

Operating manual

AMAZONE

Seed drills

D9 2500/3000 Special

D9 3000/3500/4000 Super



MG3814
BAH0041-5 07.20

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 can be found on the rating plate.

Type: D9

Implement ID no. (10-digit):

Year of manufacture:

Permissible total weight [kg]:

Manufacturer's address

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

Spare part orders

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

Please send orders to your AMAZONE dealer.

Formalities of the operating manual

Type: D9 Special / D9 Super

Document number: MG3814

Compilation date: 07.20

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AMAZONEN-WERKE H. DREYER SE & Co. KG.

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 indicated by an arrow where applicable. 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 implement is obliged

- to comply with the basic workplace safety instructions and accident prevention regulations.
- to read and understand the "General safety information" section of this operating manual.
- to read the 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 a direct threat at high risk which will result in death or most serious bodily harm (loss of limbs or long-term harm), should it not be prevented.

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



WARNING

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

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



CAUTION

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



IMPORTANT

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

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



NOTE

Indicates handling tips and particularly useful information.

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

2.3 Organisational measures

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

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



The operation manual

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

Check all the available safety equipment regularly.

2.4 Safety and protective equipment

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

Faulty safety equipment

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

2.5 Informal safety measures

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

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

2.6 User training

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

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

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

Legend: X..permitted —..not permitted

- 1) A person who can assume a specific task and who can carry out this task for an appropriately qualified company.
- 2) Instructed persons are those who have been instructed in their assigned tasks and in the possible risks in the case of improper behaviour, have been trained if necessary, and have been informed about the necessary protective equipment and measures.
- 3) 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 gear when carrying out replacement work.

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

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

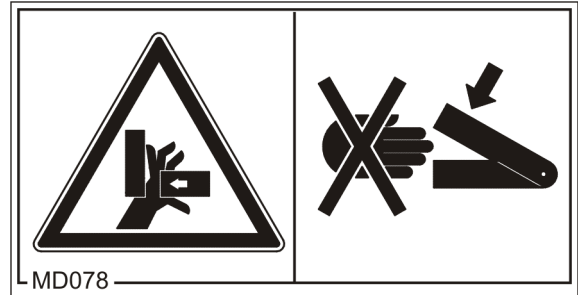
1. The dangers, e.g.:
Laceration or amputation hazard.
2. The consequence of non-compliance with the risk avoidance instructions, e.g.:
This danger can cause serious injuries to fingers or hands.
3. Instructions for avoiding the risk, e.g.:
Touch machinery parts only when they have come to a complete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

MD 078

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

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

Never reach into the 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.



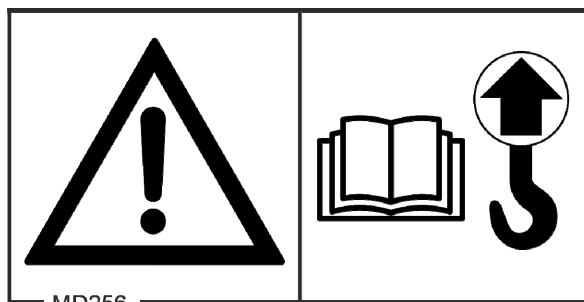
General safety instructions

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.

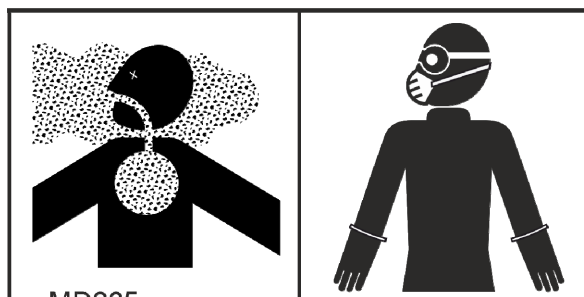


MD256

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.

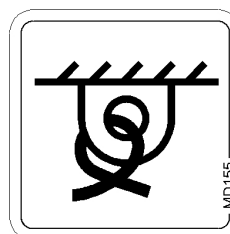


MD265

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.



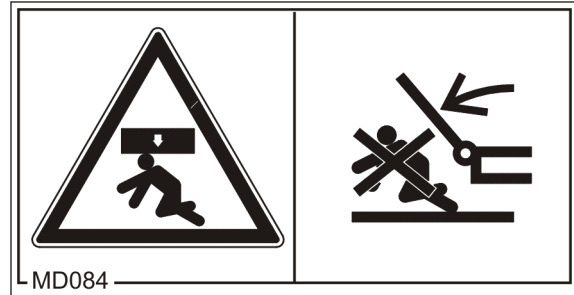
MD155

MD 084

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

Causes serious, potentially fatal injuries anywhere on the body.

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

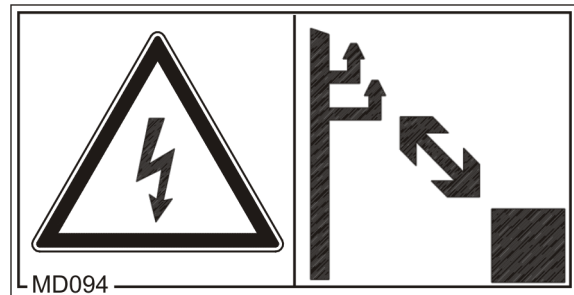


MD 094

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

These dangers can cause extremely serious and potentially fatal injuries.

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



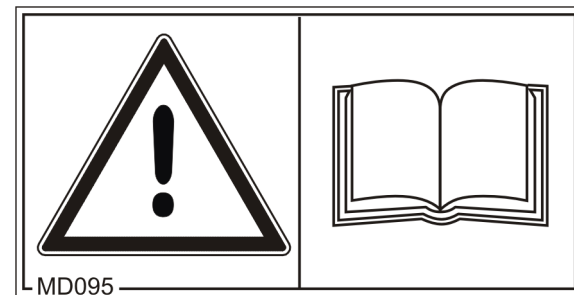
Rated voltage

Safety distance from transmission lines

up to 1 kV	1 m
over 1 up to 110 kV	3 m
over 110 up to 220 kV	4 m
over 220 up to 380 kV	5 m

MD 095

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

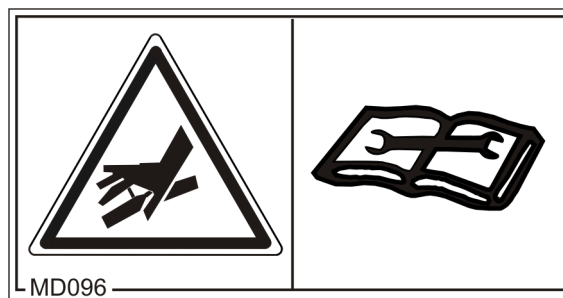


MD 096

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

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

- Never attempt to plug leaks in hydraulic hose lines 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.

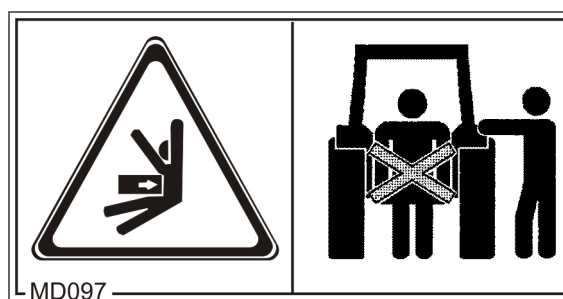


MD 097

Risk of crushing the entire body when standing in the lifting area of the 3-point hitch when the 3-point hydraulic system is being operated!

Causes serious, potentially fatal injuries anywhere on the body.

- It is forbidden to stand in the lifting area of the 3-point hitch when actuating the 3-point hydraulic system.
- Actuate the operator controls for the tractor's three-point hydraulic system:
 - only from the designated workstation.
 - under no circumstances if you are in the lifting area between the tractor and implement.



MD 102

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



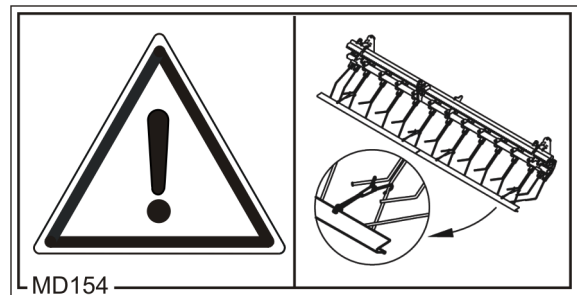
MD 154

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.

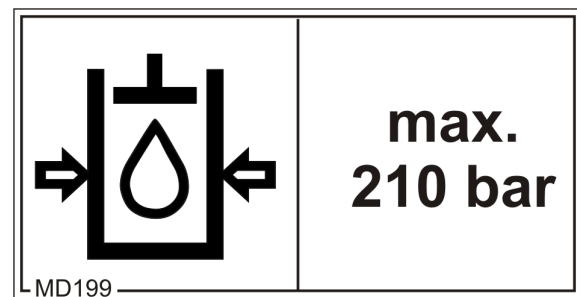
Transportation without a correctly fitted road safety bar is forbidden.

Install the road safety bar provided before starting transportation.



MD 199

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



2.13.1 Position of warning symbols

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

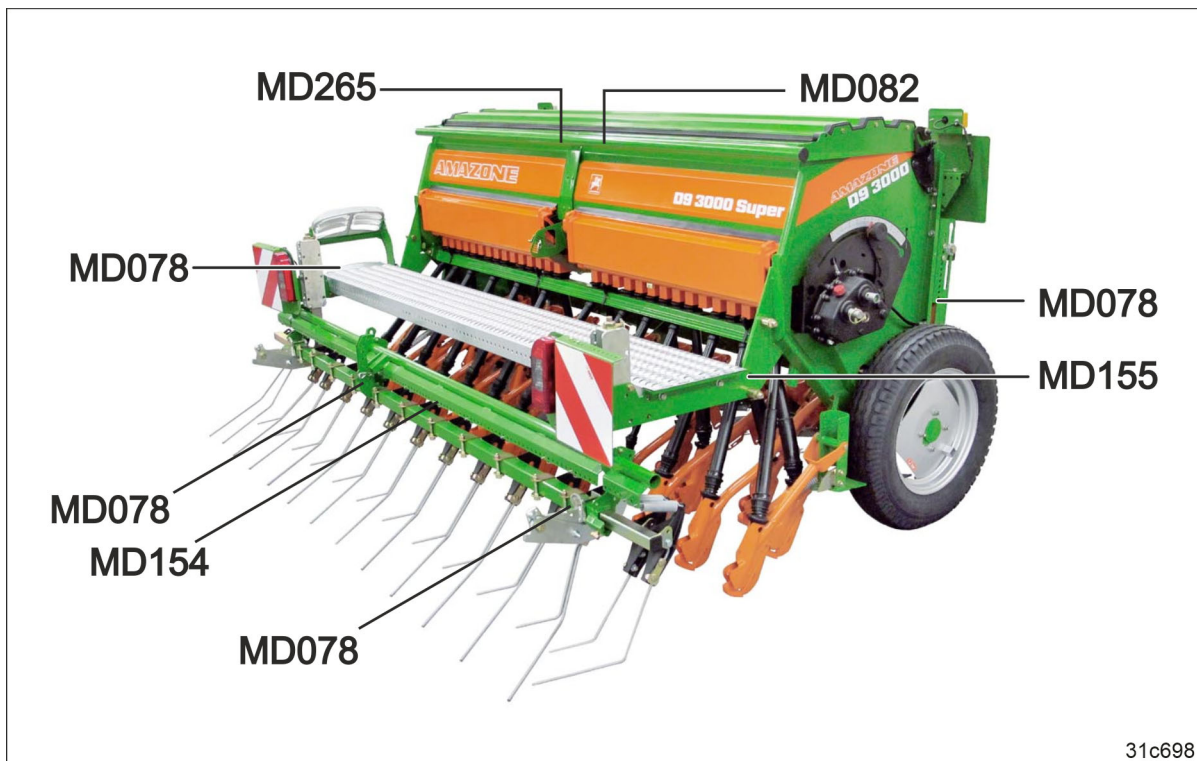


Fig. 1

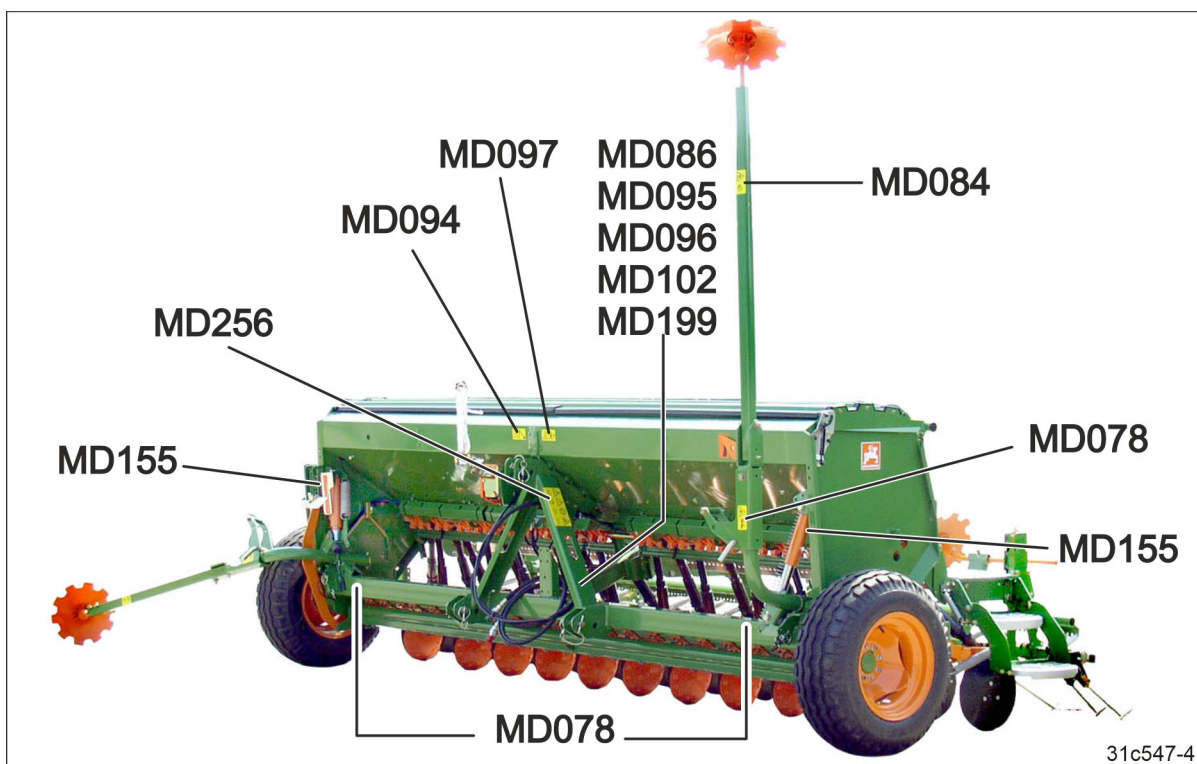


Fig. 2

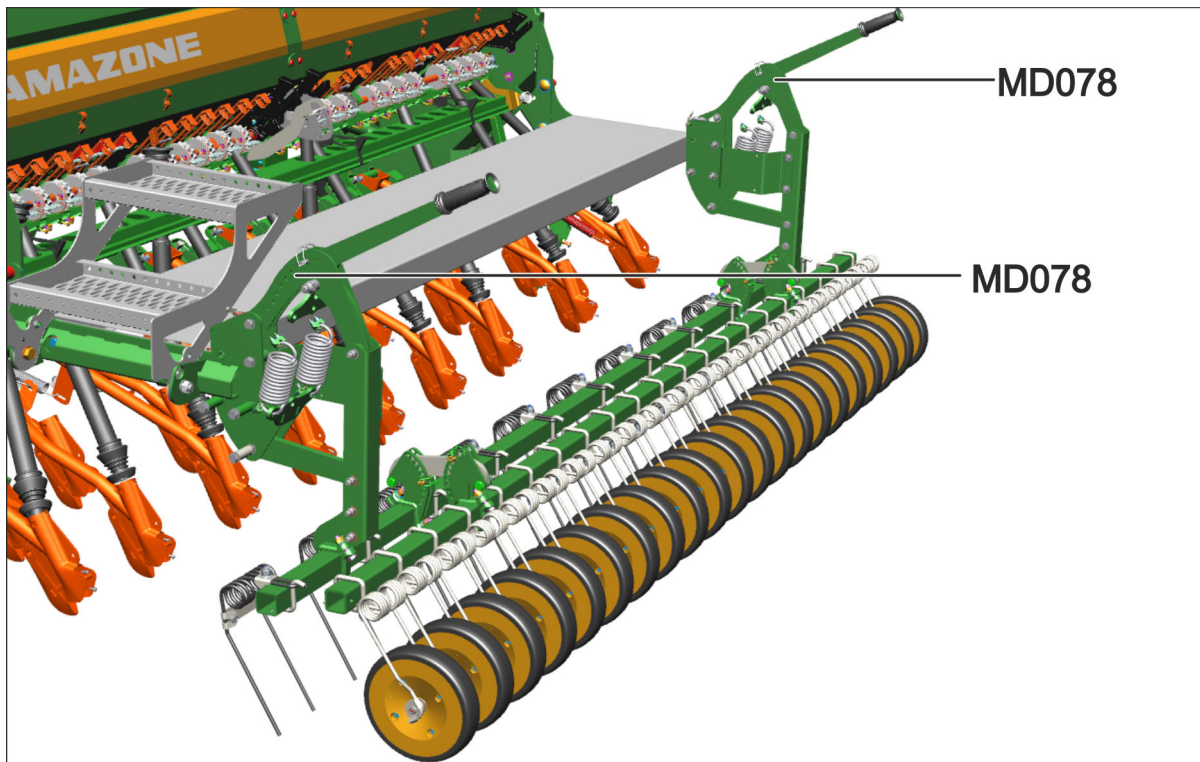


Fig. 3

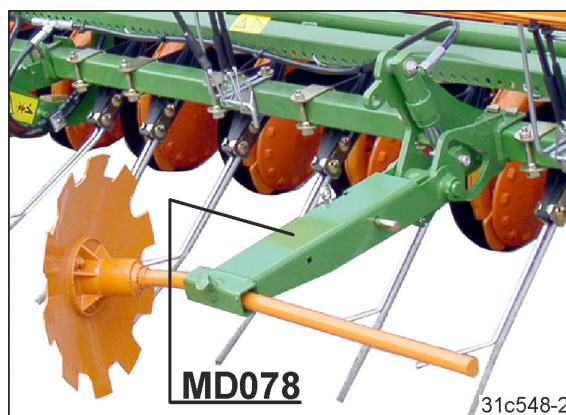


Fig. 4

2.14 Dangers in case of non-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 lead to the loss of all warranty claims.

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

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

2.15 Safety-conscious working

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

Comply with the 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 tractor or 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 radar pulses.

2.16.1 General safety instructions and accident prevention instructions

- In addition to these instructions, also comply with the generally valid national and safety and accident prevention regulations.
- The warning 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 implement. In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected or coupled implement.

Coupling and uncoupling the implement

- Only connect and transport the implement with tractors suitable for the task.
- When coupling implements to the tractor's 3-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.

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:
 - Lower the implement onto the ground.
 - Apply the tractor parking brake.
 - Switch off the tractor engine.
 - Remove the ignition spanner.



Implement transportation

- When using public roads, national road traffic regulations must be observed.
- 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 lynch 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 3-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 3-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.

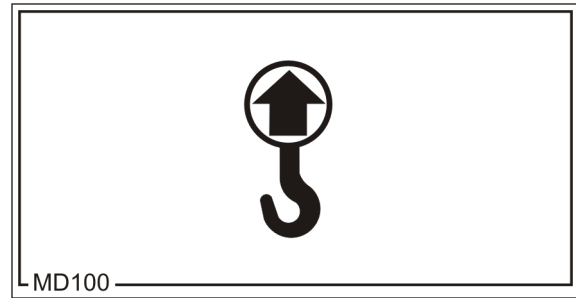


Fig. 5



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 box lid open.

Hang the crane hook in one of the two slots (Fig. 6/1) depending on the equipment and centre of gravity of the seed drill.

The seed box must not be filled.

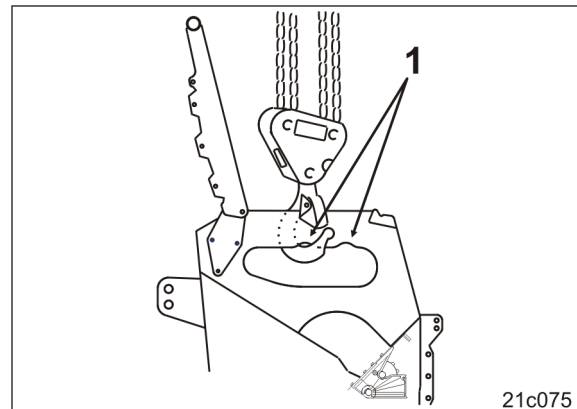


Fig. 6



DANGER

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

Only transport the D9 4000 Super seed drill with the track markers tilted to the side, (see section "Moving the track marker to the working/transport position", page 134).

4 Product description

4.1 Assembly groups of the D9 seed drill

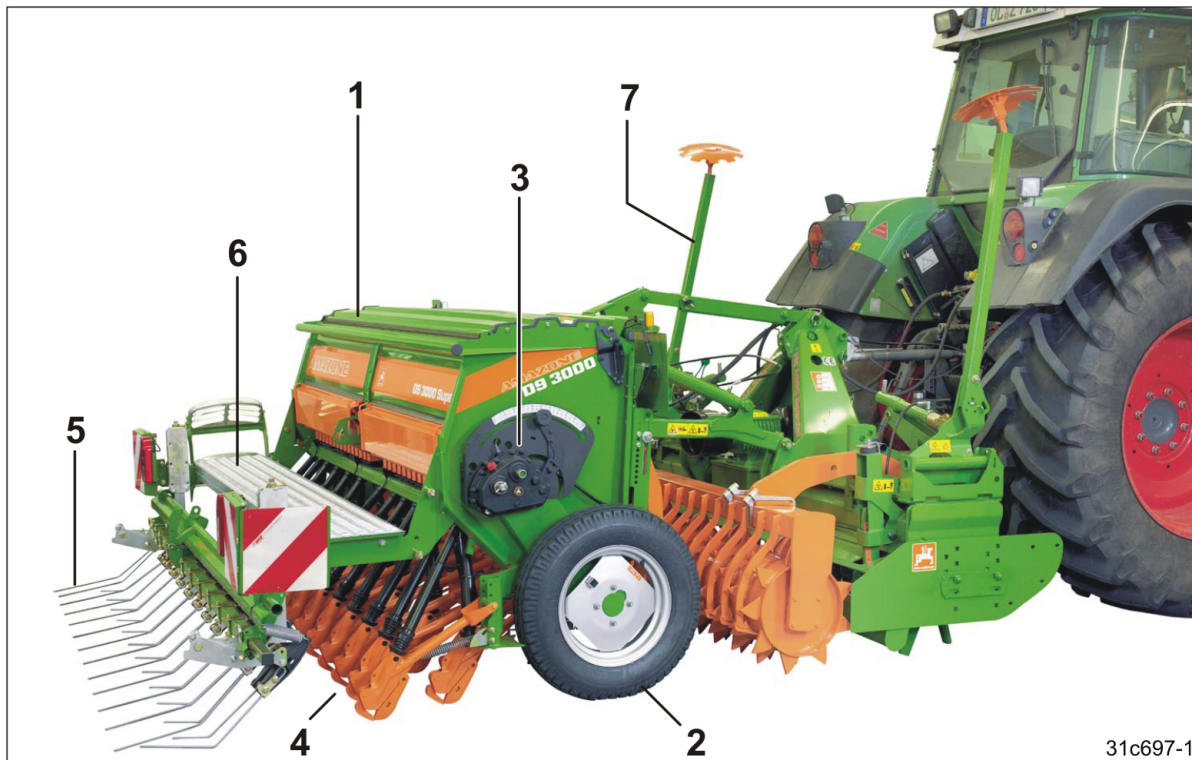


Fig. 7

- | | |
|--|--|
| (1) Seed box | (4) WS coulter,
optionally RoTeC Control coulter |
| (2) Running gear,
for working on the field | (5) Exact following harrow,
optionally roller harrow or drag tine harrow |
| (3) Vario gearbox
with gearbox lever
to set the quantity of seed | (6) Loading board |
| | (7) Track markers, optionally mounted on the
seed drill or soil tillage implement |

Fig. 8

- (1) Drag tine harrow

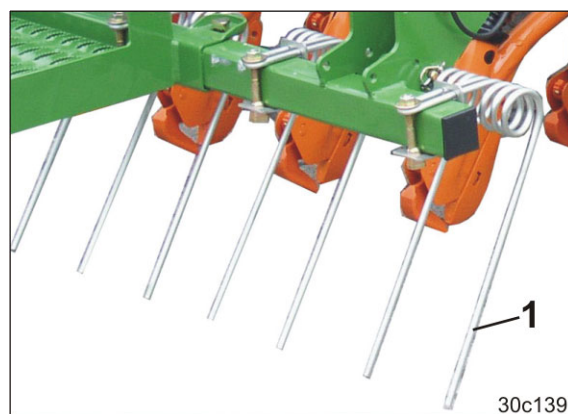
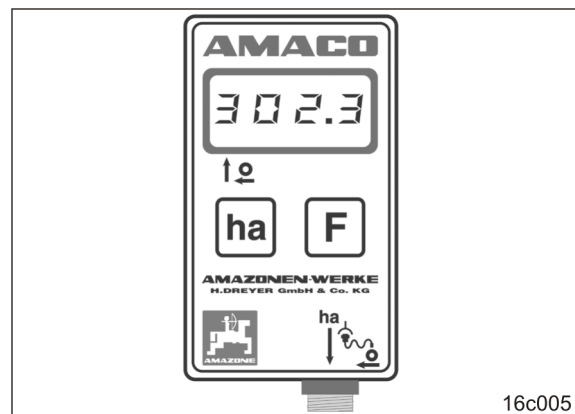


Fig. 8

Fig. 9
AMACO electr. hectare counter



16c005

Fig. 9

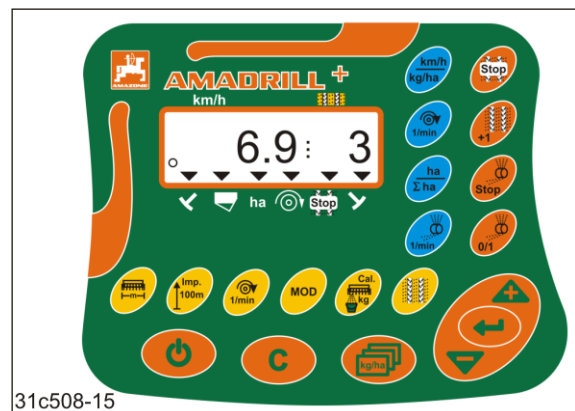
Fig. 10
Control terminal AMALOG+



28c190-13

Fig. 10

Fig. 11
AMADRILL+ control terminal



31c508-15

Fig. 11

Fig. 12
AMATRON 3 control terminal



32c835

Fig. 12

Product description

Fig. 13

- (1) Three-point hitch
- (2) Track marker shuttle valve



Fig. 13

Fig. 14

- (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

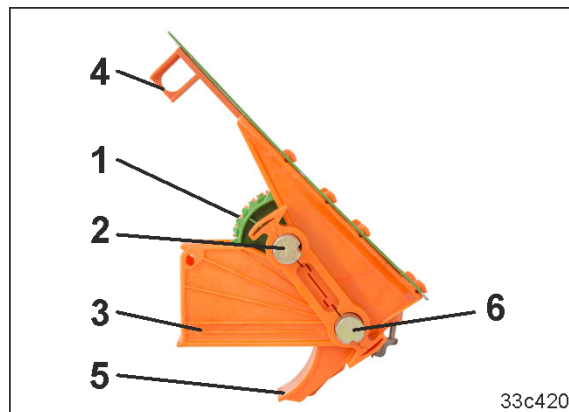


Fig. 14

Fig. 15

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

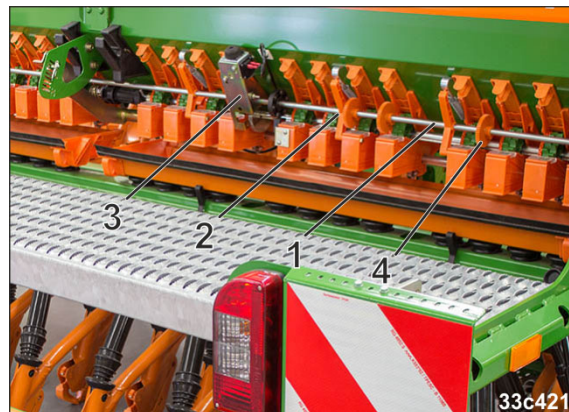


Fig. 15

Fig. 16

- (1) Crank
 - o for calibrating
 - o for adjusting the coulter pressure
 - o Exact harrow pressure adjustment



