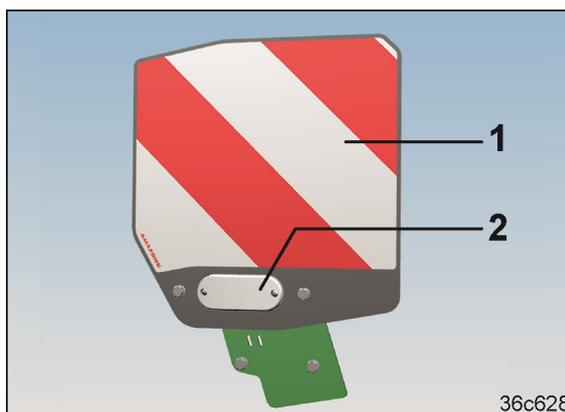


Fig. 20

4.6 Proper use

The implement

- is designed for metering and spreading certain commercially available seeds during agricultural work.
- is mounted on an AMAZONE soil tillage implement with roller approved for this purpose
- is coupled to the tractor three-point hitch together with the soil tillage implement and is operated by one person.

Slopes can be travelled

- Across the slope
Direction of travel to left: 10 %
Direction of travel to right: 10 %
- Up/down the slope
Up the slope: 10 %
Down the slope: 10 %.

Intended use also includes

- 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 sole responsibility
- AMAZONEN-WERKE accepts no liability.

4.6.1 Approved AMAZONE implement combinations

The AD 3000 Super pack top seed drill may only be combined with the following AMAZONE implements listed in the table.

The combination of an AD 3000 Super with other implement is considered improper use and is therefore forbidden.

	AMAZONE soil tillage implements	
	KE 3000 Special / Super	KE 3001 Special / Super
	KG 3000 Special / Super	KG 3001 Special / Super
	KX 3000	KX 3001
AMAZONE Tooth packer roller PW 500 1-tube system roller frame	PW 3000-500	PW 3000-500
AMAZONE Tooth packer roller PW 600 2-tube system roller frame	PW 3000-600	PW 3000-600
AMAZONE Wedge ring roller KW 520 1-tube system roller frame	KW 3000-520-125	KW 3000-520-125
AMAZONE Wedge ring roller KW 580 2-tube system roller frame	KW 3000-580-125	KW 3000-580-125
AMAZONE Wedge ring roller KWM 600 Matrix tyre profile 2-tube system roller frame	—	KWM 3000-600-125
AMAZONE Trapeze ring roller TRW 500 2-tube system roller frame	—	TRW 3000-500-125
AMAZONE Trapeze ring roller TRW 600 2-tube system roller frame	—	TRW 3000-600-125
Güttler Simplex prismatic roller suitable for AMAZONE 1-tube roller frame system	—	SX-45 SG SX-45 SU
Güttler Simplex prismatic roller suitable for AMAZONE 2-tube roller frame system	—	SX-50 SU SX-56 SU
	AMAZONE pack top seed drill AD 3000 Super Row spacing 12.5 cm	

Fig. 21

Mounting the AMAZONE AD 3000 Super seed drill on the AMAZONE CombiDisc 3000 is **not permitted**. The combination is not designed for this load.

4.7 Danger areas and danger points

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

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

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

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

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

The user may only move the implement or switch or move the tools from the transport position to the working position or vice-versa when nobody is in the implement danger area.

Danger points exist

- between the tractor and the implement, particularly during coupling and uncoupling operations.
- in the area of the swivelling track marker
- in the area of moving parts
- on the implement while it is moving.
- underneath raised, unsecured implements or parts of implements.

4.8 Rating plate

The figure shows the arrangement of the rating plate.



Fig. 22

The following information is specified on the rating plate:

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



Fig. 23

4.9 Technical data

Pack top seed drill			AD 3000 SUPER
Working width	[m]		3.0
Transport width	[m]		3.04
Hopper content	without extension	[l]	600
	with extension	[l]	1000
WS coulter	Number of rows		24
	Row spacing	[cm]	12.5
	Medium working speed	[km/h]	5 - 6
	Maximum working speed	[km/h]	8
RoTeC Control coulter	Number of rows		24
	Row spacing	[cm]	12.5
	Medium working speed	[km/h]	5 - 8
	Maximum working speed	[km/h]	10
Permissible total weight	KG		see rating plate
Hydraulic fluid 51524 HLP68			●
Electrical system 12 V (7-pin)			●

● = Standard equipment

4.10 Noise production data

The details for the workplace-related emission values (sound pressure level) can be found the operating manual of your soil tillage implement.

The noise level mainly depends on the tractor used.

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

The technical data [total weight (G_H) and distance (d)] is needed to calculate the tractor weights and tractor axle loads, see page 86.

The permissible total weight (G_H) of the rear-mounted implement combination is obtained from the sum of the weights listed in the following table.

Distance (d) is the distance between the centre of the lower link ball and the centre of gravity of the rear-mounted implement combination.

Distance $d = 1.05$ m

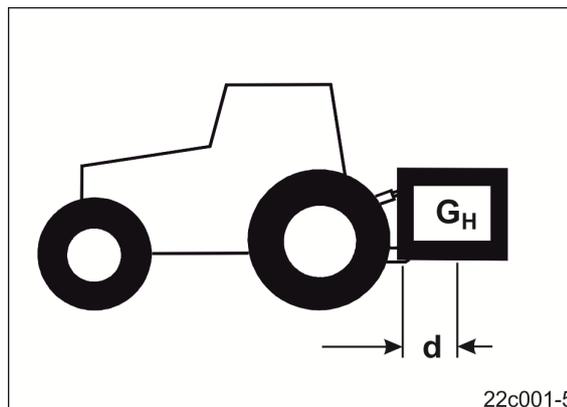


Fig. 24

The permissible **total weight (G_H)** of the implement combination is obtained from the sum of the weights:

- Permissible total weight of the pack top seed drill, see rating plate
- Total weight of the soil tillage implement, roller and coupling parts

Implements and special equipment		Enter the implement weights here
Permissible total weight of the pack top seed drill, see rating plate	KG	
Total weight of the <ul style="list-style-type: none"> • soil tillage implement, roller and coupling parts, see "Soil tillage implement" operating manual 	KG	
Total weight (G_H)	KG	

4.11 Tractor equipment

		Minimum tractor conditions for proper operation of the implement
Power requirement	AD 3000 Super	Starting at 81 kW (110 HP)
Electrical equipment	Battery voltage	12 V (volts)
	Lighting socket	7-pin
Hydraulic system	Tractor control units	See section "Overview – Supply cable / hydraulic hose lines", page 40
	Maximum operating pressure	210 bar
	Tractor pump output	at least 10 l/min at 150 bar
	Hydraulic oil for supplying the implement	See section "Technical Data"

4.12 Operating pressure of the hydraulic system

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

This information can also be found on a pictogram (Fig. 25) on your implement.

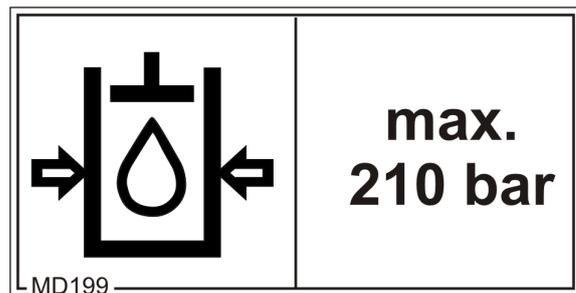


Fig. 25

5 Structure and function

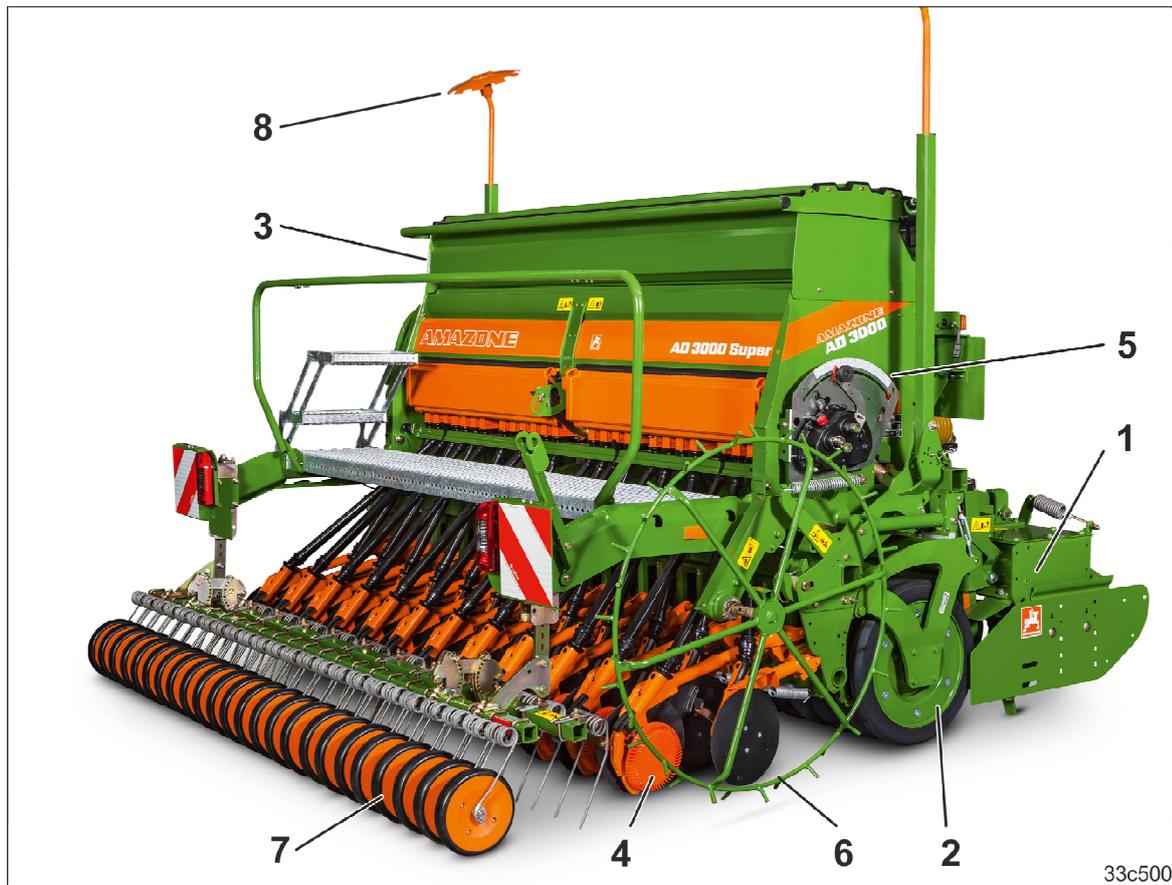


Fig. 26

The AMAZONE AD pack top seed drill is used as part of a cultivation combination with an AMAZONE soil tillage implement (Fig. 26/1) and AMAZONE roller (Fig. 26/2).

The AD pack top seed drill allows precise seed placement, uniform placement depth and coverage of the seed, and a track-free, well-structured field after cultivation.

In combination with the soil tillage implement, the cultivation combination loosens and reconsolidates the soil and delivers precise seeding work in one field pass.

The seed is carried in the seed hopper (Fig. 26/3). The seed metered by the seed metering wheels in the seed housings falls into the seed furrow created by the coulters (Fig. 26/4). The seed metering wheels are driven via the Vario gearbox (Fig. 26/5) by the star wheel (Fig. 26/6).

The seed is covered with loose soil by the exact following harrow or the roller harrow (Fig. 26/7).

The field connection run is marked in the centre of the tractor by the track markers (Fig. 26/8). The track markers are attached to the soil tillage implement.

Even on fields with large quantities of straw and plant residues, mulch seeding is possible with the RoTeC Control coulters (Fig. 26/4). 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 roller (Fig. 26/C) serves to reconsolidate the soil. AMAZONE provides the suitable roller for any seed type and any soil. The seed drill may only be combined with the approved AMAZONE rollers, see section "Approved AMAZONE implement combinations", page 44.

The **AMAZONE PW tooth packer roller** has good self-propulsion and with its on-grip teeth, it achieves full-area reconsolidation of the surface. The tooth packer roller is designed for universal use.

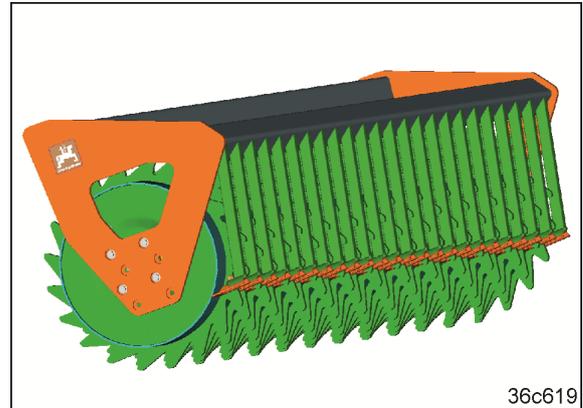


Fig. 27

The **AMAZONE KW wedge ring roller** has a wide range of applications.

Its design enables reconsolidation in strips on virtually all soils and under all conditions.

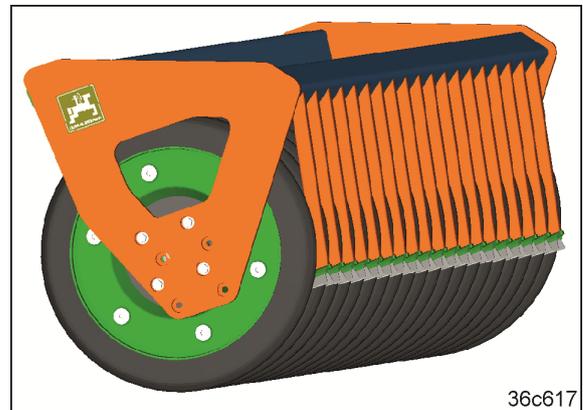


Fig. 28

Structure and function

The **AMAZONE KWM wedge ring roller** with matrix tyre profile is characterised by two particularly good properties. The wedge ring roller with matrix tyre profile has particularly good self-propulsion and produces lots of fine soil to fill the seed rows.

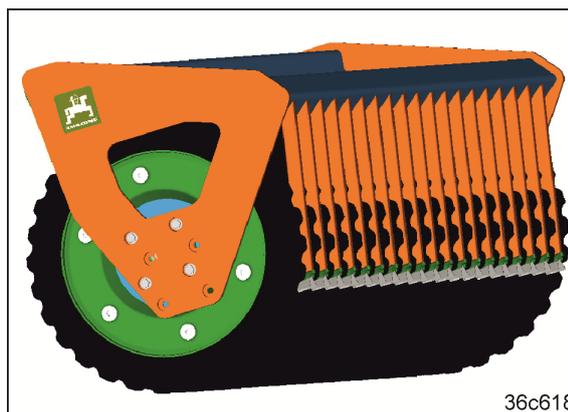


Fig. 29

The **AMAZONE TRW trapeze ring roller** reconsolidates the soil in strips. On light soils, the good load-bearing capacity of the roller prevents the trapeze rings from sinking in too deep.



Fig. 30

5.1 AMAZONE AmaLog+ control terminal

Implements with start wheel and Vario gearbox are equipped with the AmaLog+ control terminal.

The AmaLog+ control terminal with an integrated computer is used to control and monitor the seed drill.

One of these functions is the control of the tramline control and the tramline marker.

Other functions can be found in the "AmaLog+" operating manual.

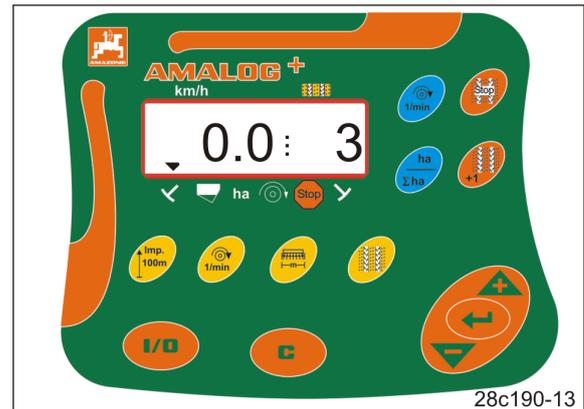


Fig. 31

5.2 Implement documentation

The implement documentation and the operating manual can be found in the case (Fig. 32/1) under the seed hopper. Keep all operating manuals or a copy in the case on your implement to avoid operating errors.



Fig. 32

5.3 Seed hopper and loading board

The cover protects the contents of the seed hopper from water and dust.

The seed hopper is filled from the loading board, on the back of the seed drill.

The hopper extension enlarges the volume of the seed hopper, see section "Technical data", page 47.



Fig. 33

5.3.1 Fill level monitoring

A low level sensor (Fig. 34/1) monitors the seed level in the seed hopper.

If the seed level reaches the low level sensor, an acoustic signal is emitted. At the same time, the control terminal displays a warning message. This warning message is intended to remind the tractor driver to refill the seeds in due time.

The height of the low level sensor is adjustable when the seed hopper is empty.



Fig. 34

The fastening height of the low level sensor depends on the filled material.

Cereals and legumes:

attach the sensor in the upper area.

Fine seed types (e.g., rapeseed):

Fasten the sensor in the lower area.

5.4 Rapeseed insert

The rapeseed insert (Fig. 35/1) reduces the holding capacity of the seed hopper.

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 installed in the seed hopper.



Fig. 35

5.5 Seed hopper partition wall

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

The partition wall (Fig. 36/1) prevents the seed from sliding around in the seed hopper.

The partition wall can be ordered through spare parts if necessary.

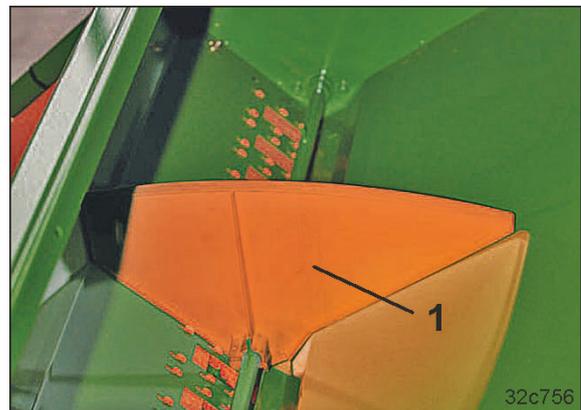


Fig. 36

5.6 Seeding shaft drive

The seed is metered by the metering wheels in the seed housings. The metering wheels are attached to the seeding shaft.

The star wheel (Fig. 37/1) drives the seed metering wheels via the Vario gearbox.

The speed of the seeding shaft is regulated depending on the working speed.

The distance covered is measured by the star wheel. The control terminal requires this data to calculate the worked area (hectare counter) and the working speed.

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

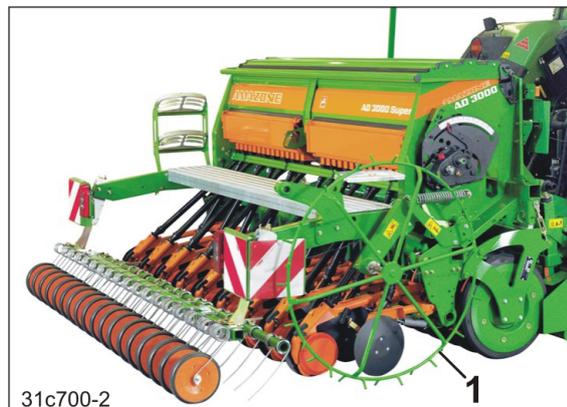


Fig. 37

The gearbox lever (Fig. 38/1) of the Vario gearbox is used to set the required application rate.

This sets the speed of the seed metering wheels. The speed of the seed metering wheels determines the spread rate.

The higher the number the gearbox lever points to on the scale (Fig. 38/2),

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

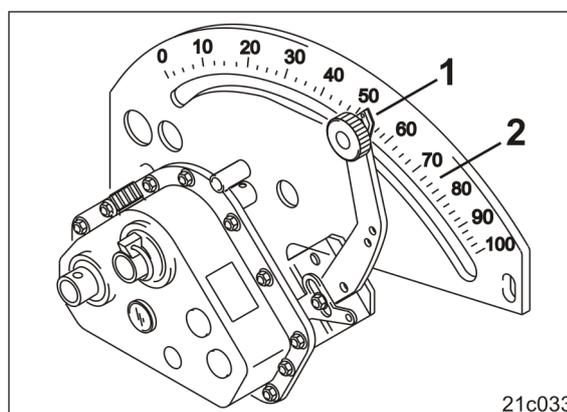


Fig. 38

5.7 Metering

The seed is carried in the seed hopper. The seed goes into the seed housing through adjustable openings (Fig. 39/1). Each seed housing has an opening. The opening size is adjusted with the sliding shutters.

The seed is metered either by the normal seed metering wheel (Fig. 39/2) or the fine seed metering wheel. The normal seed metering wheel can be immobilised for fine seeds.

For normal seeding, both seed metering wheels rotate.

The seed metering wheel conveys the seed to the edge of the bottom flap (Fig. 39/3). The metered seed travels through the seed tube to the seeding coulter.

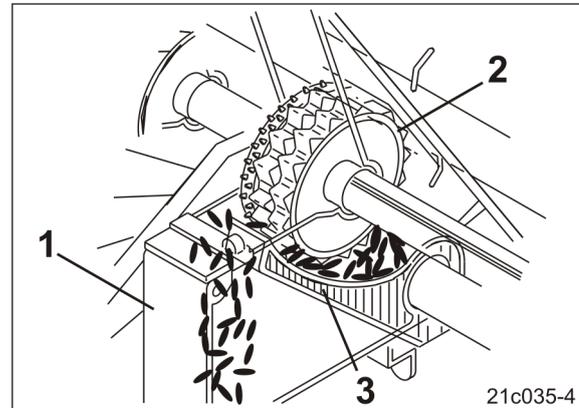


Fig. 39

Before beginning seeding,

- the following values, depending on the seed type, must be taken from the Table "Setting values" (page 58) and set:
 - Normal seed metering wheel, fine seed metering wheel or bean metering wheel
 - Sliding shutter position
 - Bottom flap position
 - Agitator shaft support.
- the seeding rate must be calibrated.

If the seed is not listed in the "Setting values" table (page 58), take the setting values for a seed with a similar shape and size.

5.7.1 Setting values

Seed	Seed metering wheel	Sliding shutter position	Bottom flap position		Agitator shaft support
			less than 6 g (rapeseed) 50 g (cereals)	using	
Rye	Normal	open	1	2	Yes
Triticale	Normal	¾ open	1	2	Yes
Barley	Normal	open	1	2	Yes
Wheat	Normal	¾ open	1	2	Yes
Spelt	Normal	open	2		Yes
Oats	Normal	open	2		Yes
Rapeseed	Fine	¾ open	1	2	No
Caraway	Fine	¾ open	1		No
Mustard/Fodder radish	Fine	¾ open	1		No
Phacelia	Normal	¾ open	1		Yes
Phacelia	Fine	¾ open	1		Yes
Turnips	Fine	¾ open	1		No
Grass	Normal	open	2		Yes
Beans, small (TGW less than 400 g)	Normal	¾ open	4		Yes
Beans, large (TGW up to 600 g)	Beans	¾ open	3		Yes
Beans, large (TGW over 600 g)	Beans	¾ open	4		Yes
Peas ¹⁾ (TGW up to 440g)	Normal	¾ open	4		Yes
Peas ¹⁾ (TGW more than 440g)	Beans	¾ open	4		Yes

1) Note for seeding peas:

Agitator shaft support should be deactivated for seeding round peas. They flow down well even without agitator shaft support.

Agitator shaft support should be activated for seeding angular peas. The peas do not flow down well and tend towards bridge formation in the seed hopper.

In exceptional cases, certain dressed peas with an inconvenient shape do not fall into the seed tube, but rather wander back into the seed hopper. This can be remedied by installing the fine seed metering wheel brushes on all seed housings, see section "Fine seed metering wheel brushes", page 60.

Seed	Seed metering wheel	Sliding shutter position	Bottom flap position	Agitator shaft support
Flax (dressed)	Normal	$\frac{3}{4}$ open	1	Yes
Millet	Normal	$\frac{3}{4}$ open	1	Yes
Lupins	Normal	$\frac{3}{4}$ open	4	Yes
Lucerne	Normal	$\frac{3}{4}$ open	1	Yes
Lucerne	Fine	$\frac{3}{4}$ open	1	Yes
Oilseed (wet dressed)	Normal	$\frac{3}{4}$ open	1	No
Oilseed (wet dressed)	Fine	$\frac{3}{4}$ open	1	No
Red clover	Fine	$\frac{3}{4}$ open	1	No
Soy	Normal	$\frac{3}{4}$ open	4	Yes
Sunflowers	Normal	$\frac{3}{4}$ open	2	Yes
Vetches	Normal	$\frac{3}{4}$ open	2	Yes
Rice	Normal	open	3	Yes

5.7.2 Normal and fine seed metering wheel

The seed metering wheel consists of

- Normal seed metering wheel (Fig. 40/1) and
- Fine seed metering wheel (Fig. 40/2).

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.

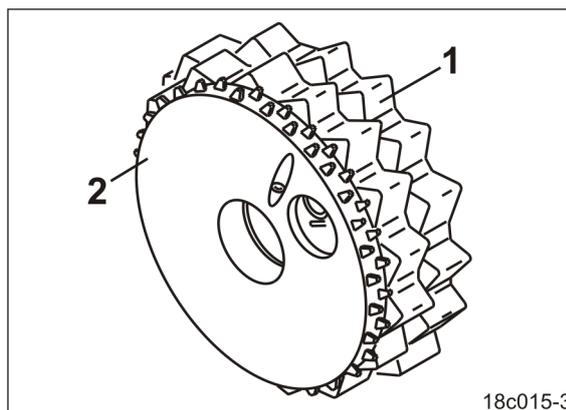


Fig. 40

18c015-3

5.7.3 Fine seed metering wheel brushes

The fine seed metering wheel brushes (Fig. 41/1) serve to clean the fine seed metering wheels.

The fine seed metering wheel brushes are clipped onto the seed housings.

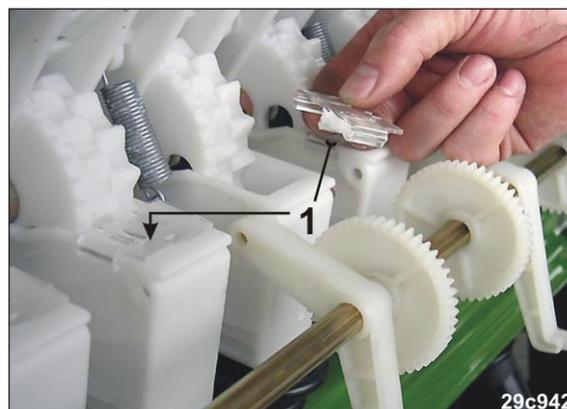


Fig. 41

29c942

5.7.4 Bean seed metering wheel

As an option, large beans can be metered in the metering housings by bean seed metering wheels (Fig. 42).

To gently convey the beans, the bean metering wheels have 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.

The bean metering wheels can be ordered through spare parts if necessary.

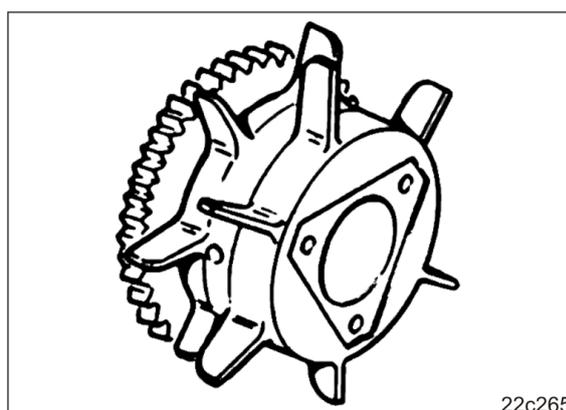


Fig. 42

22c265

5.7.5 Bottom flaps

The gap between the seed metering wheel and the bottom flap (Fig. 43/1) depends on the size of the seed.