Fig. 16

Fig. 17

(1) Agitator shaft

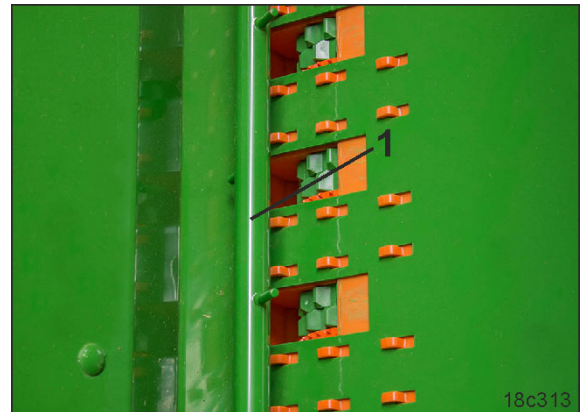


Fig. 17

Fig. 18

(1) Rapeseed insert

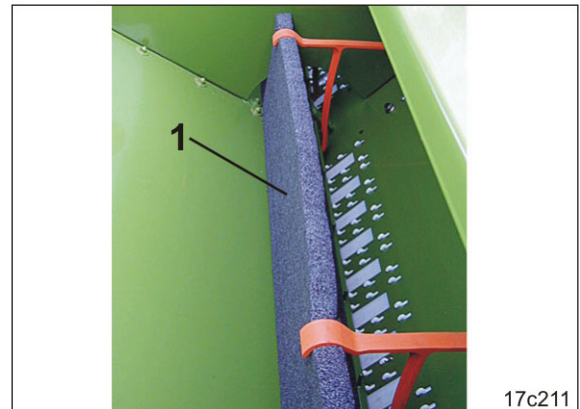


Fig. 18

Fig. 19

(1) Seed drill wheel mark eradicator



Fig. 19

Fig. 20

(1) RoTeC Control coulter

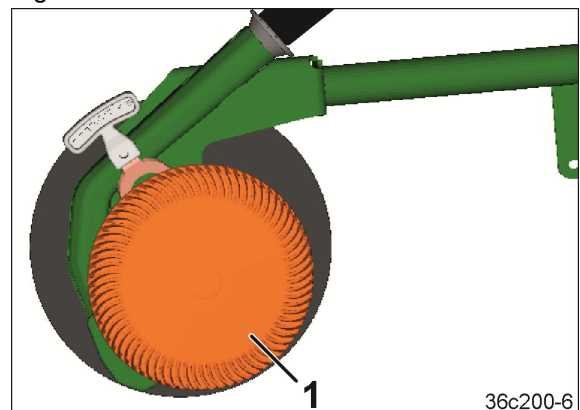


Fig. 20

Product description

Fig. 21

WS coulter



Fig. 21

Fig. 22

1. Band sowing shoe II for WS coulter

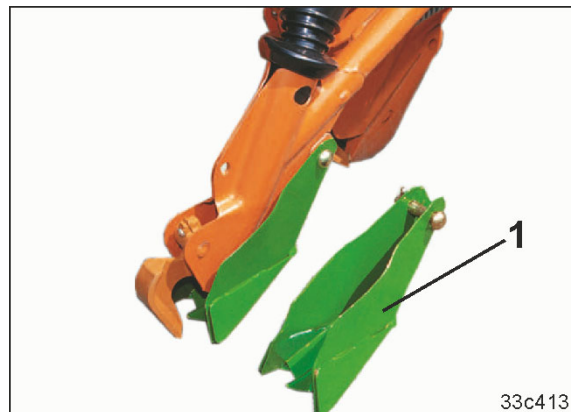


Fig. 22

Fig. 23

Tractor wheel mark eradicator, swivelling

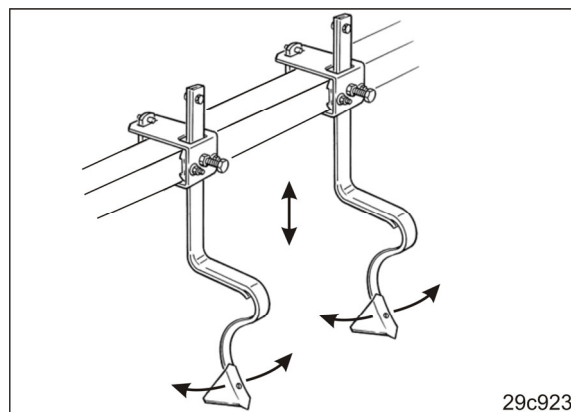


Fig. 23

Fig. 24

Tractor wheel mark eradicator, reinforced

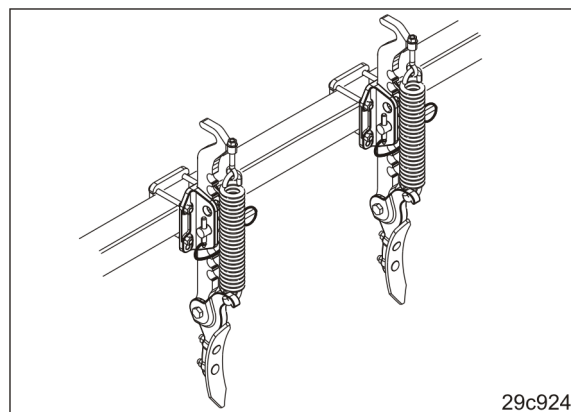


Fig. 24

Fig. 25

- (1) Fill level indicator, mechanical.
Also available in a digital version for implements with control terminal
- (2) Control box
for implements without job computer
to actuate the tramline seed metering
wheels and the tramline marker

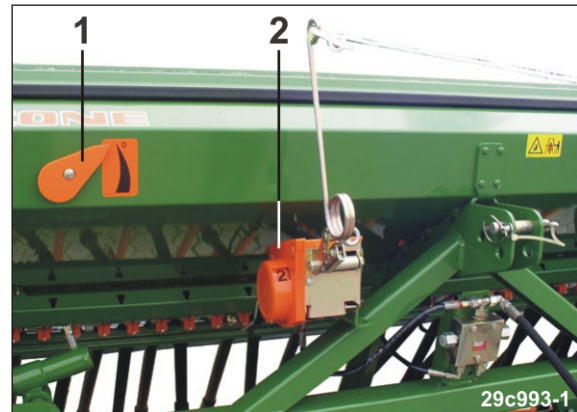


Fig. 25

Fig. 26

Tramline marker

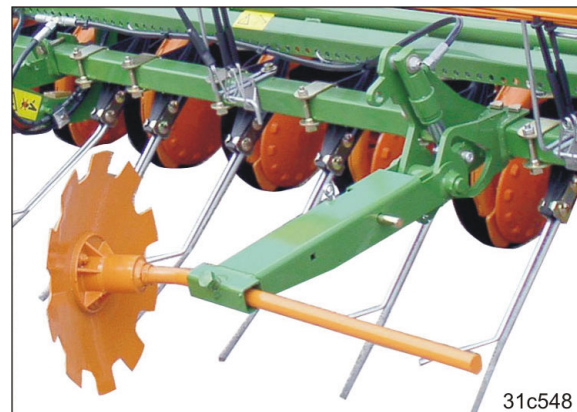


Fig. 26

Fig. 27

Track marker, hydr. actuated.
Can optionally be attached to the seed drill
or the soil tillage implement



Fig. 27

Fig. 28

- (1) Marker changeover,
hydraulic actuation of the track marker via
cable pull



Fig. 28

4.2 Safety and protective equipment

Fig. 29

- (1) Handrail



Fig. 29

Fig. 30

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

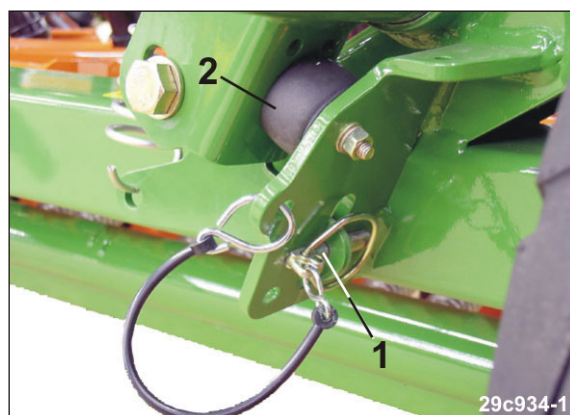


Fig. 30

Fig. 31

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

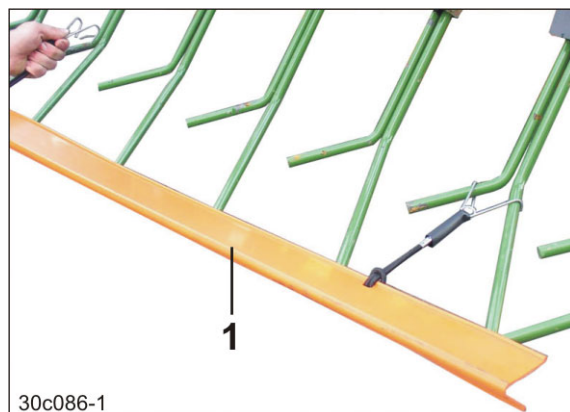


Fig. 31

4.3 Overview – Supply cable / hydraulic hose lines

4.3.1 Supply cable

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

4.3.2 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.

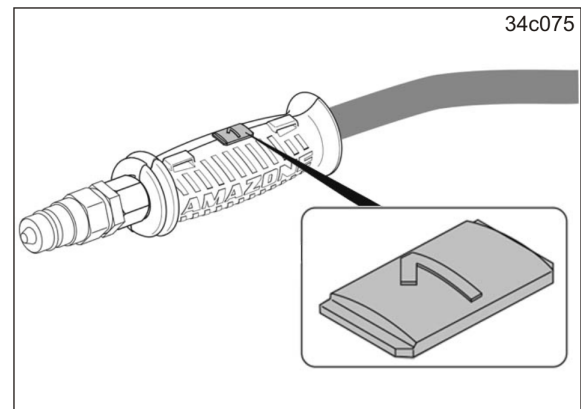


Fig. 32

4.3.2.1 Type of actuation of the tractor control units

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.

4.3.3 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 / marker changeover Lifting and lowering, alternating Control box Display for advancing the tramline counter Actuating the sections for lay shaft coupling Tramline marker Lifting and lowering, depending on the tramline counter
blue		Single acting	 	Coulter pressure increase Seed rate increase Exact following harrow pressure increase



Instructions for connecting the hydraulic hose lines

- During work the yellow tractor control unit is actuated more frequently than any other control unit. Assign the connections of the yellow control unit to an easily accessible control unit in the tractor cab.
- In combination with a soil tillage implement, hose extensions are required.

4.4 Transportation equipment

Fig. 33

only implements with exact following harrow:

- (1) Road safety bar, two-part



Fig. 33

Fig. 34

- (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)

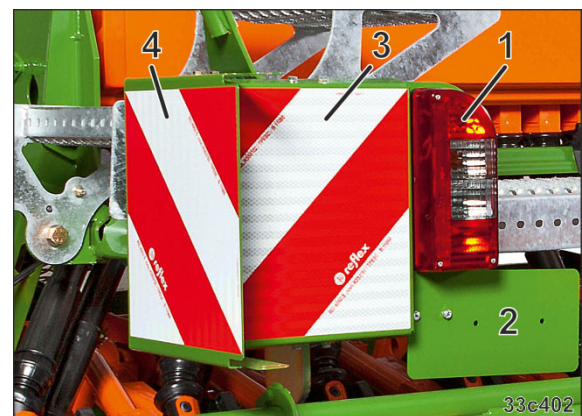


Fig. 34

Fig. 35

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

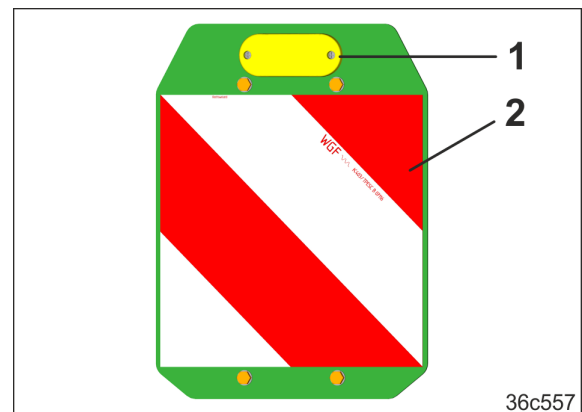


Fig. 35

4.5 Intended use

The implement

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

Slopes can be travelled

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

Intended use also 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 the sole responsibility.
- AMAZONEN-WERKE accepts no liability.

4.6 Danger areas and danger points

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

- 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.

4.7 Rating plate

The figure shows the arrangement of the rating plate.



Fig. 36

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. 37

4.8 Technical Data D9 Special

Seed drill			D9 2500 Special	D9 3000 Special
Working width	[m]		2.50	3.00
Transport width with standard tyres ¹⁾	[m]		2.50	3.00
Tyres, standard			180/90 - 16	180/90 - 16
Filling height without loading board	without extension	[m]	1.25	1.25
	with extension	[m]	-	1.56
Permissible total weight	[kg]		see rating plate	see rating plate
Content of seed box	without extension	[l]	360	450
	with extension	[l]	-	850
WS coulters	No. of rows		15/21	18/25
	Row spacing	[cm]	12.0/16.6	12.0/16.6
RoTeC Control coulters	No. of rows		15/17/21	18/21/25
	Row spacing	[cm]	12.0/14.7/16.6	12.0/14.3/16.6
	Seeding disc diameter	[mm]	Ø 320	Ø 320
	Coulter pressure	[kg]	max. 30	max. 30
Working speed	[km/h]		6 to 10	6 to 10
Area efficiency	[ha/h]		approx. 2.0	approx. 2.5
Power requirement (from)	[kW/bhp]		44/60	44/60
min. oil flow rate	[l/min]		10	10
max. working pressure (hydraulic)	[bar]		200	200
Electrical system	[V]		12 (7-pin)	12 (7-pin)
Hydraulic system			Hydraulic fluid HLP 68 DIN 51524-2 ISO 68	Hydraulic fluid HLP 68 DIN 51524-2 ISO 68
Category of the coupling points	Cat.		II	II
Track width	[m]		2.30	2.80

¹⁾ For the D9 Special seed drill, changing the tyres to a different type of tyres is not permitted.

4.9 Technical Data D9 Super

Seed drill			D9 3000 Super	D9 3500 Super	D9 4000 Super
Working width	[m]		3.00	3.50	4.00
Transport width with standard tyres ¹⁾	[m]		3.00	3.50	4.25
Tyres, standard			180/90 – 16	180/90 – 16	10.0/75-15
Filling height without loading board	without extension	[m]	1.35	1.35	1.35
	with extension	[m]	1.65	1.65	1.65
Permissible total weight		[kg]	see rating plate	see rating plate	see rating plate
Content of seed box	without extension	[l]	600	720	830
	with extension	[l]	1000	1200	1380
WS coulters	No. of rows		18/25/30	21/29	24/33
	Row spacing	[cm]	12.0/16.6/10	12.0/16.6	12.0/16.6
RoTeC Control coulters	No. of rows		18/21/25	21/25/29	24/29/33
	Row spacing	[cm]	12.0/14.3/16.6	12.0/14.0/16.6	12.0/13.7/16.6
	Seeding disc diameter	[mm]	Ø 320	Ø 320	Ø 320
	Coulter pressure	[kg]	max. 30	max. 30	max. 30
Working speed		[km/h]	6 to 10	6 to 10	6 to 10
Area efficiency		[ha/h]	approx. 2.5	approx. 3.0	approx. 3.5
Power requirement (from)		[kW/bhp]	44/60	55/75	55/75
min. oil flow rate		[l/min]	10	10	10
max. working pressure (hydraulic)		[bar]	200	200	200
Electrical system		[V]	12 (7-pin)	12 (7-pin)	12 (7-pin)
Hydraulic system			Hydraulic fluid HLP 68 DIN 51524-2 ISO 68	Hydraulic fluid HLP 68 DIN 51524-2 ISO 68	Hydraulic fluid HLP 68 DIN 51524-2 ISO 68
Category of the coupling points		Cat.	II	II	II
Track width		[m]	2.80	3.30	3.90

¹⁾ The permitted transport width is exceeded when the standard tyres are converted to 10.0/75-15 or 31x15.50 – 15 tyres (MITAS).

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

Data for calculation (see page 100):	Total weight G_H	Distance d
D9 2500 Special¹⁾, mounted on the tractor		
with a full seed box (without seed box attachment)	1000 kg	565 mm
D9 3000 Special¹⁾, mounted on the tractor		
with a full seed box (without seed box attachment)	1110 kg	565 mm
with a full seed box (with a seed box attachment)	1430 kg	565 mm
D9 3000 Super¹⁾, mounted on the tractor		
with a full seed box (without seed box attachment)	1380 kg	565 mm
with a full seed box (with a seed box attachment)	1700 kg	565 mm
D9 3500 Super¹⁾, mounted on the tractor		
with a full seed box (without seed box attachment)	1570 kg	565 mm
with a full seed box (with a seed box attachment)	1950 kg	565 mm
D9 4000 Super¹⁾, mounted on the tractor		
with a full seed box (without seed box attachment)	1860 kg	565 mm
with a full seed box (with a seed box attachment)	2300 kg	565 mm

¹⁾ Seed drill with RoTeC Control coulters (row spacing 12.0 cm) with mechanical coulter pressure adjustment, exact following harrow, loading board, track marker and tramline control.

4.9.2 Tyre equipment and inflation pressure

	Tyres		
	180/90 – 16 old name: 6.00-16	10.0/75-15	31x15.50 - 15 - MITAS -
	Tyre inflation pressure		
D9 2500 Special	1.2 bar	—	—
D9 3000 Special	1.2 bar	—	—
D9 3000 Super	1.2 bar	1.2 bar	0.8 bar
D9 4000 Super	—	1.2 bar	0.8 bar

4.10 Tyre tightening torque

Tyres	Self-locking hex. nut	Tightening torque
180/90 – 16	M12 Strength class 10 DIN 6927	90 Nm
10.0/75-15		
31x15.50 – 15 (MITAS)		



When changing the tyres, please note:

- always use new self-locking hex. nuts for each tyre change
- the permitted transport width is exceeded when converting the 180/90 – 16 tyres to 10.0/75-15 or 31x15.50 – 15 tyres (MITAS). For D9 Special seed drills, changing the tyres to a different type of tyres is not permitted.

4.11 Required tractor equipment

		Minimum tractor conditions for proper operation of the solo implement
Power requirement	D9 2500 Special	above 40 kW
	D9 3000 Special	above 45 kW
	D9 3000/3500 Super	above 55 kW
	D9 4000 Super	above 70 kW
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 43
	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"

5 Layout and function

This section provides information on the implement layout and the functions of the individual components.

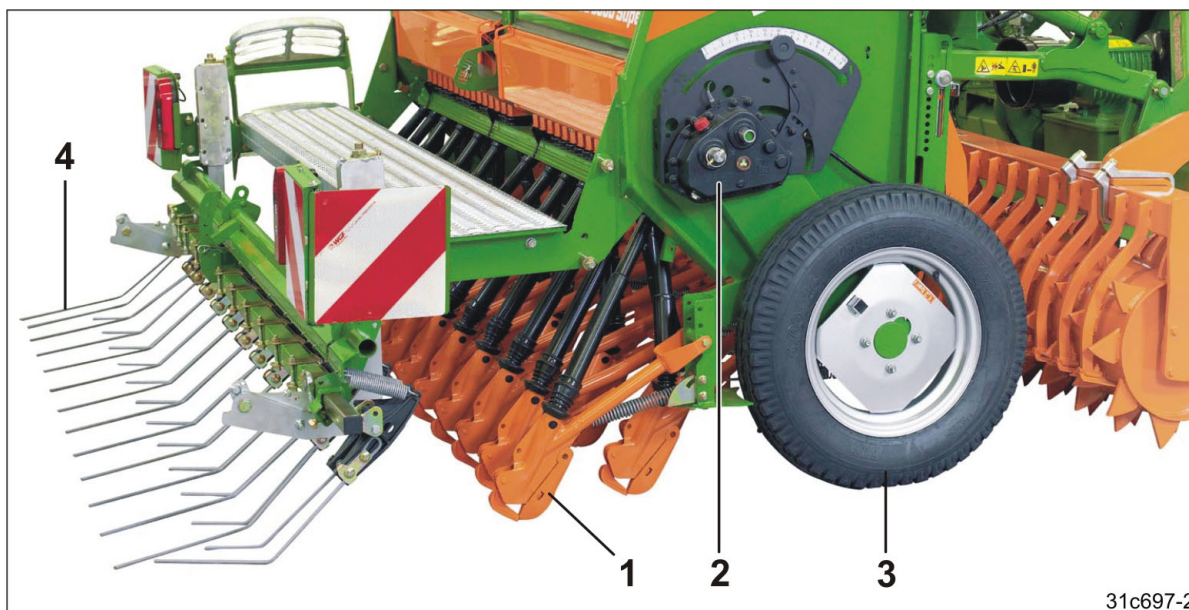


Fig. 38

The D9 seed drill enables exact seed metering, precise seed placement, uniform placement depth and coverage of the seed, and a track-free, well-structured field after tilling.

The seed drill is used alone or in combination with a soil tillage implement for plough seeding or mulch seeding.

The seed is carried in the seed box. Normal and fine seed metering wheels or the bean seed metering wheel are available for metering the seed.

The seed metered by the seed metering wheels in the seed housings falls into the seed furrow created by the coulter (Fig. 38/1). The seed metering wheels are driven via the Vario gearbox (Fig. 38/2) by the seed drill wheel (Fig. 38/3).

The WS coulter should be used on soil that is well prepared with little seed residue on the surface.

The RoTeC Control coulters also work on mulched fields with straw and other plant residues on the surface. 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 seed is covered with loose soil by the exact following harrow (Fig. 38/4). As an option, the implement can be fitted with a roller harrow or a drag tine harrow.

Track markers mark the next bout at the centre of the tractor. They are either attached to the seed drill or to the soil tillage implement.

5.1 Combination options

The AMAZONE seed drill D9 can be used

- as a solo implement or
- as part of a cultivation combination with a soil tillage implement
 - AMAZONE rotary cultivator or
 - AMAZONE rotary harrow
 and wedge ring roller, tooth packer roller or cage roller.

The seed drill is attached to the soil tillage implement as part of a cultivation combination. The mounting instructions can be found in the "Soil tillage implement" operating manual.

If the lifting force of the tractor is not strong enough to lift the combination of soil tillage implement, roller and mounted seed drill, the required force can be significantly reduced by using the lift frame.



Fig. 39



Fig. 40



Fig. 41

5.2 AMAZONE AMACO hectare counter

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

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

The description can be found in the "AMACO hectare counter" operating manual.

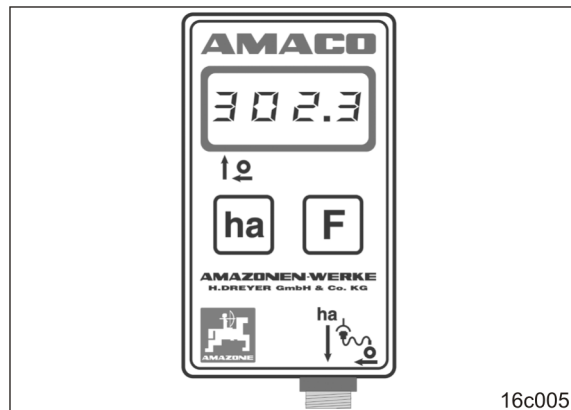


Fig. 42

5.3 AMAZONE AmaLog+ control terminal

The implement can be 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. 43

5.4 AMAZONE AmaDrill+ control terminal

The implement can be equipped with the AmaDrill+ control terminal.

The AmaDrill+ 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 "AmaDrill+" operating manual.

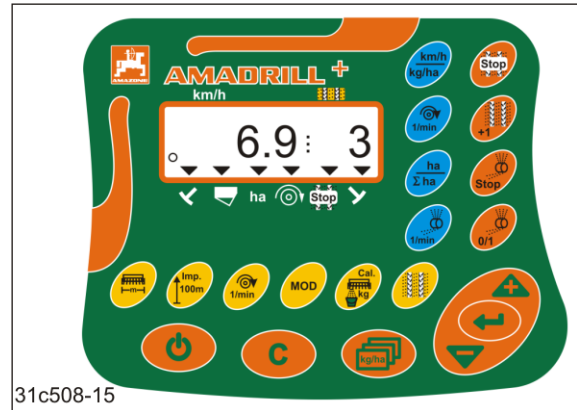


Fig. 44

5.5 AMATRON 3 control terminal

The implement can be equipped with the AmaTron 3 AMAZONE control terminal with job computer.

Instructions for operating

- the AMAZONE job computer can be found in the "AMABUS software" operating manual
- the control terminal can be found in the "AmaTron 3" operating manual.



Fig. 45

5.6 Implement documentation

The implement documentation and the operating manual can be found in the case (Fig. 46/1) under the seed box. Keep all operating manuals or a copy in the case on your implement to avoid operating errors.

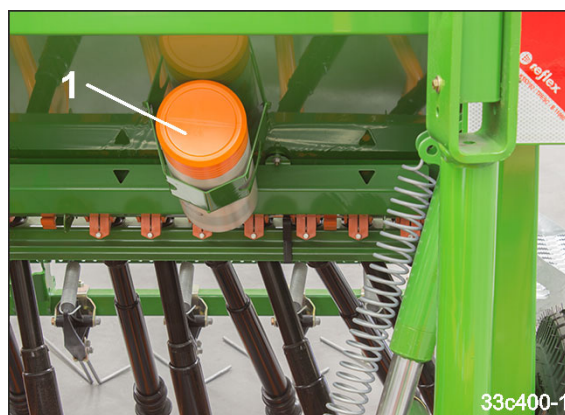


Fig. 46

5.7 Seed box and loading board

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

Manual filling of the seed box is performed from the loading board at the rear of the seed drill.

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



Fig. 47

5.8 Fill level indicator

When the seed box lid is closed, the fill level indicator (Fig. 48/1) shows the filling level in the seed box.



Fig. 48

5.9 Fill level monitoring

A low level sensor (Fig. 49/1) monitors the seed level in the seed box.

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 box is empty.

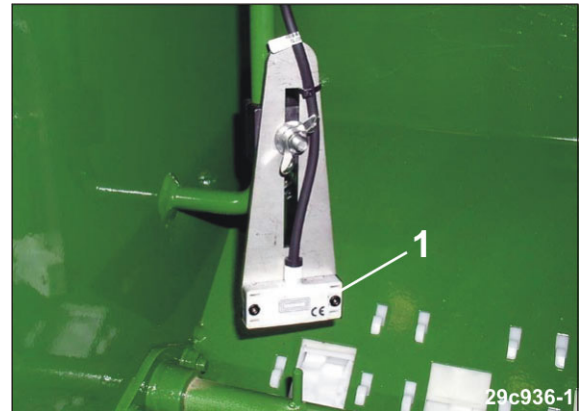


Fig. 49

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.

5.10 Rapeseed insert

The rapeseed insert (Fig. 50/1) reduces the holding capacity of the seed box.

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

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

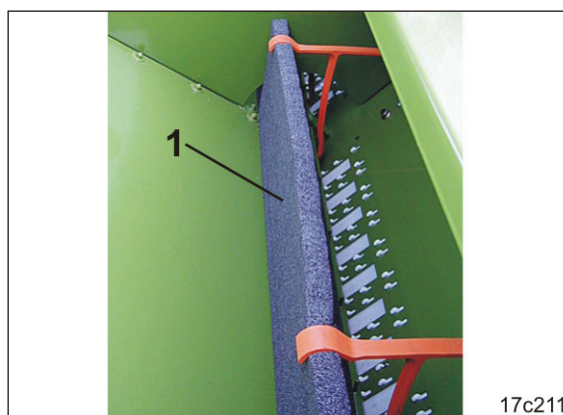


Fig. 50

5.11 Seed box partition

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

The partition (Fig. 51/1) prevents the seed from sliding around in the seed box.



Fig. 51

5.12 Seeding shaft drive

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

The right seed drill wheel drives the seeding shaft via the Vario gearbox.

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



Fig. 52

The gearbox lever (Fig. 53/1) 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. 53/2),

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

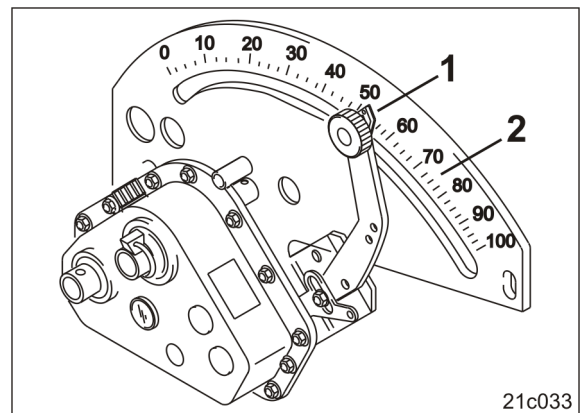


Fig. 53

5.12.1 Setting the seed rate hydraulically

The gearbox lever is used to set the seeding rate.

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

The increased seeding rate is set on the control element (Fig. 54/1) before starting work.

The seed rate can be increased during operation when changing to heavy soil, thus adapting it to the soil.

The seed rate remote control is connected to the tractor control unit (blue) together with the coulter pressure adjustment and the exact harrow adjustment. Increasing the seeding rate automatically increases the coulter pressure and the exact following harrow pressure increases.

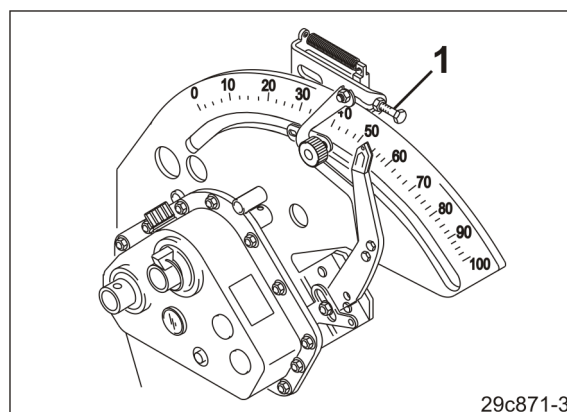


Fig. 54

5.12.2 Seed rate, electronic regulation

An electric motor (Fig. 55/1) adjusts the gearbox lever (Fig. 55/2).

The scale position of the gearbox lever is shown on the AMADRILL+/AMATRON 3 control terminal.

When calibrating the seed type, the job computer calculates the required gearbox setting for the desired seed rate. The electric motor adjusts the gearbox lever to the required scale value.

The seed rate can be adapted to the soil during operation when changing to light or heavy soil.

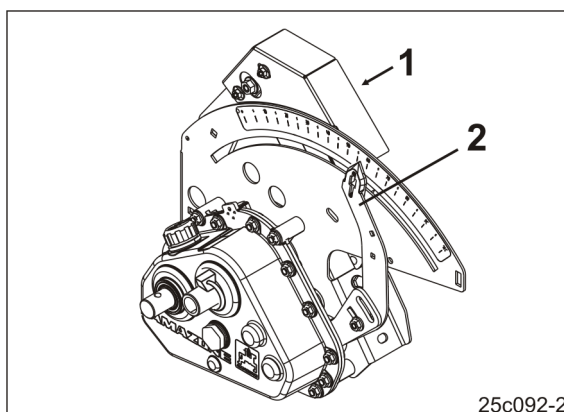


Fig. 55

5.13 Metering

The seed is carried in the seed box. The seed goes into the seed housing through adjustable openings (Fig. 56/1). 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. 56/2) 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 metering wheel conveys the seed to the edge of the bottom flap (Fig. 56/3). The metered seed travels through the seed tube to the seeding coulter.

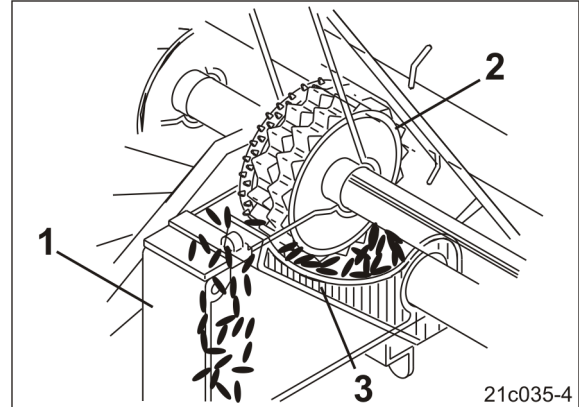


Fig. 56

Before beginning seeding,

- the following values, depending on the seed type, must be taken from the Table "Setting values" (page 64) and set:
 - Normal seed metering wheel, fine seed metering wheel or bean metering wheel
 - Sliding shutter position
 - Bottom flap position
 - Agitator shaft support.
- perform a calibration test.

If the seed is not listed in the "Setting values" table (page 64), take the setting values for a seed with a similar shape and size.

5.13.1 Setting values

Seed	Metering wheel	Sliding shutter position	Bottom flap position		Agitator shaft support
			less than	greater than	
			6 g (rapeseed) 50 g (cereals)		
Rye	Normal	open	1	2	Yes
Triticale	Normal	$\frac{3}{4}$ open	1	2	Yes
Barley	Normal	open	1	2	Yes
Wheat	Normal	$\frac{3}{4}$ open	1	2	Yes
Spelt	Normal	open	2		Yes
Oats	Normal	open	2		Yes
Rapeseed	Fine	$\frac{3}{4}$ open	1	2	No
Caraway	Fine	$\frac{3}{4}$ open	1		No
Mustard/Fodder radish	Fine	$\frac{3}{4}$ open	1		No
Phacelia	Normal	$\frac{3}{4}$ open	1		Yes
Phacelia	Fine	$\frac{3}{4}$ open	1		Yes
Turnips	Fine	$\frac{3}{4}$ open	1		No
Gras	Normal	open	2		Yes
Beans, small (TGW less than 400 g)	Normal	$\frac{3}{4}$ open	4		Yes
Beans, large (TGW up to 600 g)	Beans	$\frac{3}{4}$ open	3		Yes
Beans, large (TGW over 600 g)	Beans	$\frac{3}{4}$ open	4		Yes
Peas ¹⁾ (TGW up to 440g)	Normal	$\frac{3}{4}$ open	4		Yes
Peas ¹⁾ (TGW more than 440g)	Beans	$\frac{3}{4}$ 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 to bridge in the seed box.

In exceptional cases, certain peas with dressing and unfavourable shape do not fall into the seed tube, but rather wander back into the seed box. This can be remedied by installing the fine seed metering wheel brushes on all seed housings (see section "Fine seed metering wheel brushes", page 66).

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
Alfalfa	Normal	$\frac{3}{4}$ open	1	Yes
Alfalfa	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

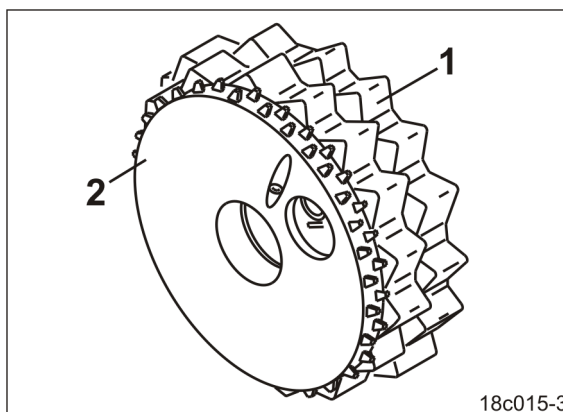
5.13.2 Normal and fine seed metering wheel

The seed metering wheel consists of

- Normal seed metering wheel (Fig. 57/1)
- and
- Fine seed metering wheel (Fig. 57/2).

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.



18c015-3

Fig. 57

5.13.3 Fine seed metering wheel brushes

The fine seed metering wheel brushes (Fig. 58/1) serve to clean the fine seed metering wheels.

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



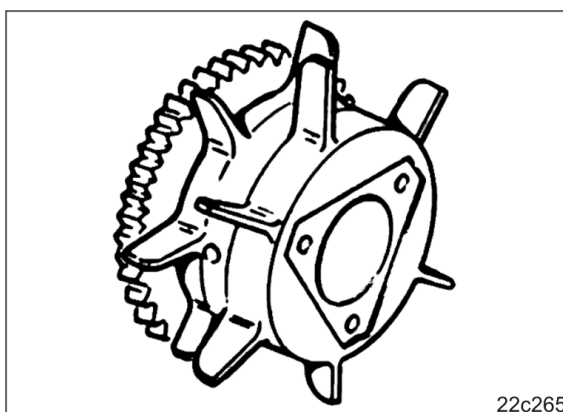
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Fig. 58

5.13.4 Bean seed metering wheel

As an option, large beans can be metered in the metering housings by bean seed metering wheels (Fig. 59).

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.



22c265

Fig. 59

5.13.5 Slide gate

The shutter slides (Fig. 60) are used to adjust the opening between the seed box and the metering housing depending on the seed.

The sliding shutters (Fig. 60) latch into one of three positions:

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

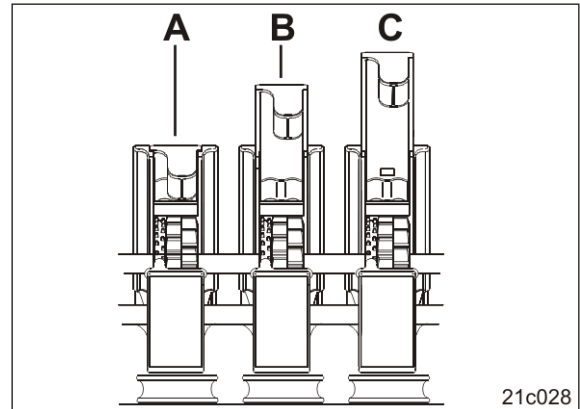


Fig. 60

5.13.6 bottom flaps

The gap between the seed metering wheel and the bottom flap (Fig. 61/1) depends on the size of the seed.

The bottom flap lever (Fig. 61/2) is used to make adjustments.

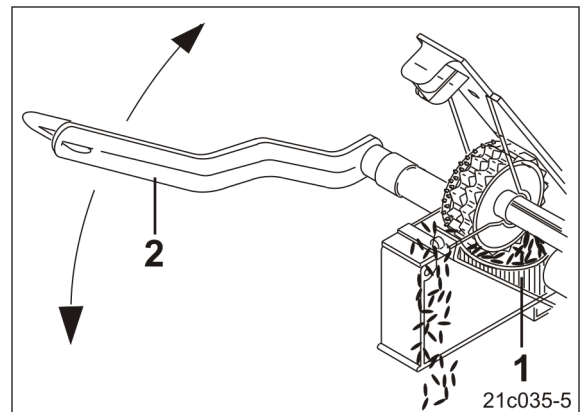


Fig. 61

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.

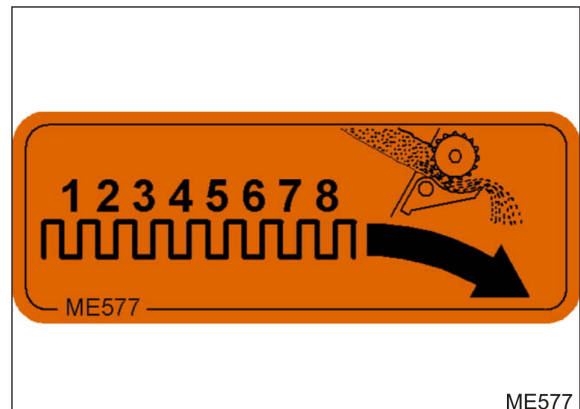


Fig. 62

5.13.7 Agitator shaft support

When seeding spelt-type seed, the stirring elements on the rotating agitator shaft (Fig. 63/1) 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 64.

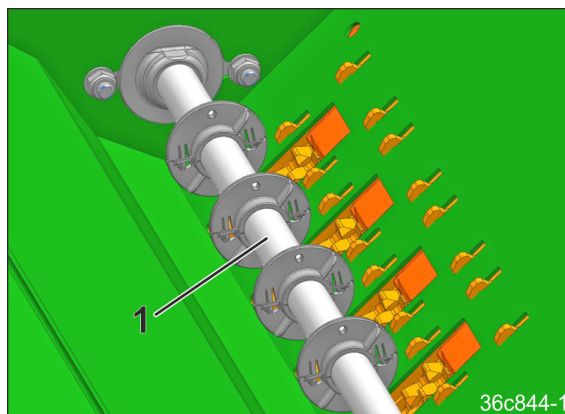


Fig. 63

The agitator shaft support is activated or deactivated with a linch pin (Fig. 64/1).

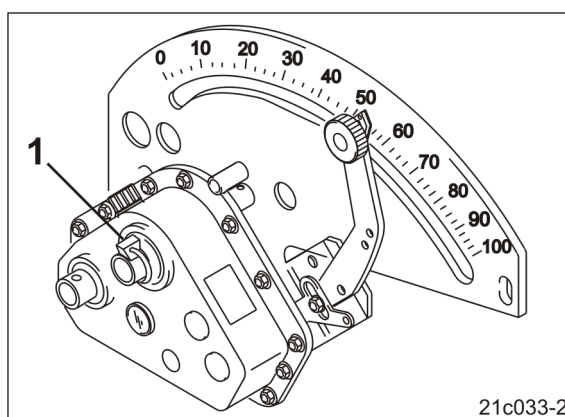


Fig. 64

5.14 Setting the seed rate

During the calibration test, the later field pass is simulated by turning the drive wheel (Fig. 65).

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.

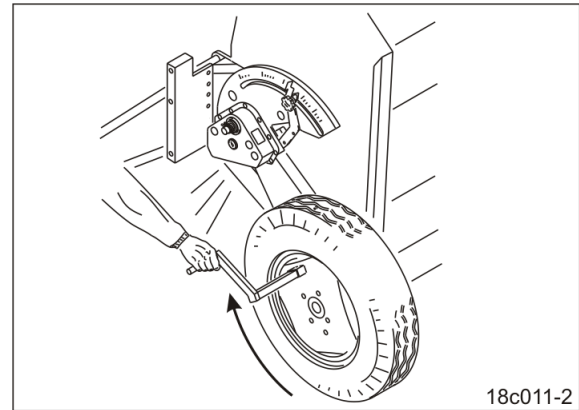


Fig. 65

The crank (Fig. 66/1) that is used to turn the drive wheel is inserted in parking position in the transport bracket underneath the seed box.



Fig. 66

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 box is emptied faster/slower than expected.

Layout and function

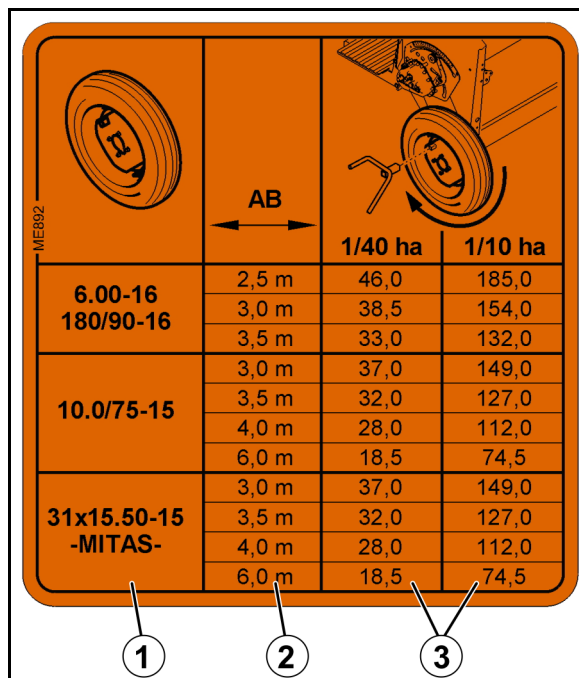
The number of crank turns on the wheel depends on

- the size of the seed drill tyres (1)
- the seed drill working width (2).

The number of wheel revolutions (3) relates to an area of

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

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



	AB	1/40 ha	1/10 ha
6.00-16 180/90-16	2,5 m	46,0	185,0
	3,0 m	38,5	154,0
	3,5 m	33,0	132,0
10.0/75-15	3,0 m	37,0	149,0
	3,5 m	32,0	127,0
	4,0 m	28,0	112,0
	6,0 m	18,5	74,5
31x15.50-15 -MITAS-	3,0 m	37,0	149,0
	3,5 m	32,0	127,0
	4,0 m	28,0	112,0
	6,0 m	18,5	74,5

Fig. 67

The calibration trays (Fig. 68/1) are used to collect the calibrated seed.

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



Fig. 68

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. 69), which is also included in the scope of delivery.



Fig. 69

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. 70/1) for all seeding rates above 30 kg/ha
- An inner white scale (Fig. 70/2) for all seeding rates below 30 kg/ha.
- A coloured scale (Fig. 70/3) with all gearbox settings from 1 to 100.

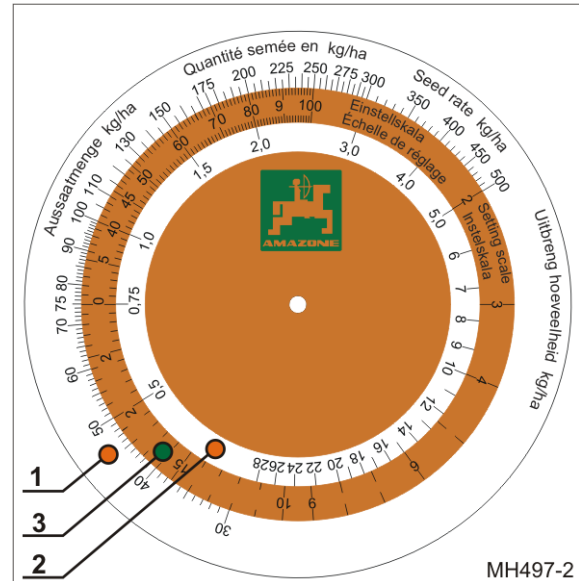


Fig. 70



The calculating disc rule (Fig. 70) is not required for electronically regulated seed rate adjustment.

5.14.1 Recalculation of the crank turns on the wheel due to slippage on seed drills with electronically regulated seed rate adjustment

The electronically regulated seed rate adjustment has an electric motor (Fig. 71/1), which actuates the gearbox lever (Fig. 71/2).

The AMADRILL+ calculates the required gear setting based on the data from the calibration test and moves the gearbox lever to the required gearbox position.

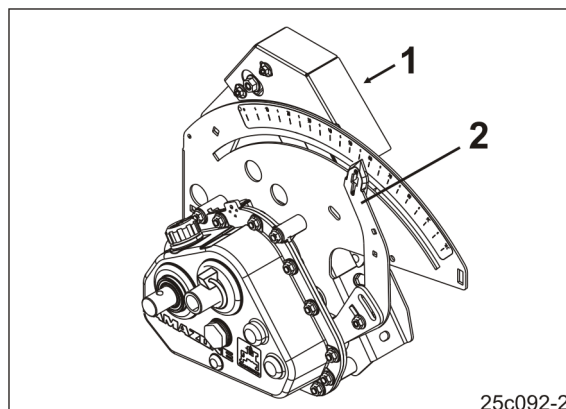


Fig. 71

Based on the "AMADRILL+" operating manual,

- determine the calibration value [pulses/100m]
- perform the calibration test for seed drills with electronically regulated seed rate adjustment.

The calibration values [pul./100 m] and crank turns listed in the table (Fig. 72) were determined during a calibration run on a standardized field with the AmaDrill+ control terminal.

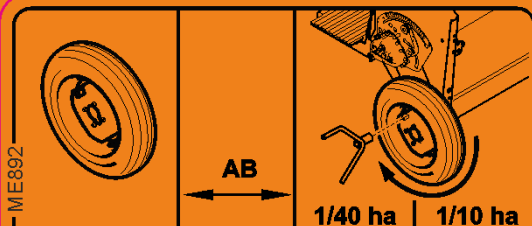
AMADRILL+ Calibration value [pul./100 m]			
		1/40 ha	1/10 ha
740	6.00-16 180/90-16	2,5 m	46,0
		3,0 m	38,5
		3,5 m	33,0
711	10.0/75-15	3,0 m	37,0
		3,5 m	32,0
		4,0 m	28,0
		6,0 m	18,5
711	31x15.50-15 -MITAS-	3,0 m	37,0
		3,5 m	32,0
		4,0 m	28,0
		6,0 m	18,5

Fig. 72

On fields with slippage, the calibration value [pulses/100 m] deviates from the standardized calibration value. This also changes the number of crank turns in the table (Fig. 72).

If the calibration value you have determined differs from the standardized calibration value in the table (Fig. 72), recalculate the number of crank turns for calibrating the seed rate (see below).

Calculating the crank turns to calibrate the seed rate

Crank turns = Crank turns (from table) x $\frac{\text{Determined calibration value [imp./100 m]}}{\text{Table value [pul./100 m]}}$

Then perform the calibration test with the calculated number of crank turns.

Example:

Seed drill:.....D9 3000 Super
 Working width:3.0 m
 Tyres:.....180/90-16
 Crank turns (table value, Fig. 72)38.5 (on 1/40 ha)
 Pul./100 m (calibration value, standardized)740 [pul./100 m]
 Pul./100 m (calibration value, determined):.....710 [pul./100 m]

$$\text{Crank turns} = 38.5 \times \frac{710 \text{ [imp./100 m]}}{740 \text{ [imp./100 m]}} = 37.0$$

Calibrate the seed rate at 37.0 crank turns.

5.15 WS coulter

Seed drills with WS coulters are used for plough seeding.

A guide funnel (Fig. 73/1) delivers the seed immediately behind the share tip (Fig. 73/2). A precise and uniform placement depth is achieved.

The hinged coulter support (Fig. 73/3) prevents the coulter outlet clogging when the seed drill is set down.

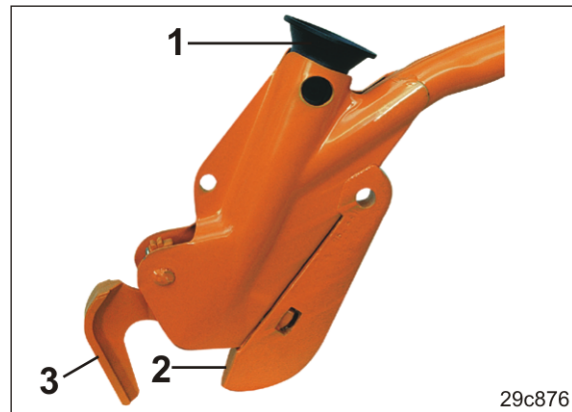


Fig. 73

5.15.1 Band seeding shoe

WS coulters can be equipped with band seeding shoes.

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

Band seeding shoe II (Fig. 74/1) is particularly well-suited for light to medium soils.

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

The exact following harrow is required to cover the seed.

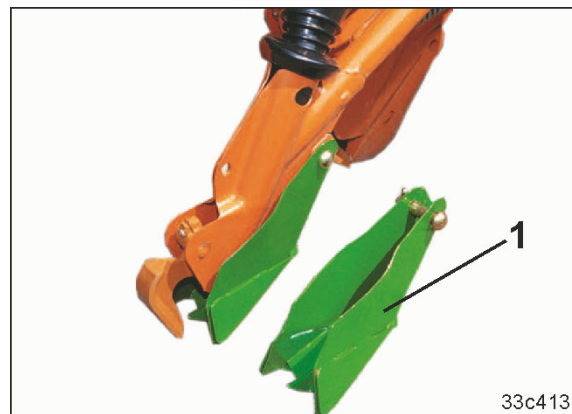


Fig. 74

5.16 RoTeC Control couler

The RoTeC Control couler (Fig. 75/1) is used for seed placement on ploughed or mulched soil, even with large quantities of straw and plant residues.

Thanks to the support of the couler on the depth control disc/wheel (Fig. 75/2) and the high couler pressure, the couler runs very smoothly and precisely maintains the seed placement depth.

The depth control discs/wheels (see below) serve for

- limiting the seed placement depth,
- cleaning the rear side of the steel disc (Fig. 75/3).

The **Control 25 depth control wheel** (Fig. 76/1) with a 25 mm-wide contact area enables shallow seeding with increased couler pressure on light soils.

The **Control 10 depth control disc** (Fig. 77/1) with a 10 mm-wide contact area is used on heavy soils.