The bottom flap lever (Fig. 43/2) is used to make adjustments.

The bottom flaps are spring suspended for gentle metering of the seed.

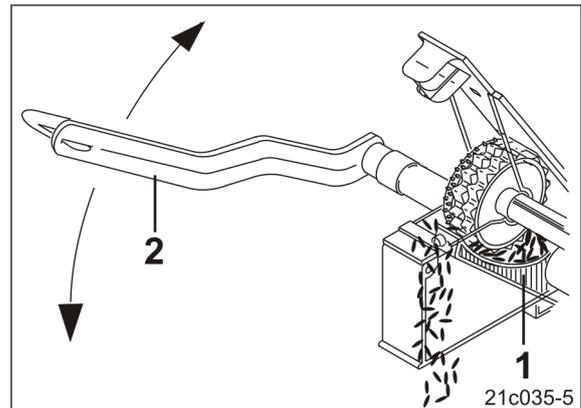


Fig. 43

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.

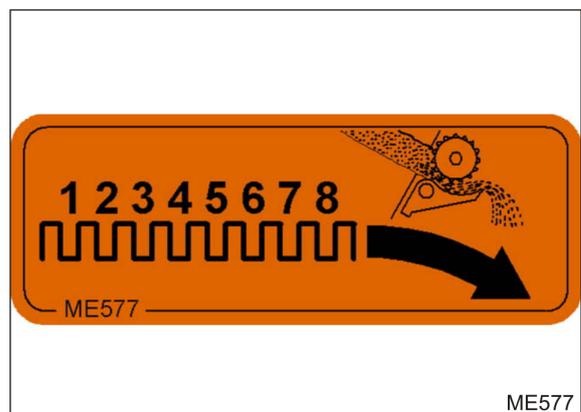


Fig. 44

5.7.6 Slide gate

The sliding shutters (Fig. 45) are used to adjust the opening between the seed hopper and the metering housing according to the seed.

The sliding shutters (Fig. 45) latch into one of three positions:

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

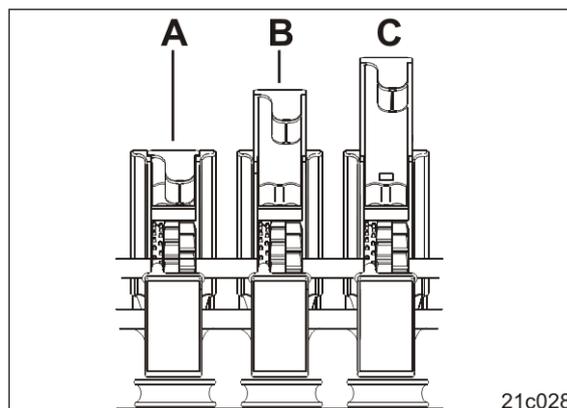


Fig. 45

5.7.7 Agitator shaft support

When seeding spelt-type seed, the stirring elements on the rotating agitator shaft (Fig. 46/1) prevent faulty seeding caused by seed blockage in the seed hopper.

The agitator shaft may not rotate when seeding certain seed types, e.g. with rapeseed, which can become sticky due to the intensive stirring action of the agitator shaft.

Information on support from the agitator shaft, depending on the seed type, can be found in the "Setting values" table, page 58.

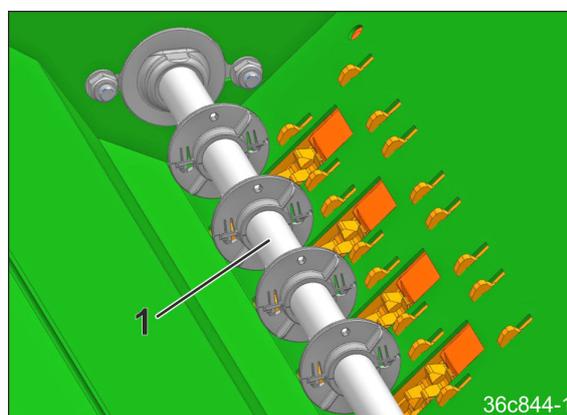


Fig. 46

The agitator shaft support is activated or deactivated with a linch pin (Fig. 47/1).

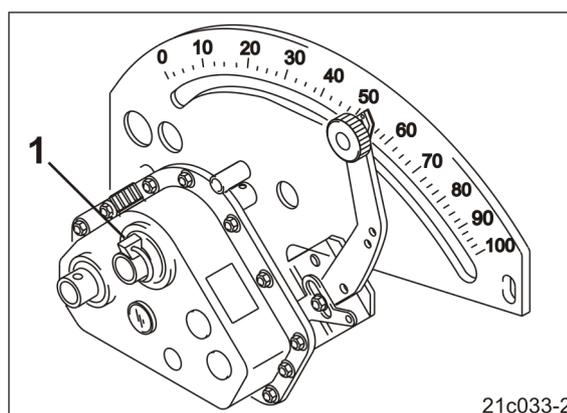


Fig. 47

5.7.8 Seed rate calibration

When calibrating the seed rate, the later field pass is simulated by rotating the star wheel (Fig. 48).

The seed metered in the process is collected and weighed.

The required seeding shaft speed is calculated from the simulated area (e.g. 1/40 ha) and the weight of the collected seed.

With the calculated seeding shaft speed depending on the seeded area, the required seed rate will be spread during the later field pass.



Fig. 48

The crank (Fig. 49/1) that is used to turn the star wheel is inserted in parking position in the transport bracket underneath the seed hopper.

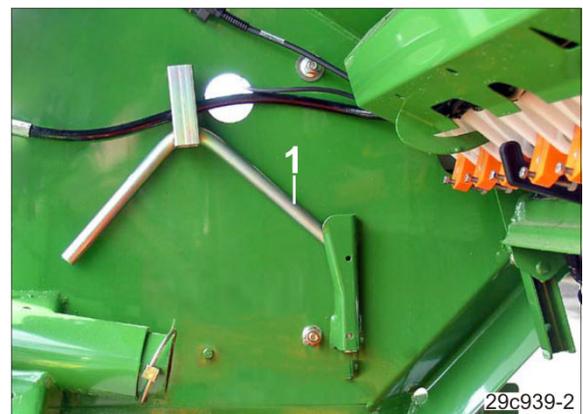


Fig. 49

Always calibrate the seed rate

- during the initial operation
- when changing the sort
- 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
 - bottom flaps
 - sliding shutter
- when changing the agitator shaft support
- if the seed hopper is emptied faster/slower than expected.

Structure and function

The number of crank turns on the star wheel depends on the seed drill working width (Fig. 50/1).

The number of star wheel rotations (Fig. 50/2) is based on 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 rapeseed, it is advisable to perform the calibration test for 1/10 ha.

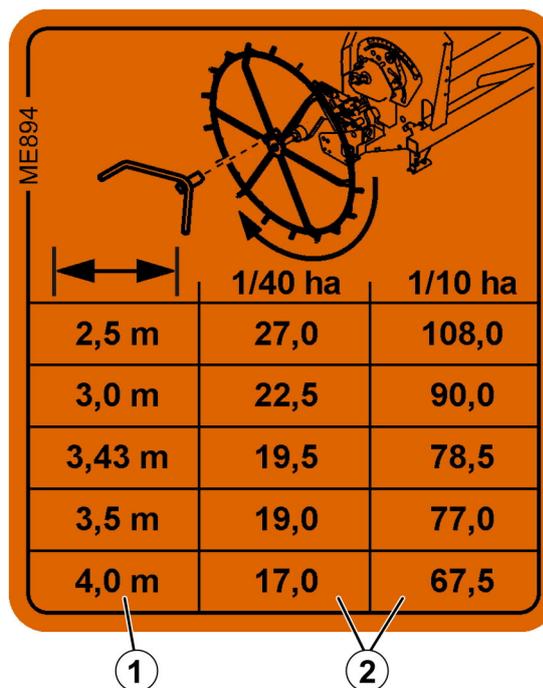


Fig. 50

The calibration trays (Fig. 51/1) are used to collect the calibrated seed.

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



Fig. 51

The supplied collapsible bucket is used to transfer the collected seed. The collected seed is weighed in the collapsible bucket.

The collapsible bucket can be conveniently hung on a digital scale (Fig. 52), which is also included in the scope of delivery.

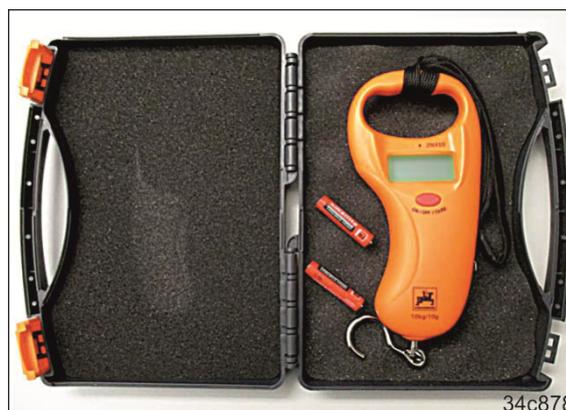


Fig. 52

The desired seed rate is adjusted with the gearbox lever of the Vario gearbox.

The correct gearbox position is determined during seed calibration. To do so, several calibration procedures are often required.

With the values from the first calibration procedure, the required gearbox position can be immediately calculated.

With another calibration procedure, you can check the gearbox setting value determined with the calculating disc rule.

The calculating disc rule has three scales

- An outer white scale (Fig. 53/1) for all seeding rates above 30 kg/ha
- An inner white scale (Fig. 53/2) for all seeding rates below 30 kg/ha.
- A coloured scale (Fig. 53/3) with all gearbox settings from 1 to 100.

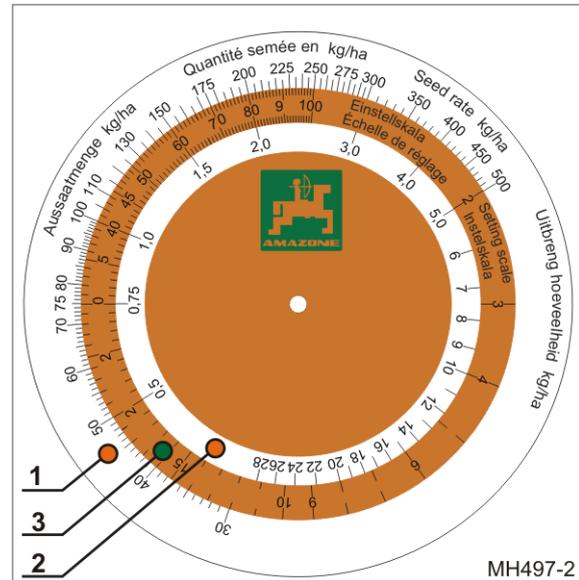


Fig. 53

5.8 RoTeC Control coulters

The RoTeC Control coulters (Fig. 54/1) is used for seed placement on ploughed or mulched soil, even with large quantities of straw and plant residues.

Due to the support of the coulters on the depth control disc / wheel (Fig. 54/2) and the high coulters pressure, the coulters run very smoothly and accurately maintains the seed placement depth.

The depth control discs/wheels (see below) are used for

- limiting the seed placement depth
- cleaning the rear side of the steel disc (Fig. 54/3).

The **Control 25 depth control wheel** (Fig. 55/1) with a 25 mm-wide contact area enables shallow seeding with increased coulters pressure on light soils.

The **Control 10 depth control disc** (Fig. 56/1) with a 10 mm-wide contact area is used on heavy soils.

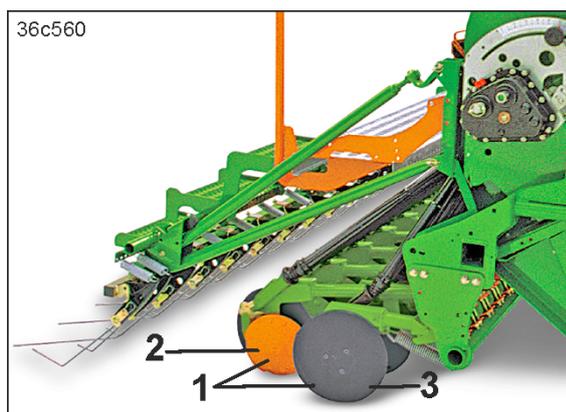


Fig. 54

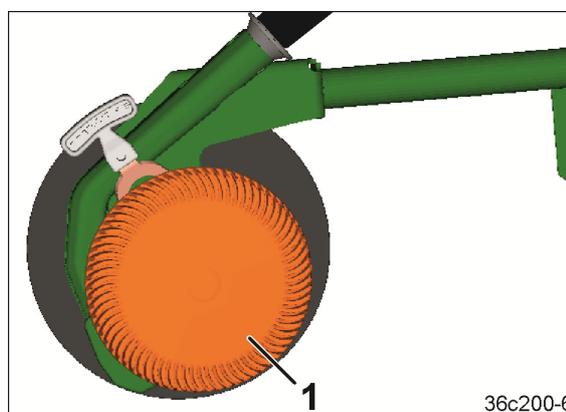


Fig. 55

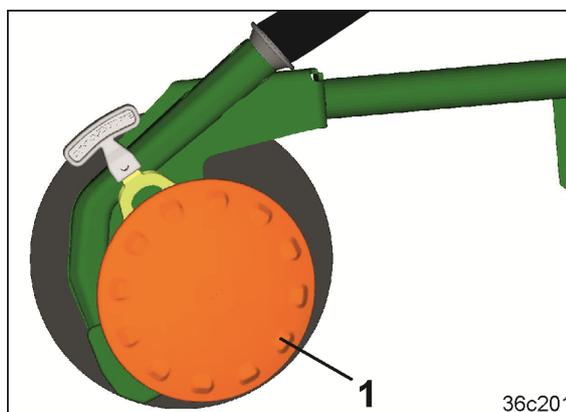


Fig. 56

The adjust the seed placement depth, the depth control disc/wheel (see Fig. 57) can be

- engaged in 3 holes on the coulter
- removed if the seed placement depth is not reached.

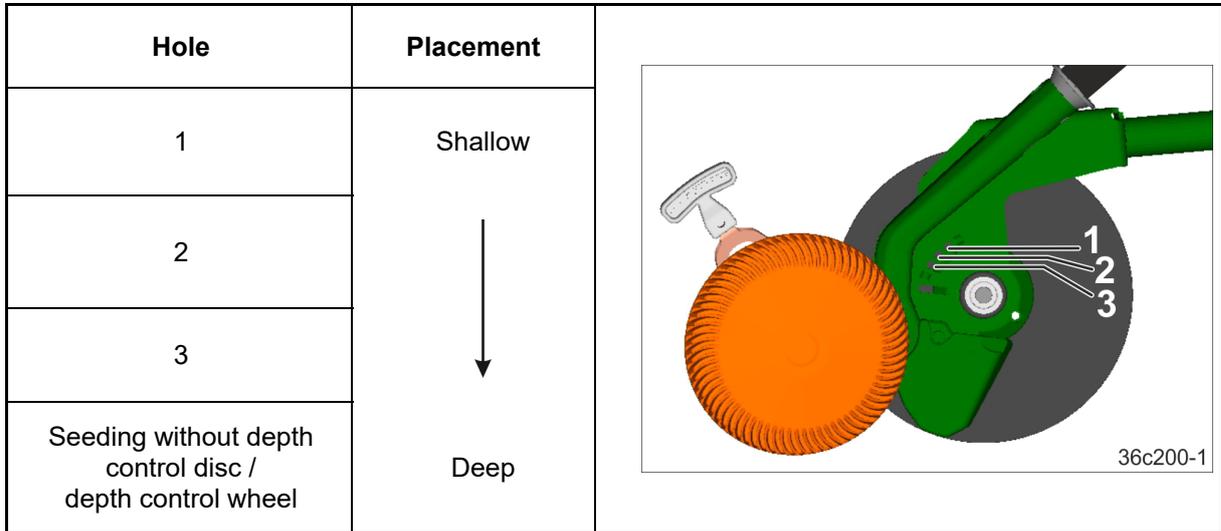


Fig. 57

The handle (Fig. 58/1) is used to adjust the depth control disc/wheel.

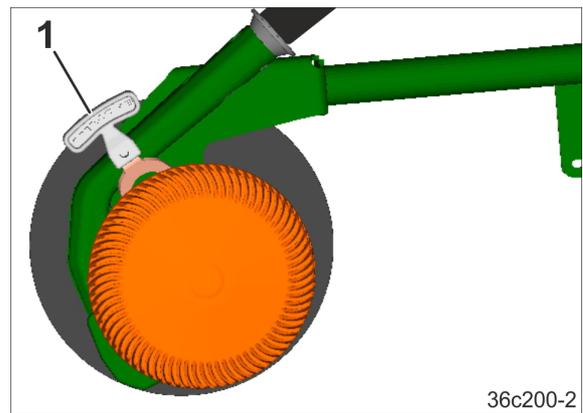


Fig. 58

5.9 Coulter pressure and seed placement depth

Adaptation of the coulter pressure to the soil is required to achieve uniform seed placement depth. The coulter pressure must be set higher on heavy soils than on light soils. The coulter pressure is adjusted centrally by means of a crank handle or hydraulically.

The hydraulically actuated coulter pressure adjustment allows the coulter pressure to be adapted to the soil during operation, when changing to heavy soil or vice versa.

The **seed placement depth** depends on the factors

- Soil type (light to heavy)
- Forward speed
- Coulter pressure
- Position of the depth control discs/wheels of the RoTeC Control coulters.

5.9.1 Coulter pressure adjustment, manually actuated

The coulter pressure is adjusted centrally with the calibration crank.



Fig. 59

5.9.2 Coulters pressure adjustment, hydraulically actuated

The coulters pressure can be adapted to the soil during operation when changing to heavy soil. The coulters pressure is adjusted hydraulically.

Two pins (Fig. 60/1) in an adjuster segment act as the stop for the hydraulic cylinder.

If pressure is applied at the tractor control unit (green), the coulters pressure increases and the stop rests against the upper pin. In floating position, the stop rests on the lower pin.

The numbers on the scale (Fig. 61/1) are provided for guidance. The higher the number indicated on the display, the greater the coulters pressure.

The tractor driver can comfortably read the coulters pressure on a second scale (Fig. 61/1) during work.

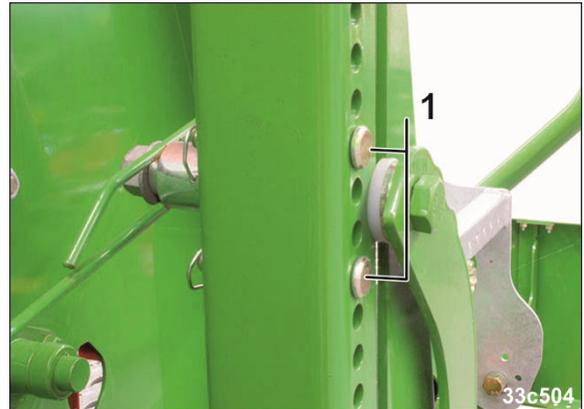


Fig. 60



Fig. 61

5.10 Exact following harrow

The exact following harrow (Fig. 62/1) evenly covers the seeds deposited in the seed furrows with loose earth and smoothes the ground.

The following are adjustable

- the exact following harrow tine setting
- the exact following harrow pressure.

The exact following harrow pressure determines the tillage intensity of the exact following harrow and depends on the soil texture.



Fig. 62

Before driving in reverse, always lift the seed drill and pay attention to obstacles. Stop immediately if there is a collision while driving in reverse. If a slight collision occurs, the exact following harrow tines deflect upwards from the obstacle without being damaged, see Fig. 63.

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

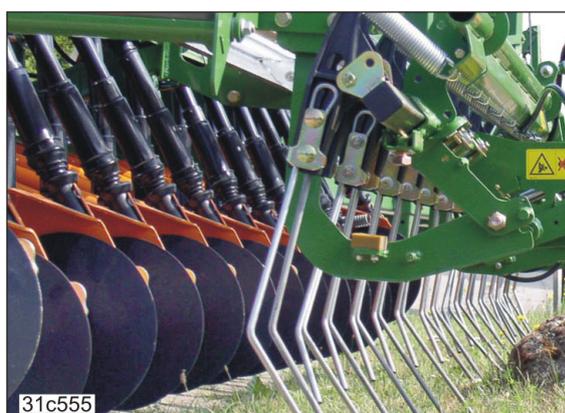


Fig. 63

5.10.1 Exact following harrow tine position

Exact following harrow tine position

Distance "A" = 230 to 280 mm

When correctly set, the harrow tines of the exact following harrow should:

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

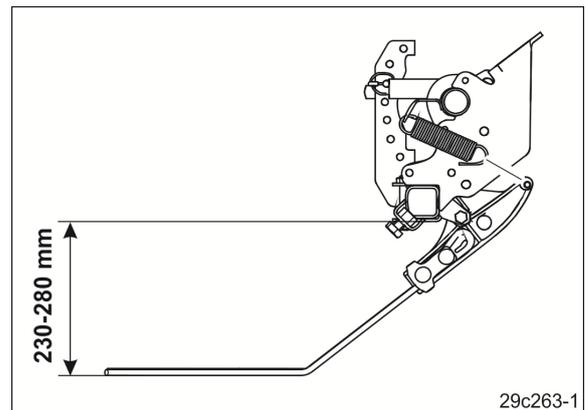


Fig. 64

The exact following harrow is fastened on the implement with two brackets.

Adjust the distance "A" from the exact following harrow tines to the ground by

- rebolting the exact following harrow brackets or

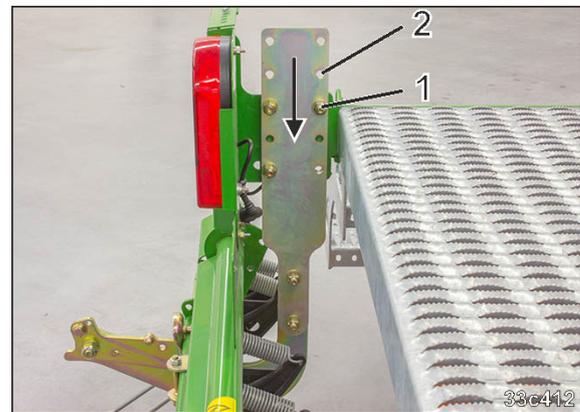


Fig. 65

- cranks with the supplied ratchet, if the brackets are equipped with spindles.



Fig. 66

5.10.2 Exact following harrow pressure

The exact following harrow pressure determines the tillage intensity of the exact following harrow and depends on the soil texture. To achieve uniform coverage of the seed row with soil, the exact following harrow pressure must be set higher on heavy soil than on light soil.

The exact following harrow pressure is generated by tension springs that are tensioned using a lever (Fig. 67/1).

The lever is in contact with a pin (Fig. 67/2) in the adjuster segment. The higher the pin is inserted in the group of holes, the greater the exact following harrow pressure.



Fig. 67

5.11 Roller harrow with contour guidance

The roller harrow consists of

- harrow tines (Fig. 68/1),
- press rollers (Fig. 68/2).

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.



Fig. 68

The following are adjustable

- the pitch of the harrow tines
- the working depth of the harrow tines
- the roller contact pressure.

If the roller harrow is not being used, it can be raised from the ground.

The adjuster segment (Fig. 69/1) serves to adjust the harrow tines.

Adjustments can be made to

- the pitch of the harrow tines
- the working depth of the harrow tines.

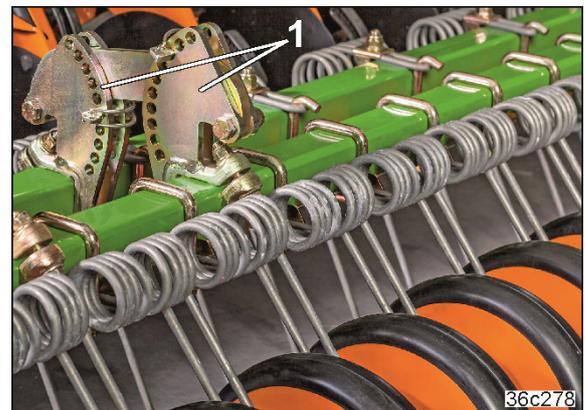


Fig. 69

The two spring-loaded levers (Fig. 70/1) serve to adjust the roller contact pressure.

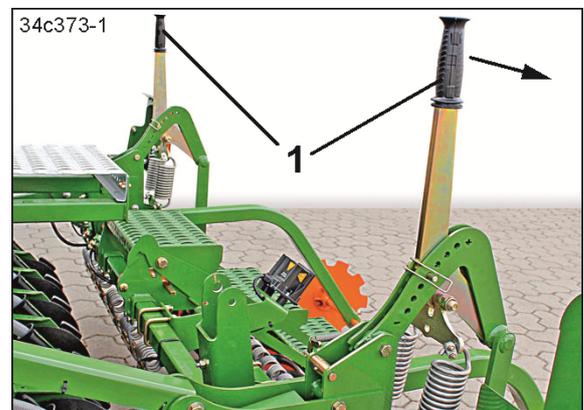


Fig. 70

5.12 Tramlines

Tramlines can be created on the field. Tramlines are seed-free tracks for fertilising and plant care implement used later.



Fig. 71

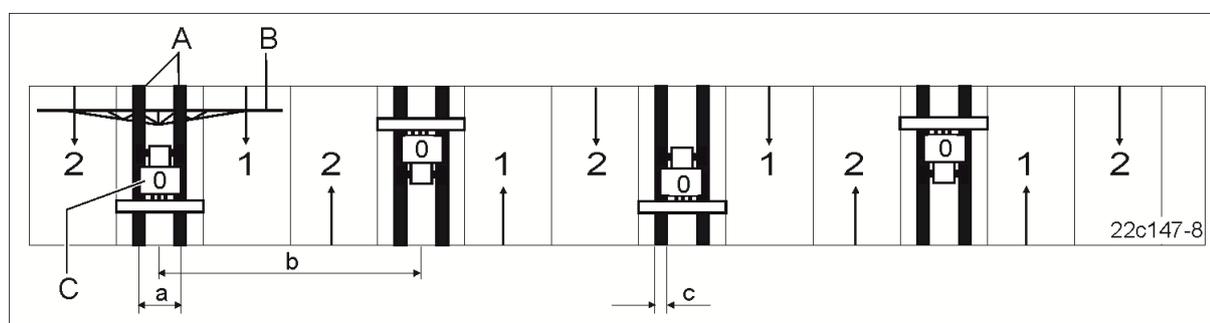


Fig. 72

The AmaLog+ control terminal controls the creation of the tramlines (A).

The tramline counter C counts the field passes. When creating tramlines, the tramline counter C shows the number "0" on the control terminal.

The **tramline spacing** (b)

- corresponds to the working width of the cultivating implement (B), e.g. fertiliser spreader and/or field sprayer, which are used on the seeded field.
- is derived from the tramline control and the working width of the seed drill.

The **tramline control**, e.g. 2-1-0-2-1-0-2 etc. can be found in the sections

- "Tramline control, tabular determination", page 75 or
- "Tramline control, graphic determination", page 76.

The track width (a) of the tramline corresponds to that of the cultivating tractor and is adjustable.

The wheelmark width (c) of the tramline increases with an increasing number of tramline coulters fitted next to each other.

5.12.1 Tramline control, tabular determination

The required tramline control can be found in the table.

The tramline control is derived from the desired tramline spacing and the working width of the seed drill.

Other adjustable tramline controls can be found in the "Control terminal" operating manual.