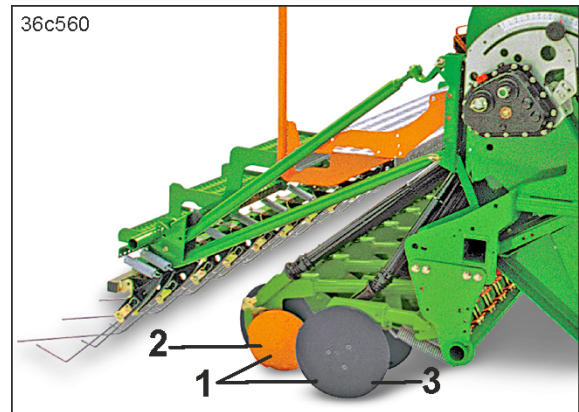


Fig. 75

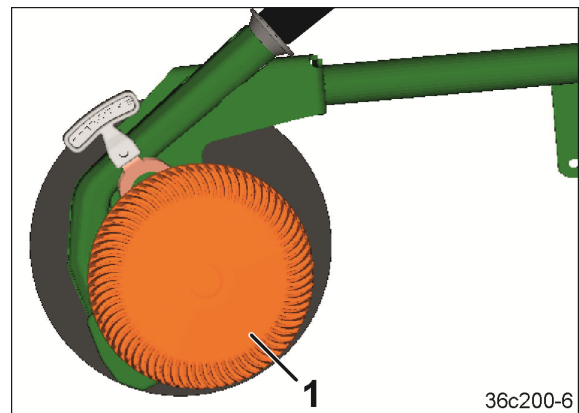


Fig. 76

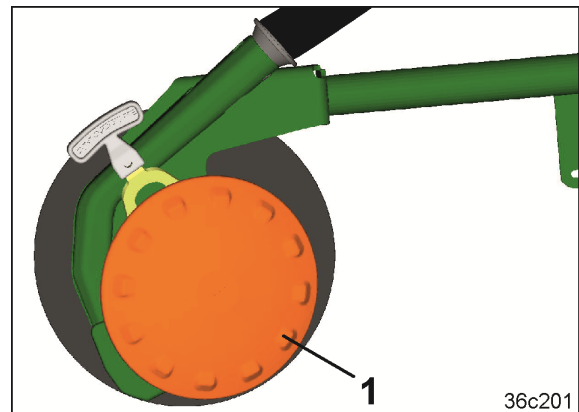


Fig. 77

Layout and function

To adjust the seed placement depth, the depth control disc/wheel (see Fig. 78) can be

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

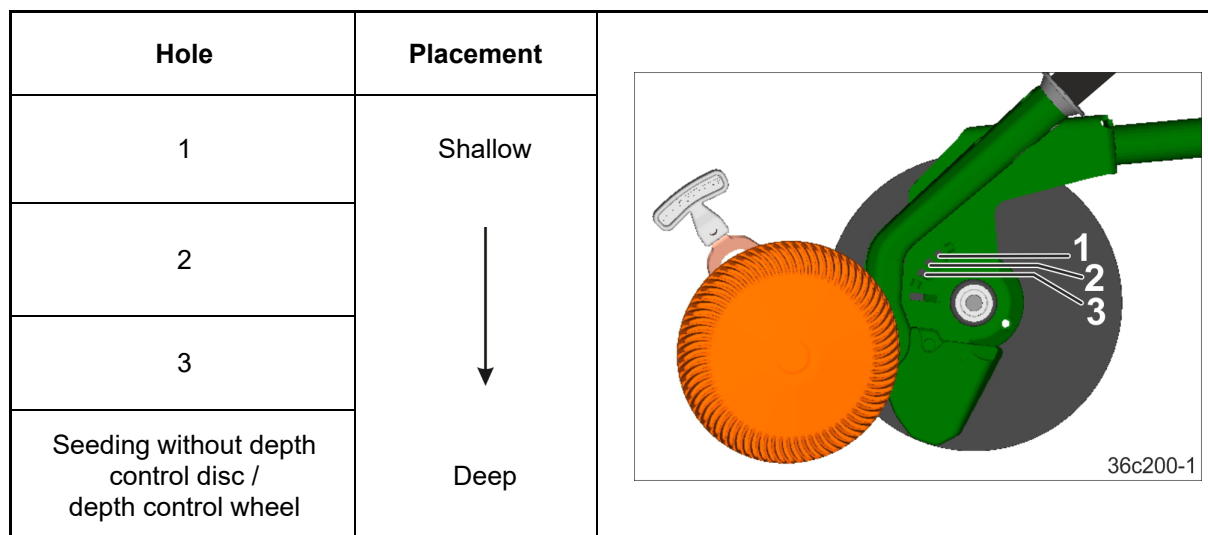


Fig. 78

The handle (Fig. 79/1) is used to adjust the depth control disc/wheel.

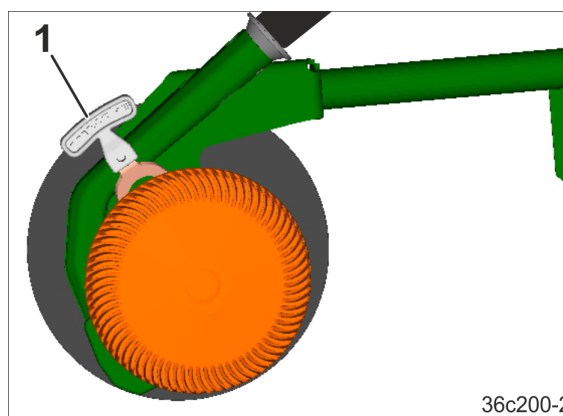


Fig. 79

5.17 Coulter pressure and seed placement depth (all coulter types)

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

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

5.17.1 Coulter pressure adjustment, outside

The depth of the outside coulter behind the seed drill wheels is limited by an adjustable cam disc (Fig. 80/1).

The outside coulter can avoid obstacles by deflecting upwards.

For all other coulter, the coulter pressure is adjusted centrally.

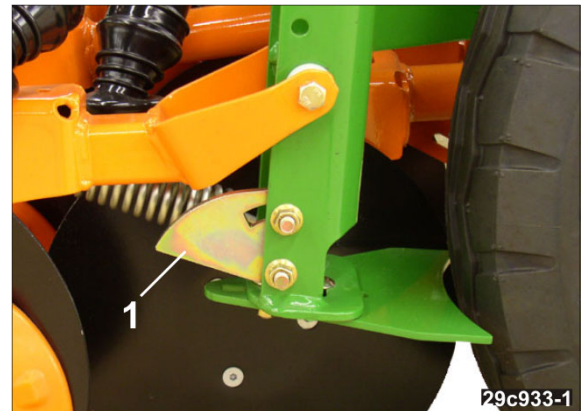


Fig. 80

5.17.2 Coulter pressure adjustment, central

The coulter pressure is adjusted centrally with the calibration crank.



Fig. 81

5.17.3 Coulter pressure adjustment, hydraulic

The coulter pressure can be increased by actuating the tractor control unit (blue). The seed rate remote control and the exact following harrow pressure adjustment are connected to the same control unit.

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

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

Two pins (Fig. 82/1) in an adjuster segment act as the stop for the hydraulic cylinder.

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

The numbers on the scale (Fig. 82/3) are provided for guidance. The higher the number indicated by the pointer (Fig. 82/2), the greater the coulter pressure.

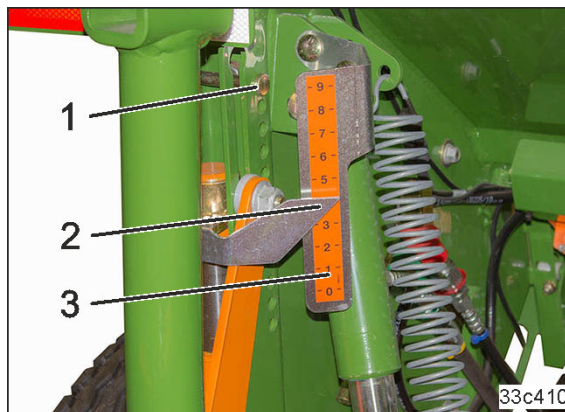


Fig. 82

5.18 Exact following harrow

The exact following harrow (Fig. 83/1) 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 mechanically or hydraulically.

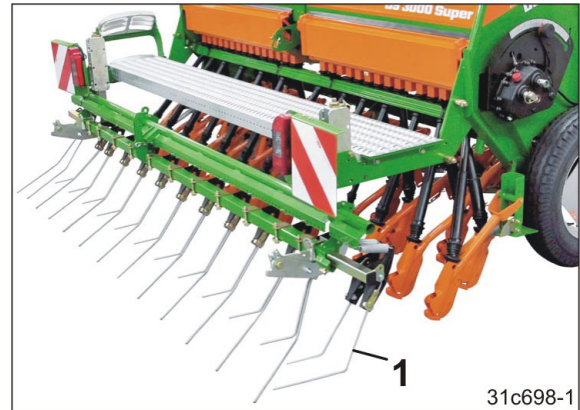


Fig. 83

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. 84.

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

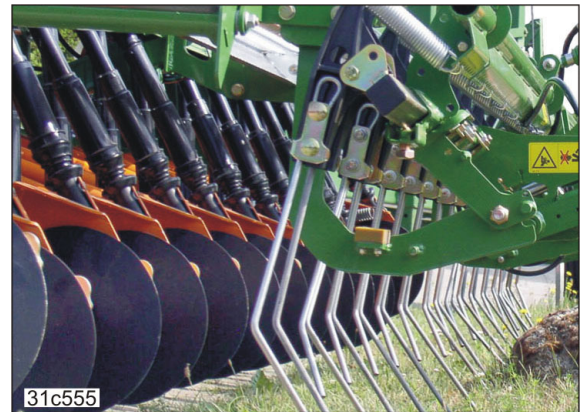


Fig. 84

5.18.1 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.

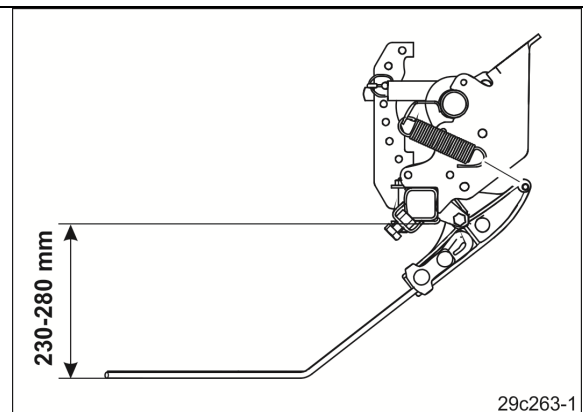


Fig. 85

5.18.2 Exact following harrow pressure

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

5.18.2.1 Mechanical exact following harrow pressure adjustment

The exact following harrow pressure is generated by tension springs that are tensioned using a lever (Fig. 86/1).

The lever is in contact with a pin (Fig. 86/2) in the adjuster segment. The higher the pin is inserted in the group of holes, the greater the exact following harrow pressure.

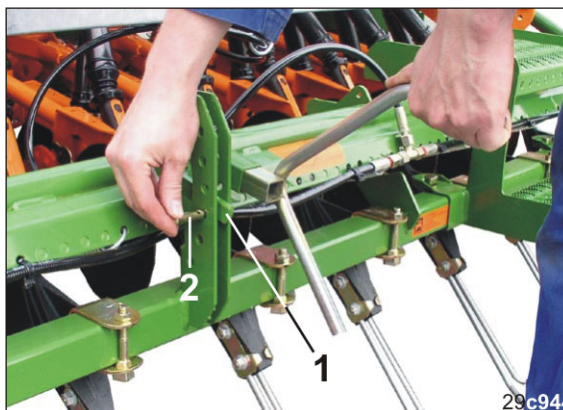


Fig. 86

5.18.2.2 Hydraulic exact following harrow pressure adjustment

The exact following harrow pressure can be adapted to the soil during operation when changing to heavy soil and vice versa. The exact following harrow pressure is adjusted centrally with a hydraulic cylinder.

Two pins (Fig. 87/1) in an adjuster segment act as the stop for the lever (Fig. 87/2). If pressure is applied to the control unit (blue), the exact following harrow pressure increases and the lever rests against the top pin. In floating position, the lever rests on the lower pin.

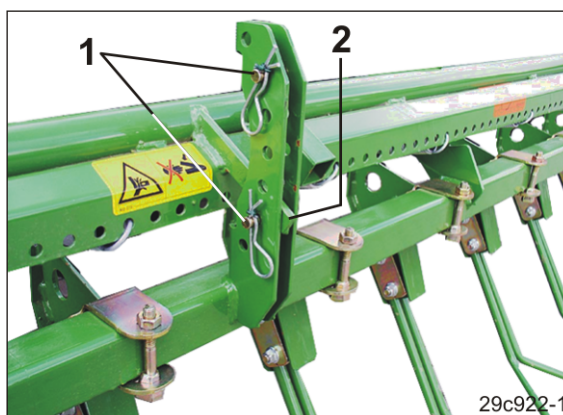


Fig. 87

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

5.19 Roller harrow

The roller harrow consists of

- harrow tines (Fig. 88/1),
- press rollers (Fig. 88/2).

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.

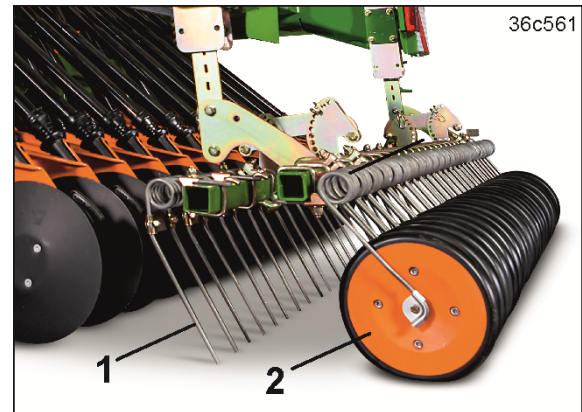


Fig. 88

The following are adjustable

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

The adjuster segment (Fig. 89/1) serves to adjust the harrow tines.

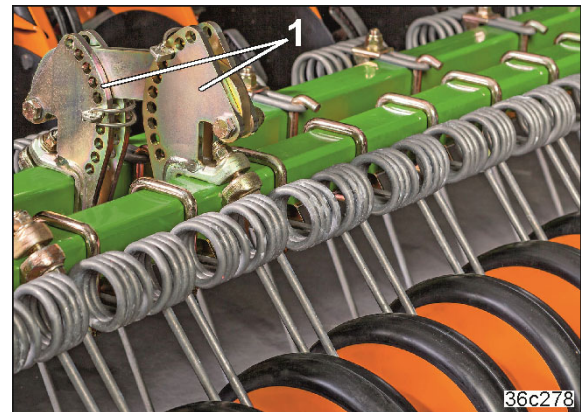


Fig. 89

5.20 Drag tine harrow

The drag tine harrow (Fig. 90/1) covers the seed placed in the seed furrows with loose soil.

The drag tine harrow is used on ploughed ground.

The vertical position of the harrow tines can be adjusted.

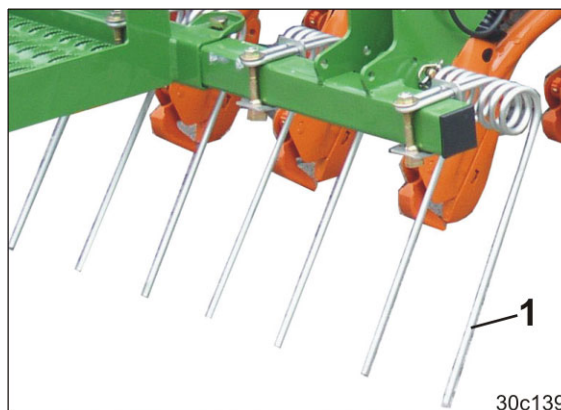


Fig. 90

5.21 Seed drill wheel mark eradicator

The wheel mark eradicator (Fig. 91/1) loosens the earth behind the wheels of the seed drill.

The share tip

- deflects when it hits stones
- automatically folds up when the seed drill is parked.

The working depth or working intensity of the wheel mark eradicator can be adjusted.

On fields with a lot of organic matter, the wheel mark eradicator is simply removed.

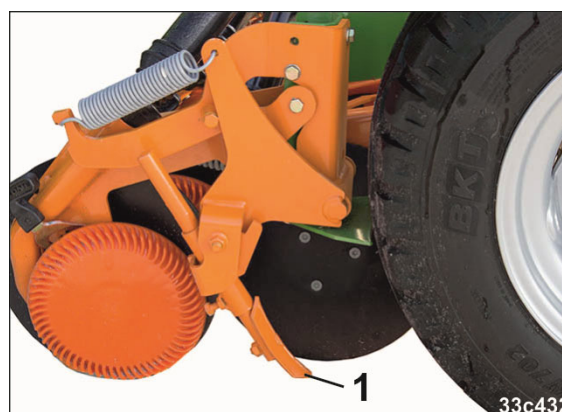


Fig. 91

5.22 Tractor wheel mark eradicator

The tractor wheel mark eradicator can loosen compacted tractor tracks or cover them with loose soil.

Tractor wheel mark eradicator, swivelling

The tractor wheel mark eradicator can be swivelled far enough that the soil can also be tilled in inaccessible areas.

The tractor wheel mark eradicator should work beside the tractor track and cover the track with loose soil.

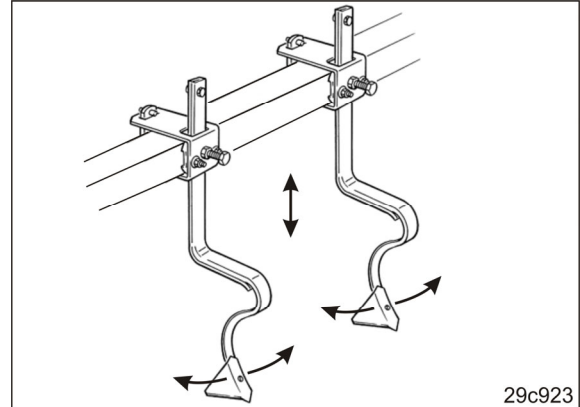


Fig. 92

Tractor wheel mark eradicator, reinforced

The reinforced tractor wheel mark eradicator is spring-suspended and can deflect on stones or other obstacles.

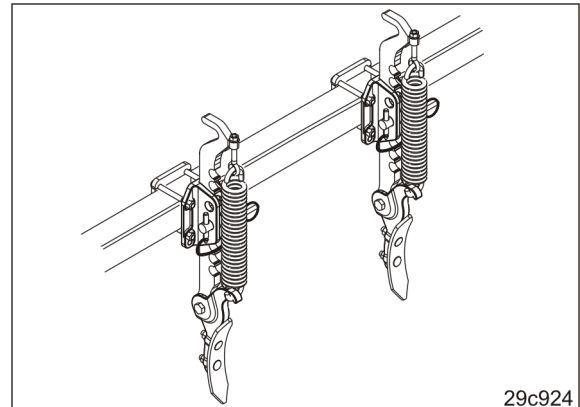


Fig. 93

5.23 Track marker

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 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.

The track markers are attached

- to the seed drill (Fig. 94) or
- to the soil tillage implement.



Fig. 94



Fig. 95

It is possible to set:

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

The instruction steps, depending on the equipment, can also be found in the "Soil tillage implement" operating manual.

If the track marker strikes against a solid obstacle, a bolt shears off and the track marker deflects on the obstacle.

When transporting the implement and turning at the end of the field, both track markers (Fig. 96/1) must be raised.

During transport, each track marker must be locked.

A more detailed description, depending on the equipment, can also be found in the "Soil tillage implement" operating manual.

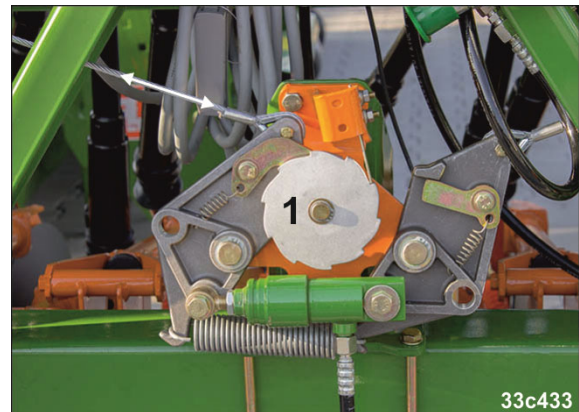


36c558-1

Fig. 96

Seed drills with a working width up to 3.0 m can be equipped with a hydraulically actuated marker changeover (Fig. 97/1).

The centrally arranged, hydraulically actuated marker changeover swivels the track markers using ropes.



33c433

Fig. 97

The track markers of the D9 4000 Super are so long that they cannot be transported in a vertical position.

To prevent exceeding the permitted transport height, the track markers are folded and tilted towards the centre of the implement during transport.



31c547-2

Fig. 98

5.24 Tramlines

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



Fig. 99

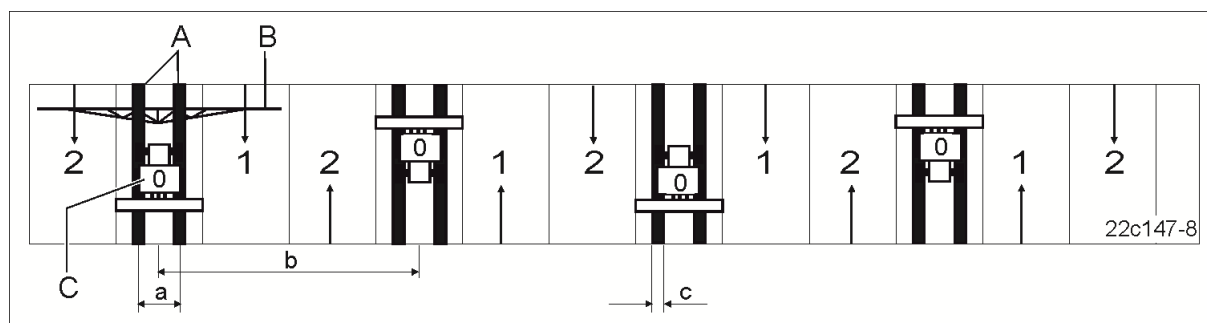


Fig. 100

To create tramlines (A), the seed drill is equipped either with the

- control box or
- AmaLog+ control terminal or
- AmaDrill+ control terminal

The tramline counter C counts the field passes. When creating tramlines, the tramline counter C shows the number "0" on the control box or 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 87 or
- "Tramline control, graphic determination", page 88.

If the seed drill has a control box, the divider wheel in the control box has to be replaced with each change in the tramline control.

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.

5.24.1 Tramline control, tabular determination

Read the required tramline control from the table.

The tramline control is derived from the required 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					
	2.5 m	3.0 m	3.5 m	4.0 m	4.5 m	6.0 m
	Tramline distance					
2	10 m	12 m	—	16 m	18 m	24 m
3	—	9 m	—	12 m	—	18 m
4	10 m	12 m	—	16 m	18 m	24 m
5	—	15 m	—	20 m	—	30 m
6	15 m	18 m	21 m	24 m	27 m	36 m
7	—	21 m	—	28 m	—	42 m
8	20m	24 m	28 m	32 m	36 m	—
9	—	27 m	—	36 m	—	—
21	15 m	18 m	21 m	24 m	27 m	24 m 36 m
5 / 13 right side	—	—	—	18 m	—	—
5 / 13 left side	—	—	—		—	—

Fig. 101

5.24.2 Tramline control, graphic determination

The graph (Fig. 102) 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".	

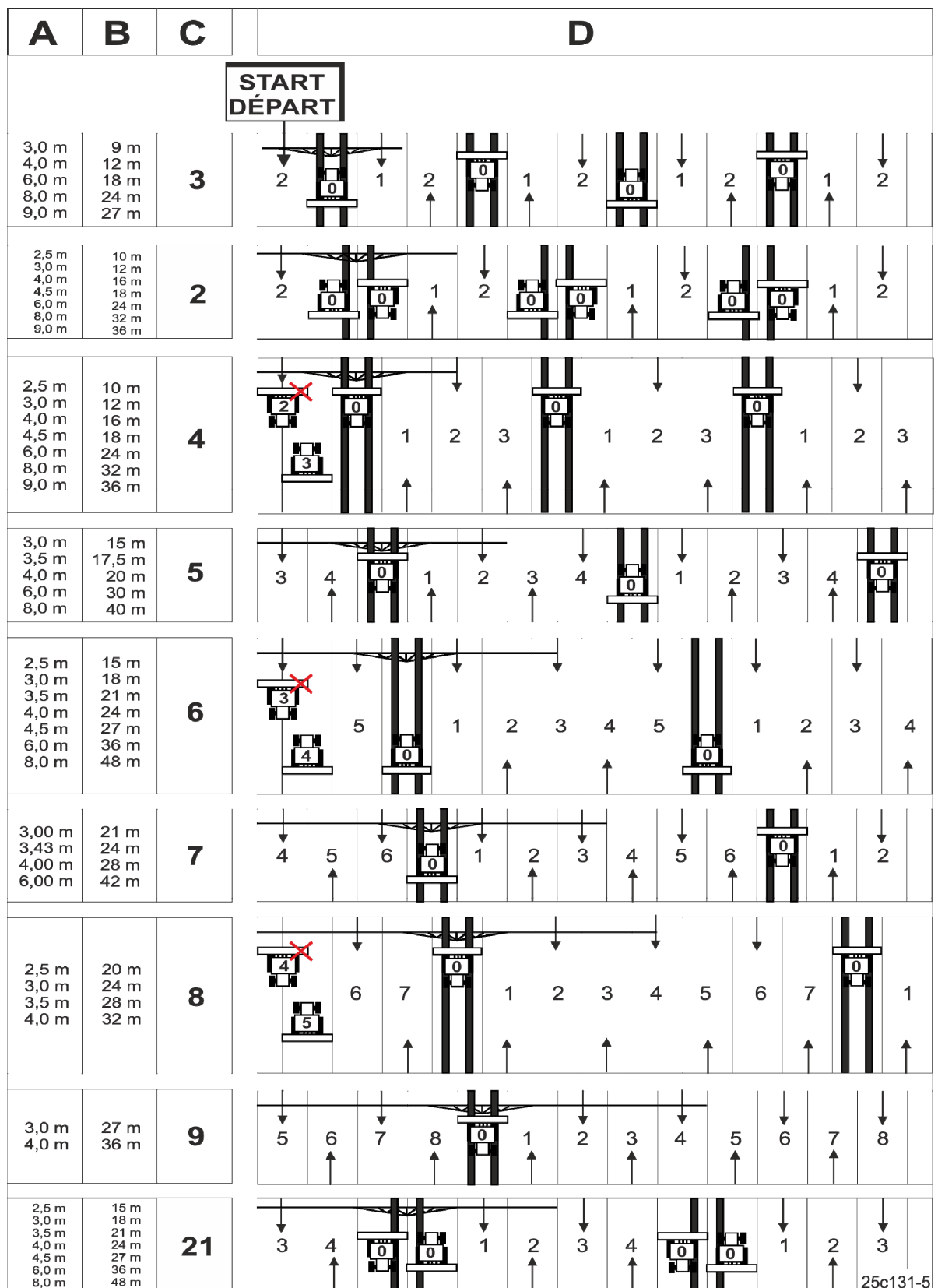


Fig. 102

5.24.3 Functional description

When creating tramlines, the tramline seed metering wheels (Fig. 103/1) are immobilised and the tramline coulters do not deposit any seed in the soil.

The tramline seed metering wheels (Fig. 103/1) can rotate freely on the seeding shaft.

The tramline seed metering wheels are driven by the gear wheels (Fig. 103/2) on the lay shaft (Fig. 103/3).

The countershaft can be equipped with a maximum of 3 gear wheels (Fig. 103/2) on each side of the implement.

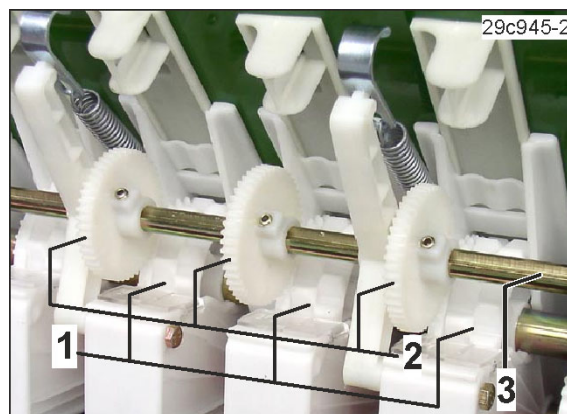


Fig. 103

The lay shaft (Fig. 104/1) is driven by the seeding shaft via a coupling (Fig. 104/2).

The lay shaft is immobilised when the tramline counter shows the number "0" on the control box or 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.

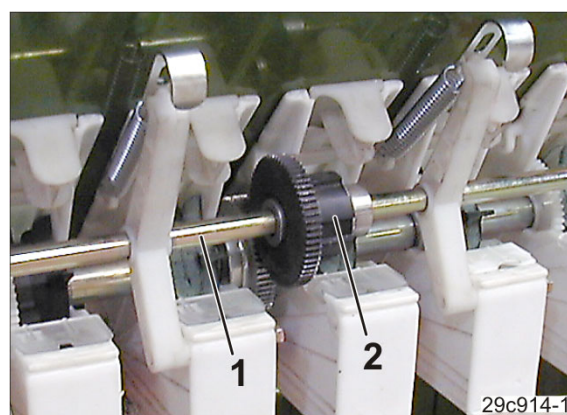


Fig. 104

The lay shaft coupling (Fig. 104/2) can be actuated

- mechanically, see section "Lay shaft coupling, mechanically actuated", page 91
- hydraulically, see section "Lay shaft coupling, hydraulically actuated", page 92
- electrically, see section "Lay shaft coupling, electrically actuated", page 92

When creating the tramlines

- the tramline counter shows the tramline number "0"
 - on the control box
 - on the control terminal
- when the coupling (Fig. 104/2) is actuated
- the lay shaft (Fig. 104/1), which drives the tramline seed metering wheels, is immobilised
- the tramline coulters do not deposit any seeds on the ground.