Tramline control	Seed drill working width
	3.0 m
	Tramline distance
2	12 m
3	9 m
4	12 m
5	15 m
6	18 m
7	21 m
8	24 m
9	27 m
21	18 m

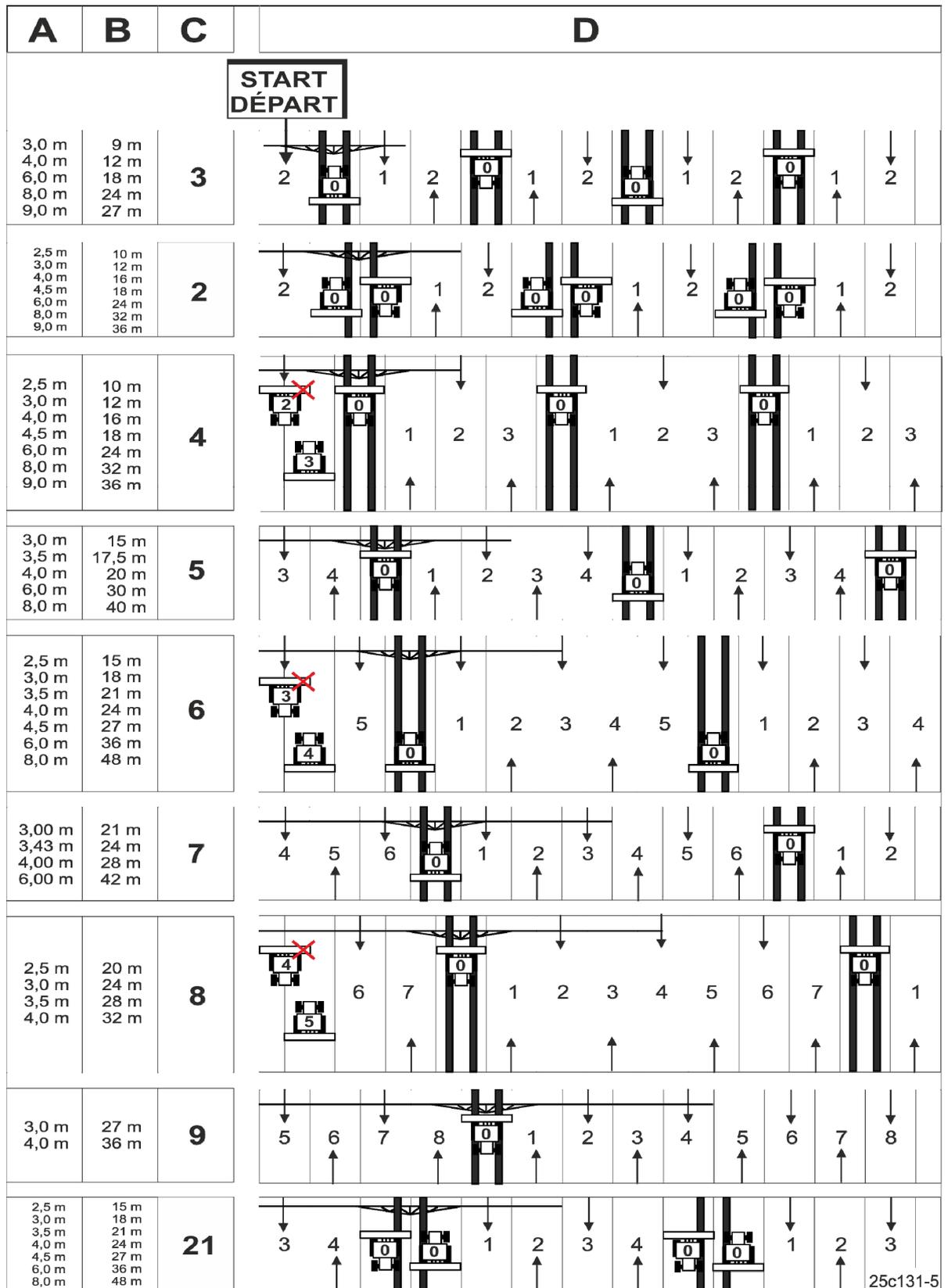
Fig. 73



5.12.2 Tramline control, graphic determination

The graph (Fig. 74) shows examples for creating tramlines. Read the required values from the graph and enter the values as required on the control terminal.

- Column A:** Working width of the seed drill 3 m
- Column B:** Tramline spacing (working width of the fertiliser spreader) 9 m
- Column C:** Tramline control 3
- Column D:** Tramline counter 2
The tramline counter for the first field pass
can be found under the lettering "START".



25c131-5

Fig. 74

5.12.3 Functional description

When creating tramlines, the tramline seed metering wheels (Fig. 75/1) are immobilised and the tramline coulters do not deposit any seed in the soil.

The tramline seed metering wheels (Fig. 75/1) can rotate freely on the seeding shaft.

The tramline seed metering wheels are driven by the gear wheels (Fig. 75/2) on the lay shaft (Fig. 75/3).

The lay shaft can be equipped with a maximum of 5 gear wheels (Fig. 75/2) on each side of the implement.

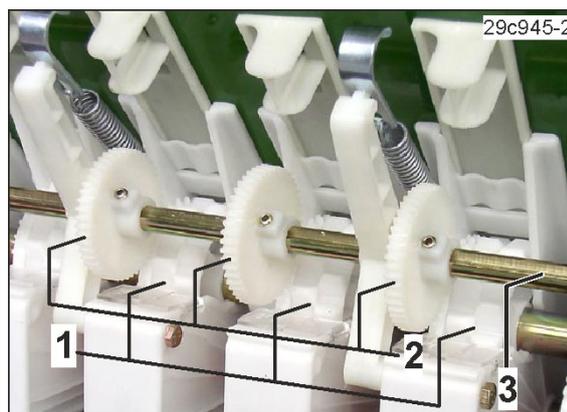


Fig. 75

The lay shaft (Fig. 76/1) is driven by the seeding shaft via a coupling (Fig. 76/2).

The lay shaft is immobilised when the tramline counter shows the number "0" on the control terminal. At the same time, the tramline seed metering wheels are also immobilised. The tramline seed metering wheels do not spread any seed when creating tramlines.

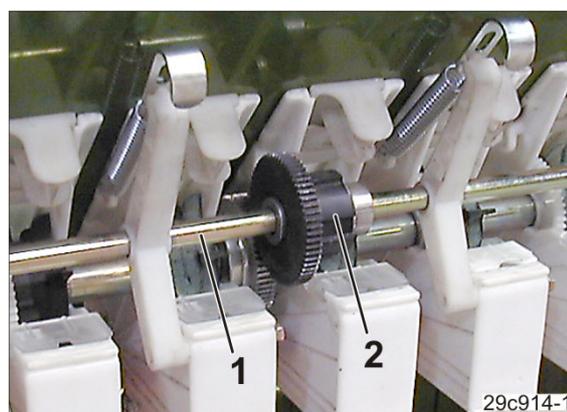


Fig. 76

The lay shaft coupling (Fig. 76/2) is electrically actuated, see section "Lay shaft coupling, electrically actuated", page 79.

When creating the tramlines

- the tramline counter shows the tramline number "0" on the control terminal
- when the coupling (Fig. 76/2) is actuated
- the lay shaft (Fig. 76/1), which drives the tramline seed metering wheels, is immobilised
- the tramline coulters do not deposit any seeds on the ground.

5.12.3.1 Lay shaft coupling, electrically actuated

A solenoid (Fig. 77/2) actuates the lay shaft coupling (Fig. 77/1).

The solenoid is controlled by the AmaLog+ control terminal.

The control terminal monitors the tramline control and issues an alarm if there is an error with the lay shaft.

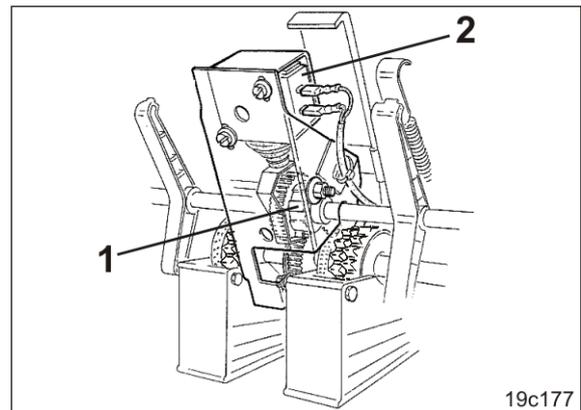


Fig. 77

5.12.4 One-sided switching

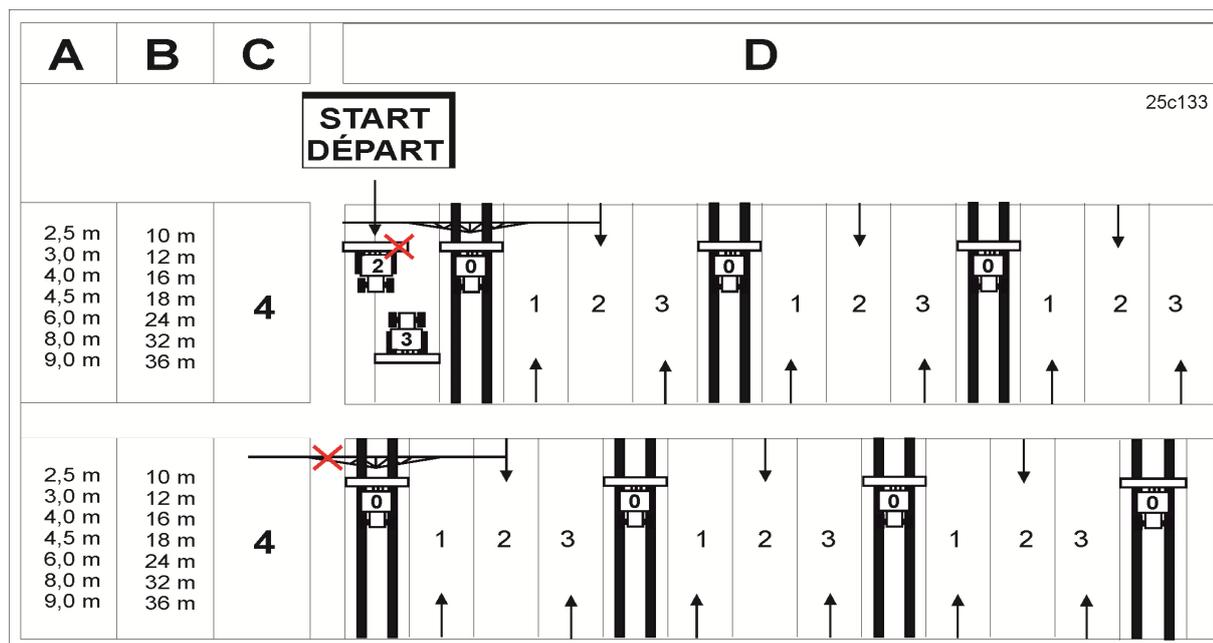


Fig. 78

Figure (Fig. 74) shows examples for creating tramlines using tramline controls 4, 6 and 8.

During the first field pass, it may be necessary to operate the seed drill with half the working width (part-width section). The coulters of the left half of the implement (see Fig. 78) do not deposit any seed in the soil if field operation starts at the right field edge field and the seeding shaft is driven by the right side of the implement. After the first field run, restore the full implement working width.

With the seeding shaft disengagement clutch (Fig. 79), the left hand side of the seeding shaft can be shut off and seed delivery to the coulters can be interrupted. If the tramline seed metering wheels should also not spread any seed, the shutter slides for the tramline seed metering wheels must be closed.

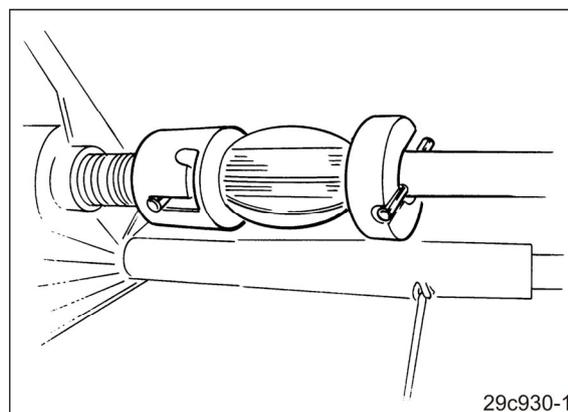


Fig. 79

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. 78.

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

5.12.5 Tramline control 2 and 21

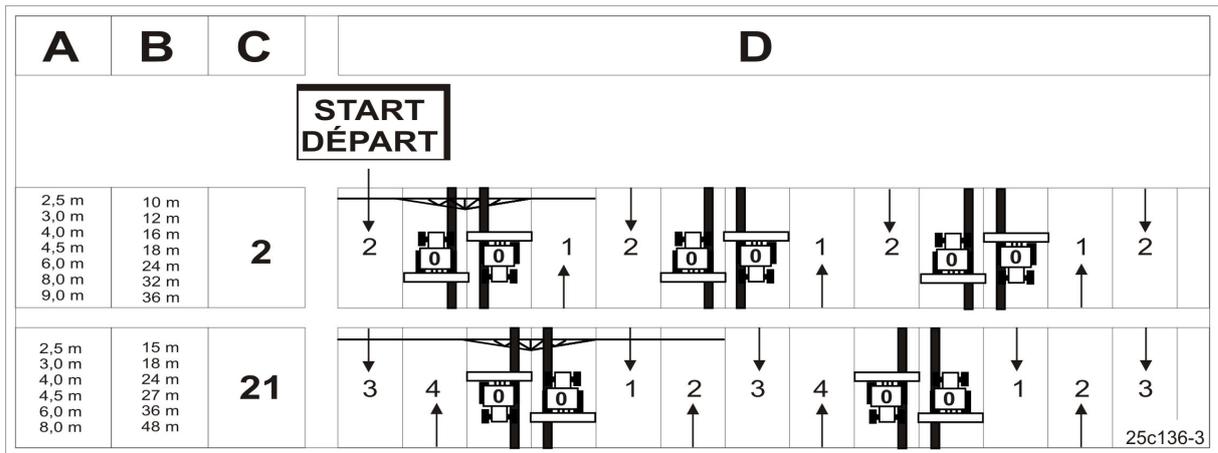


Fig. 80

(Fig. 80) shows examples of creating tramlines with tramline control 2 and 21.

When tramlines are created with the tramline control 2 and 21, tramlines are created when driving out and driving back on 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.

5.13 Tramline marker

When tramlines are being created, the track discs (Fig. 81) lower automatically and mark the tramline that has just been created. This makes the tramlines visible before the seed has germinated.

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.

For road transport of the implement, the raised sections are secured with pins.



Fig. 81

5.14 Track marker

Operate the track markers on the soil tillage implement as instructed in the the "Soil tillage implement" operating manual.

It is possible to set:

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



Fig. 82

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

In doing so, the active track marker creates a track (Fig. 83/1) on the field.

When the track markers are properly adjusted, the next row is automatically connected when the tractor driver passes over the centre of the created track (Fig. 83/2).



Fig. 83

When transporting the implement and turning at the end of the field, both track markers must be raised.

Mechanical locking of the track markers is required during transport.



Fig. 84

6 Initial operation

This section contains information

- on initial operation of your implement
- on how to check if you may mount the implement onto 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.
- Vehicle owner and vehicle operator are responsible for compliance with the statutory provisions of the national road traffic regulations.



WARNING

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

Do not block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:

- are continuous or
- are automatically locked or
- require a float position or pressure position due to their function.

6.1 Checking the suitability of the tractor



WARNING

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

- Check the suitability of your tractor before you mount or hitch the implement onto 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 machine connected.

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

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

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

The front axle of the tractor must always be loaded with at least 20 % of the tare weight of the tractor.

The tractor must achieve the brake delay specified by the tractor manufacturer, even with a mounted or trailed implement.

6.1.1 Calculating the actual values for the total tractor weight, tractor axle loads and tyre load-bearing capacity, as well as the required minimum ballast weight



The permissible 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 drawbar load of the hitched implement.



This note applies only to Germany.

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

6.1.1.1 Data required for the calculation (attached implement)

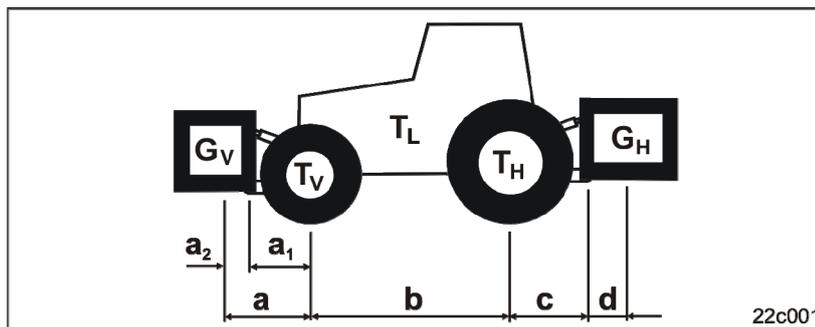


Fig. 85

T_L	KG	Tractor empty weight	Refer to the tractor operating manual or registration document
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", page 48
G_V	KG	Total weight of front-mounted implement or front ballast	See technical data for the front-mounted implement front ballast
a	[m]	Distance between the centre of gravity of the front-mounted implement or the front ballast and the centre of the front axle (sum $a_1 + a_2$)	See technical data for the tractor and front-mounted implement or front ballast or measurement
a_1	[m]	Distance from the centre of the front axle to the centre of the lower link coupling point	Refer to the tractor operating manual or measure
a_2	[m]	Distance from the centre of the lower link coupling point to the centre of gravity of the front-mounted implement or front ballast (distance from the centre of gravity)	See the technical data for the front-mounted implement or front ballast or measure
b	[m]	Tractor wheel base	See the tractor operating manual or registration document or measure
c	[m]	Distance between the centre of the rear axle and the centre of the lower link coupling point	See the tractor operating manual or registration document or measure
d	[m]	Distance between the centre of the lower link coupling point and the centre of gravity of the rear-mounted implement or rear ballast (distance from the centre of gravity)	see section "Technical data for calculating the tractor weight and the tractor axle loads", page 48

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

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

In the table (section 6.1.1.2), enter the numeric value for the calculated minimum ballast weight $G_{V \min}$ that is required on the front side of the tractor.

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

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

In the table (section 6.1.1.2), enter the numeric value for the calculated actual front axle load and the permissible tractor front axle load specified in the tractor operating manual.

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

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

In the table (section 6.1.1.2), enter the numeric value for the calculated actual total weight and the permissible total tractor weight specified in the tractor operating manual.

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

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

In the table (section 6.1.1.2), enter the numeric value for the calculated actual rear axle load and the permissible tractor rear axle load specified in the tractor operating manual.

6.1.1.6 Load-bearing capacity of the tractor tyres

In the table (section 6.1.1.2), enter the double value (2 tyres) of the permissible tyre load-bearing capacity (see e.g. tyre manufacturer's documentation).

6.1.1.7 Table

	Actual value according to calculation	Permissible value according to the tractor operating manual	Double the permissible tyre load-bearing capacity (2 tyres)
Minimum ballast weight front/rear	/ kg	--	--
Total weight	kg	≤ kg	--
Front axle load	kg	≤ kg	≤ kg
Rear axle load	kg	≤ kg	≤ kg



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



WARNING

Risk of contusions, cutting, catching, drawing in and 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 necessary) attached to the tractor for the required 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 the weight of the front-mounted implement (G_V) is not sufficient to reach the required minimum ballast at the front ($G_{V \min}$), you must use additional weights together with the front-mounted implement!
 - If the weight of the rear-mounted implement (G_H) is not sufficient to reach the required minimum ballast at the rear ($G_{H \min}$), you must use additional weights together with the rear-mounted implement!

6.2 Secure the tractor / implement against unintentional starting and rolling away

1. Switch off the tractor PTO shaft.
2. Park the tractor and the implement on solid, level ground.
3. Lower the raised, unsecured implement/raised, unsecured implement parts. This prevents accidental lowering.
4. Shut down the tractor engine.
5. Remove the ignition key.
6. Apply the tractor parking brake.



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 raised using the tractor's three-point hydraulic system
- unintentional lowering of raised, unsecured implement parts
- unintentional starting and rolling away of the tractor-implement combination.

Secure the tractor and the implement against unintentional starting and rolling before any intervention in the implement.

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

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

Coming in to contact with unsecured components poses a hazard during this kind of work in particular.

7 Coupling and uncoupling the implement

The pack top seed drill can be parked

- solo, on the parking supports



Fig. 86

- mounted, on the soil tillage implement



Fig. 87

This section describes

- the coupling and uncoupling of the soil tillage implement on the tractor.
- the coupling and uncoupling of the pack top seed drill onto the soil tillage implement.



Fig. 88



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



CAUTION

Before adjustment, maintenance and repair work

- couple the pack top seed drill and the soil tillage implement.
- lower the implement combination onto level solid ground
- apply the tractor parking brake
- switch off the control terminal
- switch off the tractor engine
- remove the ignition spanner
- disconnect the power supply between the tractor and the implement. Disconnect the implement plug (e.g. ISOBUS plug).

Risk of accident due to unintentional activation of the metering unit or other implement components caused by star wheel movement or radar pulses.



WARNING

Risk of crushing due to unintentional starting and rolling away of the tractor and implement when coupling or uncoupling the implement!

When coupling or uncoupling the implement, secure the tractor and implement against unintentional starting and rolling away before entering the danger area between the tractor and implement.



WARNING

Risk of crushing 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.



Risk of collision when coupling the implements.

Close the hopper cover.

When coupling the implement, the open hopper cover can collide with the track markers.

7.1 Hydraulic hose lines



WARNING

Danger of infection from escaping hydraulic fluid at high pressure!

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

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

7.1.1 Coupling the hydraulic hose lines



WARNING

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

When coupling the hydraulic hose lines, observe the coloured markings with the code number or code letters on the hydraulic plugs.



- Check the compatibility of the hydraulic fluids before connecting the implement to the hydraulic system of your tractor.
Do not mix any mineral oils with biological oils.
- Observe the maximum permitted hydraulic fluid pressure of 210 bar.
- Only couple clean hydraulic plugs. Minor oil contamination with particles can cause a failure of the hydraulic system.
- When connecting the hydraulic hose lines to the hydraulic system of the tractor, ensure that the hydraulic system is depressurized on both the tractor and the implement side!
- Push the hydraulic plug(s) into the hydraulic socket(s) until the hydraulic plug(s) perceivably lock(s).
- Check the coupling points of the hydraulic hose lines for proper fit and sealing.

1. Clean the coupling part.
2. Put the tractor control units into the float position.
3. Connect the hydraulic lines
In doing so, observe the labels on the hydraulic lines, see section 4.4.



Fig. 89

7.1.2 Disconnecting the hydraulic hose lines

1. Put the tractor control units into the float position.
2. Disconnect the hydraulic plug and hang it in the hose cabinet.



Fig. 90

7.2 Safety instructions for coupling the seed drill



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 or mount it on tractors that are suitable for the purpose.



WARNING

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

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



CAUTION

Only connect the implement when

- **the tractor and implement are coupled**
- **the tractor parking brake is applied**
- **the tractor engine is switched off and**
- **the ignition spanner has been removed.**

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

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

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

**DANGER**

When the tractor control units are actuated, several hydraulic cylinders could be operated at the same time depending on the switch position.

Direct people out of the danger area.

Risk of injury from moving parts.



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



Due to the extremely compact design, implement parts may damage the rear window of the tractor when the implement combination is raised.

7.2.1 Coupling and uncoupling the implement combinations - Overview

Rollers	Soil tillage implements			
	KE 3000 Special KE 3000 Super KX 3000 KG 3000 Special KG 3000 Super		KE 3001 Special KE 3001 Super KX 3001 KG 3001 Special KG 3001 Super	
	Mounting the seed drill	Uncoupling the seed drill	Mounting the seed drill	Uncoupling the seed drill
Tooth packer roller PW 3000-500 1-tube system roller frame	Section 7.2.2 Page 97	Section 7.2.3 Page 100	Section 7.2.2 Page 97	Section 7.2.3 Page 100
Tooth packer roller PW 3000-600 2-tube system roller frame	Section 7.2.4 Page 103	Section 7.2.5 Page 108	Section 7.2.6 Page 112	Section 7.2.7 Page 116
Wedge ring roller KW 3000-520 1-tube system roller frame	Section 7.2.2 Page 97	Section 7.2.3 Page 100	Section 7.2.2 Page 97	Section 7.2.3 Page 100
Wedge ring roller KW 3000-580 2-tube system roller frame	Section 7.2.4 Page 103	Section 7.2.5 Page 108	Section 7.2.6 Page 112	Section 7.2.7 Page 116
Wedge ring roller with matrix tyre profile KWM 3000-600 2-tube system roller frame	—	—	Section 7.2.6 Page 112	Section 7.2.7 Page 116
Trapeze ring roller TRW 3000-500 2-tube system roller frame	—	—	Section 7.2.6 Page 112	Section 7.2.7 Page 116
Trapeze ring roller TRW 3000-600 2-tube system roller frame	—	—	Section 7.2.6 Page 112	Section 7.2.7 Page 116
Simplex Prismatic roller suitable for AMAZONE 1-tube roller frame system	—	—	Section 7.2.2 Page 97	Section 7.2.3 Page 100
Simplex Prismatic roller suitable for AMAZONE 2-tube roller frame system	—	—	Section 7.2.6 Page 112	Section 7.2.7 Page 116

All types:

Uncoupling the seeding combination from the tractor	Section 7.2.8, page 120
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**7.2.2 Mounting the seed drill
on KG/KE/KX 00 soil tillage implements
with 1-tube system roller frame**

- Tooth packer roller PW 500
- Wedge ring roller KW 520

**on KG/KE/KX 01 soil tillage implements
with 1-tube system roller frame**

- Tooth packer roller PW 500
- Wedge ring roller KW 520
- Simplex prismatic roller SX-45 SG (made by Güttler)
- Simplex prismatic roller SX-45 SU (made by Güttler)

The pack top seed drill is equipped with two link plates (Fig. 91/1) with socket.

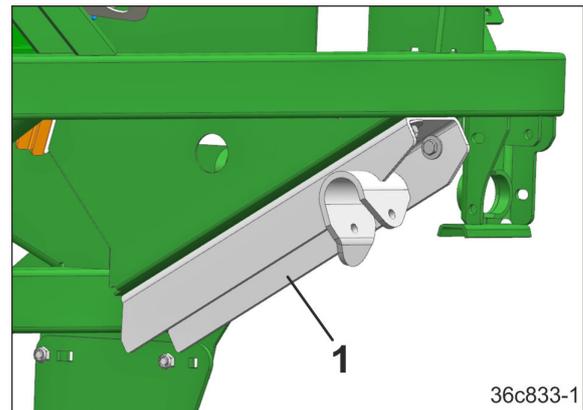


Fig. 91

The 1-tube frame roller is equipped with 2 bearing brackets (Fig. 92/1).

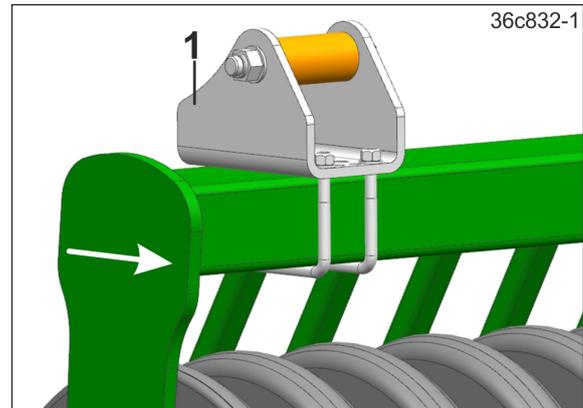


Fig. 92

Coupling and uncoupling the implement

1. Direct persons away from the danger area between the soil tillage implement and the pack top seed drill.

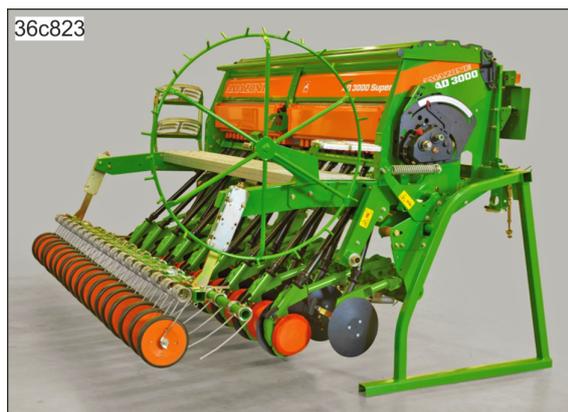


Fig. 93

2. Drive the soil tillage implement in reverse towards the pack top seed drill parked on the parking supports.



Fig. 94

3. Attach the bearing sleeves (Fig. 95/1) with the catching sockets (Fig. 95/2).
4. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
5. Lock the connection with bolts (Fig. 95/3).