5.24.3.1 Lay shaft coupling, mechanically actuated

The lay shaft coupling (Fig. 105/1) is actuated by a rod (Fig. 105/2), as soon as the divider wheel (Fig. 105/3) shows the number "0" on the control box.

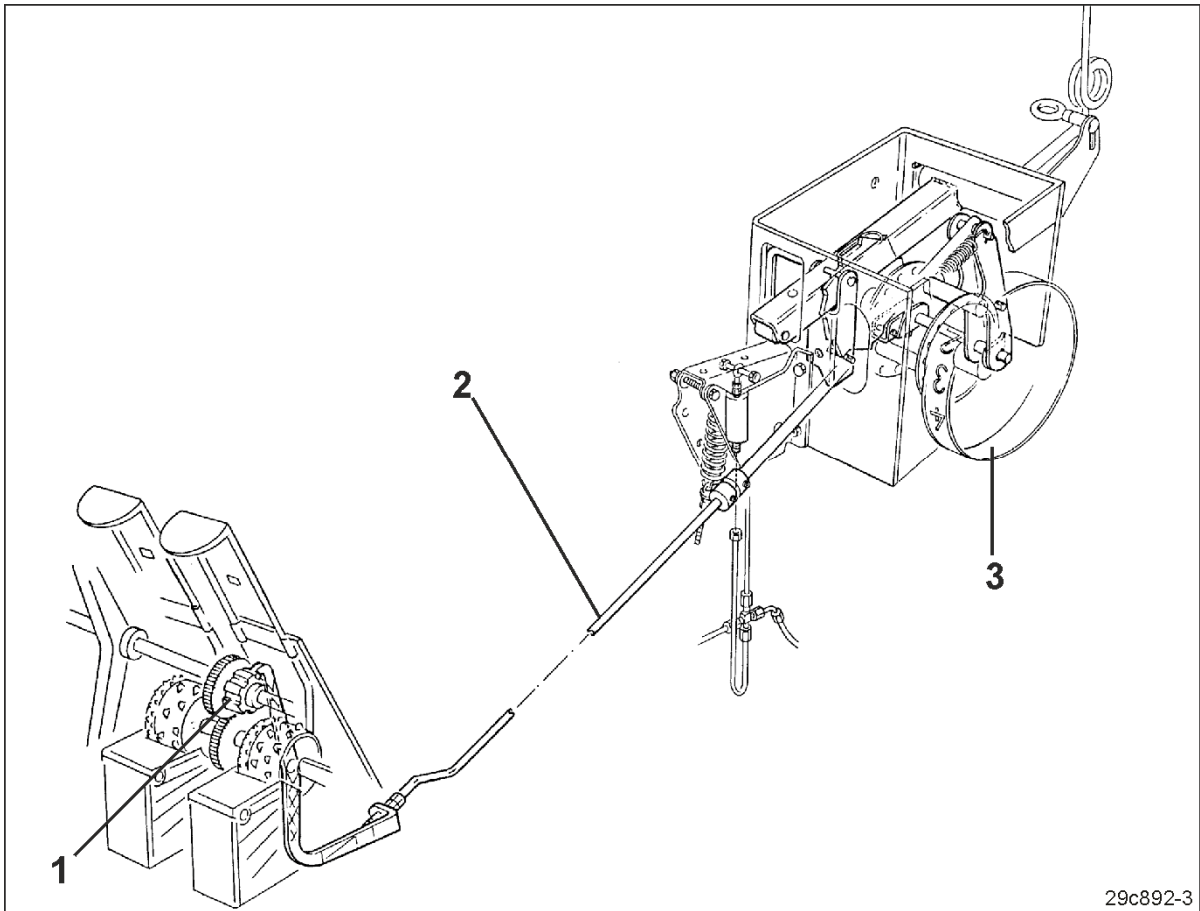


Fig. 105

The tramline number on the divider wheel (Fig. 106/2) on the control box is clearly visible from the tractor seat.

The operating lever (Fig. 106/1) is used to switch the divider wheel.

The rope (Fig. 106/3) can be used to make corrections from the tractor seat if the divider wheel shows the wrong tramline number.

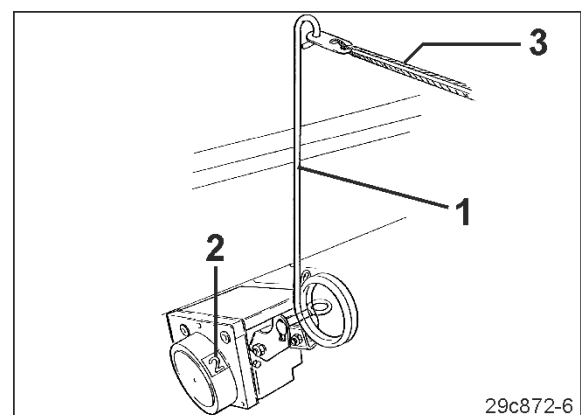


Fig. 106

5.24.3.2 Lay shaft coupling, hydraulically actuated

The lay shaft coupling (Fig. 105/1) is actuated by a rod (Fig. 105/2), as soon as the divider wheel (Fig. 105/3) shows the number "0" on the control box.

The divider wheel in the control box, and therefore the lay shaft coupling, can be actuated by a hydraulic cylinder (Fig. 107/1).

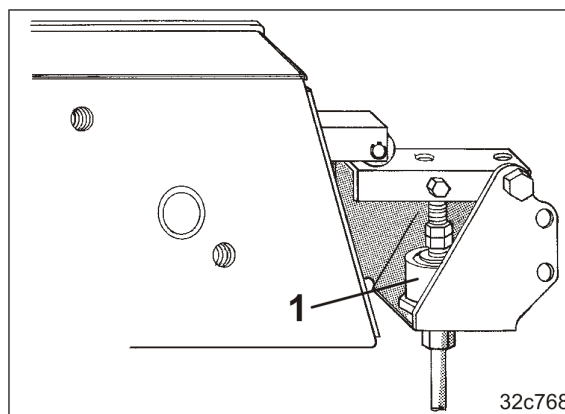


Fig. 107

5.24.3.3 Lay shaft coupling, electrically actuated

A solenoid (Fig. 108/2) actuates the lay shaft coupling (Fig. 108/1).

The solenoid can be controlled either by the

- AmaLog+ control terminal
- AmaDrill+ control terminal

If the seed drill has seeding shaft monitoring, the control terminal issues an alarm if there is a malfunction of the lay shaft.

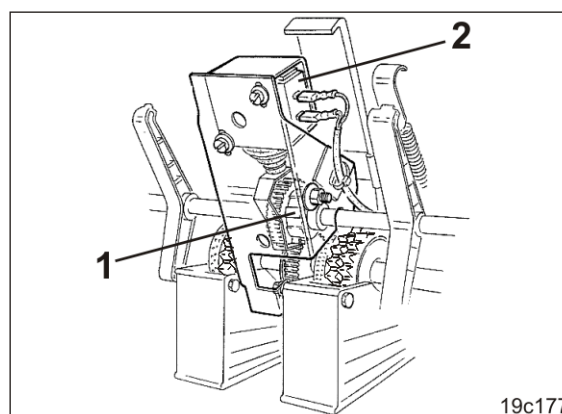


Fig. 108

5.25 One-sided switching

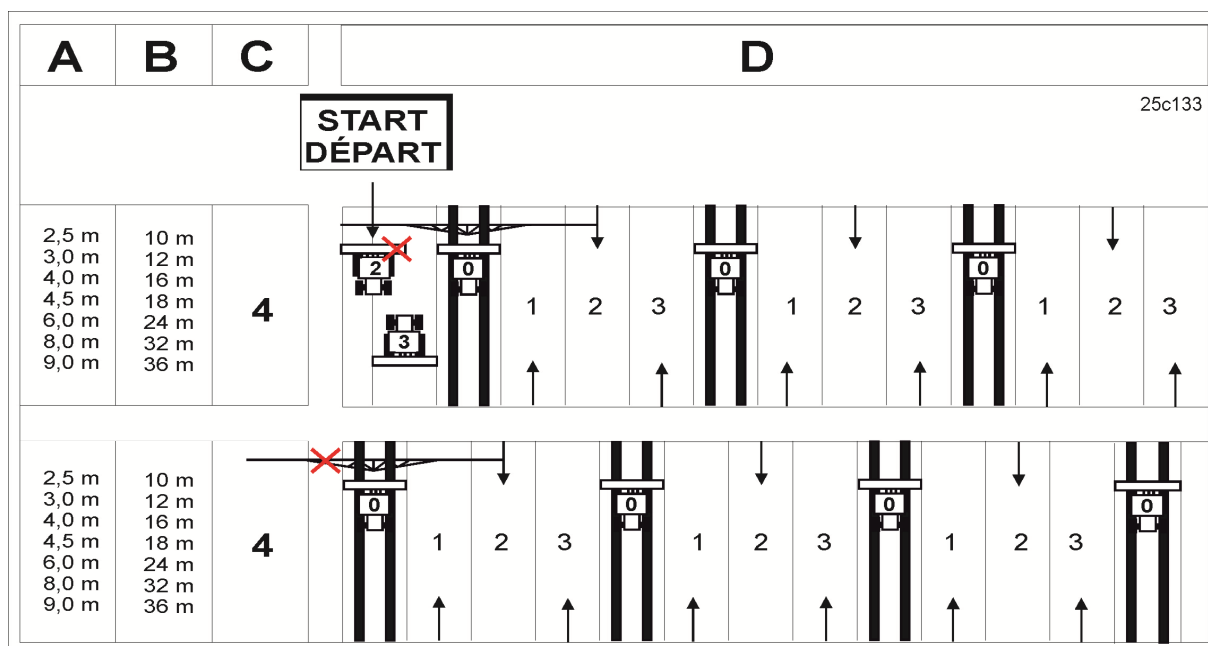


Fig. 109

Figure (Fig. 102) 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. 109) do not deposit any seed in the soil if field operation starts at the right edge of the 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. 110), 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.

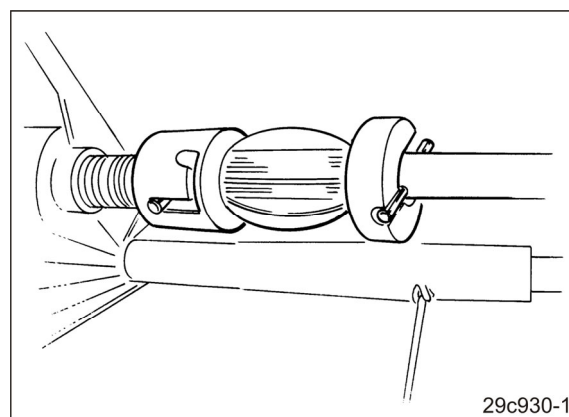


Fig. 110

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. 109).

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

5.25.1 Tramline control 2 and 21

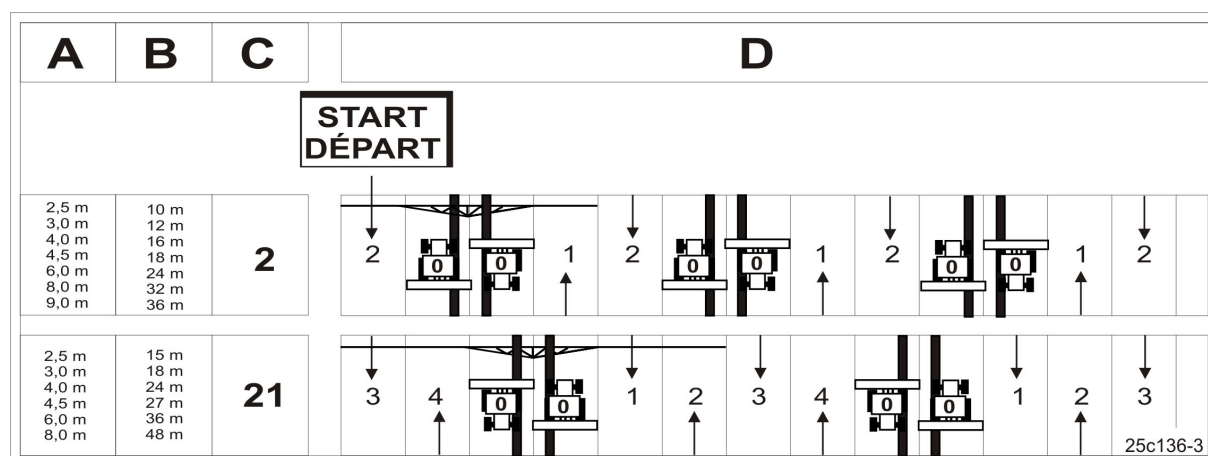


Fig. 111

(Fig. 111) 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

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

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

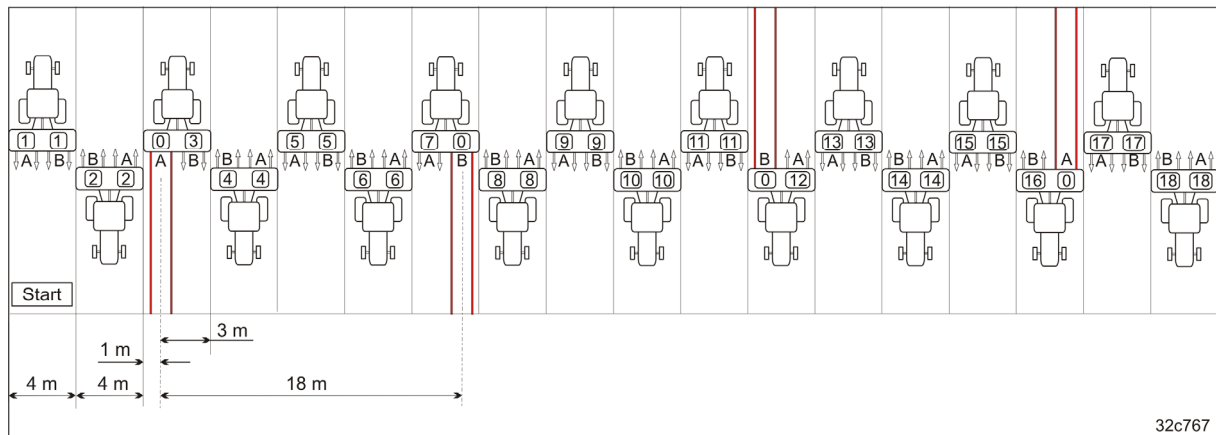


Fig. 112

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

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

If the on-board computer or one of the control boxes shows the tramline number "0", then the tramline seed metering wheels are switched off.



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

During work, both control boxes show the following switching positions (see also Fig. 112):

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

5.26 Tramline marker

When tramlines are being created, the track discs (Fig. 113) 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.



Fig. 113

6 Start-up

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 implement 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 empty 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)

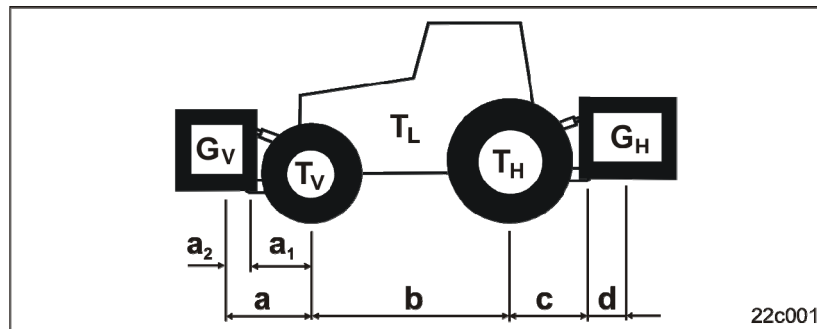


Fig. 114

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 51
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 51

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 6.1.1.7), 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 6.1.1.7), 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 6.1.1.7), 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 6.1.1.7), 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 6.1.1.7), 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 approved load capacity (two tyres)
Minimum ballast weight front/rear	<input type="text"/> / <input type="text"/> kg	--	--
Total weight	<input type="text"/> kg	<input type="text"/> kg	--
Front axle load	<input type="text"/> kg	<input type="text"/> kg	<input type="text"/> kg
Rear axle load	<input type="text"/> kg	<input type="text"/> kg	<input type="text"/> 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 any raised, unsecured implement/raised, unsecured implement parts. This prevents accidental lowering.
4. Shut down the tractor engine.
5. Remove the ignition spanner.
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 3-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.

6.3 Initial installation of the holders for the road safety bar

Screw the two holders (Fig. 115/1) onto the exact following harrow (Fig. 115/2).

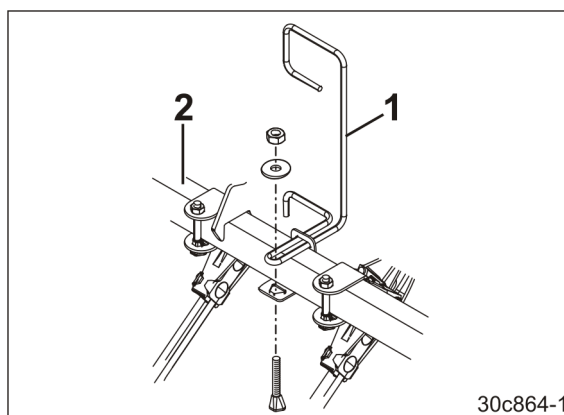


Fig. 115



During work, fasten the road safety bars (Fig. 116/2) to the holders (Fig. 116/1).

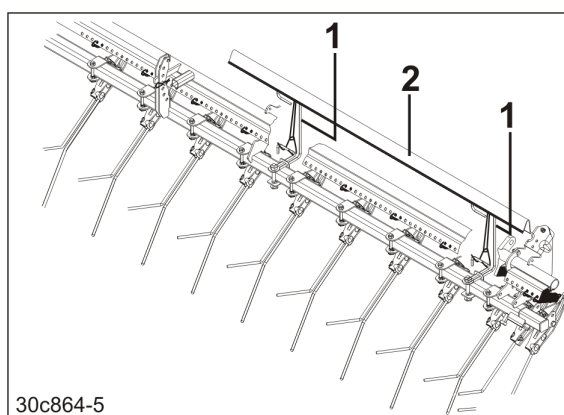


Fig. 116

7 Coupling and uncoupling the implement

The D9 seed drill can be parked

- as a solo implement



Fig. 117

- when mounted on the soil tillage implement



Fig. 118

This section describes

- the coupling and uncoupling of the D9 seed drill on the tractor.



Fig. 119



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 seed drill and tractor or 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 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 contusions between the rear of the tractor and the implement when coupling and uncoupling the implement!

Actuate the operating controls for the tractor's 3-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 and the door of the control centre.

When coupling the implement, the open hopper cover and the open door 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.
- 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.

Coupling and uncoupling the implement

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.



Fig. 120

7.1.2 Uncoupling the hydraulic hose lines

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



Fig. 121

7.2 Coupling the implements



WARNING

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

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



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 the implement to the tractor

1. Fit the upper and lower link pins with ball sockets.

For construction reasons, the ball sockets only fit for one type of tractor and need to be obtained from the tractor manufacturer.

You will find the category of the tensioned crosspiece from your order documents or the "Technical Data" section.

2. The upper and lower link pins each need to be secured with a linch pin.



Fig. 122

The linkage categories on tractor and implement must be compatible. Use Cat. 2-3 ball sockets if the seed drill has Cat. 2 and the tractor Cat. 3.

Insert the upper link pin so that the top link is as horizontal as possible. The lifting force required to lift the implement is lowest when the top link is horizontal.

3. Instruct people to stay out of the danger area between the tractor and the implement before you approach the implement.
4. Drive the tractor towards the implement in such a way that
 - o a gap (approx. 25 cm) remains between tractor and implement
 - o the lower link hooks are flush with the lower pivot points of the implement.
5. Secure the tractor against unintentional start-up and unintentional rolling.



Fig. 123

Coupling and uncoupling the implement

6. Couple the supply lines (Fig. 124/1) to the tractor, see section "Overview – Supply cable / hydraulic hose lines", page 43.



Fig. 124

7. Open the tractor lower link securing device, i.e. it must be ready for coupling.
8. Drive the tractor in reverse towards the implement, so that the lower pivot points of the implement are inserted into the lower link hooks of the tractor.
- The lower link hooks lock automatically.
9. From the tractor cab, couple the top pivot point of the implement to the the top link.
- The upper link hook locks automatically.
10. Visually check that the upper and lower link hooks are correctly locked.
11. Implement plug, connect to the control terminal.
12. Plug
Connect the road traffic lighting system (7-pin).
13. Route the rope (Fig. 125/1) to actuate the operating lever (Fig. 125/2) of the control box (if equipped) in the tractor cab.

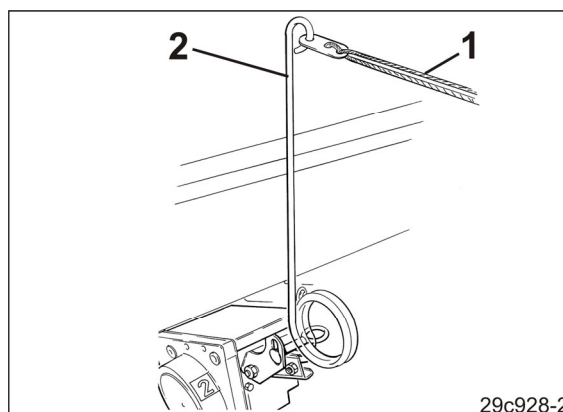


Fig. 125



Check the function of the braking and lighting system.

7.2.2 Uncoupling the implement from the tractor



WARNING

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

Empty the seed box and park the seed drill on a level surface on solid ground.

1. Raise the track markers and secure them (see section "Moving the track marker to the working/transport position", page 134).
2. Empty the seed box (see section "Emptying the seed box and seed housing", page 175).
3. Park the implement on a level surface on solid ground.
4. Release the top link.
5. Unlock and uncouple the top link hook from the tractor cab.



Fig. 126

6. Release the lower links.
7. Unlock and uncouple the lower link hooks from the tractor cab.
8. Pull the tractor forward approx. 25 cm.
This will allow more clearance between tractor and implement and provide better access for uncoupling the supply lines.
9. Secure tractor and implement against unintentional starting and rolling away.
10. Uncouple the supply lines and hang in the hose cabinet.



Fig. 127

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 3-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 (e.g. ISOBUS plug).

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

8.1 Folding the steps up and down



DANGER

Never climb onto the steps and the loading board when the seed drill is parked as a solo implement (risk of tipping).

Climbing up is only permitted when the seed drill is coupled to the tractor or 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. 128) 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.

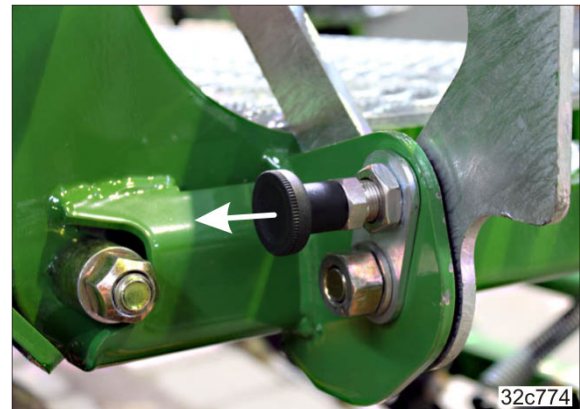


Fig. 128

Settings

Fold the steps up and down carefully by hand.

Only fold down 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) for the steps.
3. Fold down the steps.

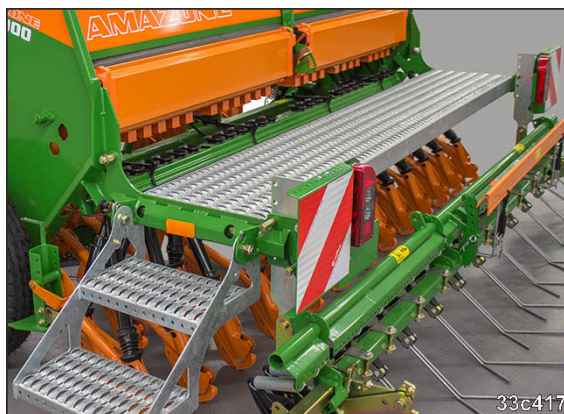


Fig. 129

The steps are automatically locked when folded up.

4. Check the latch (see above) for proper seating after folding up the steps (Fig. 130).



Fig. 130

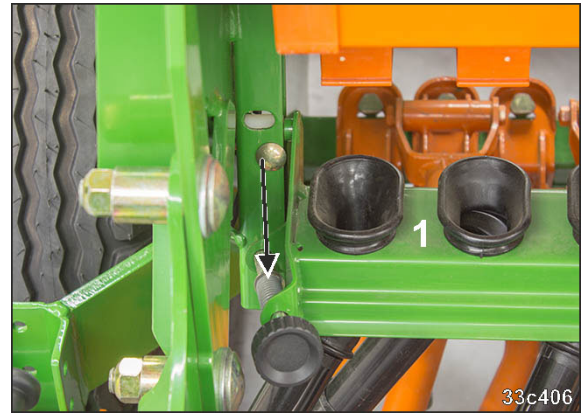
8.2 Placing the calibration trays on the funnel rail

1. Pull the spring-loaded lever (Fig. 131/1) sideways out of the locking device.



Fig. 131

2. Lower the funnel rail (Fig. 132/1).

**Fig. 132**

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

**Fig. 133**

4. Place the calibration trays on the funnel rail.

**Fig. 134**

8.3 Setting the seed rate

1. The required setting values can be found in the table "Setting values", page 64.
 - 1.1 Metering wheel selection,
see section "Seeding with the normal or fine seed metering wheel", page 118.
 - 1.2 Sliding shutter position,
see section "Adjusting the sliding shutters", page 121
 - 1.3 Bottom flap position,
see section "Bottom flap position", page 122
 - 1.4 Agitator shaft support,
see section "Agitator shaft support", page 124
2. Calibrate the seed rate,
see section "Setting the seed rate using a calibration test", page 128.

8.3.1 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. 135) out of the brackets.
After the adjustment work, attach the calibration trays back in the brackets.

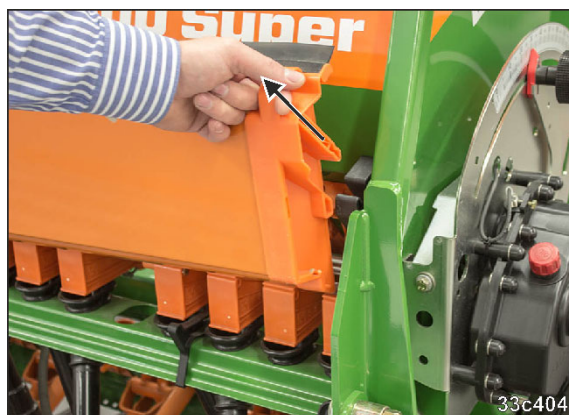


Fig. 135

2. Lift the seed drill until the wheels spin freely.
3. Apply the parking brake, switch the tractor engine off and remove the ignition key.
4. Insert the calibration crank (Fig. 136/1) into the square tube on the right wheel.

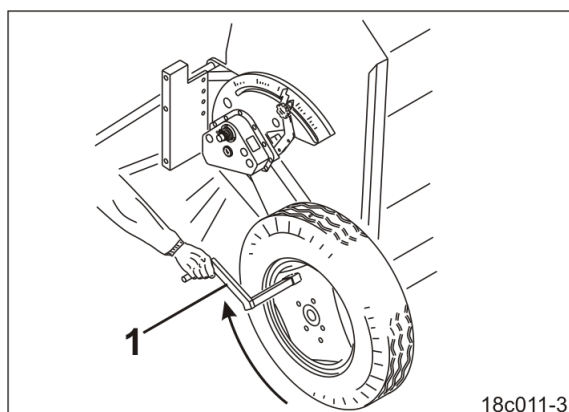
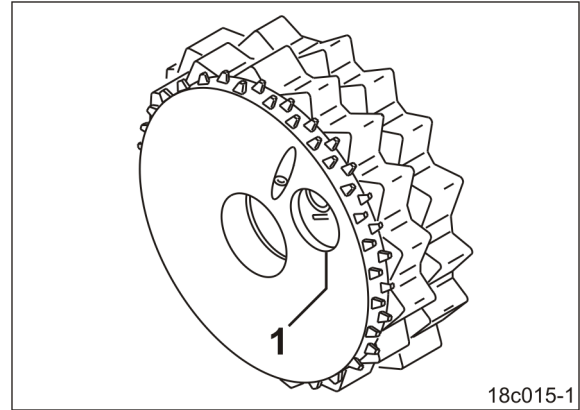


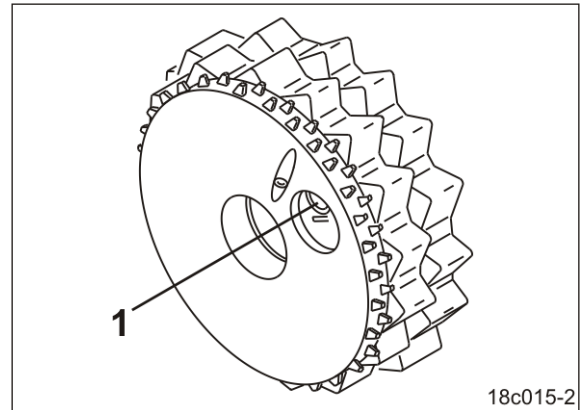
Fig. 136

5. Turn the seed drill wheel to the right until the holes (Fig. 137/1) of the fine seed metering wheels are visible.
6. Lower the seed drill.
7. Apply the parking brake, switch the tractor engine off and remove the ignition key.

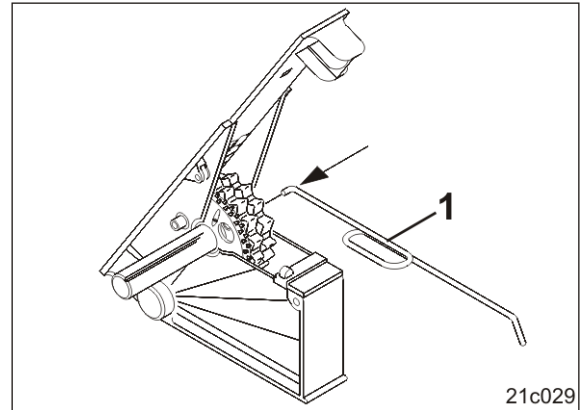

Fig. 137

Seeding with normal seed metering wheels

1. Turn the normal seed metering wheel on the seeding shaft by hand until the pin (Fig. 138/1) is visible in the hole.


Fig. 138

2. Press the pin against the fine seed metering wheel using the supplied key (Fig. 139/1).
3. Check the connection.
4. Make the same settings on all seed metering wheels.


Fig. 139

Seeding with fine seed metering wheel

1. Use the supplied key (Fig. 140/1) 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.

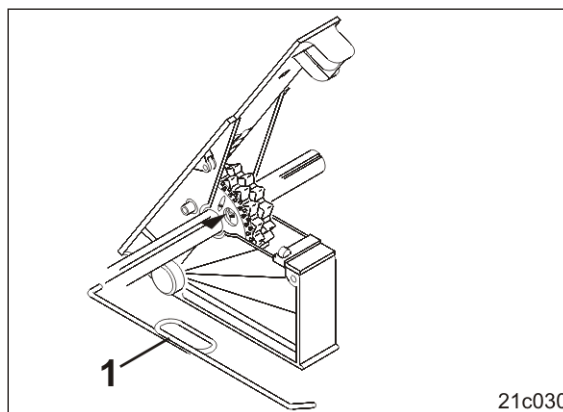


Fig. 140

8.3.2 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 199).

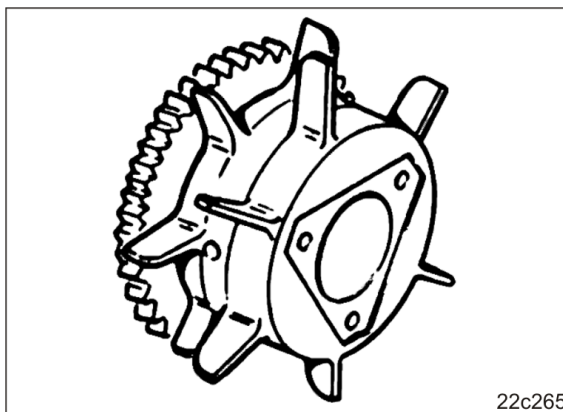


Fig. 141

8.3.3 Adjusting the sliding shutters



This setting affects the seeding rate.

Calibrate the seed rate after the adjustment.

1. Pull the calibration trays (Fig. 142) out of the brackets.
After the adjustment work, attach the calibration trays back in the brackets.



Fig. 142

2. Set the sliding shutters (Fig. 143) to the value from the table (see page 64).

The sliding shutters (Fig. 143) 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.

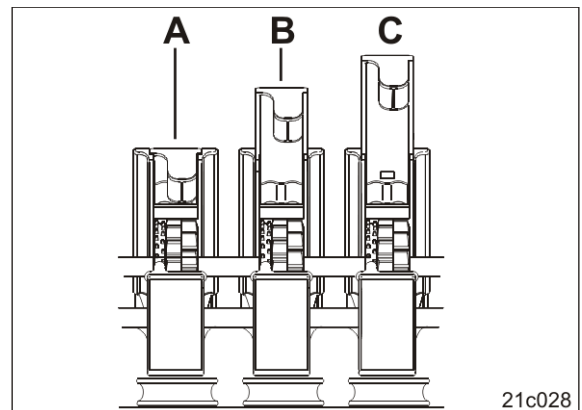


Fig. 143

8.3.4 Bottom flap position



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

1. Set the bottom flap lever (Fig. 144/1) in the group of holes at the value from the table (see page 64).
2. Secure the bottom flap lever with a linch pin (Fig. 144/2).

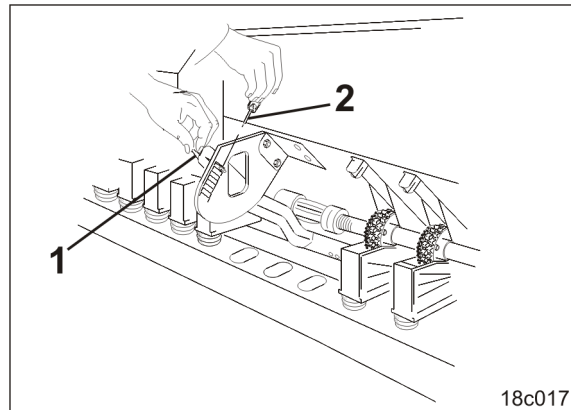


Fig. 144

8.3.5 Setting the digital filling level sensor



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

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

1. Adjust the height of the fill level sensor (Fig. 145/1) according to the required residual seed quantity.
2. Tighten the thumb nut (Fig. 145/2).

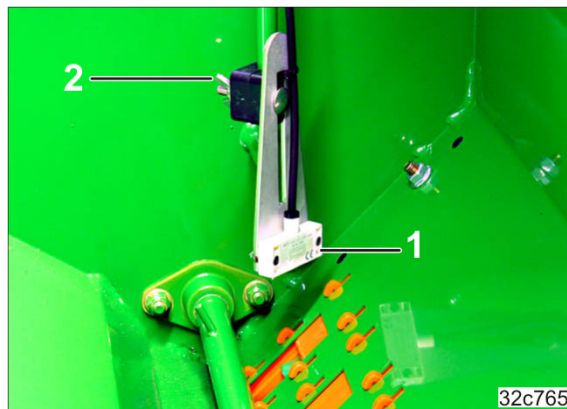


Fig. 145

8.3.6 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 124.



Position the stirring pins (Fig. 146/2) vertically if the agitator shaft does not have any round stirring elements, see section Agitator shaft support, page 68.

2. Fasten the rapeseed insert profiles (Fig. 146/1) in the seed hopper using clamps (Fig. 146/3), see assembly diagram (Fig. 147).

The rapeseed insert profiles are supported by the agitator shaft.

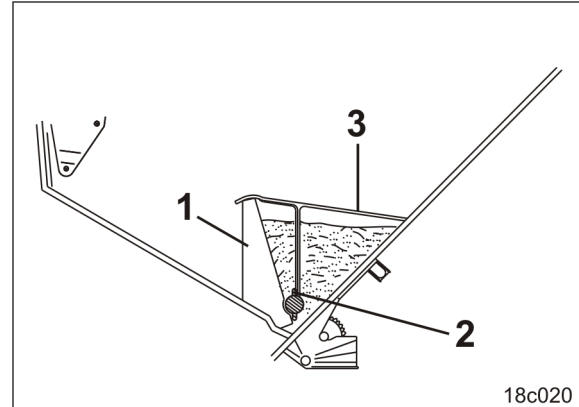


Fig. 146

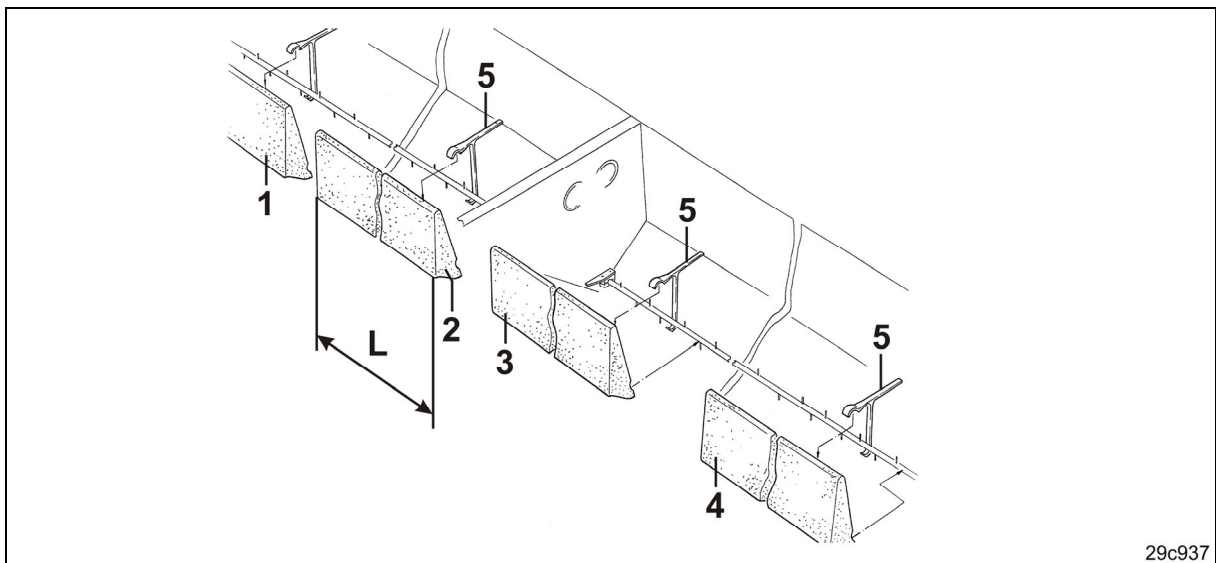


Fig. 147

			D9 2500	D9 3000	D9 3500	D9 4000
1	Profile length "L"	[mm]	1025	1025	—	1025
2		[mm]	—	255	—	755
3		[mm]	1025	1025	1025	1025
4		[mm]	—	255	—	755
5	Clamps	[number]	6	8	9	10



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

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.

8.3.7 Agitator shaft support



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

Seeding with agitator shaft support

If the linch pin (Fig. 148/1) is inserted in the hole of the gearbox hollow shaft, the agitator shaft support is active.

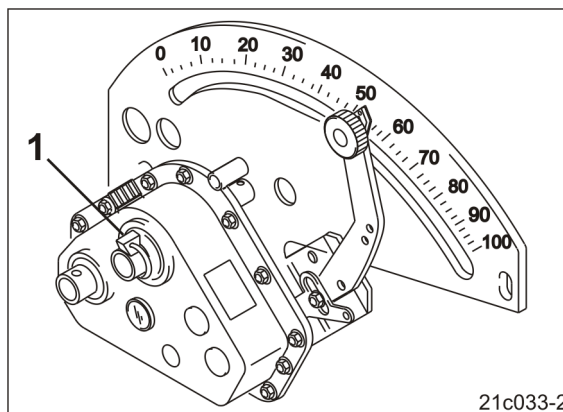


Fig. 148

Seeding without agitator shaft support

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

When parking, insert the linch pin (Fig. 149/1) into the hole on the auxiliary shaft.

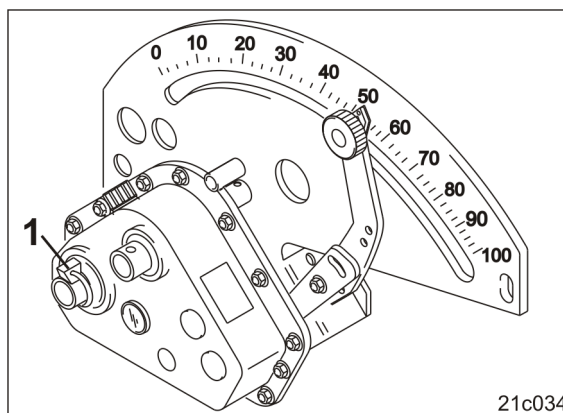


Fig. 149

8.4 Filling the seed box



DANGER

The solo seed drill

- **must first be coupled to the tractor before filling the seed box (risk of tipping)**
- **must first be emptied and then uncoupled from 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.

Settings

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. Set the bottom flap lever (Fig. 150/1) as required to a position between 1 and 4.

Always engage the bottom flap lever in the group of holes.

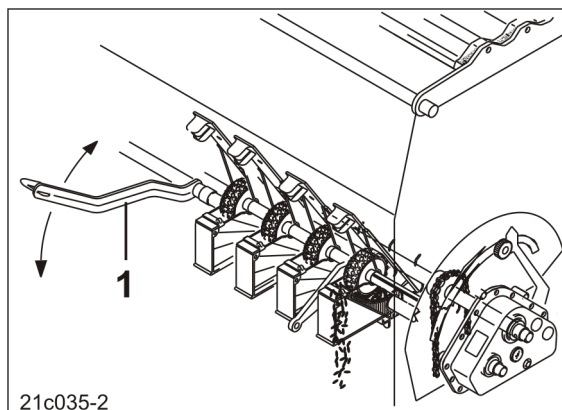


Fig. 150

5. Fold the steps down.
6. Climb onto the loading board using the steps.

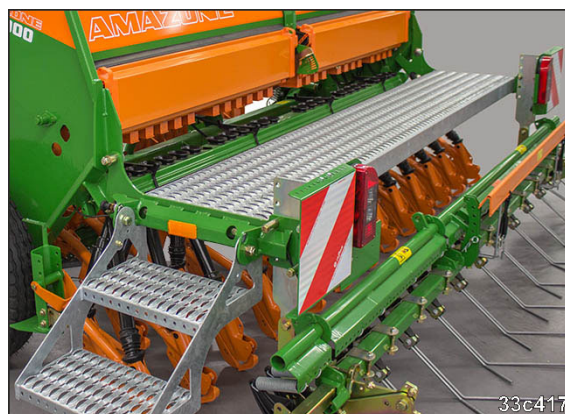


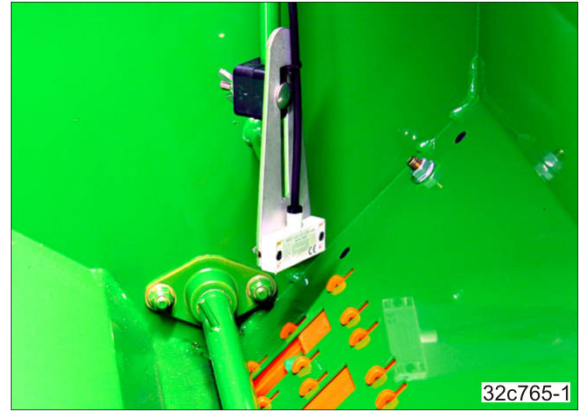
Fig. 151

7. Use the handle to open the lid of the seed box.



Fig. 152

8. Adjust the height of the filling level sensors (Fig. 153) for the desired residual seed quantity.

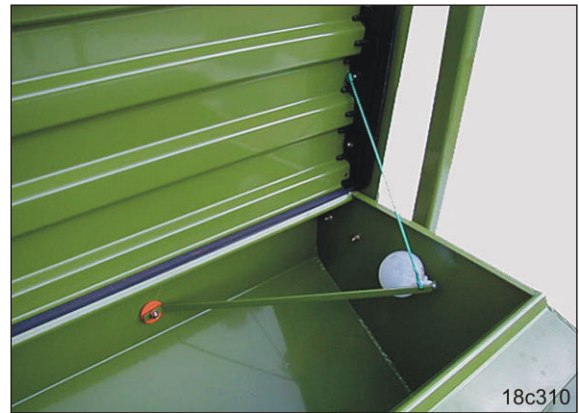

Fig. 153

9. Fill the seed box. The loading aid (Fig. 154/1) makes it easier to fill with sacks.


Fig. 154

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

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


Fig. 155

8.5 Setting the seed rate using a calibration test

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

Always perform the calibration test

- when the seed type is changed
- if the seed type is identical, but the grain size, grain shape, specific weight and dressing are different
- when changing from the normal seed metering wheel to the fine seed metering wheel or bean seed metering wheel and vice versa
- after adjusting the
 - bottom flaps
 - Sliding shutter
- after switching the agitator shaft on or off.
 1. Couple the seed drill to the tractor.
 2. Secure the tractor against unintentional start-up and rolling.
 3. Fill at least 1/3 of the seed box with seed (accordingly less for fine seed).
 4. Place the calibration trays on the funnel rail, see section "Placing the calibration trays on the funnel rail", page 116.



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

If the tramline counters is on "0"

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

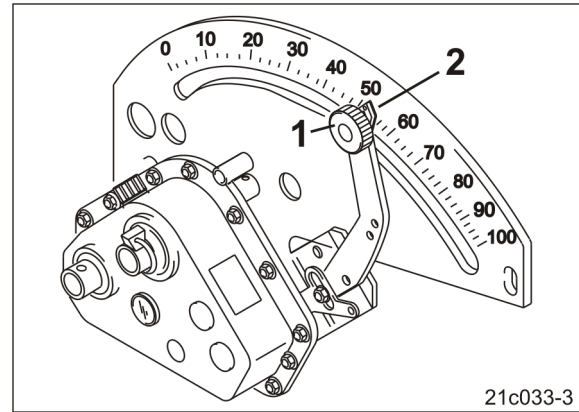


If the seed drill is equipped with the AmaDrill+ control terminal and electronically regulated seed rate adjustment (see section "Seed rate, electronic regulation", page 62), further settings can be found in the AmaDrill+ operating manual.



Section "Hydr. seed rate remote control" on page 132 describes the adjustment of the gearbox lever, if equipped accordingly.

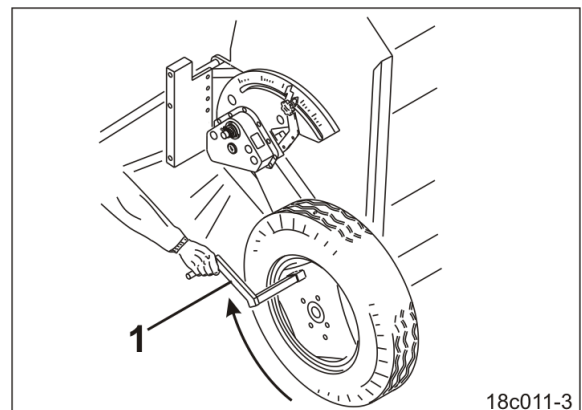
5. Undo the locking knob (Fig. 156/1).
6. Consult the table (Fig. 157, page 129) for the gearbox setting value for the first calibration test.
7. Set the pointer (Fig. 156/2) of the gearbox lever to the gearbox setting value.
8. Tighten the locking knob.


Fig. 156
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. 157
Pre-calibrating the implement

9. Pre-calibrate the seed drill. Preturning creates the same conditions as when driving on the field later on.
 - 9.1 Use the tractor to lift the seed drill until the wheels will turn freely.
 - 9.2 Apply the parking brake, switch the tractor engine off and remove the ignition key.
 - 9.3 Insert the calibration crank (Fig. 158/1) into the square tube on the right wheel.
 - 9.4 Turn the seed drill wheel in the direction shown by the arrow until the seed falls out of all seed housings into the calibration trays.
 - 9.5 Fill the calibration trays twice by turning the calibration crank (with fine seed, approx. 200 crank turns will be enough).
 - 9.6 Empty the calibration trays into the seed box and place them on the funnel rails again.


Fig. 158

Calibrating the seed rate

10. Calibrating the seed rate.

10.1 Turn the right seed drill wheel to the right by the number of crank turns given in the table (Fig. 67).

10.2 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.

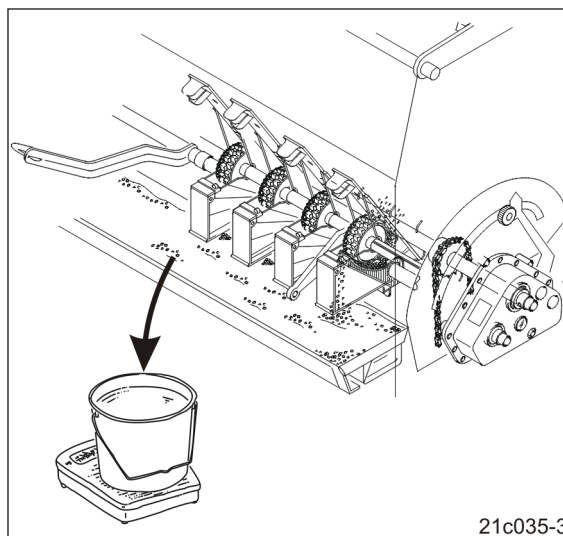


Fig. 159

10.3 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

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

11. 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 131.
12. Repeat the calibration test until the desired seed rate is achieved.
13. Attach the calibration trays to the seed box.
14. Slide the funnel rails upwards and lock them into place.
15. Clip the calibration crank into its transport bracket.



Repeat the calibration test again after approx. 2 ha.

8.5.1 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. 160/A)
 - o Gearbox setting value 70 (Fig. 160/B).
2. Read the gearbox setting value for the desired seed rate:
 - o Desired seed rate
125 kg/ha (Fig. 160/C)
 - o Gearbox setting value 50 (Fig. 160/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.

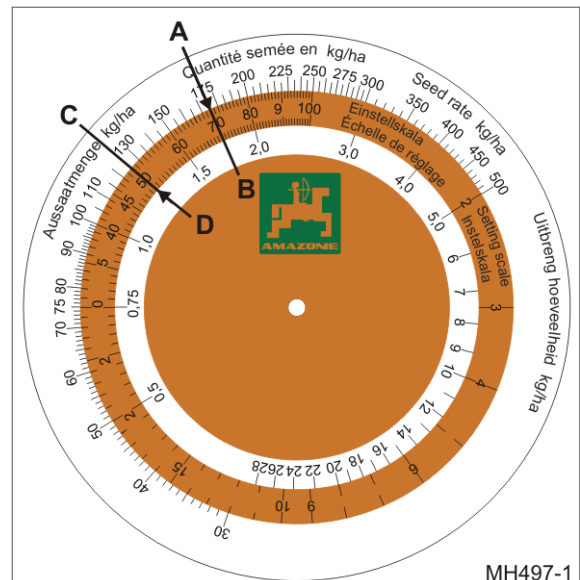


Fig. 160

8.5.2 Hydr. seed rate remote control



WARNING

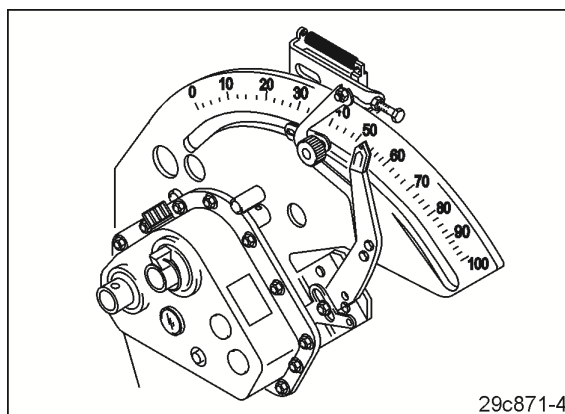
Instruct people to stay out of the operating area of the hydraulic cylinders.

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

- Vario gearbox
- coulter pressure
- Exact following harrow pressure.

Determining the gearbox setting required for the desired seed rate

1. Shift the control valve (blue) to the float position.
2. Apply the parking brake, switch the tractor engine off and remove the ignition key.
3. Perform the calibration test, see section "Setting the seed rate using a calibration test", page 128.



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Fig. 161

Determining the gearbox setting required for the increased seed rate

1. Apply pressure to control valve (blue).
2. Apply the parking brake, switch the tractor engine off and remove the ignition key.
3. Use the adjusting screw (Fig. 162/1) to set the pointer (Fig. 162/2) of the gearbox lever to the desired gearbox setting for the elevated seeding rate.

Unscrew adjusting screw (Fig. 162/1):
increase seeding rate.

Screw in adjusting screw (Fig. 162/1):
reduce seeding rate.

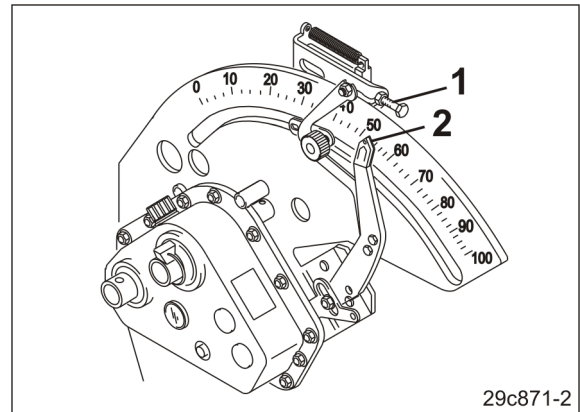


Fig. 162

4. Determine the increased seed rate with a calibration test (see section "Setting the seed rate using a calibration test", page 128).
5. Shift control valve 2 to the float position.

Deactivating the increased seed rate

Actuating control valve (blue) should increase the coulter pressure and the exact following harrow pressure, but not the seed rate.

To do so, screw the adjustment bolt (Fig. 163/1) all the way in.

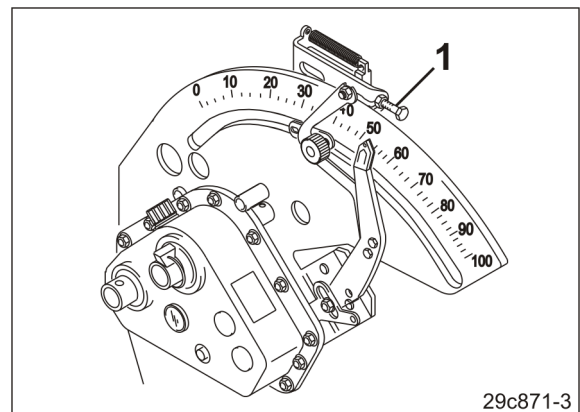


Fig. 163

8.6 Moving the track marker to the working/transport position



DANGER

The track markers

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

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



WARNING

Direct people out of the danger area.

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



When the track markers are attached to the soil tillage implement, the track markers must be secured in transport position with a latch (Fig. 164/1).

Move the track markers to working and transport position as described in the "Soil tillage implement" operating manual.



Fig. 164

8.6.1 Moving the track markers into working position with the marker changeover

Seed drills with a working width up to 3.0 m can be equipped with a hydraulically actuated marker changeover (Fig. 165/1).