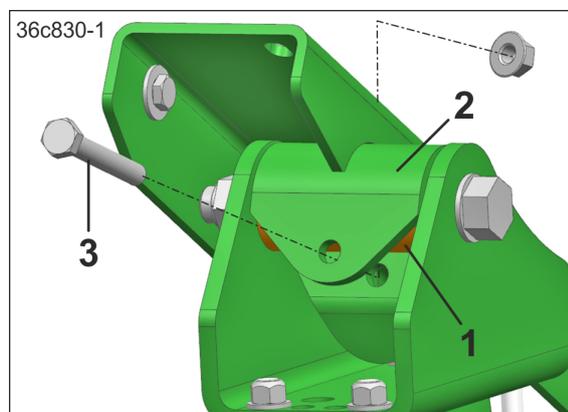


Fig. 95

6. Peg the top link (Fig. 96/1) with 2 top link pins (Fig. 96/2) onto the soil tillage implement and the pack top seed drill.
7. Secure the top link pins with linch pins.

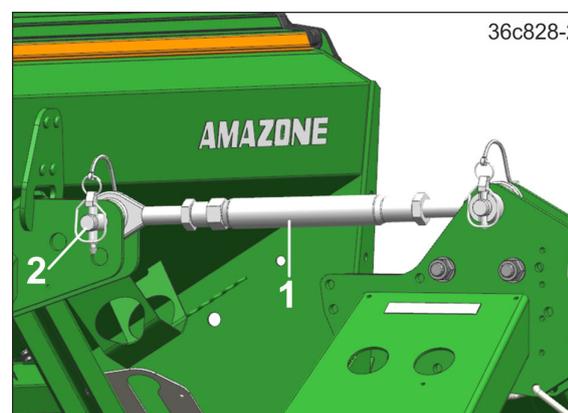


Fig. 96

8. Raise the combination so that the parking supports are just above the ground.
9. Remove the parking supports (Fig. 97/1).
10. Park the combination without parking supports.
11. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.

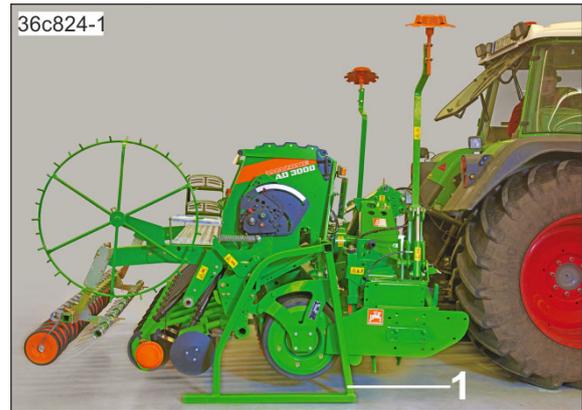


Fig. 97



DANGER

Remove the parking supports immediately after coupling the seed drill on the soil tillage implement.

The parking supports do not have a locking device. When transporting the combination, they can accidentally wander out of the mounts and cause serious accidents.

12. Align the pack top seed drill until straight by adjusting the top link (Fig. 98/1). Secure the top link (lock nut).

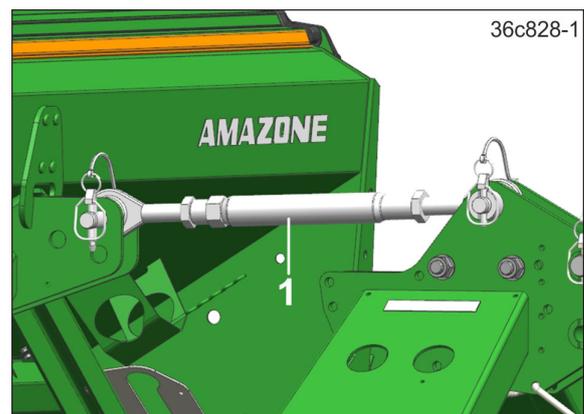


Fig. 98

13. Establish the electric and hydraulic connections between
 - o the soil tillage implement and the seed drill
 - o the tractor and soil tillage implement.

Instructions for connecting the implement cable can be found in the "Control terminal" operating manual.

7.2.3 Uncoupling the seed drill from KG/KE/KX 00 soil tillage implements with 1-tube system roller frame

- Tooth packer roller PW 500
- Wedge ring roller KW 520

from KG/KE/KX 01 soil tillage implements with 1-tube system roller frame

- Tooth packer roller PW 500
- Wedge ring roller KW 520
- Simplex prismatic roller SX-45 SG (made by Güttnler)
- Simplex prismatic roller SX-45 SU (made by Güttnler)



DANGER

Empty the hopper before decoupling the pack top seed drill from the soil tillage implement.



DANGER

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

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

1. Move the combination into transport position, see section "Moving the seeding combination into transport position", page 159.
2. Park the combination on a level surface with solid ground.
3. Empty the hopper.
4. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
5. Disconnect the electric and hydraulic connections between
 - the soil tillage implement and the seed drill
 - the tractor and soil tillage implement.

Instructions for disconnecting the implement cable can be found in the "Control terminal" operating manual.

6. Hang the supply lines in the hose cabinet (Fig. 99).



Fig. 99

7. Slightly raise the combination and insert the parking supports (Fig. 100/1) into the square tubes of the pack top seed drill.
8. Lower the combination until the pack top seed drill is standing on the parking supports.



Fig. 100

9. Apply the parking brake, switch the tractor engine off and remove the ignition key.
10. Remove the locking bolts (Fig. 101/1).

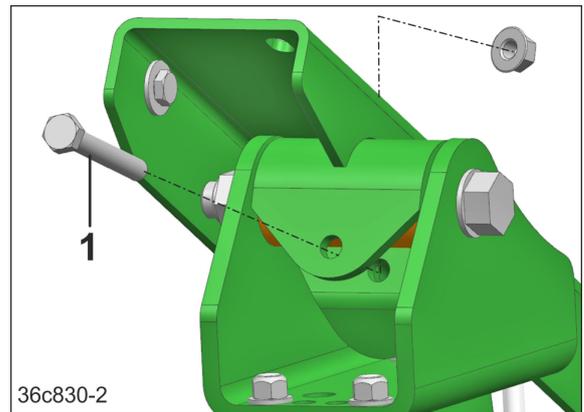


Fig. 101

Coupling and uncoupling the implement

11. Remove the top link (Fig. 102/1).
12. Direct persons away from the danger area between the soil tillage implement and the pack top seed drill.
13. Raise the soil tillage implement and carefully pull it forwards without touching the pack top seed drill.

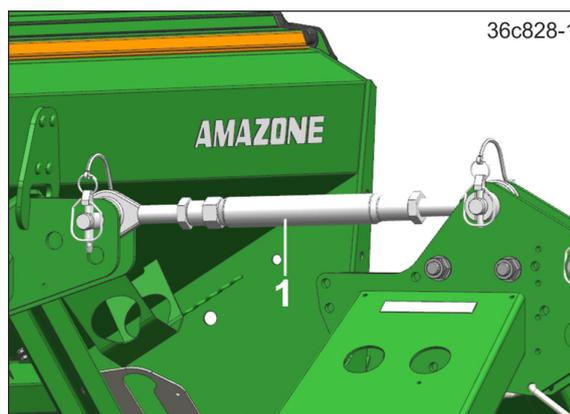


Fig. 102



The supply lines may not get caught when pulling the soil tillage implement forward.



Danger

While pulling the tractor forwards, no one is permitted to stand between the tractor and the implement.

It is forbidden to climb onto the loading board when the implement is standing on the parking supports (risk of tipping).

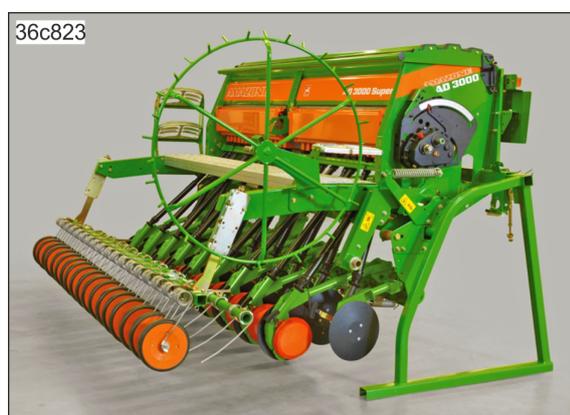


Fig. 103

7.2.4 Mounting the seed drill on KG/KE/KX 00 soil tillage implements with 2-tube system roller frames

- Tooth packer roller PW 600
- Wedge ring roller KW 580

The pack top seed drill is equipped with

- two plastic supports (Fig. 104/1) and

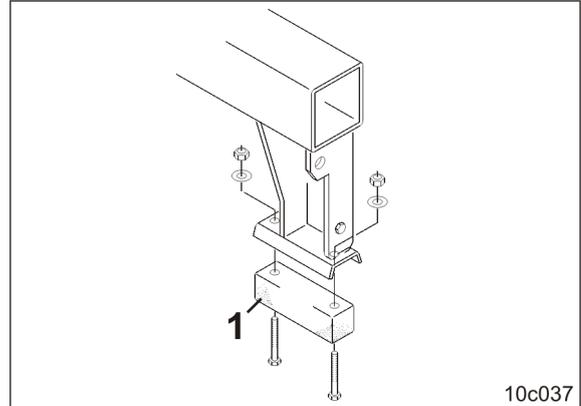


Fig. 104

- two bearing sleeves (Fig. 105/1)

The bearing sleeves are fastened in the holes (Fig. 105/2).

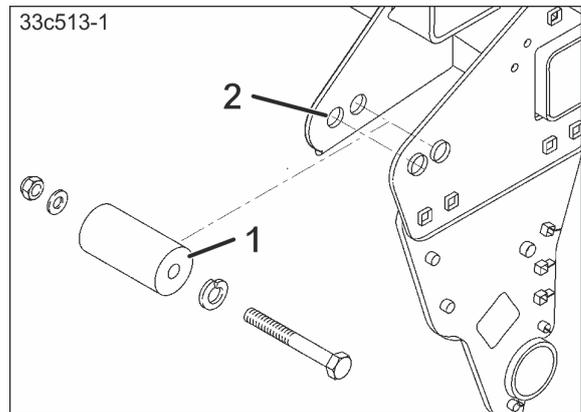


Fig. 105

The 2-tube frame roller is equipped with 2 catching sockets (Fig. 106/1).

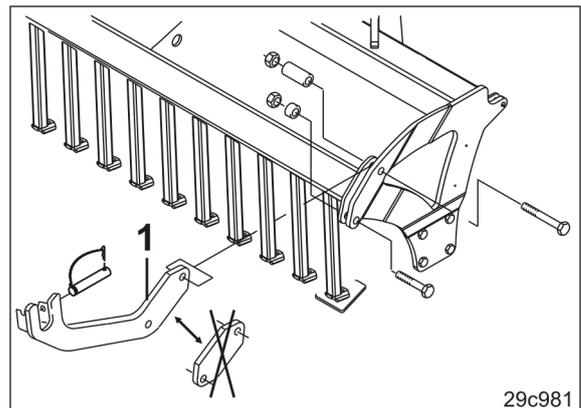


Fig. 106

Coupling and uncoupling the implement

1. Direct persons away from the danger area between the soil tillage implement and the pack top seed drill.



Fig. 107

2. Drive the soil tillage implement in reverse towards the pack top seed drill parked on the parking supports.



Fig. 108

3. Carefully guide the catching sockets (Fig. 109/1) under the square tube (Fig. 109/2) of the pack top seed drill.

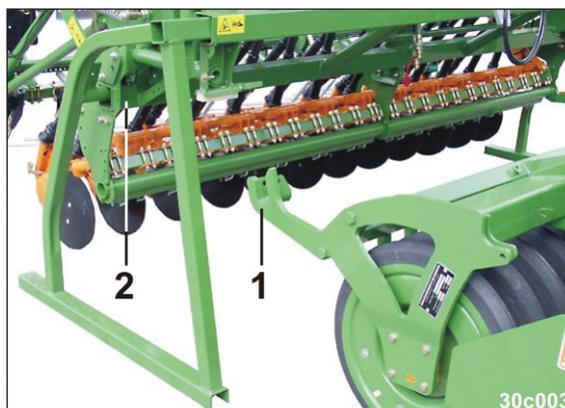


Fig. 109

4. Attach the bearing sleeves (Fig. 110/2) with the catching sockets (Fig. 110/1).
5. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
6. Fix the connection with pins (Fig. 110/3) and secure with a spring cotter pin.

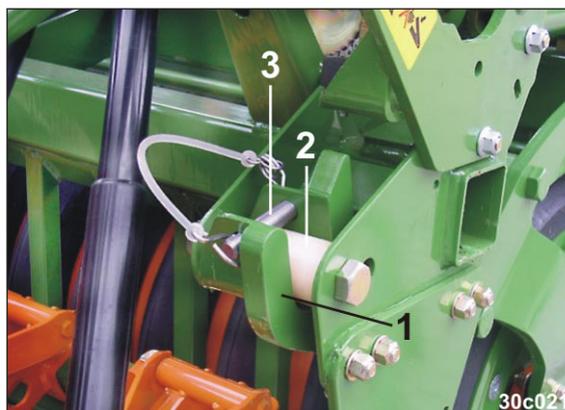


Fig. 110

7. Fasten the pack top seed drill onto the roller with 2 turnbuckles (Fig. 111/1).
8. Secure each pin (Fig. 111/2) with a cotter pin.
9. Tighten and lock the turnbuckles (lock nut).

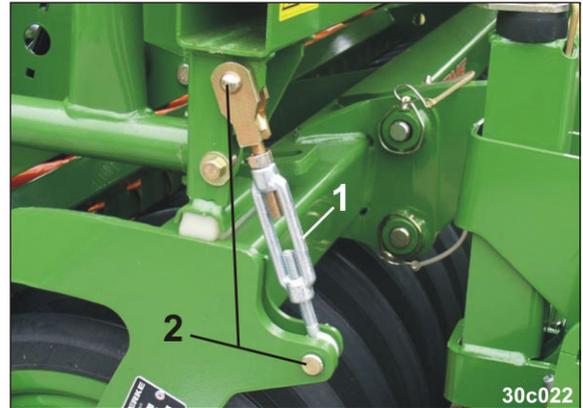


Fig. 111

10. Peg the top link (Fig. 112/1) with 2 top link pins (Fig. 112/2) onto the soil tillage implement and the pack top seed drill.
11. Secure the top link pins with linch pins.

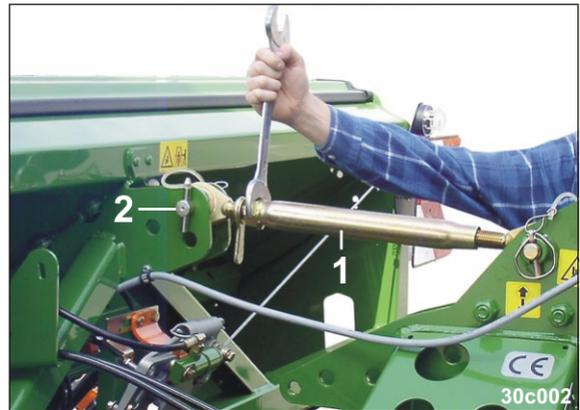


Fig. 112

Coupling and uncoupling the implement

12. Raise the combination so that the parking supports are just above the ground.
13. Remove the parking supports (Fig. 113/1).
14. Park the combination without parking supports.
15. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.



Fig. 113



DANGER

Remove the parking supports immediately after coupling the seed drill on the soil tillage implement.

The parking supports do not have a locking device. When transporting the combination, they can accidentally wander out of the mounts and cause serious accidents.

16. Align the pack top seed drill until straight by adjusting the top link (Fig. 114/1).



Fig. 114

17. Pull out the top carrying arm pin (Fig. 115/1). Adjust the top link if the carrying arm pin cannot be loosened.

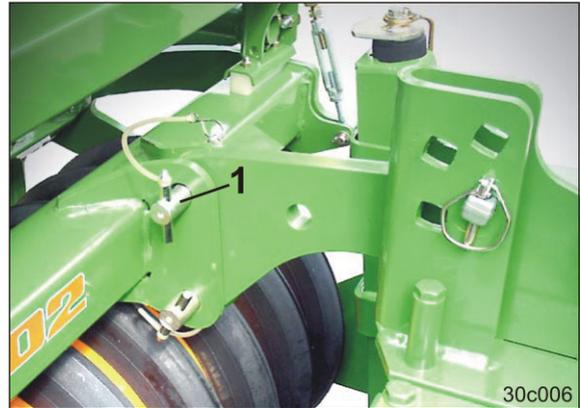


Fig. 115

18. Put the carrying arm pin (Fig. 116/1) into parking position and secure with a linch pin.
19. Repeat the procedure for the second carrying arm.



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

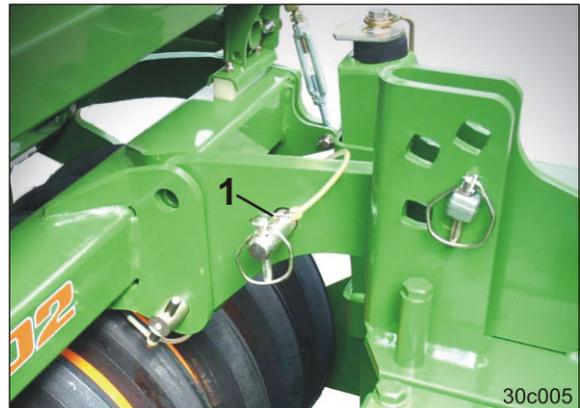


Fig. 116

20. Establish the electric and hydraulic connections between
 - o the soil tillage implement and the seed drill
 - o the tractor and soil tillage implement.

Instructions for connecting the implement cable can be found in the "Control terminal" operating manual.

**7.2.5 Uncoupling the seed drill
from KG/KE/KX 00 soil tillage implements
with 2-tube system roller frame
Tooth packer roller PW 600
Wedge ring roller KW 580**



DANGER

Empty the hopper before decoupling the pack top seed drill from the soil tillage implement.



DANGER

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

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

1. Move the combination into transport position, see section "Moving the seeding combination into transport position", page 159.
2. Park the combination on a level surface with solid ground.
3. Empty the hopper.
4. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
5. Disconnect the electric and hydraulic connections between
 - o the soil tillage implement and the seed drill
 - o the tractor and soil tillage implement.

Instructions for disconnecting the implement cable can be found in the "Control terminal" operating manual.

6. Hang the supply lines in the hose cabinet (Fig. 117).



Fig. 117

7. Fix the carrying arms with the top carrying arm pins (Fig. 118/1). Line up the holes by adjusting the top link.
8. Secure the carrying arm pins with linch pins.



Fig. 118

9. Slightly raise the combination and insert the parking supports (Fig. 119/1) into the square tubes of the pack top seed drill.
10. Lower the combination until the pack top seed drill is standing on the parking supports.



Fig. 119

Coupling and uncoupling the implement

11. Apply the parking brake, switch the tractor engine off and remove the ignition key.
12. Remove both catch hook lock pins (Fig. 120/1).

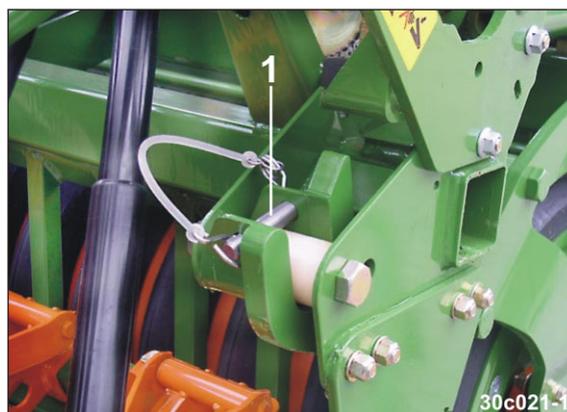


Fig. 120

13. Remove the 2 turnbuckles (Fig. 121/1).



Fig. 121

14. Remove the top link (Fig. 122/1).
15. Direct persons away from the danger area between the soil tillage implement and the pack top seed drill.
16. Lower the soil tillage implement and carefully pull it forwards without touching the pack top seed drill.



Fig. 122



The supply lines may not get caught when pulling the soil tillage implement forward.



Danger

While pulling the tractor forwards, no one is permitted to stand between the tractor and the implement.

It is forbidden to climb onto the loading board when the implement is standing on the parking supports (risk of tipping).



Fig. 123

7.2.6 Mounting the seed drill on KG/KE/KX 01 soil tillage implements with 2-tube system roller frame

- Tooth packer roller PW 600
- Wedge ring roller KW 580
- Wedge ring roller with matrix tyre profile KWM 600
- Trapeze ring roller TRW 500
- Trapeze ring roller TRW 600
- Simplex prismatic roller SX-50 SG (made by Güttler)
- Simplex prismatic roller SX-56 SU (made by Güttler)

The pack top seed drill is equipped with 2 pintles (Fig. 124/1).

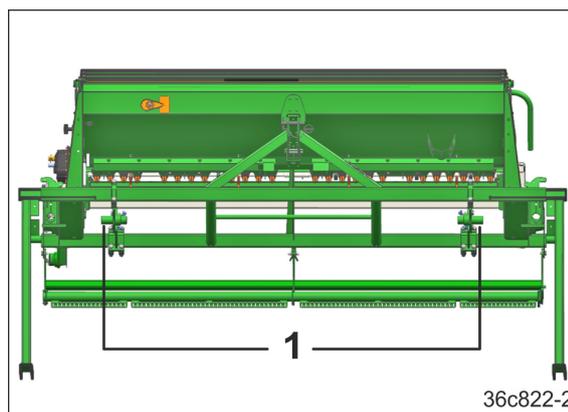


Fig. 124

Each pintle (Fig. 125/1) is fastened on the seed drill frame with 3 clamps:

- 1 clamp at the top (Fig. 125/2)
- 2 clamps at the bottom (Fig. 125/3).

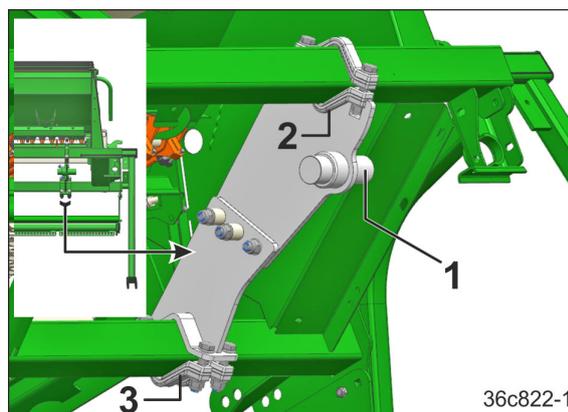


Fig. 125

1. Remove the coupling pieces (Fig. 126/1).



2 coupling pieces can be found in parking position on the soil tillage implement. They serve as a mechanical lock after coupling the combination.

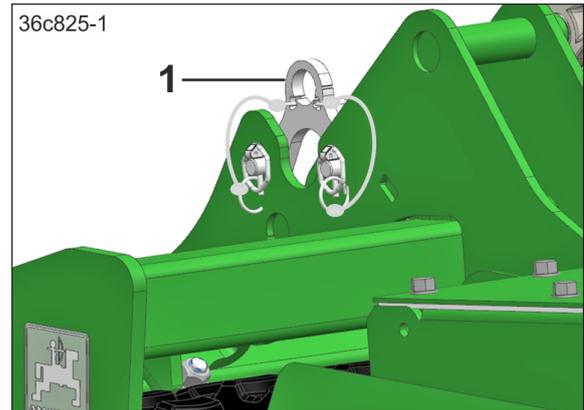


Fig. 126

2. Direct persons away from the danger area between the soil tillage implement and the pack top seed drill.
3. Drive the soil tillage implement in reverse towards the pack top seed drill parked on the parking supports.

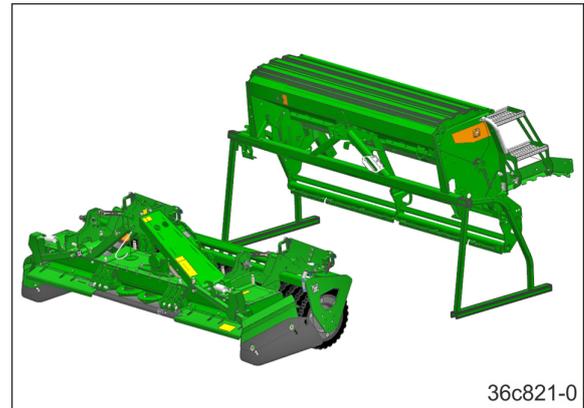


Fig. 127

Coupling and uncoupling the implement

- Pick up the seed drill bearing (Fig. 128/1) with the soil tillage implement catch hooks (Fig. 128/2).

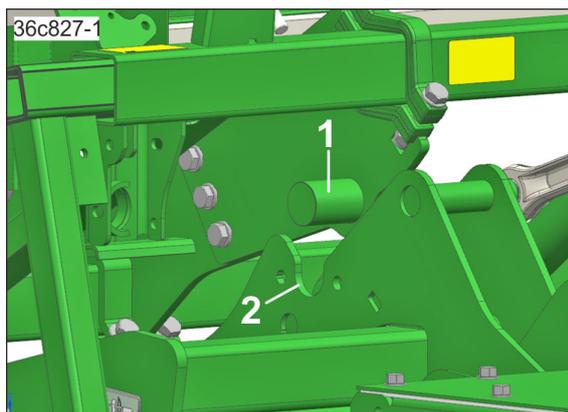


Fig. 128

- Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
- Secure the connection with two coupling pieces (Fig. 129/1).
- Position and secure each coupling piece with 2 linch pins (Fig. 129/2).

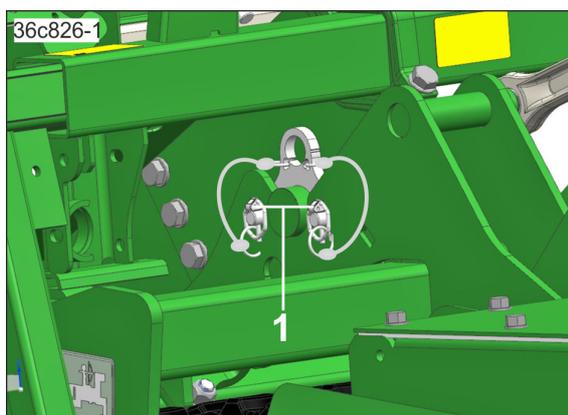


Fig. 129

- Peg the top link (Fig. 130/1) with 2 top link pins (Fig. 130/2) onto the soil tillage implement and the pack top seed drill.
- Secure the top link pins with linch pins.

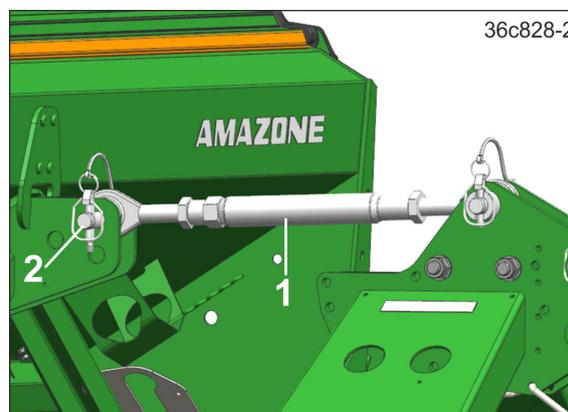


Fig. 130

10. Raise the combination so that the parking supports are just above the ground.
11. Remove the parking supports (Fig. 131/1).
12. Park the combination without parking supports.
13. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.



Fig. 131



DANGER

Remove the parking supports immediately after coupling the seed drill on the soil tillage implement.

The parking supports do not have a locking device. When transporting the combination, they can accidentally wander out of the mounts and cause serious accidents.

14. Align the pack top seed drill until straight by adjusting the top link (Fig. 132/1).

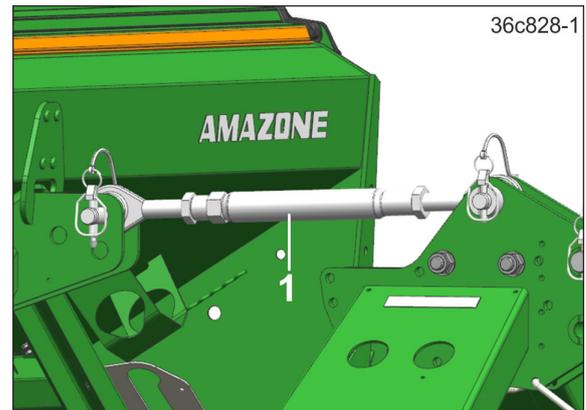


Fig. 132

15. Establish the electric and hydraulic connections between
 - o the soil tillage implement and the seed drill
 - o the tractor and soil tillage implement.

Instructions for connecting the implement cable can be found in the "Control terminal" operating manual.

7.2.7 Uncoupling the seed drill from KG/KE/KX 01 soil tillage implements with 2-tube system roller frame

- Tooth packer roller PW 600
- Wedge ring roller KW 580
- Wedge ring roller with matrix tyre profile KWM 600
- Trapeze ring roller TRW 500
- Trapeze ring roller TRW 600



DANGER

Empty the hopper before decoupling the pack top seed drill from the soil tillage implement.



DANGER

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

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

1. Move the combination into transport position, see section "Moving the seeding combination into transport position", page 159.
2. Park the combination on a level surface with solid ground.
3. Empty the hopper.
4. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
5. Disconnect the electric and hydraulic connections between
 - the soil tillage implement and the seed drill
 - the tractor and soil tillage implement.

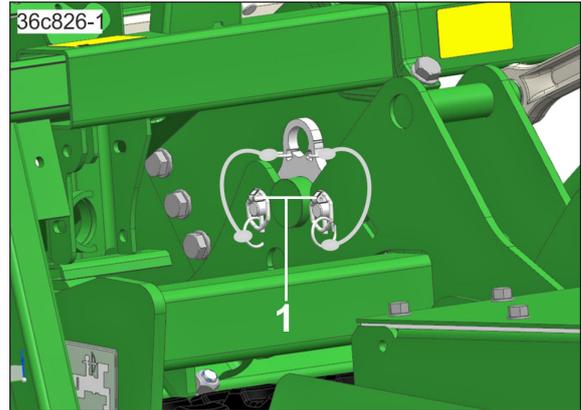
Instructions for disconnecting the implement cable can be found in the "Control terminal" operating manual.

6. Hang the supply lines in the hose cabinet (Fig. 133).

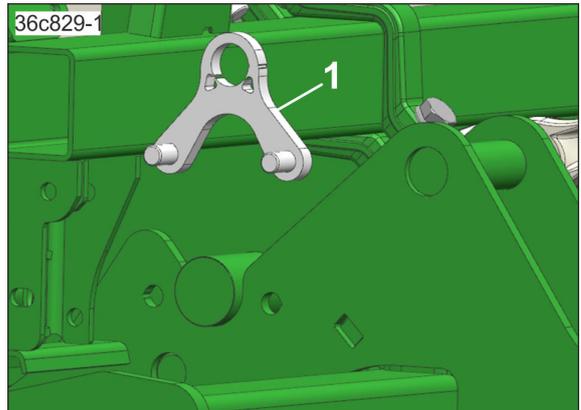


Fig. 133

7. Remove the coupling pieces.
 - 7.1 Raise the combination so that the parking supports are just above the ground.
 - 7.2 Apply the tractor parking brake, switch off the engine and remove the ignition key.
 - 7.3 Remove the linch pins (Fig. 134/1).

**Fig. 134**

- 8.4 Remove both coupling pieces (Fig. 135/1).

**Fig. 135**

Coupling and uncoupling the implement

9. Slide 2 parking supports (Fig. 136/1) into the mounting until the stop.
10. Lower the combination until the pack top seed drill is standing on the parking supports.



Fig. 136

11. Remove the top link (Fig. 137/1).

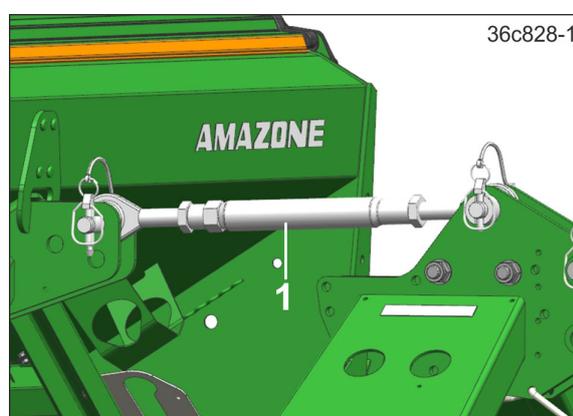


Fig. 137

12. Direct persons away from the danger area between the soil tillage implement and the pack top seed drill.
13. Lower the soil tillage implement and carefully pull it forwards without touching the pack top seed drill.

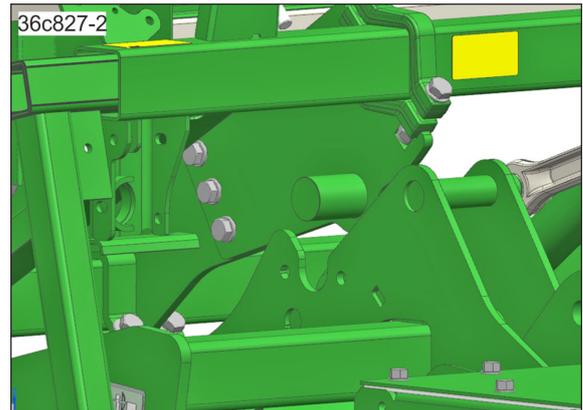


Fig. 138



The supply lines may not get caught when pulling the soil tillage implement forward.



Danger

While pulling the tractor forwards, no one is permitted to stand between the tractor and the implement.

It is forbidden to climb onto the loading board when the implement is standing on the parking supports (risk of tipping).

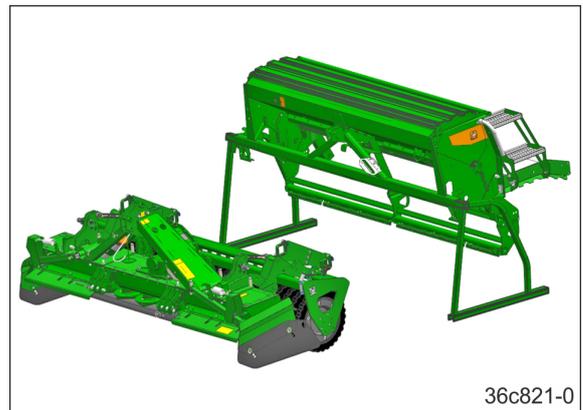


Fig. 139

14. For parking, insert the coupling pieces (Fig. 140/1) in the same spot and secure them.

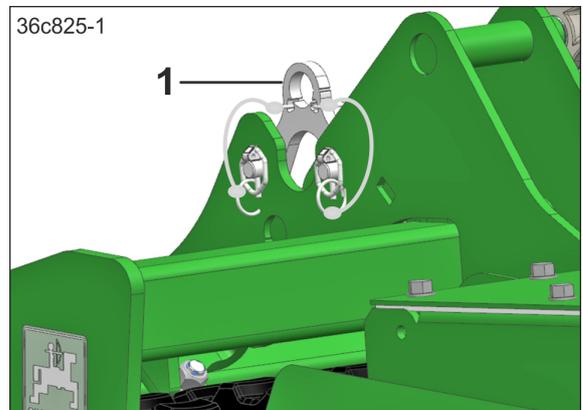


Fig. 140

7.2.8 Uncoupling – Seeding combination from the tractor (all types)



DANGER

Danger: the uncoupled combination may roll away from the tractor.

Set the combination down only on a level parking area with firm ground.

Secure the combination against rolling away before uncoupling it.

The pack top seed drill can be parked while mounted on the soil tillage implement.

1. Move the combination into transport position, see section "Moving the seeding combination into transport position", page 159.
2. Before uncoupling from the tractor, set the combination down on a level parking area with firm ground.



Fig. 141

8 Settings



WARNING

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

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

Secure the tractor and the implement against unintentional starting and rolling away before working on the implement.

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



WARNING

Before adjustment, maintenance and repair work (if not specified otherwise)

- couple the implement combination and tractor
- lower the implement combination onto level solid ground
- apply the tractor parking brake
- switch off the control terminal
- switch off the tractor engine
- remove the ignition spanner
- disconnect the power supply between the tractor and the implement. Disconnect the implement plug .

Risk of accident due to unintentional activation of the metering unit or other implement components caused by star wheel movement or radar pulses.

8.1 Folding the steps up and down



DANGER

Never climb onto the steps and the loading board when the seed drill is parked on the supports (risk of tipping).

Climbing up is only permitted when the seed drill is coupled to the soil tillage implement.



CAUTION

Only step onto the loading board via the steps.

Climbing onto the loading board without using the steps can lead to serious injuries due to falling.



Always fold up the steps before starting operation or road transport.



DANGER

A latch (Fig. 142) represents the mechanical transport locking mechanism for the steps.

The arrow shows the pulling direction for unlocking.

Check the latch for proper seating after folding in the steps.

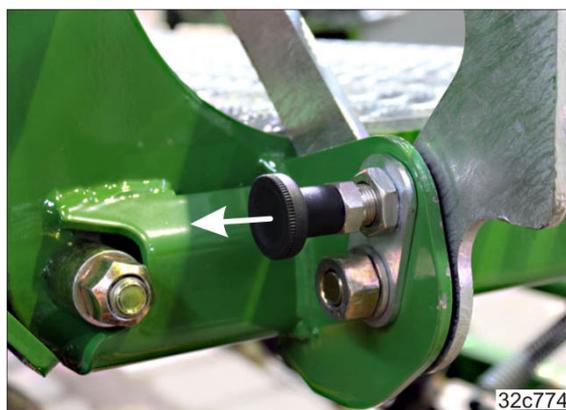


Fig. 142

Fold the steps up and down carefully by hand.

Only unfold the steps when the seed drill is coupled to the tractor or the soil tillage implement.

1. Hold onto the steps.
2. Release the mechanical transport lock (see above).
3. Unfold the steps.



Fig. 143

The steps are automatically locked when folded up.

4. Check the latch (see above) for proper seating after folding up the steps (Fig. 144).



Fig. 144

8.2 Moving the star wheel into transport/working position

8.2.1 Moving the star wheel to the working position

1. Pull the star wheel out of the transport bracket (Fig. 145/1). The star wheel is secured with a linch pin (Fig. 145/2).

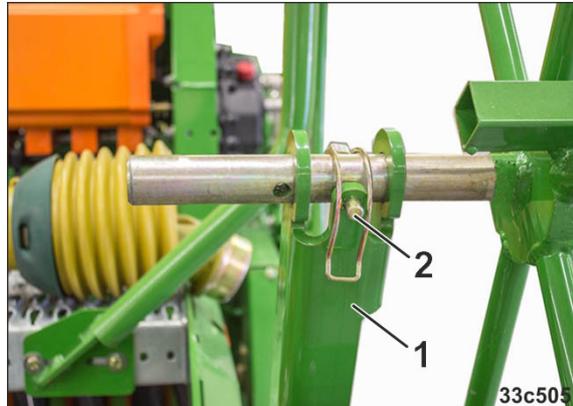


Fig. 145

2. Insert the star wheel in the drive and secure it with a linch pin (Fig. 146/1)

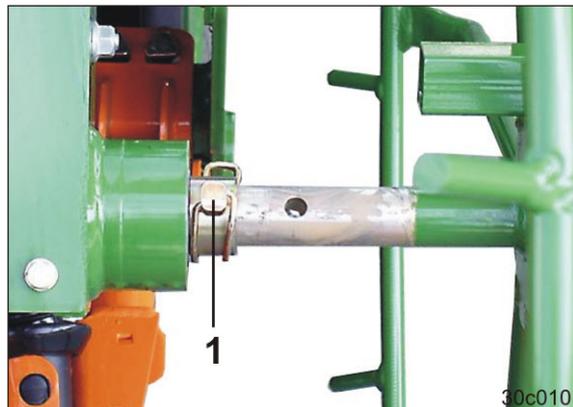


Fig. 146

8.2.2 Move the star wheel to the transport position

1. Raise the star wheel.
2. Swivel the bar (Fig. 147/1).

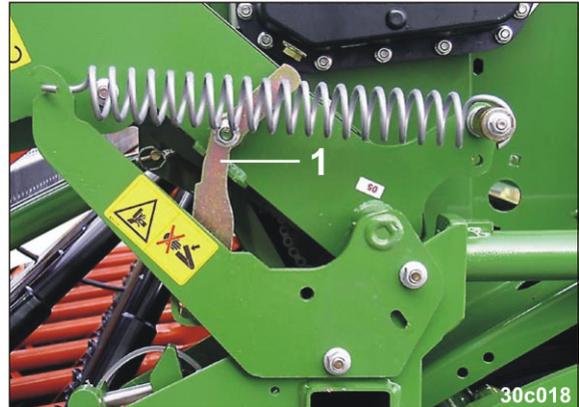


Fig. 147

3. Fasten the star wheel in the transport bracket.
 - 3.1 Loosen the linch pin (Fig. 148/1) and pull the star wheel off of the drive.

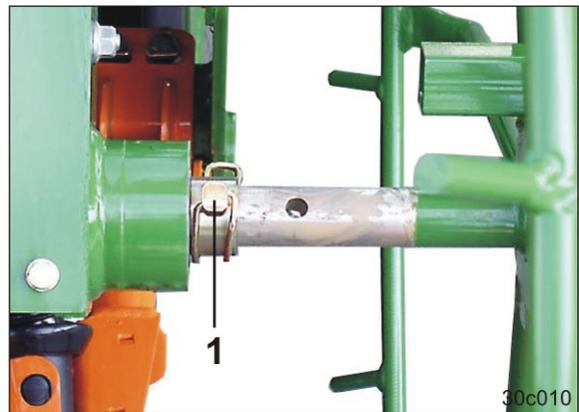


Fig. 148

- 3.2 Insert the star wheel in the transport bracket (Fig. 149/1) and secure it with the linch pin (Fig. 149/2).

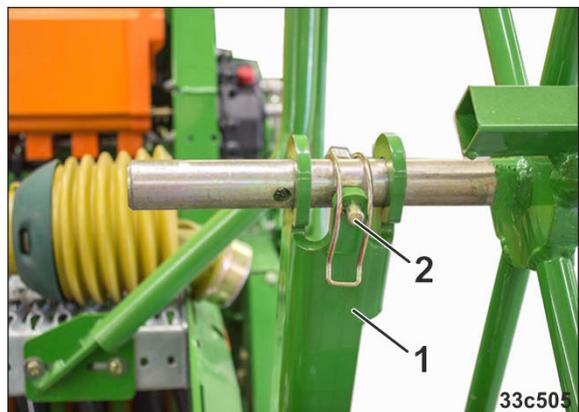


Fig. 149

8.3 Fill the seed hopper

**DANGER**

Never fill the seed drill when the seed drill is parked on the supports (risk of tipping).

Before filling the seed hopper, couple the implement combination to the tractor.

Observe the permissible fill levels and total weights.

**WARNING**

Risk of crushing in danger area under suspended loads/implement parts when filling the hopper, caused by unintentional lowering!

Always put the implement combination down on the ground before filling the hopper.

Never stand under full Big Bags.

Always open Big Bags from a safe position next to the Big Bag.

**DANGER**

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

Dressing dust can escape

- when filling the implement
- when emptying the implement
- when cleaning and removing dressing dust

Wear protective clothing, face mask, protective goggles, and gloves.

1. Couple the implement combination to the tractor.
2. Park the combination on a level surface.
3. Secure the tractor / implement against unintentional starting and rolling away.
4. Climb onto the loading board using the steps (Fig. 150/1).
5. Open the seed hopper cover by the handle.



Fig. 150

6. Adjust the height of the low level sensor (Fig. 151/1) to the required residual seed volume.



You can only adjust the height of the low level sensor when the seed hopper is empty.

The low level sensor may not touch the wall of the hopper.

7. Tighten the thumb nut (Fig. 151/2).



Fig. 151

Settings

8. While filling the seed hopper, set the bottom flap lever (Fig. 152/1) to a position between 1 and 4.

Always engage the bottom flap lever in the group of holes and secure it.

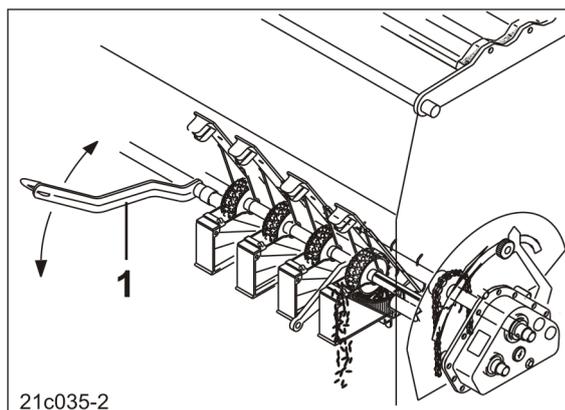


Fig. 152

9. Fill the seed hopper

- o with bagged goods from a supply vehicle: The loading aid (Fig. 153/1) makes it easier to fill with bagged goods.
- o with a front loader shovel
- o from BigBags
- o with a filling auger.

10. Close the seed hopper cover.

11. Fold up the steps

A latch represents the mechanical transport locking mechanism for the steps. Check the latch for proper seating, see section 8.1, page 122.



Fig. 153

8.4 Placing the calibration trays on the funnel rail

1. Pull the spring-loaded lever (Fig. 154/1) sideways out of the locking device.



Fig. 154

2. Lower the funnel rail (Fig. 155/1).

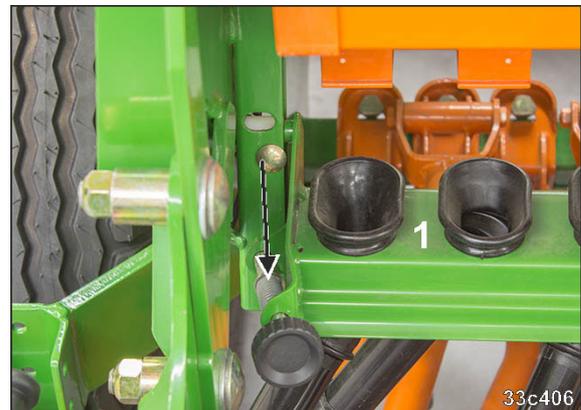


Fig. 155

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

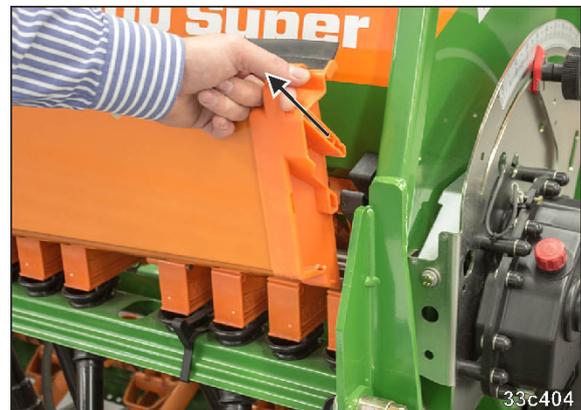


Fig. 156

4. Place the calibration trays on the funnel rail.



Fig. 157

8.5 Setting the seed rate

1. The required setting values can be found in the table "Setting values", page 58.
 - 1.1 Seed metering wheel selection, see section "Seeding with the normal or fine seed metering wheel", page 130.
 - 1.2 Sliding shutter position, see section "Adjusting the sliding shutters", page 133
 - 1.3 Bottom flap position, see section "Bottom flap position", page 134
 - 1.4 Agitator shaft support, see section "Agitator shaft support", page 135
2. Calibrate the seed rate, see section "Calibrating the seed rate", page 137.

8.5.1 Seeding with the normal or fine seed metering wheel



This setting affects the seeding rate.

Calibrate the seed rate after the adjustment.

1. Pull the calibration trays (Fig. 158) out of the brackets. After the adjustment work, attach the calibration trays back in the brackets.

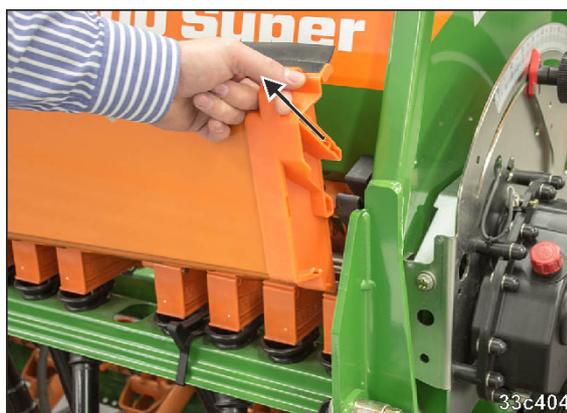


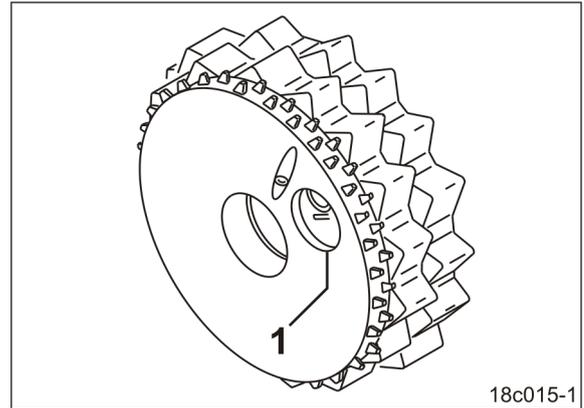
Fig. 158

2. Raise the star wheel, see section "Moving the star wheel into transport/working position", Seite 124.
3. Insert the calibration crank (Fig. 159/1) into the square tube of the star wheel.



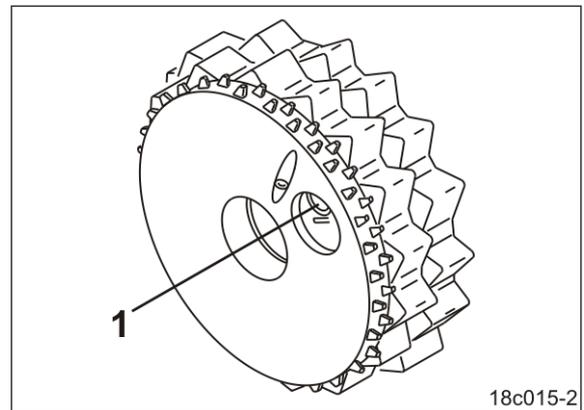
Fig. 159

4. Turn the star wheel to the right until the holes (Fig. 160/1) of the fine seed metering wheels are visible.

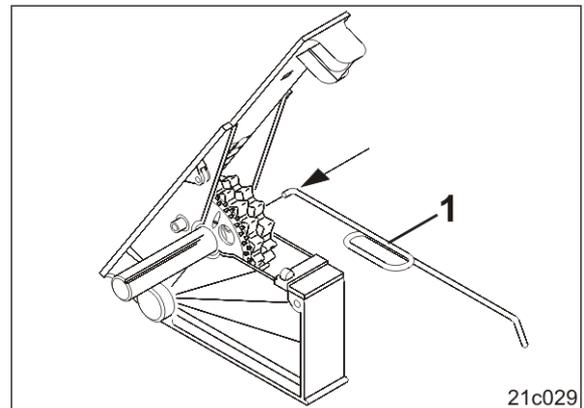

Fig. 160

Seeding with normal seed metering wheels

1. Turn the normal seed metering wheel on the seeding shaft by hand until the pin (Fig. 161/1) is visible in the hole.


Fig. 161

2. Press the pin against the fine seed metering wheel using the supplied key (Fig. 162/1).
3. Check the connection.
4. Make the same settings on all seed metering wheels.


Fig. 162

Seeding with fine seed metering wheel

1. Use the supplied key (Fig. 163/1) 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.

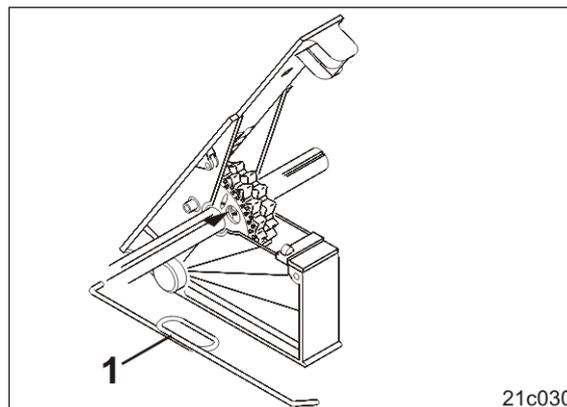


Fig. 163

21c030

8.5.2 Seeding with bean seed metering wheels



This setting affects the seeding rate.

Calibrate the seed rate after the adjustment.

The bean seed metering wheels

- can be replaced by the normal or fine seed metering wheel after removing the seeding 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 the bean metering wheels", page 185.

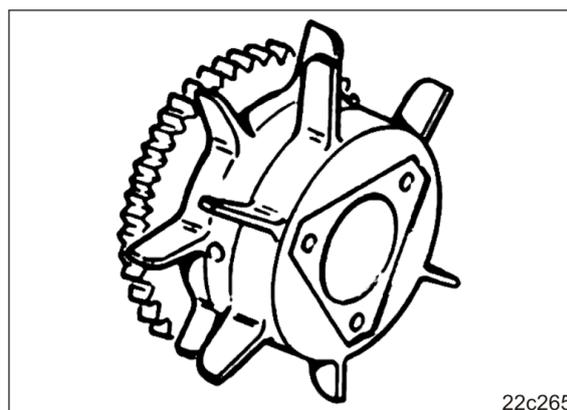


Fig. 164

22c265

8.5.3 Adjusting the sliding shutters



This setting affects the seeding rate.

Calibrate the seed rate after the adjustment.

1. Pull the calibration trays (Fig. 165) out of the brackets.
After the adjustment work, attach the calibration trays back in the brackets.



Fig. 165

2. Set the sliding shutters (Fig. 166) to the value from the table (see page 58).

The sliding shutters (Fig. 166) latch into one of three positions:

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

3. Close the sliding shutters to the seed housings that are not needed.

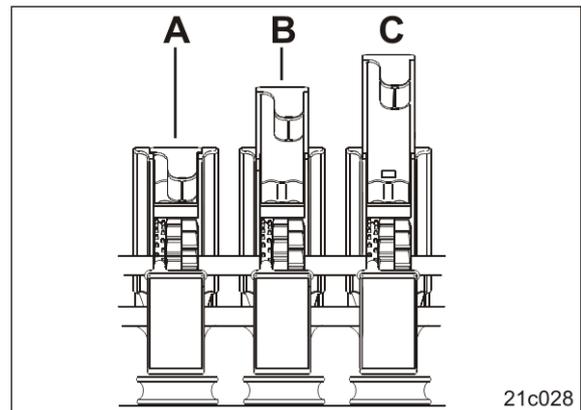


Fig. 166

8.5.4 Bottom flap position



This setting affects the seeding rate.
Calibrate the seed rate after the adjustment.