The centrally arranged, hydraulically actuated marker changeover swivels the track markers using ropes.

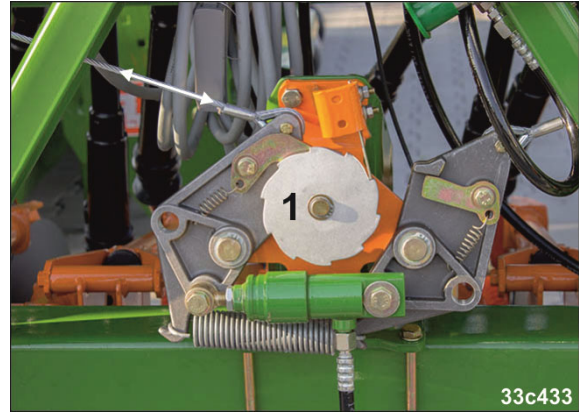


Fig. 165

1. Position the implement on the field.
2. Apply the tractor parking brake, switch the tractor engine off and remove the ignition spanner.
3. Unlock both track markers.
 - 3.1 Press the track marker boom against the rubber block (Fig. 166/1).



CAUTION

When releasing the linch pin, lower the track marker until the rope is taut.

- 3.2 Hold onto the track marker tightly, pull out the linch pin (Fig. 166/2) and insert in parking position in the hole (Fig. 166/3).
 - 3.3 Slowly lower both track markers manually until the ropes are taut.
 - 3.4 Actuate the tractor control valve (yellow) and put the active track marker down on the ground.
4. Limit the working depth of the track marker discs to about 5 cm depth by repositioning the chain.
5. Secure the chain with a linch pin (Fig. 167/1).
6. Adjust the track marker length (see section "Adjusting the track marker length", page 137).

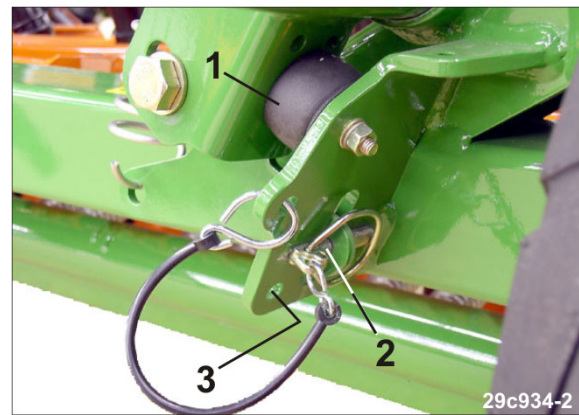


Fig. 166

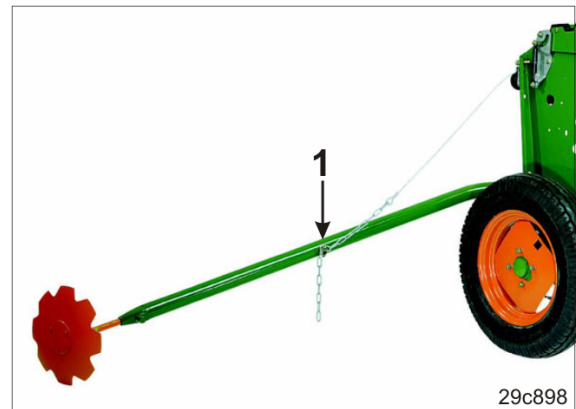


Fig. 167

8.6.2 Moving the track marker on the D9 2500/3000/3500 into working position

1. Position the implement on the field.
2. Apply the tractor parking brake, switch the tractor engine off and remove the ignition spanner.
3. Unlock both track markers.
 - 3.1 Press the track marker boom against the rubber block (Fig. 168/1).
 - 3.2 Pull out the linch pin (Fig. 168/2) and insert it in the parking position in the hole (Fig. 168/3).
3. Direct people out of the swivel area of the track marker.
4. Move track markers to working position.
 - 4.1 Actuate the tractor control valve (yellow) and put the active track marker down on the ground.
5. Adjust the track marker length (see section "Adjusting the track marker length", page 137).

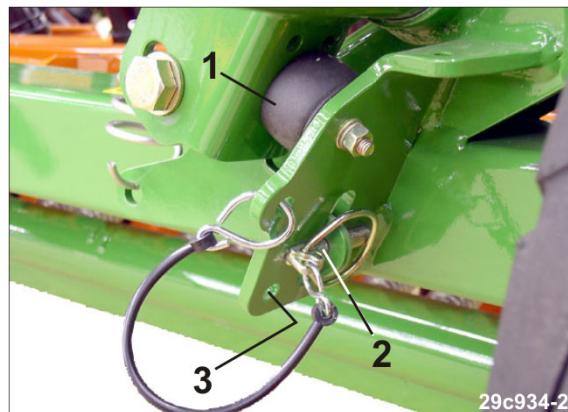


Fig. 168

8.6.3 Moving the track markers on the D9 4000 into working position

The track markers of the D9 4000 Super are so long that they cannot be transported in a vertical position. To prevent exceeding of the permitted transport height, the track markers are folded and tilted towards the centre of the implement during transport.

1. Position the implement on the field.
2. Place both track markers on the D9 4000 Super in a vertical position and secure them.
 - 2.1 Pull out the pin (Fig. 169/1).
 - 2.2 Place the track marker in a vertical position.
 - 2.3 Insert the bolt (Fig. 169/1) into the hole (Fig. 169/2) and secure it (linch pin).
3. Move the track markers on the D9 4000 into working position (see section "Moving the track marker on the D9 2500/3000/3500 into working position", page 136)



Fig. 169

8.6.3.1 Adjusting the track marker length

4. Adjust the track marker length.
 - 4.1 Move track markers into working position.
 - 4.2 Apply the tractor parking brake, switch off the engine and remove the ignition key.
 - 4.3 Loosen 2 bolts (Fig. 170/1).
 - 4.4 Set the track marker length to length "A" (see table Fig. 171).
 - 4.5 Turn the track marker disc to adjust the working intensity of the track markers so that they run roughly parallel to the direction of travel on light soil and are more attuned to grip on heavier soil.
 - 4.6 Tighten screws (Fig. 170/1).

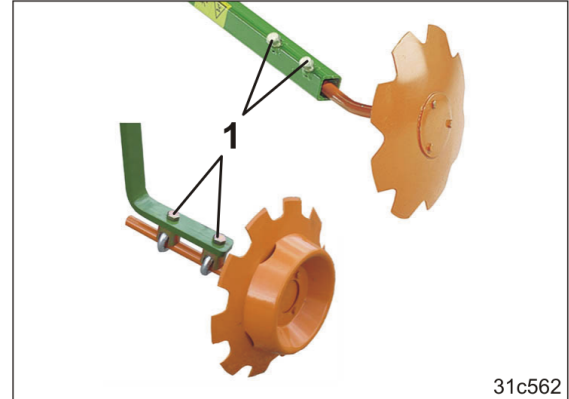


Fig. 170

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

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

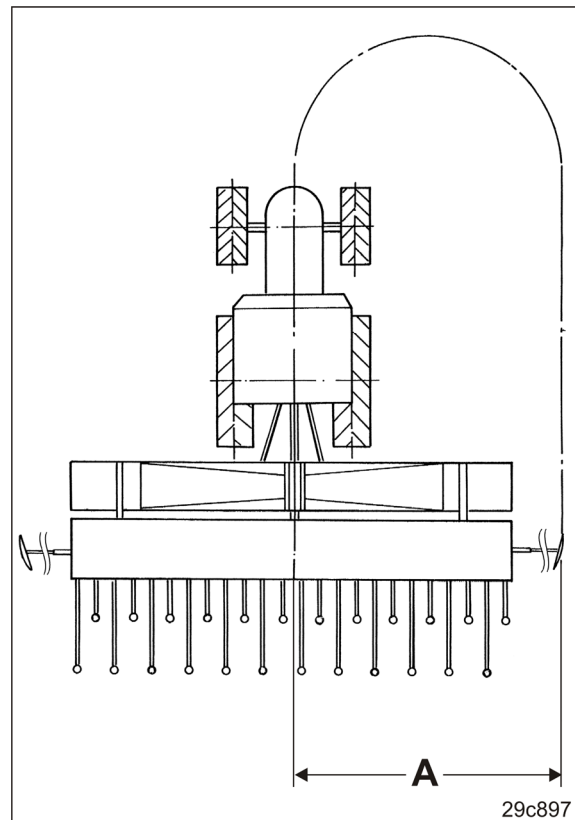


Fig. 171

8.6.4 Moving the track marker to transport position

1. Direct people out of the swivel area of the track marker.
2. Actuate the control valve (yellow).
 - Raise both track markers like when turning at the end of the field (see Fig. 172).
3. Apply the parking brake, switch the tractor engine off and remove the ignition key.



Fig. 172

4. Secure both track markers with linch pins.
 - 4.1 Press the track markers booms against the rubber block (Fig. 173/2) and secure with a linch pin (Fig. 173/1).

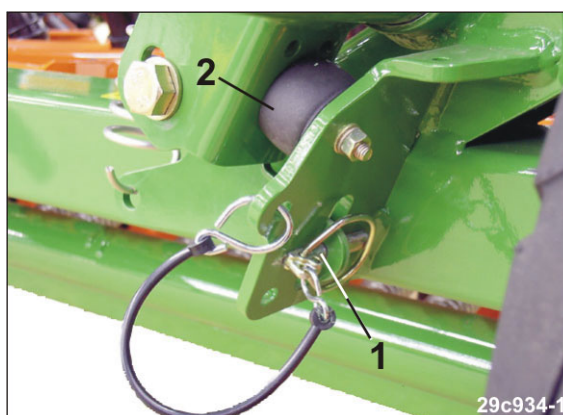


Fig. 173

only D9 4000 Super:

The long track markers of the D9 4000 Super may only be transported tilted towards the centre of the implement so that the permissible transport height is not exceeded.

Both track markers have a joint. Tilt the track markers towards the centre of the implement and secure with the pin (Fig. 174/1). Secure the bolt with a linch pin.



Fig. 174

8.7 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 8.7.1, page 139.
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 Coulter pressure adjustment, central

1. Place the calibrating crank (Fig. 175) on the setting spindle and set the coulter pressure.

Turning the calibration crank

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

2. Clip the calibration crank into its transport bracket.



Fig. 175

8.7.2 Coulter pressure adjustment, hydraulic



WARNING

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

Setting the coulter pressure

1. Actuate the control valve (blue).
→ 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. 176/1) below the stop (Fig. 176/3) into a hole in the group of holes and secure it with a linch pin (Fig. 176/2).

Each of the holes is identified with a number.

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

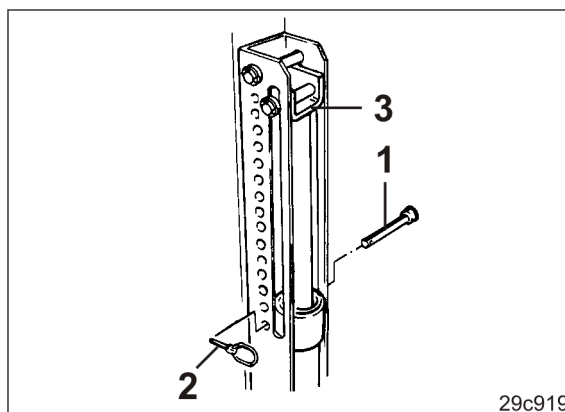


Fig. 176

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

Setting the coulter pressure higher

1. Shift the control valve (blue) to the float position.
2. Apply the parking brake, switch the tractor engine off and remove the ignition key.
3. Insert the bolt (Fig. 177/1) above the stop (Fig. 177/3) into a hole in the group of holes and secure it with a linch pin (Fig. 177/2).

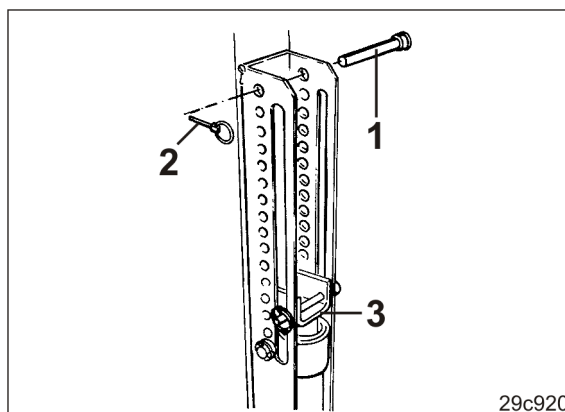


Fig. 177

8.7.3 Adjusting the seed placement depth for the outer coulters

1. Move the implement into working position on the field.
2. Release the nuts (Fig. 178/1).
3. Set the seed placement depth of the outside coulter (Fig. 178/3) by turning the cam disc (Fig. 178/2).
4. Tighten the nuts.

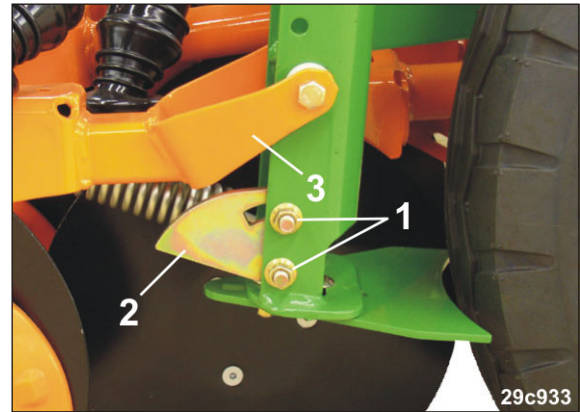


Fig. 178

8.7.4 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. 78, page 76).
2. Insert the shoulder of the depth control disc/wheel into the required hole. The lever (Fig. 179/1) is used to actuate the depth control disc/wheel.
3. Adjust all of the depth control discs/wheels equally.

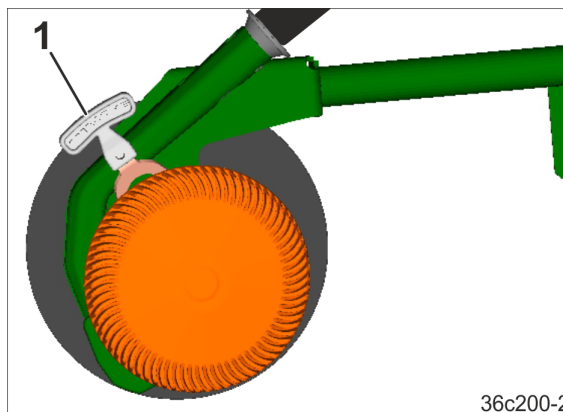


Fig. 179

Dismounting the depth control disc/wheel

1. Engage the shoulder of the lever beyond the group of holes (Fig. 180/1) into the elongated slot (Fig. 180/2).
2. Move the depth control disc/wheel in the elongated slot (Fig. 180/2) until the depth control disc/wheel is released from the locking mechanism (Fig. 180/3).
3. Pull the depth control disc/wheel off of the coulter.

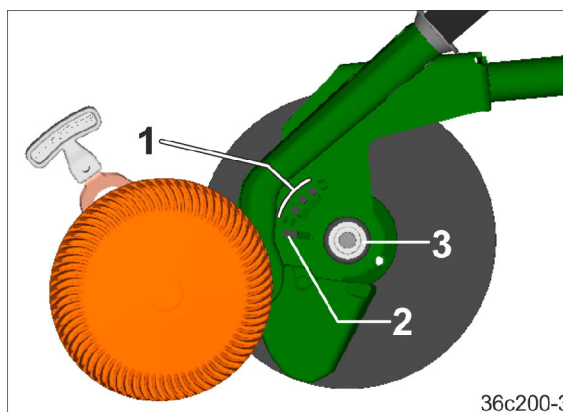


Fig. 180

Mounting the depth control disc/wheel

1. Insert the depth control disc/wheel on the locking mechanism (Fig. 180/3). In doing so, the shoulder engages in the slotted hole (Fig. 180/2) of the coulter.
2. Move the depth control disc/wheel in the elongated slot (Fig. 180/2) 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. 180/1).



Fasten the depth control disc/wheel with

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

8.8 Attaching the band seeding shoe to the WS coulter

Fix the band seeding shoe (Fig. 181/1) to the WS coulter with a bolt and secure with a linch pin.

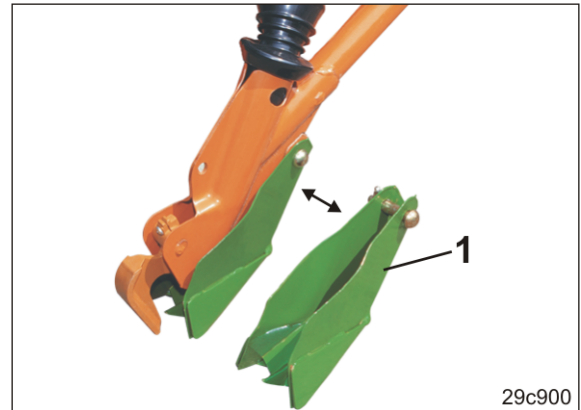


Fig. 181

8.9 Adjusting the seed drill wheel mark eradicator

8.9.1 Moving the seed drill wheel mark eradicator into working position

1. Adjust the seed drill wheel mark eradicator
 - 1.1 Unscrew the screw (Fig. 182/1).
 - 1.2 Set the working depth of the seed drill wheel mark eradicator and bolt firmly.
 - 1.3 Secure the bolt with the lock nut.

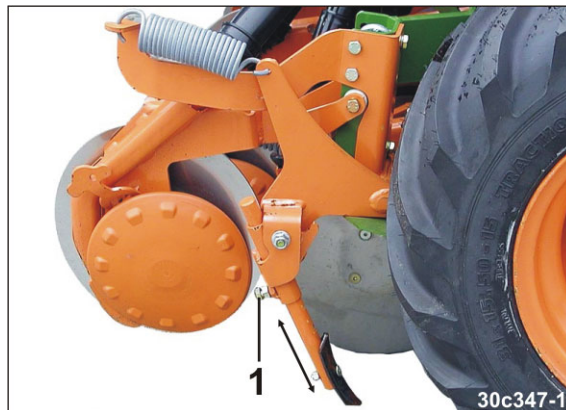


Fig. 182

8.9.2 Moving the seed drill wheel mark eradicator into transport position

Seed drills with a working width of more than 3.5 m can be equipped with seed drill wheel mark eradicators. The transport width of the seed drill with seed drill wheel mark eradicators increases by 15 cm.



DANGER

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

Remove any wheel mark eradicators protruding into the road before transport if the permitted transport width is exceeded.

1. Remove the wheel mark eradicators.
 - 1.1 Unscrew two eye nuts (Fig. 183/1).
 - 1.2 Remove the wheel mark eradicator (Fig. 183/2).

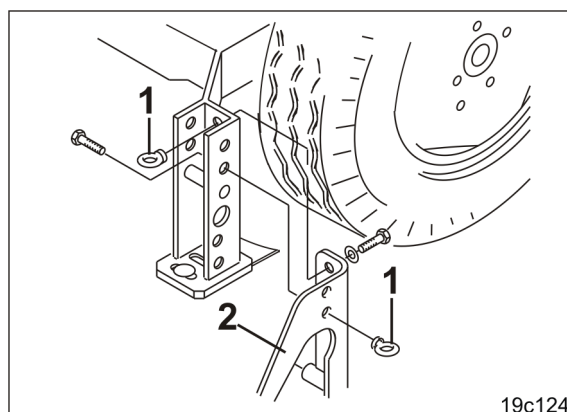


Fig. 183

8.10 Adjusting the tractor wheel mark eradicator



Move the tractor wheel mark eradicator into working position on the field, and after the work is finished, fasten it right at the top. Otherwise there is a risk of damage to the tractor wheel mark eradicator when the implement is parked.



DANGER

Before making any adjustments, apply the parking brake, switch the tractor engine off and remove the ignition key.

8.10.1 Tractor wheel mark eradicator, reinforced

Adjust the tractor wheel mark eradicator horizontally:

1. Hold the tractor wheel mark eradicator by the handle (Fig. 184/1).
2. Unscrew the bolts (Fig. 184/2) and adjust the tractor wheel mark eradicator horizontally.
3. Tighten the bolts (Fig. 184/2).

Adjust the tractor wheel mark eradicator vertically:

1. Hold the tractor wheel mark eradicator by the handle (Fig. 184/1).
2. Unscrew the pin (Fig. 184/3) and adjust the tractor wheel mark eradicator vertically.
3. After making the adjustment, secure the bolt (Fig. 184/3) with a linch pin.

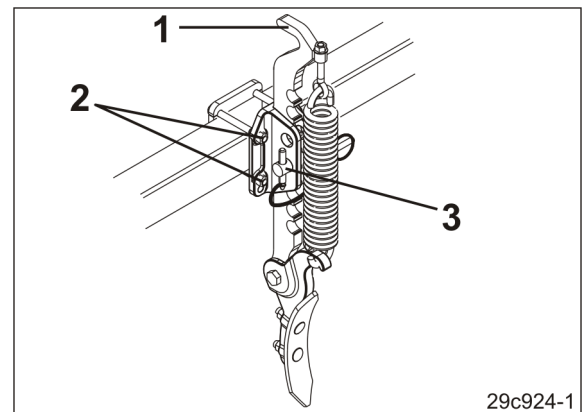


Fig. 184

8.10.2 Tractor wheel mark eradicator, swivelling

1. Adjusting the tractor wheel mark eradicator
 - 1.1 Loosen the lock nut and the hexagonal bolt (Fig. 185/1).
 - 1.2 Readjust the tractor wheel mark eradicator horizontally and vertically.
 - 1.3 Loosen two nut (Fig. 185/2) and swivel the tractor wheel mark eradicator.
 - 1.4 Tighten the nuts.
 - 1.5 Tighten the hexagonal bolt and secure it with the lock nut.

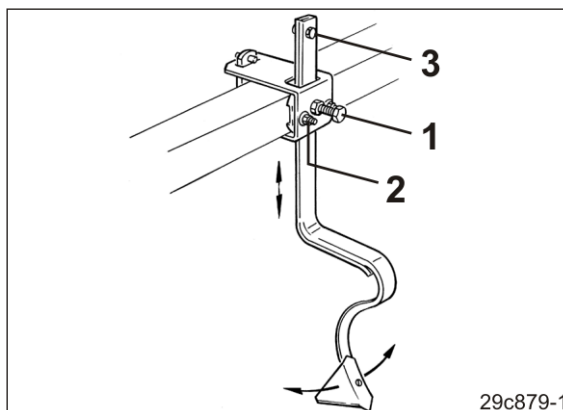


Fig. 185



The locking bolt (Fig. 185/3) prevents the wheel mark eradicator from being lost if the retaining screws were to come undone.



The tractor mark is best levelled if the tractor wheel mark eradicator covers the track with the loose soil lying next to the track.

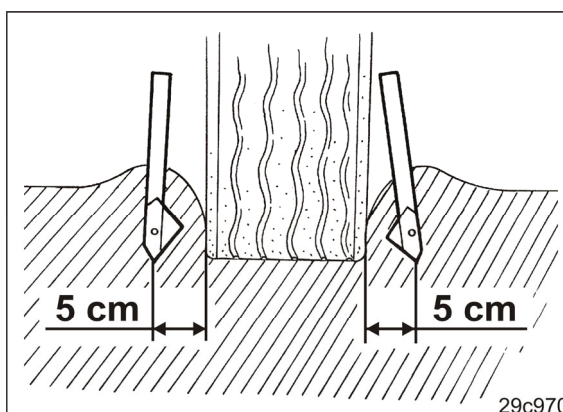


Fig. 186

8.11 Adjusting the exact following harrow

Before you make any settings on the exact following harrow, secure the tractor / implement against unintentional starting and rolling away, see section 6.2, page 103.

8.11.1 Working width of the exact following harrow

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

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

The greater the forward speed, the further the square tubes (Fig. 187/1) have to be pushed outwards.

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

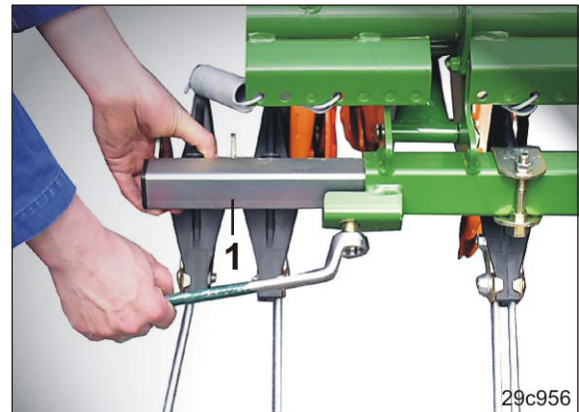


Fig. 187

8.11.2 Exact following harrow tine position

8.11.2.1 Adjusting the exact following harrow tine position by adjusting the screws

1. Adjust the exact following harrow tines according to the table (Fig. 85).
2. The exact following harrow tines are set by evenly applying the harrow brackets.
 - 2.1 Loosen the bolts (Fig. 188/1).
 - 2.2 Move the holder to a new hole (Fig. 188/2).
 - 2.3 Insert the bolts and tighten them.

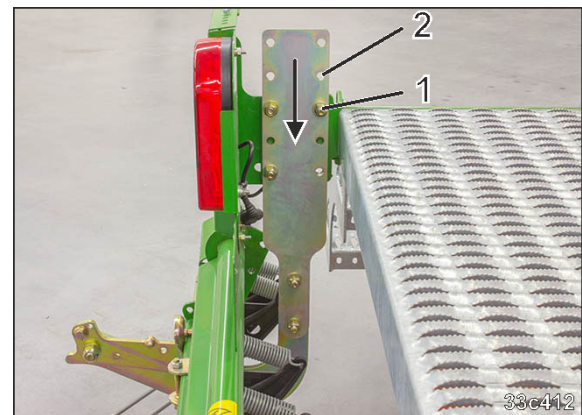


Fig. 188

8.11.2.2 Adjusting the exact following harrow tine position by adjusting spindles

1. Remove the linch pin (see below).
2. Insert the ratchet.
3. Set the distance "A" (Fig. 85).
 - 3.1 Adjustments are made by uniformly turning the spindle (Fig. 189) on all of the adjuster segments.



Fig. 189

4. Secure the adjustment by inserting a linch pin (Fig. 190/1).

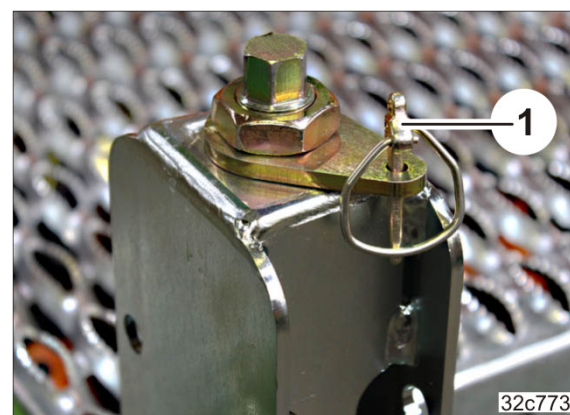


Fig. 190

5. Insert the ratchet into the cartridge (Fig. 191/1).



Fig. 191

8.11.3 Exact following harrow pressure, manual adjustment

1. Tension the tension springs of the exact following harrow with the calibration crank.
2. Insert the pin (Fig. 192/2) in a hole beneath the lever (Fig. 192/1) and secure with a spring cotter pin.
3. Relieve the calibration crank.