1. Set the bottom flap lever (Fig. 167/1) in the group of holes at the value from the table (see page 58).
2. Secure the bottom flap lever with a linch pin (Fig. 167/2).

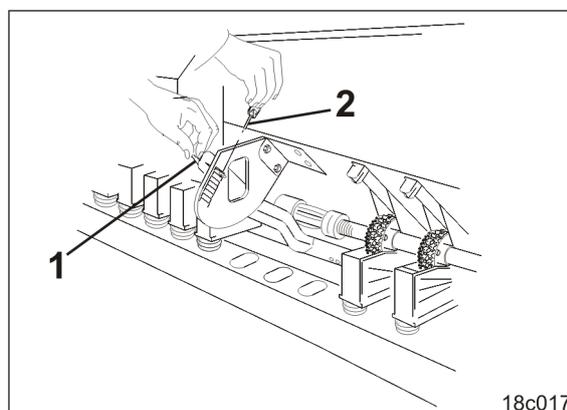


Fig. 167

8.5.5 Agitator shaft support



This setting affects the seeding rate.

Calibrate the seed rate after the adjustment.

Seeding with agitator shaft support

If the lynch pin (Fig. 168/1) is inserted in the hole of the gearbox hollow shaft, the agitator shaft support is active.

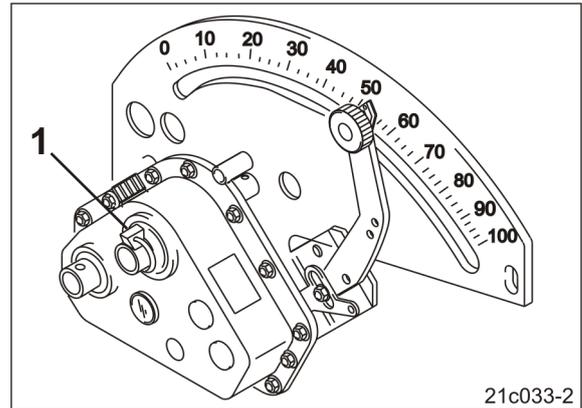


Fig. 168

Seeding without agitator shaft support

If the lynch pin is not inserted in the hole of the gearbox hollow shaft, the agitator shaft support is inactive.

When parking, insert the lynch pin (Fig. 169/1) into the hole on the auxiliary shaft.

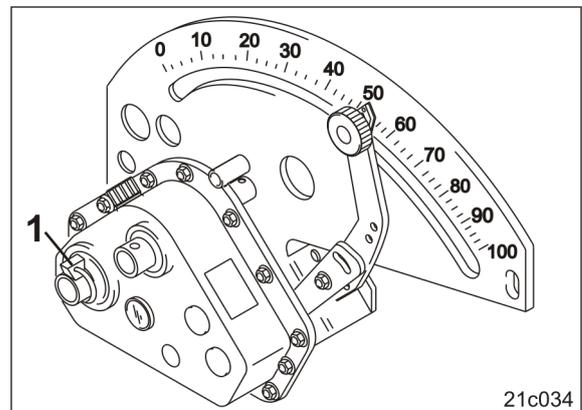


Fig. 169

8.5.6 Mounting the rapeseed insert



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

1. Switch off the agitator shaft drive, see section "Agitator shaft support", page 135.



Position the stirring pins (Fig. 170/2) vertically if the agitator shaft does not have any round stirring elements, see section Agitator shaft support, page 62.

2. Fasten the rapeseed insert profiles (Fig. 170/1) in the seed hopper using clamps (Fig. 170/3), see assembly diagram (Fig. 171).

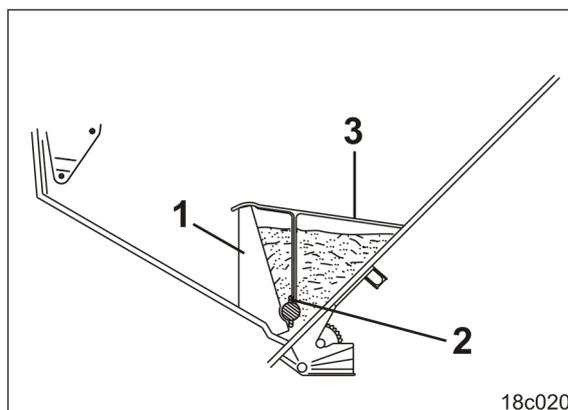
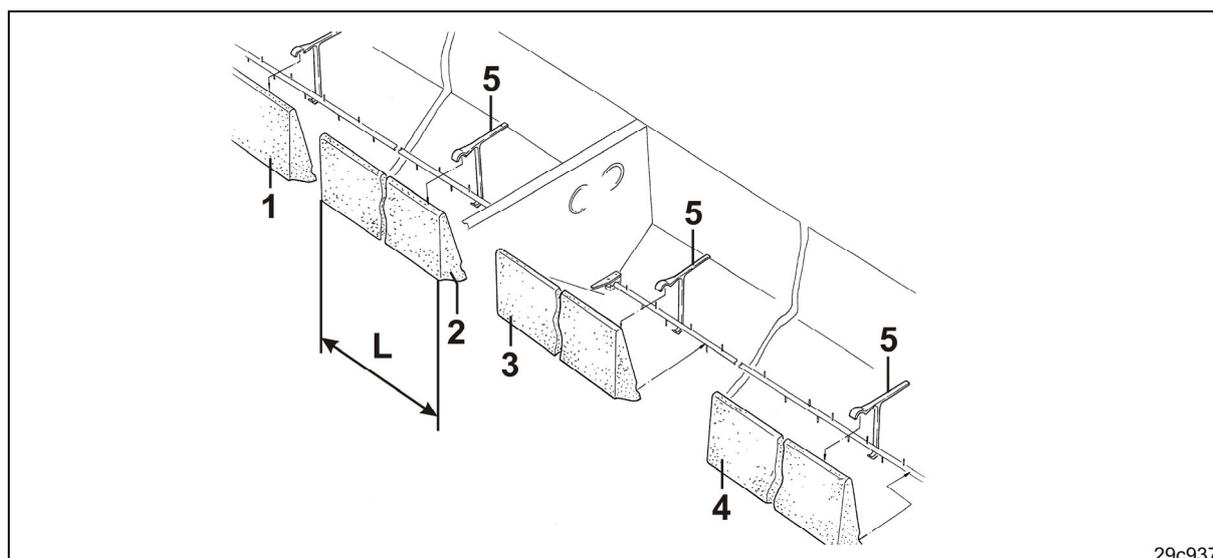


Fig. 170

The rapeseed insert profiles are supported by the agitator shaft.



29c937

Fig. 171

			AD 3000
1	Profile length "L"	[mm]	1025
2		[mm]	255
3		[mm]	1025
4		[mm]	255
5	Clamps	[number]	8



Once the rapeseed insert has been removed, reconnect the agitator shaft to the drive if necessary (see Table on page 58).

Seed blockages may occur in the seed hopper resulting in an incorrect seeding pattern, especially when spreading spelt seed and when the agitator shaft is not rotating.

8.6 Calibrating the seed rate

1. Couple the seeding combination to the tractor.
2. Park the combination on a level surface.
3. Secure the tractor against unintentional start-up and unintentional rolling away.
4. Fill at least 1/3 of the seed hopper with seed (accordingly less for fine seed).
5. Place the calibration trays on the funnel rail, see section "Placing the calibration trays on the funnel rail", page 129.
6. If the tramline counter shows the number "0" on the "AmaLog+" control terminal, set the tramline counter to "1".



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

If the tramline counter is on "0"

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

7. Undo the locking knob (Fig. 172/1).
8. Consult the following table (Fig. 173) for the gearbox setting value for the first calibration test.
9. Set the pointer (Fig. 172/2) of the gearbox lever to the gearbox setting value.
10. Tighten the locking knob.

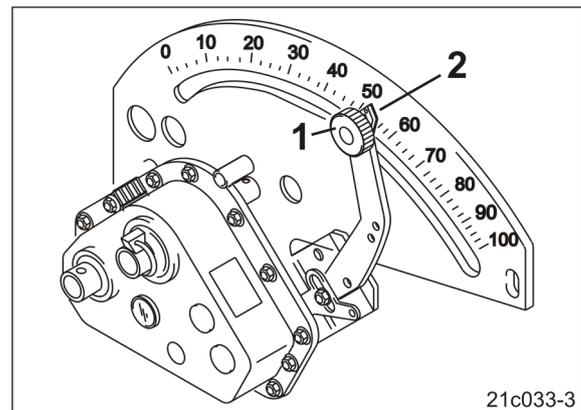


Fig. 172

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. 173

Pre-calibrating the implement

11. Pre-calibrate the seed drill. Preturning creates the same conditions as when driving on the field later on.
 - 11.1 Raise the star wheel.
 - 11.2. Insert the calibration crank (Fig. 174/1) into the square tube of the star wheel.
 - 11.3 Turn the star wheel clockwise (direction shown by the arrow) until the seed falls out of all seed housings into the calibration trays.
 - 11.4 Fill the calibration trays twice by turning the calibration crank (with fine seed, approx. 200 crank turns will be enough).
 - 11.5 Empty the calibration trays into the seed hopper and place them on the funnel rails again.



Fig. 174

Calibrating the seed rate

12. Calibrating the seed rate.

12.1 Turn the star wheel to the right by the number of crank turns specified in the table (Fig. 50, page 64).

12.2 Weigh the seed collected in the calibration trays.
 The supplied collapsible bucket is used to transfer the collected seed.
 The collected seed is weighed in the collapsible bucket.
 The collapsible bucket can be conveniently hung on a digital scale, which is also included in the scope of delivery.



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

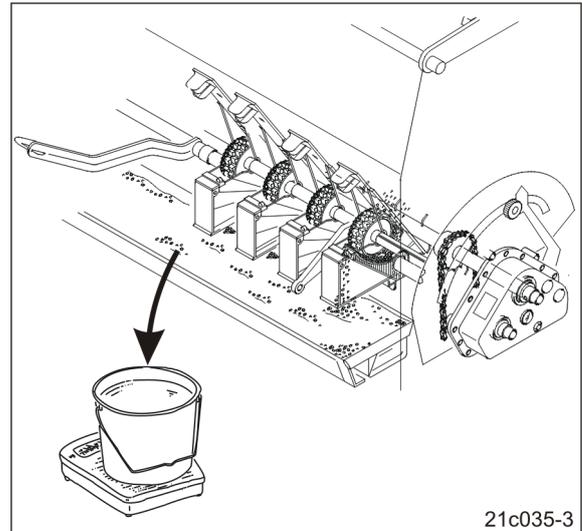


Fig. 175

12.3 Calculate the subsequent 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).

Calibrating on 1/40 ha:

Seed rate [kg/ha] = Calibrated seed rate [kg/ha] x 40
--

Calibrating on 1/10 ha:

Seed rate [kg/ha] = Calibrated seed rate [kg/ha] x 10
--

Example:

Calibrated seed rate: 3.2 kg auf 1/40 ha

Seed rate [kg/ha] = 3.2 [kg/ha] x 40 = 128 [kg/ha]

Settings

13. The desired seed rate [kg/ha] is generally not achieved with the first calibration. Using the calibration values from the first calibration, determine the required gearbox setting values for the desired seed rate [kg/ha] using the calculating disc rule, see section "Determining the gearbox setting using the calculating disc rule", page 140.
14. Repeat the calibration test until the desired seed rate is achieved.
15. Fasten the calibration trays to the seed hopper.
16. Slide the funnel rails upwards and lock them into place.
17. Clip the calibration crank into its transport bracket.



Repeat the calibration test again after approx. 2 ha.

8.6.1 Determining the gearbox setting using the calculating disc rule

Using the calculating disc rule and the calibration values from the first calibration, the required gearbox setting value for the desired seed rate [kg/ha] can be quickly determined.

Example:

- Gearbox setting value for the first calibration:70
- Calculated seed rate after the first calibration:175 [kg/ha]
- **Desired seed rate:**125 [kg/ha].

1. Set the calibration values above one another on the calculating disc rule:
 - o Calculated seed rate
175 kg/ha (Fig. 176/A)
 - o Gearbox setting value 70 (Fig. 176/B).
2. Read the gearbox setting value for the desired seed rate:
 - o Desired seed rate
125 kg/ha (Fig. 176/C)
 - o Gearbox setting value 50 (Fig. 176/D).
3. Set the lever for the Vario gearbox to the determined gearbox setting value and repeat the calibration until the desired seed rate is achieved.

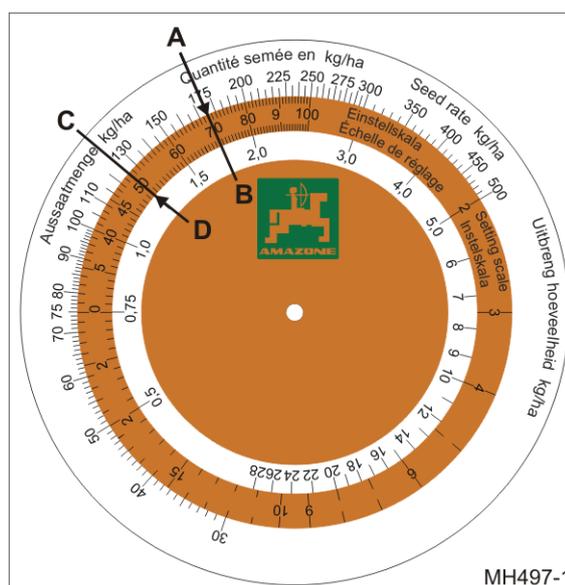


Fig. 176

8.7 RoTeC Control coulter

8.7.1 Adjusting and checking the seed placement depth

The seed placement depth depends on the factors

- Soil type (light to heavy)
- Forward speed
- Coulter pressure
- Position of the depth control discs/wheels.

Check the placement depth when one of the factors has changed.

1. Adjust the coulter pressure, see section 8.8, page 144.
A higher coulter pressure generally maintains the seed placement depth more continuously.
2. Seed approx. 30 m to 50 m at working speed.
3. Expose the seed at a number of points.
4. Check the seed placement depth.
5. Repeat the procedure until the desired seed placement depth is achieved.
6. If the desired placement depth cannot be achieved by adjusting the coulter pressure, adjust all depth control discs/wheels equally, see section "Adjusting the depth control discs / wheels", page 142.
7. After adjusting the depth control discs/wheels, adjust the desired seed placement depth again using the coulter pressure.

8.7.1.1 Adjusting the depth control discs / wheels

If the desired placement depth cannot be achieved by adjusting the coulter pressure, adjust or remove all of the depth control discs/wheels equally, as described in this section.

Engaging the depth control disc/wheel in one of the holes on the coulter

1. Read the required hole for the depth control disc/wheel from the table (Fig. 57, page 67).
2. Insert the shoulder of the depth control disc/wheel into the required hole. The lever (Fig. 177/1) is used to actuate the depth control disc/wheel.
3. Adjust all of the depth control discs/wheels equally.

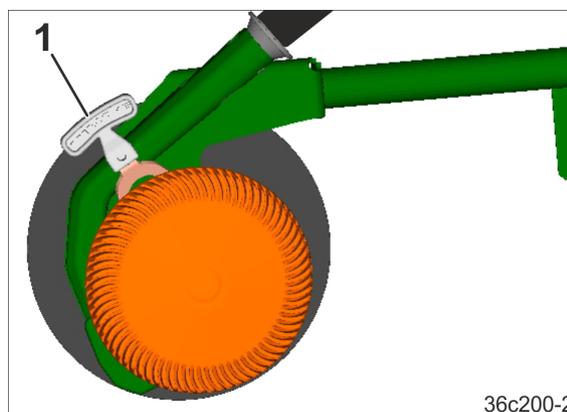


Fig. 177

Dismounting the depth control disc/wheel

1. Engage the shoulder of the lever beyond the group of holes (Fig. 178/1) into the slotted hole (Fig. 178/2).
2. Move the depth control disc/wheel in the slotted hole (Fig. 178/2) until the depth control disc/wheel is released from the locking mechanism (Fig. 178/3).
3. Pull the depth control disc/wheel off of the couler.

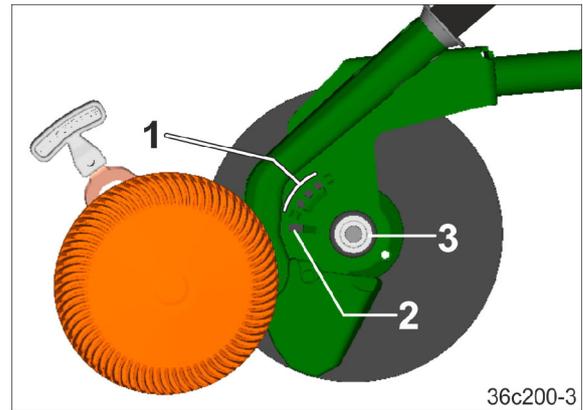


Fig. 178

Mounting the depth control disc/roller

1. Insert the depth control disc/wheel on the locking mechanism (Fig. 178/3). In doing so, the shoulder engages in the slotted hole (Fig. 178/2) of the couler.
2. Move the depth control disc/wheel in the slotted hole (Fig. 178/2) until the depth control disc/wheel engages in the locking mechanism. A light knock on the centre of the disc helps to latch it into position.
3. Using the lever, pull the shoulder out of the slotted hole and insert it in the required bore (Fig. 178/1).



Fasten the depth control disc/wheel with

- the marking "K" on the short couler
- the marking "L" on the long couler.

8.8 Coulter pressure



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

8.8.1 Coulter pressure adjustment (manual adjustment)

1. Place the calibration crank on the setting spindle (Fig. 179) and set the coulter pressure.

Turning the calibration crank

- to the left
causes shallower seed placement
 - to the right
causes deeper seed placement.
2. Clip the calibration crank into its transport bracket.



Fig. 179

8.8.2 Hydr. coulters pressureadjustment



WARNING

Direct people out of the danger area of the hydraulically operated components.

1. Actuate the control valve (green).
- Apply pressure to the hydraulic cylinder.
2. Apply the parking brake, switch the tractor engine off and remove the ignition key.
3. Insert the pin (Fig. 180/1) below the stop (Fig. 180/3) into a hole in the group of holes and secure it with a linch pin (Fig. 180/2).

Each of the holes is identified with a number.

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

4. Put the control valve (green) to the float position.

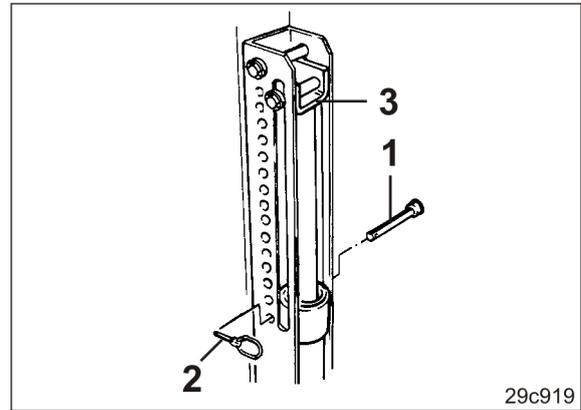


Fig. 180

Setting the coulters pressure higher

1. Put the control valve (green) to the float position.
2. Apply the parking brake, switch the tractor engine off and remove the ignition key.
3. Insert the bolt (Fig. 181/1) above the stop (Fig. 181/3) into a hole in the group of holes and secure it with a linch pin (Fig. 181/2).

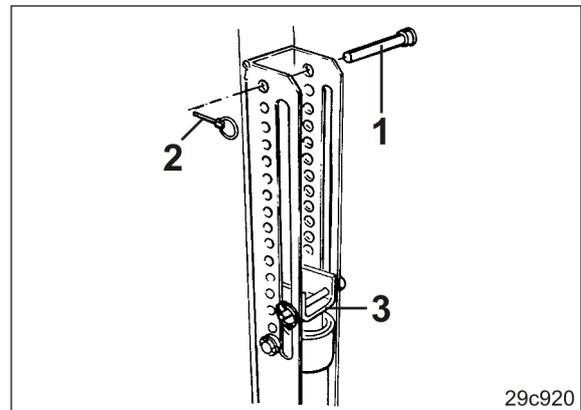


Fig. 181

8.9 Adjusting the exact following harrow

8.9.1 Moving the exact following harrow to the working/transport position

8.9.1.1 Move the exact following harrow into working position

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 seedbed is created.

The greater the working speed, the further the square tubes (Fig. 182/1) have to be pushed outwards.

Secure the square tubes with the outer harrows using locking bolts after every adjustment.

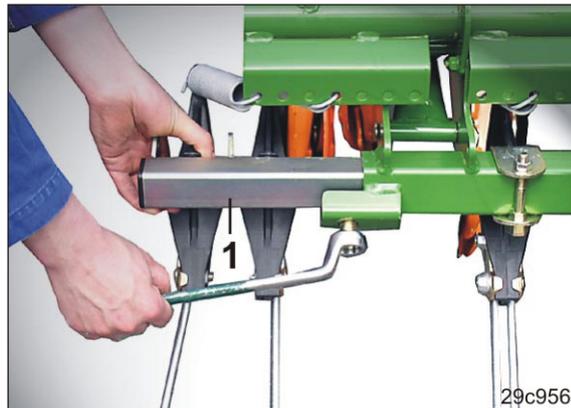


Fig. 182

8.9.1.2 Moving the exact following harrow into transport position

The outer tines of the exact following harrow can exceed the permissible transport width during transport and protrude into the traffic area, see section "Legal regulations and safety", page 160.

To avoid exceeding the permissible transport width, insert both square tubes (Fig. 182/1) with the outer harrows into the harrow carrier tube up to the stop.

Clamp the square tubes with the outer harrows after every adjustment.

8.9.2 Adjusting the exact following harrow tines by rebolting the brackets

1. Adjust the distance "A" (see section 5.10.1, page 71) by rebolting the exact following harrow bracket.
2. The exact following harrow has two adjuster segments. Make the same adjustments on both adjuster segments.

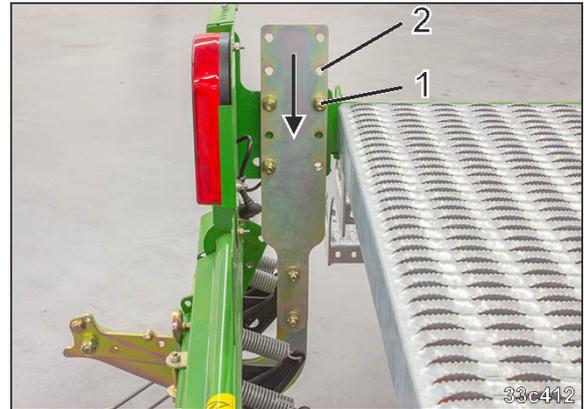


Fig. 183

8.9.3 Infinitely variable adjustment of the exact following harrow tines

1. Remove the linch pin, see below.
2. Insert the ratchet.
3. Set the distance "A" (Fig. 64).
 - 3.1 Adjustments are made by uniformly turning the spindle (Fig. 184) on all of the adjuster segments.



Fig. 184

4. Secure the adjustment by inserting a linch pin (Fig. 185/1).
5. Insert the ratchet into the cartridge.

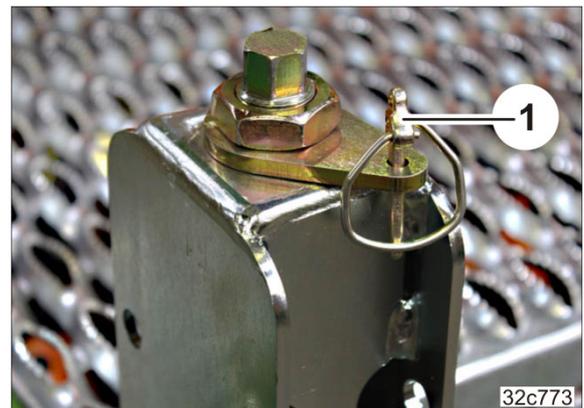


Fig. 185

8.9.4 Setting the exact following harrow pressure

1. Tension the tension springs of the exact following harrow with the calibration crank.
2. Insert the pin (Fig. 186/2) in a hole beneath the lever (Fig. 186/1) and secure with a spring cotter pin.
3. Relieve the calibration crank.



Fig. 186

8.10 Adjusting the roller harrow

8.10.1 Setting the pitch of the tines to the ground

1. Raise the implement until the harrow tines are directly above the ground, but not touching it.
2. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
3. Change the pitch of the tines to the ground by repositioning the safety pin for the tube (Fig. 187/1)
 - o below the link (Fig. 187/2),
 - o in all segments
 - o in the same hole.

The deeper the safety pin for the tube (Fig. 187/1) is inserted in the adjuster segment, the flatter the pitch.

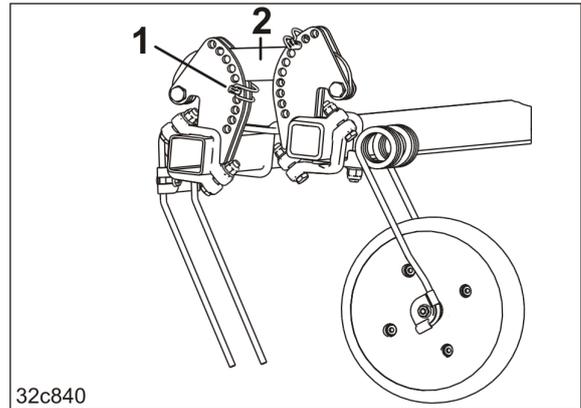


Fig. 187

8.10.2 Working depth adjustment of the harrow tines

1. Raise the implement until the harrow tines are directly above the ground, but not touching it.
2. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
3. The working depth of the harrow tines is adjusted by repositioning the safety pin for the tube (Fig. 188/1)
 - o above the link (Fig. 188/2),
 - o in all segments
 - o in the same hole.

The lower the safety pin for the tube (Fig. 188/1) is inserted in the adjusting segment, the greater the working depth.

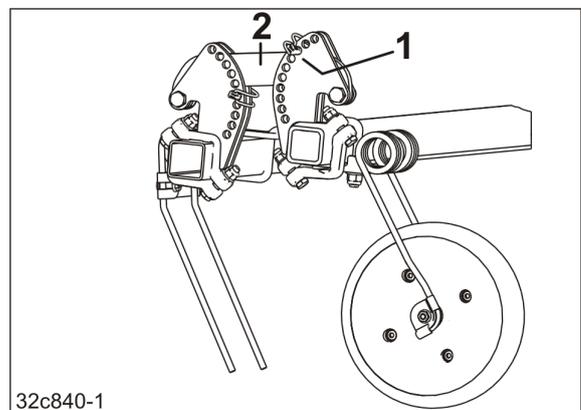


Fig. 188

8.10.3 Setting the roller contact pressure

1. Move the implement on the field to the working position.
2. Swivel both handles (Fig. 189/1) up.



Fig. 189

The two spring-loaded levers (Fig. 190/1) serve to adjust the roller contact pressure on the ground.

3. Pull the first lever in the direction of the arrow.

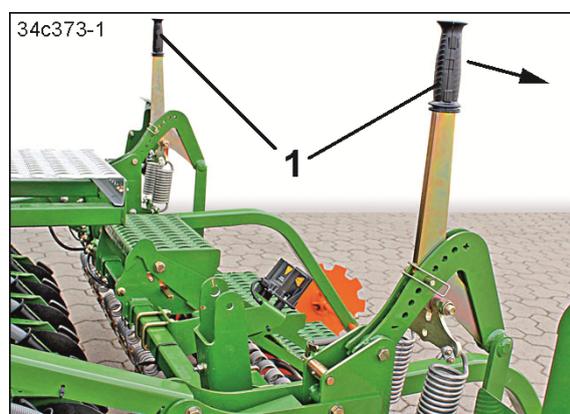
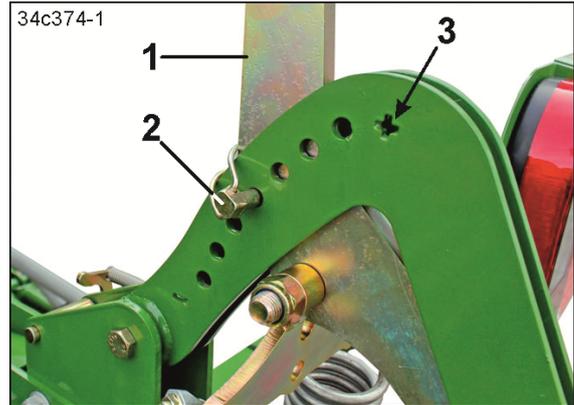


Fig. 190

4. Secure the position of the lever (Fig. 191/1) with a safety pin for the tube (Fig. 191/2).
5. Peg the second lever in the same hole of the hole group and secure it.

The roller contact pressure is highest when the safety pin for the tube (Fig. 191/2) is inserted in the hole beside the plus symbol (Fig. 191/3).

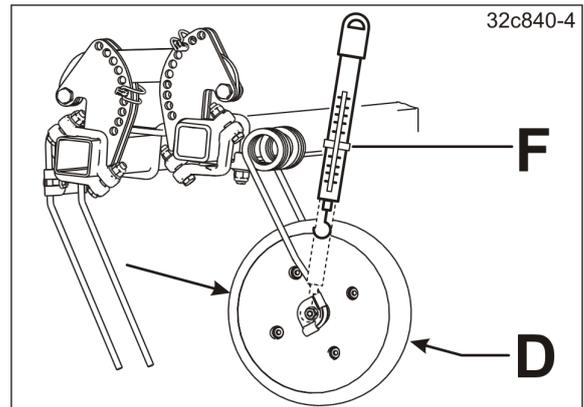

Fig. 191

6. Check the roller contact pressure, e.g. with a spring balance (see Fig. 192).

Roller diameter D	Roller contact pressure F
250 mm	max. 20 kg



To prevent damage to the roller harrow, the roller contact pressure "F" must not exceed the table value.


Fig. 192

8.10.4 Deactivating/activating the roller harrow

8.10.4.1 Deactivating the roller harrow (lifting)

1. Set the implement down on a level surface.
2. Briefly pull on the lever (Fig. 193/1) and remove the safety pin for the tube (Fig. 193/2).

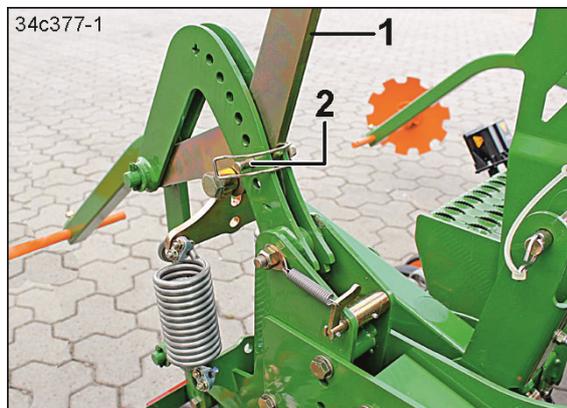


Fig. 193

3. Swivel the handle (Fig. 194/1) down.



Fig. 194

4. Push the lever (Fig. 195/1) in the direction shown by the arrow until the clamping plate (Fig. 195/2) engages.
5. Insert the safety pin for the tube in a free hole in parking position.
6. Repeat the procedure for the second lever.

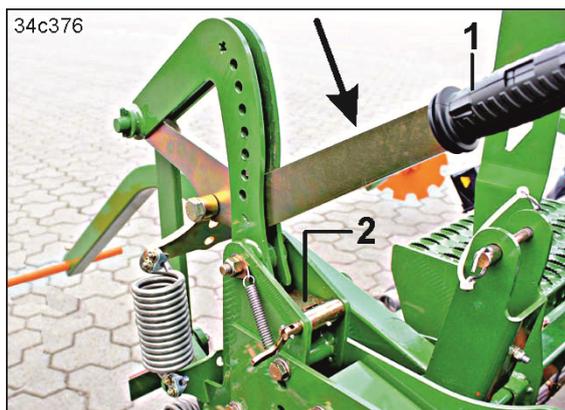


Fig. 195

8.10.4.2 Activating the roller harrow (lowering)

1. Set the implement down on a level surface.
2. Take the safety pin for the tube that was inserted in the parking position.
3. Swivel the handle (Fig. 196/1) up.



Fig. 196

4. Pull the lever (Fig. 197/1) in the direction shown by the arrow.
 - The roller harrow is in working position.
5. Repeat the procedure for the second lever.
6. Adjust the roller contact pressure on the ground, see section "Setting the roller contact pressure", page 150.

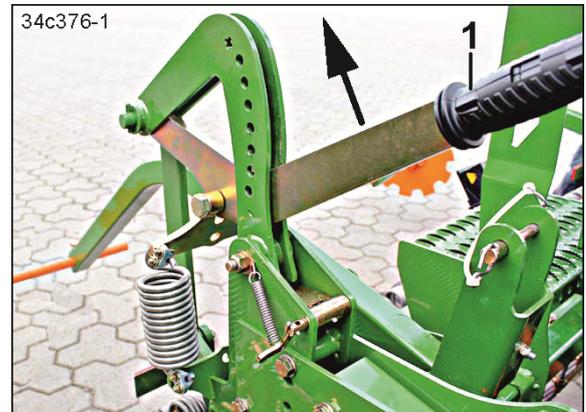


Fig. 197

8.11 Activating/deactivating tramline control

8.11.1 Activating tramline control

1. You can find the required tramline control and the tramline counter for the first field pass in the tables (Fig. 73 und Fig. 74).
2. The tramline control and the tramline counter must only be set on the control terminal just before starting work, see "AmaLog+" operating manual.

8.11.2 Deactivating tramline control

Switch off tramline control as described in the "AmaLog+ control terminal" operating manual.

8.12 Moving the track marker to the working / transport position



DANGER

Each track marker has a mechanical lock.

Secure the track markers when they are raised for transport immediately after work on the field.

Unsecured track markers could unintentionally move to the working position and cause serious injury.

Only remove the mechanical lock for the track marker immediately before beginning field work.



WARNING

Direct people out of the danger area.

The track markers and tramline markers can be swivelled simultaneously when actuating the tractor control unit.

Operate the track markers according to the "Soil tillage implement" operating manual. The required track marker length can be found in the table:

Working width	Distance A ¹⁾
AD 3000 Super	3.0 m

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

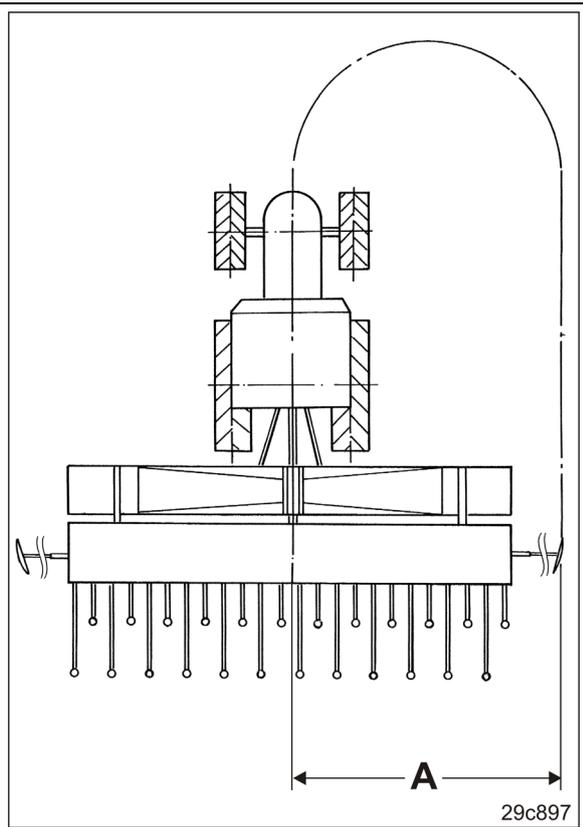


Fig. 198

8.13 One-sided switching

With the one-sided switching, the left side of the seeding shaft can be shut off and seed delivery to the coulters can be interrupted. If the tramline seed metering wheels should also not spread any seed, the shutter slides for the tramline seed metering wheels must be closed.

8.13.1 Deactivating the left side of the seeding shaft

3. Deactivate the left side of the seeding shaft (Fig. 199)
 - 3.1 Push the spring-loaded seeding shaft coupling to the left against the spring and turn it in the direction shown by the arrow.
 - 3.2 Close the sliding shutters on the tramline seed metering wheels on the left hand side of the seeding shaft.

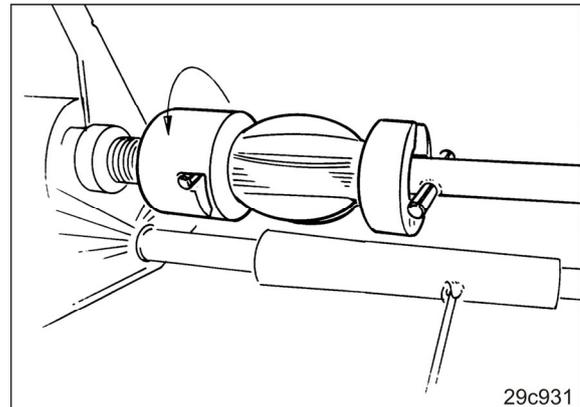


Fig. 199

8.13.2 Activating the left side of the seeding shaft

1. Activate the left side of the seeding shaft (Fig. 200)
 - 1.1 Push the spring-loaded seeding shaft coupling to the left against the spring and turn it in the direction shown by the arrow.
 - 1.2 Open the sliding shutters on the tramline seed metering wheels on the left hand side of the seeding shaft, see table with the setting values.

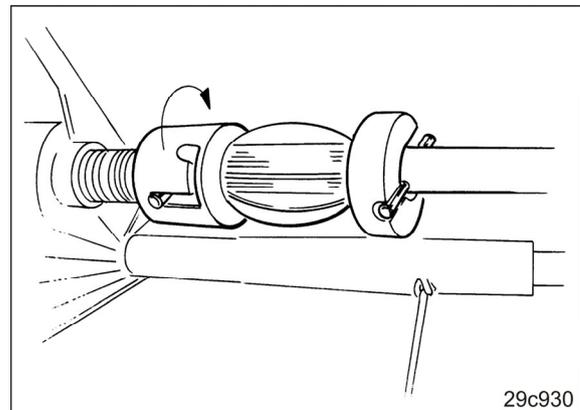


Fig. 200

8.14 Moving the tramline marker into working/transport position



WARNING

Direct people out of the danger area of the hydraulically operated components.

When actuating the tractor control unit, the hydraulic cylinders of the track markers and of the tramline marker can be actuated simultaneously.

8.14.1 Move the tramline marker to working position

1. Position the implement on the field.
2. Hold the track disc carrier, remove the pin (Fig. 201/1) and swivel the track disc carrier downwards.
The pin is secured with a spring cotter pin.
3. Repeat the setting work on the second track disc.

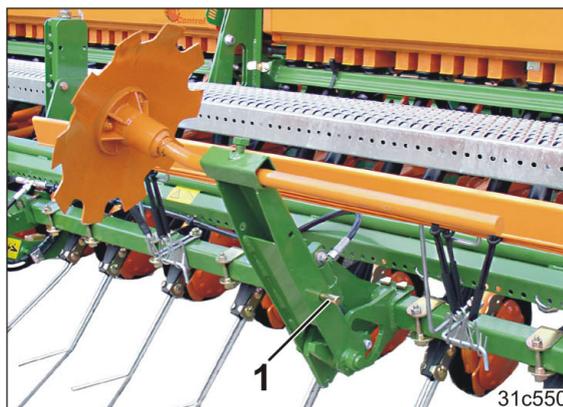


Fig. 201

4. Set the tramline counter to "0".
5. Lower the track discs.
 - 5.1 Actuate the tractor control unit (yellow 1).
6. Apply the parking brake, switch the motor off and remove the ignition key.
7. Undo the bolt (Fig. 202/1).
8. Set the track disc such that it marks the tramline created by the tramline coulters.
9. 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.
10. Tighten the bolt (Fig. 202/1).
11. Repeat the setting work on the second track disc.



Fig. 202

8.14.2 Move the tramline markers to the transport position

1. Lift the track discs hydraulically, if the track discs are lowered to create a track, refer to the "Control terminal" operating manual.
2. Apply the parking brake, switch the motor off and remove the ignition key.
3. Insert the track disc carrier (Fig. 203/1) on the transport bracket (Fig. 203/2), and secure with a pin (Fig. 203/3).
4. Secure the pin (Fig. 203/3) with spring cotter pins (Fig. 203/4).
5. Repeat the setting work on the second track disc.

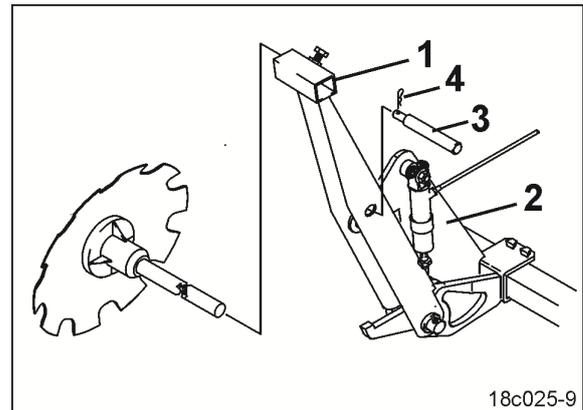


Fig. 203

8.15 Moving the exact following harrow road safety bar into road transport/parking position

8.15.1 Moving the road safety bar into road transport position

1. Push the two-part road safety bar (Fig. 204/1) over the tine tips of the exact following harrow.
2. Fasten the road safety bar with spring holders (Fig. 204/2) to the exact following harrow.

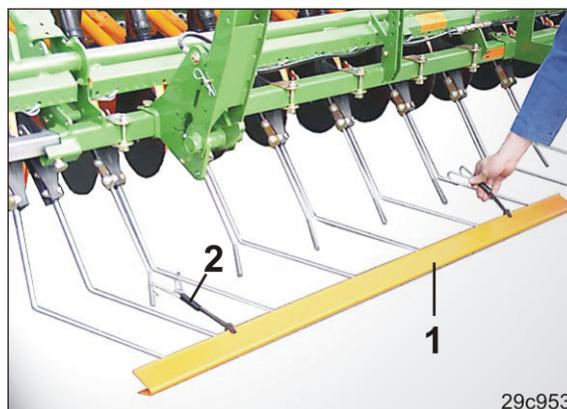


Fig. 204

8.15.2 Moving the road safety bar into parking position

Place the road safety bars inside each other and secure them to the transport bracket (Fig. 205/2) using the spring holders (Fig. 205/1).



Fig. 205

9 Transportation



DANGER

In Germany and several other countries, the transportation of implements mounted on the tractor on public roads and routes is approved up to a width of 3.0 m.

Transport of a combination over 3.0 m wide is only permitted on a transport vehicle in these countries. Place and secure the combination consisting of soil tillage implement, roller and seed drill on the transport vehicle in accordance with regulations. Do not exceed the max. transport height of 4.0 m.

Read the transport width of the seed drill and soil tillage implement combination from both operating manuals. The data can be found in the "Technical data" section.



Fig. 206

9.1 Moving the seeding combination into transport position

1. Press the pause button on the control terminal (if required).
Pressing the pause button before folding the track markers prevents the tramline counter from advancing by one digit.
2. Move the track marker to transport position and secure it Page 154
3. Move the pulse wheel to the transport position Page 124
4. Move the tramline markers to the transport position Page 156
5. Move the exact following harrow into transport position..... Page 146
6. Move the road safety bar of the exact following harrow into transport position Page 158
7. Empty the seed hopper if one of the permissible values for the total tractor weight, axles loads and tyre load-bearing capacity is exceeded when the seed hopper is full, see also section "Checking the suitability of the tractor", page 84 Page 170
8. Close the seed hopper cover.
9. Fold up the steps Page 122
10. Switch off the control terminal, see the "Control terminal" operating manual
11. Check the lighting system and warning signs for proper function and cleanliness Page 42
12. Check that the parking supports have been removed.
The parking supports do not have a locking device. When transporting the combination, they can accidentally wander out of the mounts and cause serious accidents.
13. Disable the tractor control units required for operating the implement,
see also tractor operating manual Page 40
14. Read and observe section 9.2:
Legal guidelines and the safety instructions before and during road transport.
15. Switch on the warning beacon and check operation before driving off Page 160

9.2 Legal regulations and safety

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

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

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

Transport width/Transport height

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

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

Max. permissible speed

The max. permissible speed ¹⁾ is 40 km/h for tractors with mounted implements.

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

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

Warning beacon

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



Before driving off, 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.
- that the warning signs and yellow reflectors are clean and undamaged
- the hydraulic system for visible damage.
- the tractor parking brake must be released completely.



WARNING

Risk of being crushed, cut, caught, drawn in or struck if the implement is unintentionally released from its attached or hitched position.

Before road transport, perform a visual check that the top and lower link pins are firmly secured with original linch pins against unintentional release.



DANGER

Risk of personal injury from cutting and impacts caused by unintentional lowering of the track marker during transportation.

Before road transport, visually check that the track markers are secured in the transport position.



DANGER

The parking supports may not be inserted in the mounts on the seed drill during transport.

The parking supports do not have a locking device. When transporting the combination, they can accidentally wander out of the mounts and cause serious accidents.

**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 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.
- Before transportation, fasten the side locking device of the tractor lower link so that the mounted or towed 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.

Observe the permissible total weight of the mounted implement combination and the permissible axle and drawbar loads of the tractor.

**WARNING**

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

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

**WARNING**

Other road users can be endangered by carried loads falling down!

It is forbidden to carry loads on the loading board of the implement.

**WARNING**

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

Road transport without a correctly fitted road safety bar is forbidden when the implement is equipped with an exact following harrow.

**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 following harrow before you perform any transport journeys.

**CAUTION**

Switch off the control terminal during road transport.

If the control terminal is switched on, there is a risk of accident caused by operating errors.

**DANGER**

Lock the tractor control units during road transport.

There is a risk of accident caused by operation errors.



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

10 Use of the implement

When using the implement, observe

- Section "Warning symbols on the implement", page 18
- Section "Safety information for users", page 26.

Observing these sections is important for your safety.



Fig. 207



WARNING

Actuate the tractor control units only in the tractor cab.



WARNING

Risk of crushing, being pulled in or caught during implement operation because of unprotected drive elements.

Only ever start up the implement when the protective equipment is fully installed.



WARNING

Risk of slipping, stumbling or falling due to unauthorised climbing onto the implement and/or carrying persons on the implement, the loading board or the steps.

It is forbidden to ride on the implement and/or climb on the implement when it is in operation.

Instruct persons to get off the loading board before starting the implement.



WARNING

Risk of cutting and impacts when swivelling the track marker up and down.

Before swivelling the track marker, direct people out of the swivelling range.



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

10.1 Initial operation

Before initial commissioning		
	Check the hydraulic hose lines and couplings.	Section 12.5.2 Page 189
	Check all the components of the hydraulic system for leaks	
	Check the oil level, in the Vario gearbox	Section 12.7 Page 191
After the first 10 operating hours		
	Check the hydraulic hose lines and couplings.	Section 12.5.2 Page 189
	Check all the components of the hydraulic system for leaks	
	Check all bolted connections for tight fit	Section 12.10 Page 195

10.2 Moving the implement from transport into working position

1. Put down the seeding combination at the beginning of the field and align it straight.
2. Move the road safety bar of the exact following harrow to the parking position Page 158
3. Move the exact following harrow into working position Page 146
4. Move the star wheel into working position Page 124
5. Move the tramline marker into working position..... Page 156
6. Check all implement settings Page 11
7. Instruct any people
in the area to stand at a minimum distance of 20 m from the implement
8. Release the transport lock for the track markers
see "Soil tillage implement" operating manual.
9. Switch on the control terminal, see "Control terminal" operating manual.
10. Actuate the tractor control unit (yellow):
 - Lower the active track marker
 - Advance the tramline control
 - o Creation of tramlines (if required)
 - o Lowering the tramline marker (if necessary).
11. Set the tramline counter just before commencing the first field run
 - o refer to the "Control terminal" operating manual.
12. Run the PTO shaft of the soil tillage implement up to operating speed
see "Soil tillage implement" operating manual.
13. Start off and lower the combination using the tractor's three-point hydraulic system.
14. Calibrate the seed rate after approx. 2 ha.

10.3 During operation

10.3.1 Overview of checks during operation

Time interval	Inspection	Section	Page
<ul style="list-style-type: none"> • after the first 30 to 50 m travelled at working speed have been covered • after changing from light to heavy soil and vice-versa • after setting the coulter pressure • after readjusting the RoTeC depth control discs/wheels • hourly, e.g. each time the seed hopper is refilled 	Check the seed placement depth	8.8	144
	Check the tillage intensity of the exact following harrow	8.9	146
	Check the tillage intensity of the roller harrow	8.10	149

10.3.2 Seeding check

During operation, the "AmaLog+" control terminal 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 control terminal. 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].

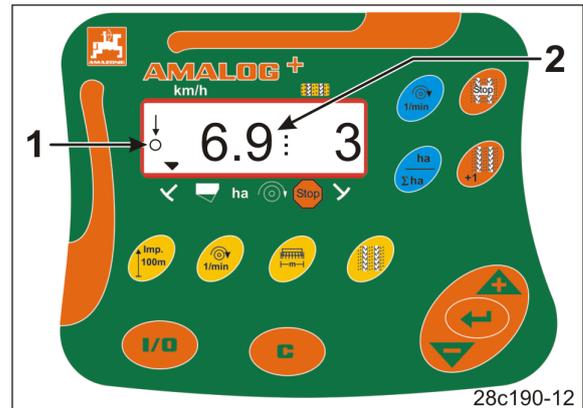


Fig. 208

If seeding is interrupted, e.g.

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

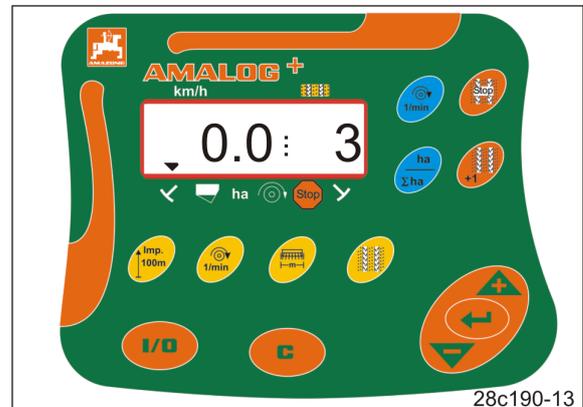


Fig. 209

10.4 Turning at end of the field



DANGER

After turning, with the corresponding pre-selection on the control terminal and when the tractor control unit is actuated, the opposite track marker is moved to the working position.

1. Actuate the tractor control unit (yellow).
 - Raise the active track marker
 - Advance the tramline counter
 - Raise the track disc of the tramline marker.
2. Operate the control unit for the tractor lower link.
 - Raise the combination.
3. Turn the combination.



The coulter and harrow must not contact the ground during turning.

Raising the combination before turning at the end of the field interrupts the seed supply by stopping the seeding shaft.

After turning at the end of the field

1. Start.
2. Operate the control unit for the tractor lower link.
 - Lower the combination.
3. Actuate the tractor control unit (yellow) for at least 5 seconds so that all hydraulic functions are fully executed.
 - Lower the active track marker.
 - Lower the track disc of the tramline marker to create tramlines.

10.4.1 Track marker

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

Raising the track marker makes the tramline counter advance. Advancing of the tramline counter can be disabled, refer to the "AmaLog+" operating manual.

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.



Damage due to the track marker when folding

Track marker sections can shear off when colliding with an obstacle.

Track marker sections in a sheared-off state

- should not be folded, to prevent damage to the seed drill
- should be repaired, see soil tillage implement operating manual.

10.4.2 End of work on the field

Move the seeding combination into transport position, see section 9.1, page 159.



DANGER

Fold and secure the track markers, see "Soil tillage implement" operating manual.

Unsecured track markers could unintentionally move to the working position and cause serious injury.



Empty and clean the seed housing after operation.

Seed residues can germinate in seed housings that are not emptied and cleaned.

This can strongly impede the rotation of the seed metering wheels and causes deviations between the set and actual seed rate.

10.5 Emptying the seed hopper and seed housing



CAUTION

Before working on the implement

- couple the pack top seed drill and the soil tillage implement.
- lower the implement combination onto level solid ground
- apply the tractor parking brake
- switch off the control terminal
- switch off the tractor engine
- remove the ignition spanner
- disconnect the power supply between the tractor and the implement. Disconnect the implement plug.

Risk of accident due to unintentional activation of the metering units or other implement components caused by star wheel movement.



DANGER

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

Dressing dust can escape

- when filling the implement
- when emptying the implement
- when cleaning and removing dressing dust

Wear protective clothing, face mask, protective goggles, and gloves.

1. Place the soil tillage implement with pack top seed drill on level ground.
2. Switch off the tractor engine and apply the tractor parking brake.



When emptying the seed hopper, the tramline counter should not display "0". If necessary, advance the tramline counter.

If the tramline counter displays "0", no seed will be conveyed by the tramline seed metering wheels.

3. Put the bottom flap setting lever in hole 1.
4. Set the pointer (Fig. 210/2) of the gearbox lever to the gearbox setting value 100.
5. Firmly tighten the locking knob (Fig. 210/1).

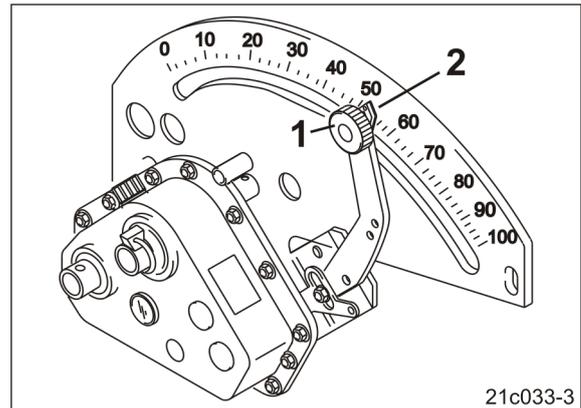


Fig. 210

6. Place the calibration trays (Fig. 211/1) on the funnel rail, see section "Placing the calibration trays on the funnel rail", page 129.
7. Open all sliding shutters.
8. Rotate the bottom flap lever across the group of holes.
 - Open the bottom flaps.
 - The seed flows into the calibration trays.
9. Put the bottom flap setting lever in hole 1 as soon as the calibration trays have been filled.
10. Empty the calibration trays.
11. Repeat the procedure until the seed hopper is empty.

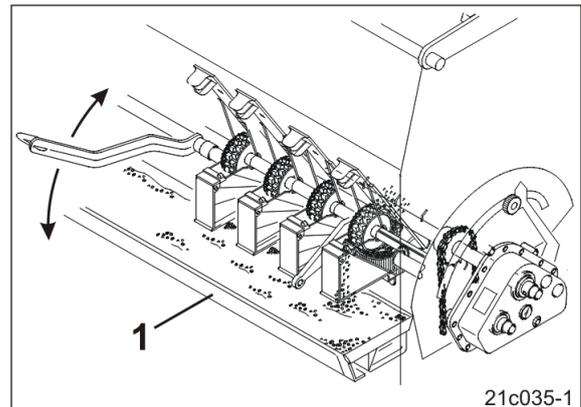


Fig. 211

Use of the implement

12. Empty the seed housing.
 - 12.1 Raise the star wheel and lock it.
 - 12.2 Insert the calibration crank (Fig. 212/1) into the square tube of the star wheel.
 - 12.3 Fill the calibration trays by turning the star wheel clockwise until the seed housings are empty.



Fig. 212

13. Clean the seed hopper and metering unit.
14. Lock the bottom flap setting lever in hole 8 if the implement will be parked for a longer period.
15. Fasten the calibration trays to the seed hopper.
16. Push the funnel rail up until it audibly clicks into place.



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

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

11 Faults



WARNING

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

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

Secure the tractor and the implement against unintentional starting and rolling away before eliminating faults on the implement.

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



CAUTION

Before working on the implement

- couple the pack top seed drill and the soil tillage implement.
- lower the implement combination onto level solid ground
- apply the tractor parking brake
- switch off the control terminal
- switch off the tractor engine
- remove the ignition spanner
- disconnect the power supply between the tractor and the implement. Disconnect the implement plug (e.g. ISOBUS plug).

Risk of accident due to unintentional activation of the metering units or other implement components caused by star wheel movement or radar pulses.

11.1 Residual seed quantity display

A visual and acoustic warning is given when the residual quantity in the hopper is undercut (when the fill level sensor is correctly set).

The residual quantity should be large enough to prevent fluctuations in the seed rate.

11.2 Deviations between the set and actual seed rate

Possible causes that can lead to a deviation between the set and actual seed rate:

- To record the worked area and the required seed rate, pulses from the star wheel are required over a calibration distance of 100 m.

Field surfaces change during work, e.g. when changing from dry, light soil to wet, heavy soil.

This can also alter the calibration value "Pulse/100 m".

If there are differences between the set and actual seed rate, the calibration value "Pulses/100 m" has to be re-determined by travelling the calibration distance.

- When seeding with moist dressed seeds, deviations between the set and actual seed rate may occur if there is a period of less than 1 week (2 weeks are recommended) between the dressing and seeding.

12 Maintenance and repairs

12.1 Maintenance schedule



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

Before starting work (every day)		
	Visual inspection of the upper and lower link pins	Section 12.5.1 Page 188
	Check the hydraulic hose lines and couplings	Section 12.5.2 Page 189
	Check all the components of the hydraulic system for leaks	
During operation		
	Overview of checks during operation	Section 10.3.1 Page 166
After finishing work (daily)		
	Clean the implement (if required)	Section 12.3.1 Page 178
Every week		
	Vario gearbox, check the oil level	Section 12.7 Page 191
Every 3 months (at least every 500 operating hours)		
Specialist workshop	Check and perform maintenance on the hydraulic hose lines. This inspection has to be recorded by the operator.	Section 12.8.1 Page 192
	Checking roller chains and chain wheels	Section 12.6 Page 190
	Bottom flaps, check basic position	Section 12.6.1 Page 190

12.2 Lubrication schedule

Lubrication points	Component	Number of grease nipples	Lubrication interval	Note
Fig. 213/1	Tramline marker	2	1x annually	



Lubricants, see section "Oils and greases", page 194.

12.2.1 Lubrication points

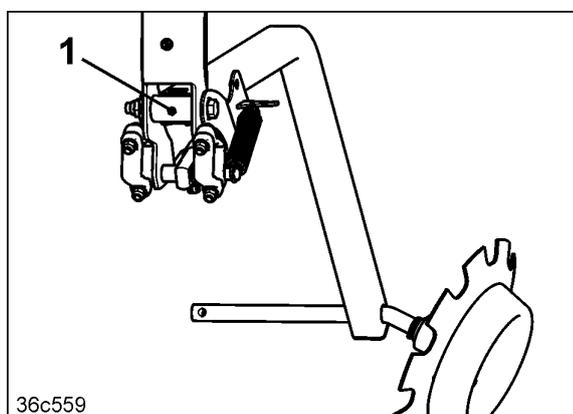


Fig. 213

12.3 Safety



WARNING

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

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

Secure the tractor and the implement against unintentional starting and rolling away before working on the implement.

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



CAUTION

Before adjustment, maintenance and repair work

- couple the pack top seed drill and the soil tillage implement.
- lower the implement combination onto level solid ground
- apply the tractor parking brake
- switch off the control terminal
- switch off the tractor engine
- remove the ignition spanner
- disconnect the power supply between the tractor and the implement. Disconnect the implement plug (e.g. ISOBUS plug).

Risk of accident due to unintentional activation of the metering unit or other implement components caused by star wheel movement or radar pulses.



WARNING

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

- Mount protective equipment, which you removed when cleaning, maintaining and repairing the implement.
- Replace defective protective equipment with new equipment.
- Never crawl under a raised, unsecured implement.



WARNING

Risk of crushing, shearing, cutting, being caught, wound in, pulled in or trapped by the driven, unprotected seeding shaft and agitator shaft!

Never open or remove the safety equipment in the hopper when the seeding shaft / agitator shaft are running, or as long as the seeding shaft / agitator shaft can be unintentionally driven.

12.3.1 Safety when cleaning the implement



DANGER

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

Wear protective clothing, breathing mask, safety glasses and gloves

- when filling the implement
- when emptying the hopper and seed housings
- when removing dressing dust.



When cleaning the implement, please note:

- empty the seed hopper and the seed housing before cleaning.
- Observe the legal regulations for handing and disposing of cleaning agents.
- never treat hydraulic hose lines with fuel, benzene, petroleum or mineral oils.



The pictogram serves as a reminder never to aim the cleaning jet of the (hot water) high pressure cleaner directly on

- electrical components
- lubrication points and bearings
- the rating plate, warning symbols, stickers and design foils.

The components can be damaged.



Fig. 214



When using (hot water) high pressure cleaners, please note:

- Observe the safety regulations for working with your cleaning device.
- Observe the legal regulations for handing and disposing of cleaning agents.
- Do not clean any electrical components with high-pressure cleaners.
- Never aim the cleaning jet of the high pressure cleaner directly on lubrication points and bearings, rating plates, warning signs, stickers and design foils.
- Pay particular attention to the hydraulic hose lines during cleaning.
- Do not exceed a jet pressure of 120 bar.
- Always maintain a minimum nozzle distance of 300 mm between the high-pressure cleaning nozzle and the implement.
- Lubricate the implement after cleaning.

12.3.2 Safety when working on the hydraulic system

Only a specialist workshop may perform work on the hydraulic system.

12.4 Installations

12.4.1 Shutdown of the implement over a long period of time

1. The RoTeC Control coulters
 - o must be cleaned and dried thoroughly
 - o must be protected against rust with an environmentally-friendly anti-corrosion agent.
2. Relieve the roller harrow to unload the formed rubber elements, see section "Setting the roller contact pressure", page 150.
The formed rubber elements are used as a spring-loaded suspension for the roller harrow carrying arms. As a result, the roller harrow can follow the contours of the soil.



Fig. 215

12.4.2 Folding down the lay shaft

1. Pull the calibration trays (Fig. 216) upwards out of the bracket.

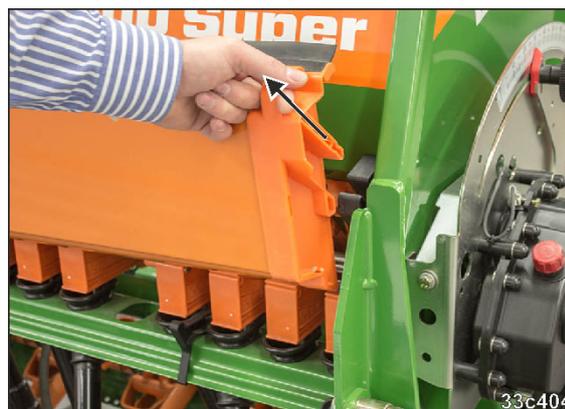


Fig. 216

2. Remove the tension springs (Fig. 217/1) on the lay shaft bearing (Fig. 217/2).

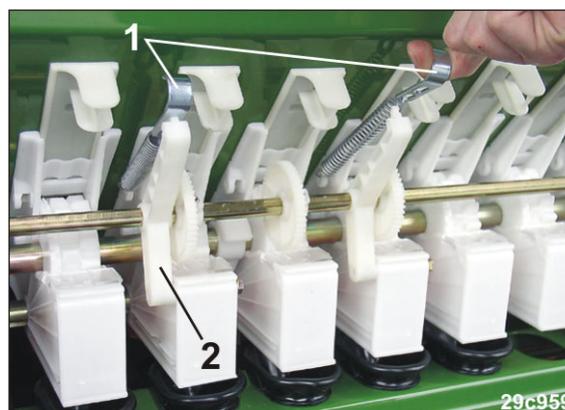


Fig. 217

3. Fold down the lay shaft (Fig. 218/1).



Fig. 218

- At the same time, a bracket (Fig. 219/1) that axially secures the lay shaft will be pulled out of the recess in the seed housing.



Fig. 219

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



Fig. 220

12.4.3 Folding up the lay shaft

4. Fold up the lay shaft.
- When doing so, insert the bracket (Fig. 221/1) that secures the lay shaft in an axial position into the recess of a seed housing.
5. Secure the bracket axially with two set collars (Fig. 221/2).



Fig. 221

6. Mesh the teeth (Fig. 222/1) of the drive pinion and the tramline fine seed metering wheels.
7. Tighten the hexagon socket screws (Fig. 222/1) of the drive pinion in the notch of the lay shaft without tension.

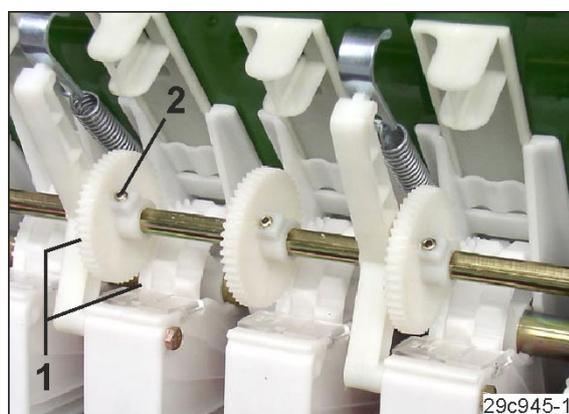


Fig. 222

8. Mesh the cogs (Fig. 223/1) of the lay shaft coupling and the seeding shaft spur gear.
9. Hook in the tension springs (Fig. 223/2) on the pivot bearings (Fig. 223/3).
10. Check that the seed metering wheel tramline control is working.

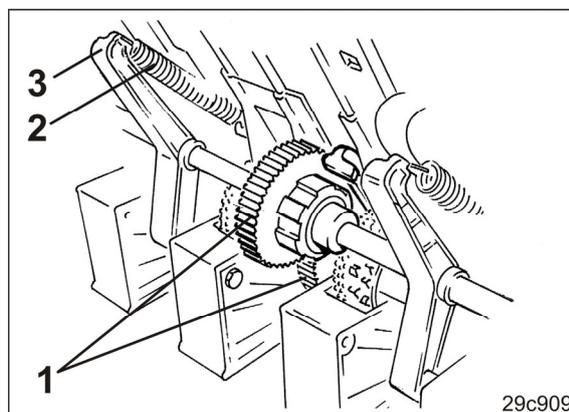


Fig. 223

12.4.4 Setting the tramline spacing, track width and wheelmark width

1. Fold down the lay shaft, see section "Folding down the lay shaft", page 180.
2. Mark new tramline seed metering wheels by inserting the fine seed metering wheel brushes (Fig. 224/1) onto the new tramline seed housings.

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

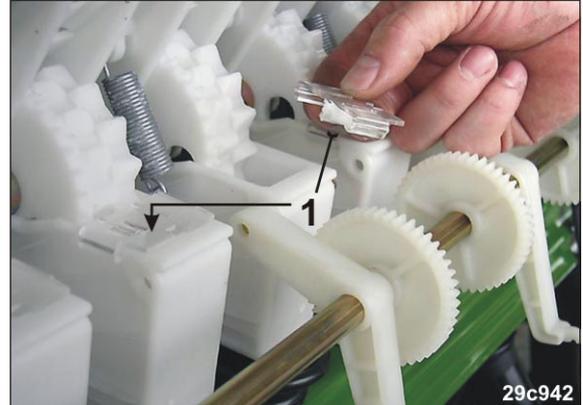


Fig. 224



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.

3. Unscrew the hexagon socket screws (Fig. 225/1) on the new tramline seed metering wheels until the new tramline seed metering wheels can turn freely on the seeding shaft.

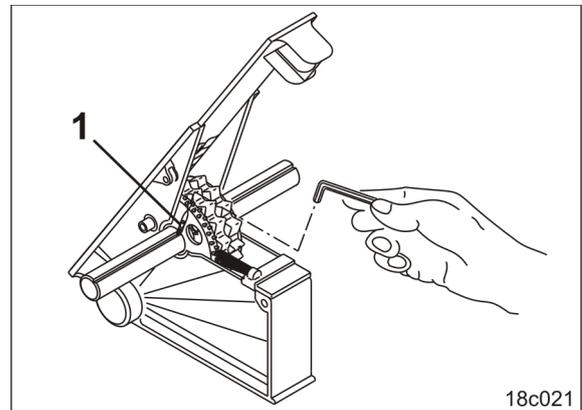


Fig. 225

Maintenance and repairs

4. Remove (Fig. 226/1) bolts.
5. Loosen the hexagon socket screws (Fig. 226/2).
6. Push the swivel bearing and the driving pinion onto the lay shaft.
7. Screw the swivel bearing onto the new tramline seed housings.

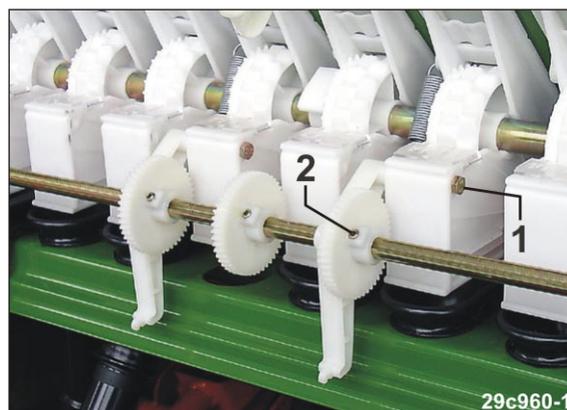


Fig. 226

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

Screw the hexagon socket screw (Fig. 227/1) into the fine seed metering wheel until the seed metering wheel is taken up by the seeding shaft with slight play. If the hexagon socket screws are too tight, the seed metering wheels will be distorted.

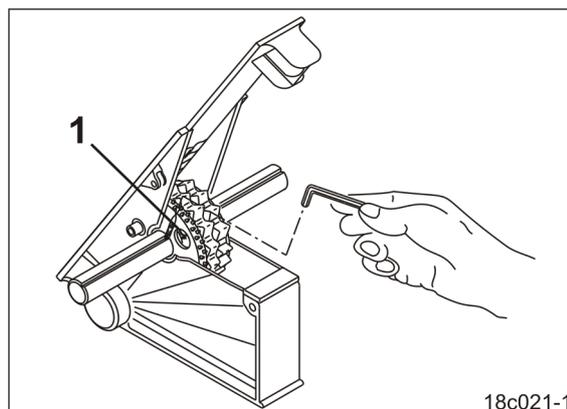


Fig. 227

9. Fold up the lay shaft, see section "Folding up the lay shaft", page 182.

12.4.5 Installing the bean metering wheels



This setting affects the seeding rate.
Check the setting with a calibration test.

1. Fold down the lay shaft, see section "Folding down the lay shaft", page 180.
2. Do not remove the detent plate for the bottom flaps.
3. Open the seeding shaft contact pressure bearings (Fig. 228/1).

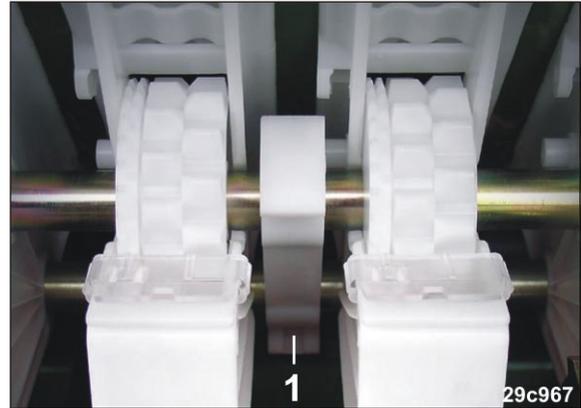


Fig. 228

4. Unscrew the bolts (Fig. 229/1).
5. Slide the connecting sleeve on the seeding shaft.
6. Lift out the seeding shaft.



Fig. 229



The bean seed metering wheels

- can be individually replaced with the seed metering wheels or
- can be replaced by 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.

Maintenance and repairs

7. The bean seeding shaft is installed in reverse sequence.
8. Mount the gear wheel (Fig. 230/1) onto the bean seeding shaft.

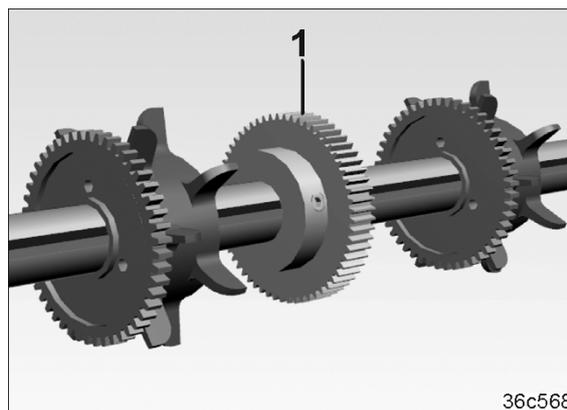


Fig. 230

9. Remove the triangular carriers (Fig. 231/1) 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 (Fig. 231/1) of the other bean seed metering wheels grip into the recess on the seeding shaft.

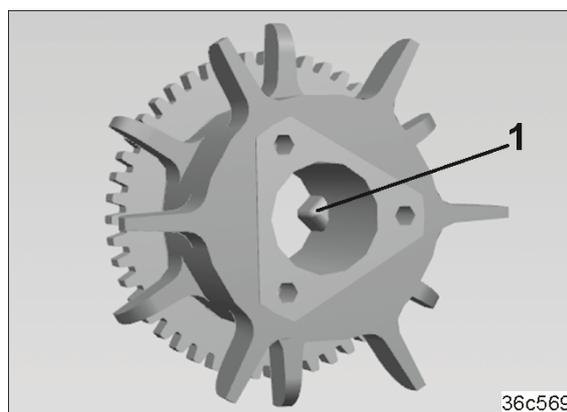


Fig. 231

10. Fold up the lay shaft, see section "Folding up the lay shaft", page 182.
 - 10.1 Make sure that the cogs (Fig. 232/1) of the gear wheels are meshed.



Fig. 232

- 10.2 Rotate the axial lock (Fig. 233/1) so that the short arm is supported in the recess on the seed housing.

If the seed drill is refitted with normal and fine seed metering wheels, turn the axial lock (Fig. 233/1) around and insert the long arm into the recess on the seed housing.

11. Check that the seed metering wheel tramline control is working.



Fig. 233

12.5 Maintenance

12.5.1 Visual inspection of the upper and lower link pins



Adhere to the inspection intervals,
see section "Maintenance schedule", page 175.



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 worn top and lower link pins.

12.5.2 Visual check of the hydraulic hose lines and couplings



Adhere to the inspection intervals, see section "Maintenance schedule", page 175.

Check the hydraulic hose lines and coupling:

- Regularly check all the hydraulic hose lines and couplings for visible defects, damage, chafing points, wear, impurities, and aging.
- Have any defects on the hydraulic hose lines immediately repaired by a specialist workshop. Use only original AMAZONE hydraulic hose lines.
- Have the hydraulic hose lines checked for proper functioning by a specialist workshop at least every quarter.
- The hydraulic hose lines should not be used for longer than 6 years, including any storage time of maximum 2 years. The hydraulic hose line are marked with the manufacturing date, see section 12.5.2.1.

Even with proper storage and approved use, hoses and hose connections are subject to natural aging, thus limiting the duration of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose lines made of thermoplastics, other guide values may be decisive.

12.5.2.1 Date of manufacture of the hydraulic hose line

The hydraulic hose lines are marked as follows:

Fig. 234/...

- (1) Label of the manufacturer of the hydraulic hose line (A1HF)
- (2) Date of manufacture of the hydraulic hose line (20/02 = year / month = February 2020)
- (3) Maximum permitted operating pressure (210 bar).

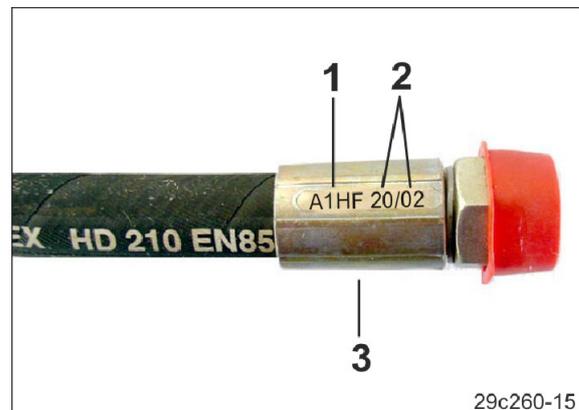


Fig. 234

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.

12.6.1 Bottom flaps basic position



Adhere to the inspection intervals, see section "Maintenance schedule", page 175.

1. Close the shutter when the seed hopper is full.
2. Empty the seed housing, see section Emptying the seed hopper and seed housing, page 170.
3. Check that the bottom flaps (Fig. 235/1) are easy to move.
4. Insert the bottom flap lever into hole 1 and secure it.
5. 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.

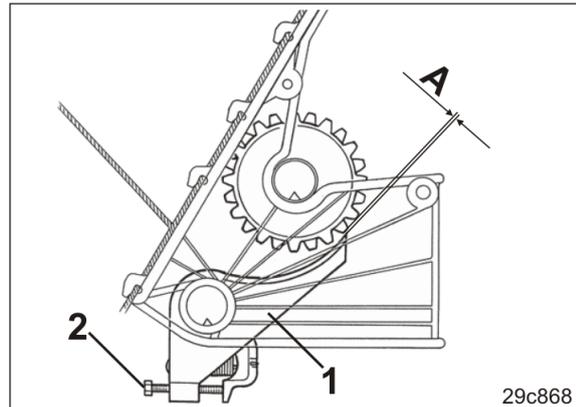


Fig. 235

The distance "A" (Fig. 235) between the bottom flap and seed metering wheel is 0.1 mm to 0.5 mm.

6. Set the prescribed distance with the bolt (Fig. 235/2).

12.7 Vario gearbox, check the oil level



Adhere to the inspection intervals,
see section "Maintenance schedule", page 175.

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. 236/1).

There is no need to change the oil.

The oil filler neck (Fig. 236/2) is used to top up the Vario gearbox.

Refer to the table (Fig. 237) for the grade of transmission oil required.

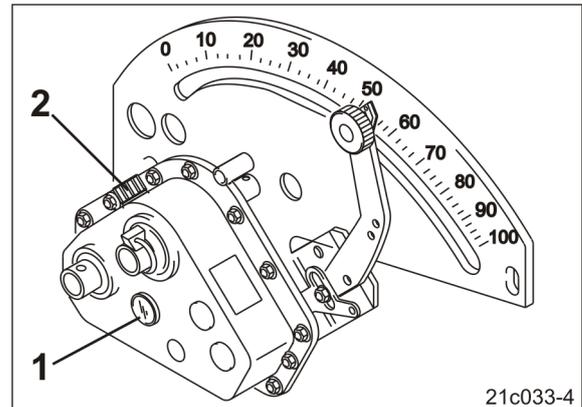


Fig. 236

12.8 Repairs (specialist workshop work)



WARNING

The work described in the Repairs section may only be performed by a specialist workshop.

12.8.1 Checking the hydraulic hose lines



Adhere to the inspection intervals,
see section "Maintenance schedule", page 175.

Check the hydraulic hose lines and fix any defects (specialist workshop):

- Damage to the outer layer up to the ply (e.g. scouring points, cuts, cracks).
- Brittleness of the outer layer (crack formation of the hose material).
- Deformations which do not match the natural shape of the hose or the hose line. Both in a depressurized and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
- Leak points. Tighten the screwed connections if necessary.
- Damage or deformation of the hose assembly (sealing function restricted); minor surface damage is not a reason for replacement.
- Movement of the hose out of the valve chest.
- Corrosion of valve chest, reducing the function and strength rating.
- Installation requirements not complied with.
- Life span of 6 years has been exceeded.

The date of manufacture of the hydraulic hose line on the valve chest plus six years is decisive. If the date of manufacture on the assembly is "2020", then the hose should not be used after February 2026. For more information, see section "Date of manufacture of the hydraulic hose line", page 189.



DANGER

Observe section "Safety when working on hydraulic hose lines", page 193.

12.8.1.1 Safety when working on hydraulic hose lines

When installing or removing hydraulic hose lines, observe the following safety instructions:

- Only a specialist workshop may perform work on the hydraulic system.
- Use only genuine AMAZONE hydraulic hose lines!
- Ensure cleanliness.
- As a matter of principle, you must install the hydraulic hose lines such that, in all implement situations,
 - there is no tension, apart from the hose's own weight
 - there is no possibility of jolting on short lengths
 - external mechanical effects 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 measured such that the smallest approved bending radius is not undershot over the whole range of movement and/or the hydraulic hose line is not over-tensioned.
- Attach the hydraulic hose lines onto the specified attachment points. There, avoid hose clips, which impair the natural movement and length changes of the hoses.
- It is forbidden to paint hydraulic hose lines!



WARNING

Risk of infection caused by the high-pressure hydraulic fluid of the hydraulic system entering the body.

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

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

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

12.9 Oils and greases



Hydraulic oil

- Keep out of the reach of children
- May not enter the ground or water
- Dispose of properly.

12.9.1 Vario gearbox gear oil

Vario gearbox Total filling quantity	0.9 litres
Vario gearbox Gear oil (selectable)	Wintershall Wintal UG22 WTL-HM (ex-works)
	Fuchs Renolin MR5 VG22

Fig. 237

12.9.2 Lubricants for grease nipples and grease guns

Lubricate using a lithium-saponified multi-purpose grease with EP additives:

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

The lubrication points on the implement are marked with the symbol (Fig. 238).



Carefully clean the grease nipple and grease gun before lubrication so that no dirt is pressed into the bearings. Press the dirty grease completely into the bearings and replace it with new grease.

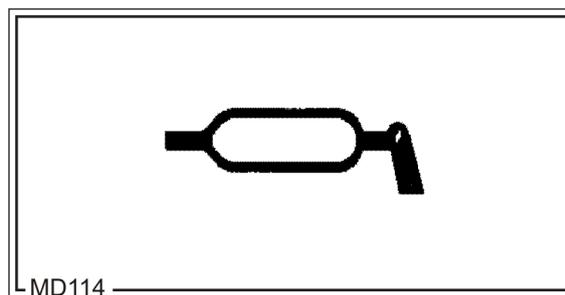


Fig. 238

12.10 Bolt tightening torques

		The tightening torques listed in this table do <u>not</u> apply for coated bolts. If coated bolts are fitted, you can find the tightening torques beside the instruction.		
M	S	Nm		
		8.8	10.9	12.9
M 8	13	25	35	41
M 8x1		27	38	41
M 10	16 (17)	49	69	83
M 10x1		52	73	88
M 12	18 (19)	86	120	145
M 12x1.5		90	125	150
M 14	22	135	190	230
M 14x1.5		150	210	250
M 16	24	210	300	355
M 16x1.5		225	315	380
M 18	27	290	405	485
M 18x1.5		325	460	550
M 20	30	410	580	690
M 20x1.5		460	640	770
M 22	32	550	780	930
M 22x1.5		610	860	1050
M 24	36	710	1000	1200
M 24x2		780	1100	1300
M 27	41	1050	1500	1800
M 27x2		1150	1600	1950
M 30	46	1450	2000	2400
M 30x2		1600	2250	2700

Tightening torques for rustproof bolts (inserted with assembly paste)

M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
Nm	2.4	4.9	8.4	20.6	40.7	70.5	112	174	242	342	470	589



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