Fig. 192

8.11.4 Exact following harrow pressure, hydraulic adjustment



WARNING

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

1. Set the increased exact following harrow pressure.
 - 1.1 Put the control valve (blue) to the float position.
 - 1.2 Apply the parking brake, switch the tractor engine off and remove the ignition key.
 - 1.3 Insert a pin (Fig. 193/3) in a hole above the lever (Fig. 193/2) and secure with a spring cotter pin.
2. Set the required exact following harrow pressure
 - 2.1 Apply pressure to control valve (blue).
 - 2.2 Apply the parking brake, switch the tractor engine off and remove the ignition key.
 - 2.3 Insert the pin (Fig. 193/1) in a hole underneath the lever (Fig. 193/2) and secure with a spring cotter pin.
3. Put the control valve (blue) to the float position.

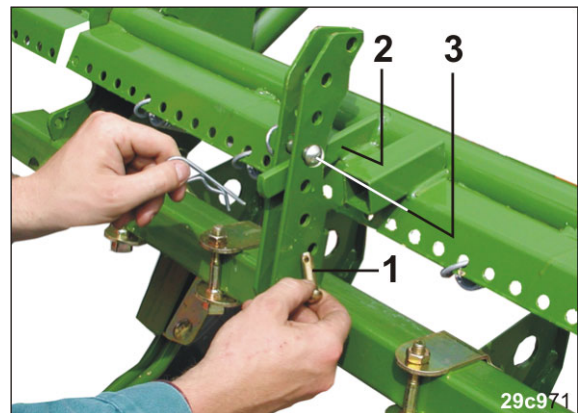


Fig. 193

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

8.11.5.1 Move the exact following harrow into working position

Move the exact following harrow into working position, see section "Working width of the exact following harrow", page 147.

8.11.5.2 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 163. To avoid exceeding the permissible transport width, insert both square tubes (Fig. 194/1) with the outer harrows into the harrow carrier tube up to the stop.

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

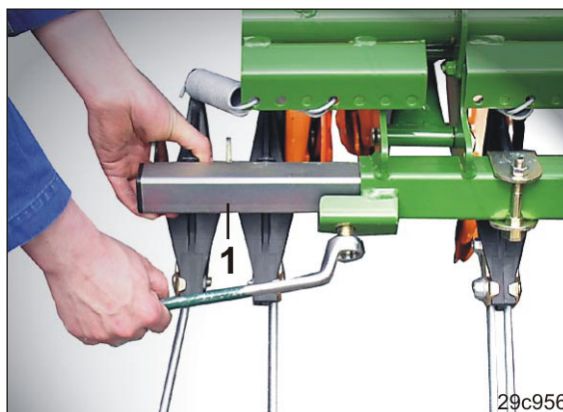


Fig. 194

8.12 Adjusting the roller harrow

8.12.1 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 spanner.
3. Change the pitch of the tines to the ground by repositioning the safety pin for the tube (Fig. 195/1)
 - o below the link (Fig. 195/2),
 - o in all segments,
 - o in the same hole.

The deeper the safety pin for the tube (Fig. 195/1) is inserted in the adjuster segment, the flatter the pitch.

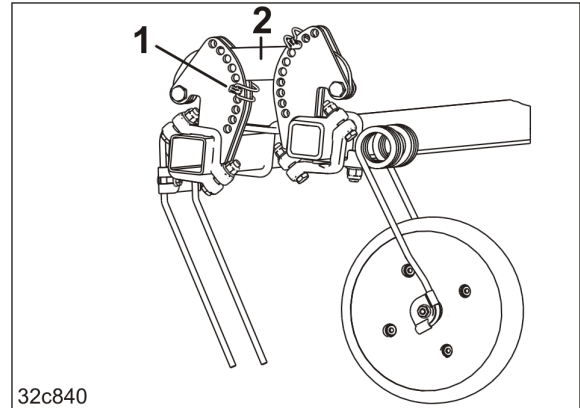


Fig. 195

8.12.2 Setting the 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 spanner.
3. The working depth of the harrow tines is adjusted by repositioning the safety pin for the tube (Fig. 196/1)
 - o above the link (Fig. 196/2),
 - o in all segments,
 - o in the same hole.

The lower the safety pin for the tube (Fig. 196/1) is inserted in the adjusting segment, the greater the working depth.

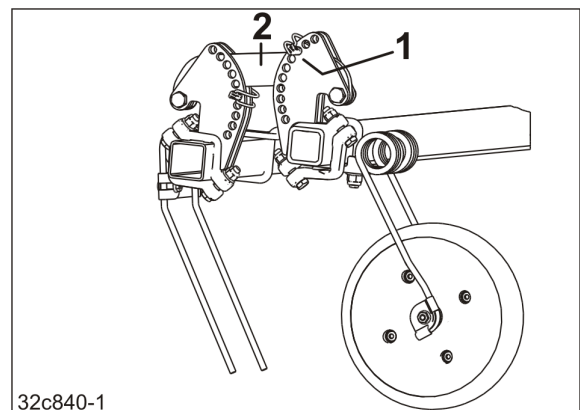


Fig. 196

8.12.3 Setting the roller contact pressure

1. Move the implement on the field to the working position.
2. Swivel both handles (Fig. 197/1) up.

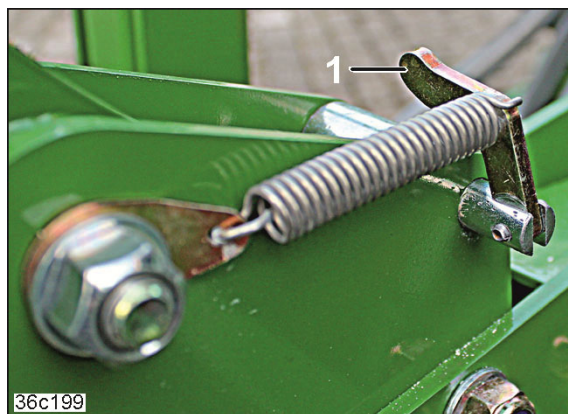


Fig. 197

The two spring-loaded levers (Fig. 198/1) serve to adjust the roller contact pressure on the ground.

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

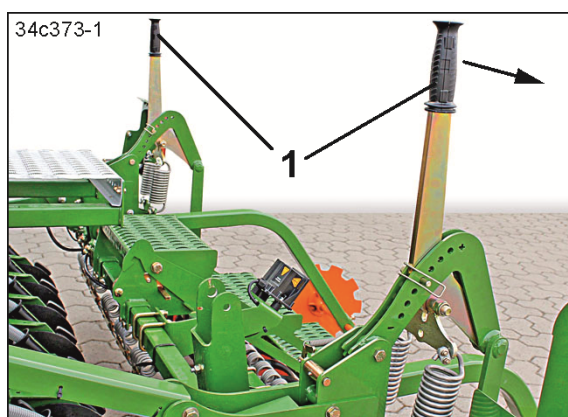
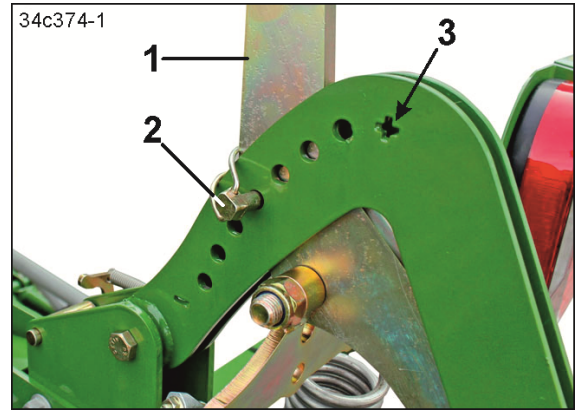


Fig. 198

4. Secure the position of the lever (Fig. 199/1) with a safety pin for the tube (Fig. 199/2).
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. 199/2) is inserted in the hole beside the plus symbol (Fig. 199/3).

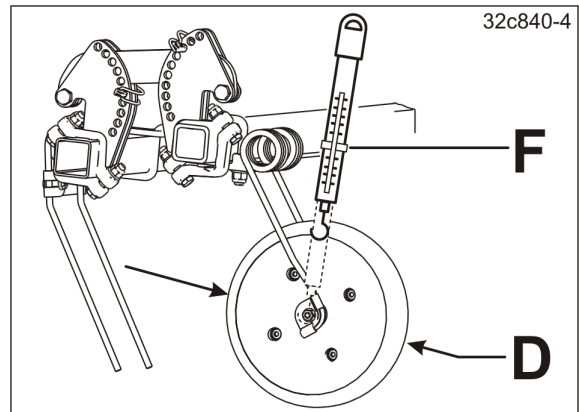

Fig. 199

6. Check the roller contact pressure, e.g. with a spring balance (see Fig. 200).

Roller diameter D	Roller contact pressure F
250 mm	max. 20 kg
330 mm	max. 35 kg



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


Fig. 200

8.12.4 Lifting/lowering the roller harrow

8.12.4.1 Lifting the roller harrow (deactivate)

1. Set the implement down on a level surface.
2. Briefly pull on the lever (Fig. 201/1) and remove the safety pin for the tube (Fig. 201/2).

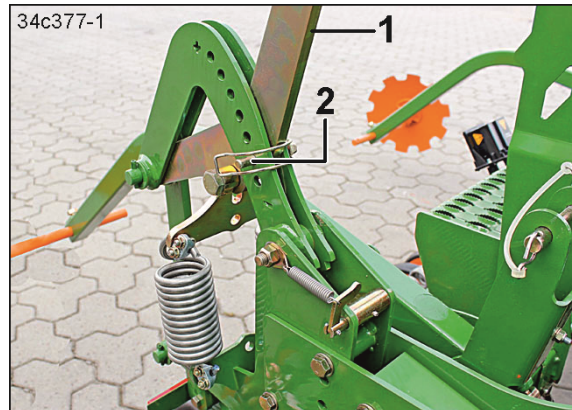


Fig. 201

3. Swivel the handle (Fig. 202/1) down.



Fig. 202

4. Push the lever (Fig. 203/1) in the direction shown by the arrow until the clamping plate (Fig. 203/2) engages.
5. Insert the safety pin for the tube in a free hole in parking position.
6. Repeat the procedure for the second lever.

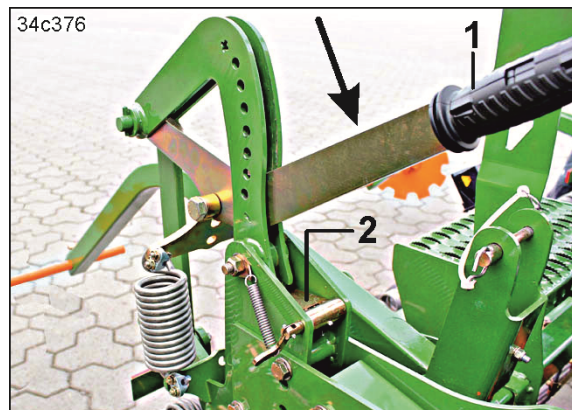


Fig. 203

8.12.4.2 Lowering the roller harrow (activate)

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. 204/1) up.

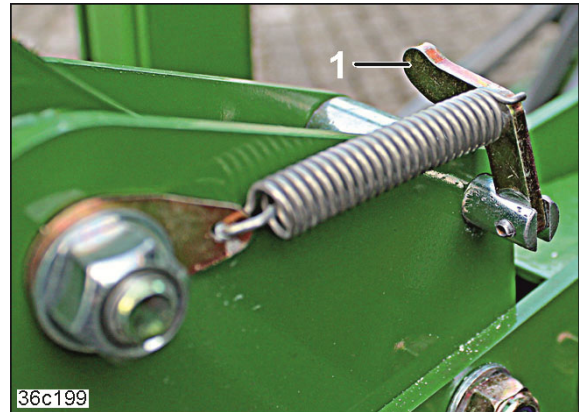


Fig. 204

4. Pull the lever (Fig. 205/1) 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 152).

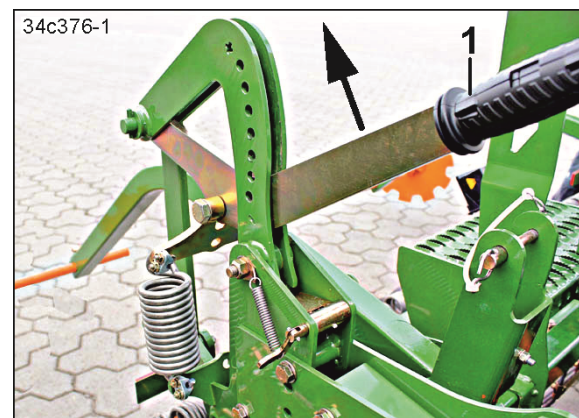


Fig. 205

8.13 Seed drills with mechanical or hydraulic actuation of the lay shaft coupling

8.13.1 Activating tramline control

1. The required tramline control can be found in the "Tramline controls" table.



The control box is equipped with the desired tramline control during cultivation.

Changing to a different tramline control means that the divider wheel needs to be replaced (Fig. 206/1). For certain controls it is enough to reposition the sprockets (Fig. 206/2).

Always replace the display wheel (Fig. 206/3) or the label the existing display wheel with the new tramline numbers.

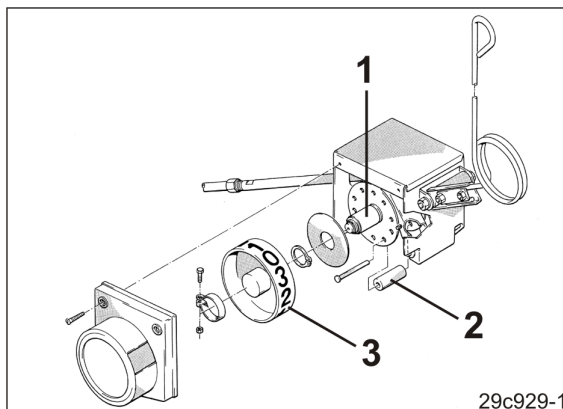


Fig. 206

2. You can find the required tramline counter in the section "Examples for setting up tramlines".
3. Set the tramline counter just before starting work by pulling on the operating lever (Fig. 207/1). The current tramline counter is displayed in the window (Fig. 207/2) of the control box. Only actuate the operating lever using the rope (Fig. 207/3) in the tractor cab.

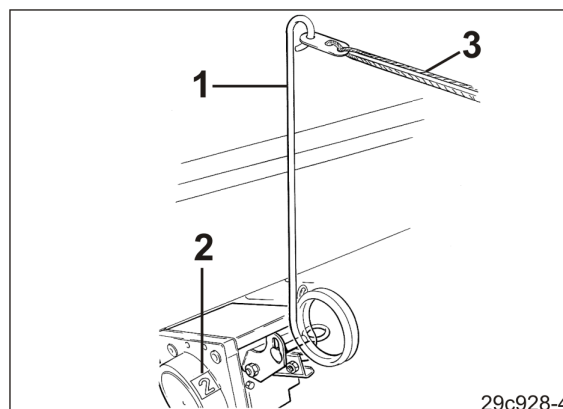


Fig. 207

8.13.2 Deactivating tramline control

When actuating the tractor control valve (yellow), the track markers and the tramline counter are actuated simultaneously. At tramline number "0", the tramline marker is lowered.

If only the track markers should be working, make the following settings:

1. Put the control valve (yellow) to the float position.
2. Pull on the operating lever (Fig. 208/1) of the control box if the number (Fig. 208/2) in the window of the control box is at "0". The tramline counter may not display "0".
3. Unscrew the locking bolt (Fig. 208/A) and slide it down in the elongated slot and then tighten it (see Fig. 208/B).

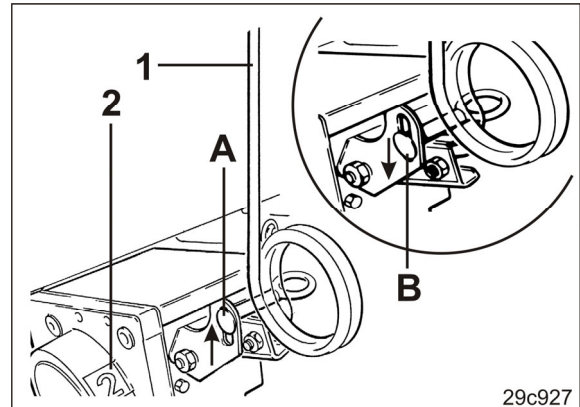


Fig. 208

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



The tramline counter (Fig. 208/2) should not show "0". Otherwise tramlines are continuously created.

8.14 Seed drills with electrical actuation of the lay shaft coupling

8.14.1 Activating tramline control

1. You can find the required tramline control and the tramline counter for the first field pass in the tables (Fig. 101 und Fig. 102).
2. The tramline control and the tramline counter must only be set on the control terminal just before starting work, see "AmaDrill+" operating manual.

8.14.2 Deactivating tramline control

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

8.15 Switching the left side of the seeding shaft

8.15.1 Switching off the left side of the seeding shaft

3. Switch off the left side of the seeding shaft (Fig. 209)
 - 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 tram-line seed metering wheels on the left hand side of the seeding shaft.

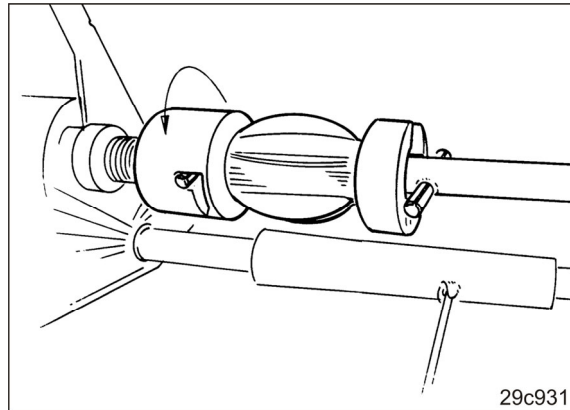


Fig. 209

8.15.2 Switching on the left side of the seeding shaft

1. Switch on the left side of the seeding shaft (Fig. 210)
 - 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 tram-line seed metering wheels on the left hand side of the seeding shaft.

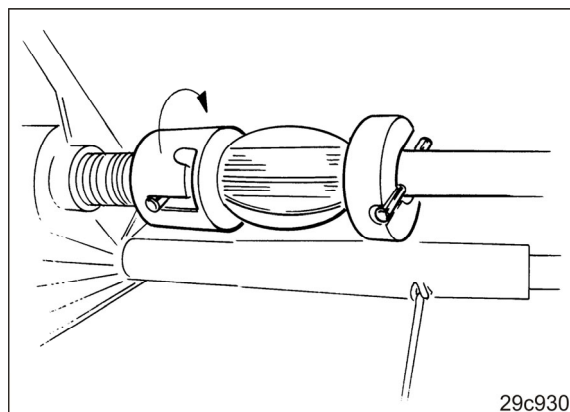


Fig. 210

8.16 Moving the tramline marker into working/transport position



WARNING

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

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

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

8.16.1 Moving the tramline marker to working position

1. Hold the track disc carrier, remove the pin (Fig. 211/1) and swivel the track disc carrier downwards.
The pin is secured with a spring cotter pin.
2. The implement is equipped with two track discs. Repeat the process.

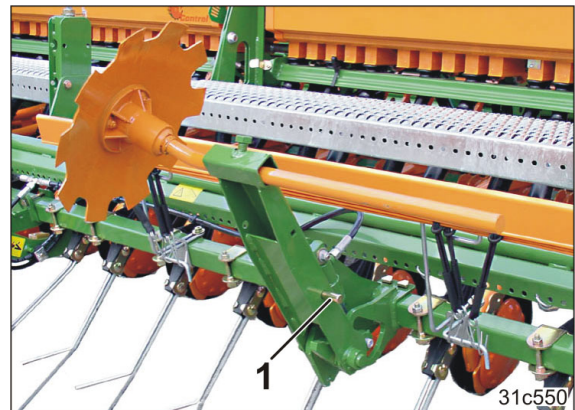


Fig. 211

3. Set the tramline counter to "0".
4. Actuate the control unit (yellow) and lower the track discs.
5. Apply the parking brake, switch the engine off and remove the ignition key.
6. Unscrew the bolt (Fig. 212/1).
7. Set the track disc such that it marks the tramline created by the tramline coulters.
8. Adjust the work intensity to the soil by rotating the disc.
Adjust the discs to run roughly parallel with the direction of travel on light soils, and with more grip on heavy soils.
9. Tighten the bolt (Fig. 212/1).
10. The implement is equipped with two track discs. Repeat the process.

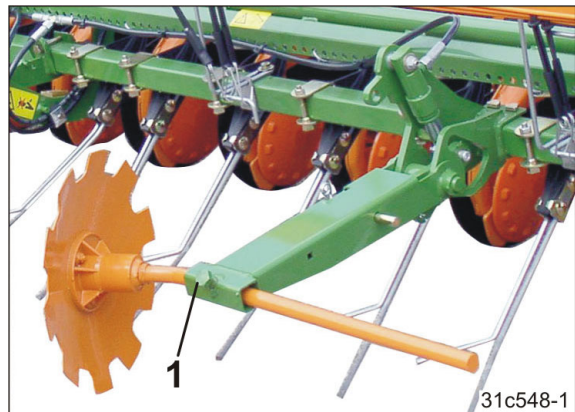


Fig. 212

8.16.2 Moving the tramline markers to the transport position



The tramline counter must not point to "0".

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

1. Apply the parking brake, switch the engine off and remove the ignition key.
2. Secure the track disc carrier (Fig. 213/1) to the transport brackets (Fig. 213/2).
3. Secure the pin (Fig. 213/3) with spring cotter pins (Fig. 213/4).
4. Unscrew the fastening bolt (Fig. 213/6).
5. Pull the track disc (Fig. 213/5) out of the track disc carrier (Fig. 213/1) and take it with you in a suitable storage compartment.

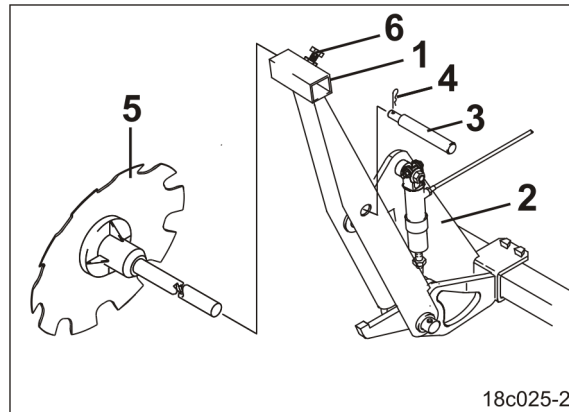


Fig. 213

8.17 Moving the road safety bar into transport/parking position

Transport position

1. Push the two-part road safety bar (Fig. 214/1) over the tine tips of the exact following harrow.
2. Fasten the road safety bar with spring holders (Fig. 214/2) to the exact following harrow.

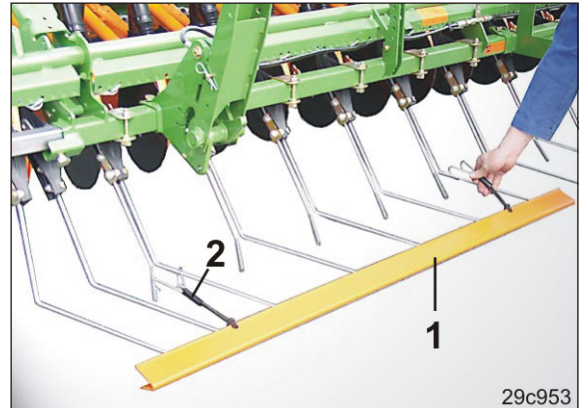


Fig. 214

Parking position

Connect the road safety bars (Fig. 215/1) into each other and attach them to the transport bracket (Fig. 215/2).

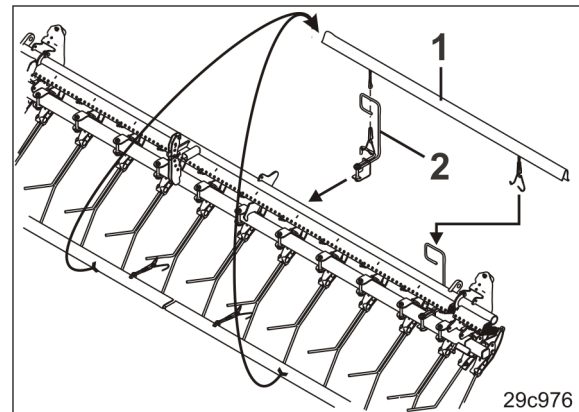


Fig. 215

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. 216

9.1 Moving the seed drill into transport position

1. If necessary, advance the tramline counter. The tramline counter may not display "0".
2. 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.
3. Fold and lock the track markers Page 134
 - o if the track markers are attached on the soil tillage implement, see the "Soil tillage implement" operating manual
4. Move the tramline markers to the transport position Page 159
5. Move the exact following harrow into transport position Page 150
6. Move the road safety bar of the exact following harrow into transport position Page 161
7. Move the tractor wheel mark eradicator into transport position and lock it Page 145
8. Move the seed drill wheel mark eradicators into transport position Page 144
9. Empty the seed box if one of the permissible values for the total tractor weight, axle loads and tyre load-bearing capacity is exceeded when the seed box is full (see also section "Checking the suitability of the tractor", page 98) Page 175
10. Close the seed box cover.
11. Fold up the steps Page 115
12. Switch off the control terminal (see the "Control terminal" operating manual)
13. Lock the tractor control unit.
14. Check the lighting system and warning signs for proper function and cleanliness Page 45
15. Disable the tractor control units required for operating the implement (see also tractor operating manual) Page 43
16. Read and observe section 9.2:
Legal guidelines and the safety instructions before and during road transport.
17. Lift up the seed drill. Lock the lifting frame into transport position (see the operating manual for the soil tillage implement).

18. Switch on the warning beacon and check operation before driving off Page 163

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.
- the warning signs and yellow reflectors must be 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.



WARNING

Risk of crushing, cutting, being caught and/or drawn in, or impact from tipping and insufficient stability.

- Drive in such a way that you always have full control over the tractor with the attached machine.
In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected or coupled implement.
- Before transportation, fasten the side locking 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!

During road transport, extended outer harrow elements can protrude on the sides into the traffic area and endanger other road users. 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.



WARNING

Wheel mark eradicators that protrude into the traffic area put other road users at risk.

Remove any wheel mark eradicators protruding into the road before transport if the permitted transport width is exceeded.

10 Use of the implement

When using the implement, observe

- Section "Warning symbols on the implement", page 18
- Section "Dangers in case of non-compliance with the safety instructions", page 26.

Observing these sections is important for your safety.



Fig. 217



WARNING

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



WARNING

Risk of contusions, drawing in and catching during implement operation without the intended protective equipment!

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



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

10.1 Initial operation

Initial operation	Before initial commissioning	Specialist workshop	Check and service the hydraulic hose lines. This inspection has to be recorded by the operator.	Section 12.9
			Check Tyre equipment and inflation pressure	Section 4.9.2
			Checking the oil level in the Vario gearbox	Section 12.6
	After the first 10 operating hours		Repair any areas of chafing on hydraulic hose lines and pipes.	
			Check the hydraulic hose lines and connections for visible damage. Have any defects remedied in a specialist workshop.	
		Specialist workshop	Check and service the hydraulic hose lines based on the service schedule. This inspection has to be recorded by the operator.	Section 12.9
			Check the tyre tightening torques.	
		Specialist workshop	Check all bolted connections for a secure fit.	Section 12.11

10.2 Moving the implement from transport into working position

1. Move the road safety bar to the parking position Page 161
2. Move the exact following harrow into working position Page 150
3. Move the seed drill wheel mark eradicator into working position Page 144
4. Move the tramline marker into working position Page 159
5. Move the tractor wheel mark eradicator into working position Page 145
6. Check all implement settings Page 114
7. Instruct any people in the area to stand at a minimum distance of 20 m from the implement.
8. Move track markers into working position Page 134.
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 by actuating the control box
 - 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 3-point hydraulic system.
14. Check / correct after 30 m
 - o the placement depth of the seed in several places
 - o the work intensity of the harrow.
15. Repeat the calibration test 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 hourly, e.g. each time the seed hopper is refilled Only implements with RoTeC Control coulters: <ul style="list-style-type: none"> after readjusting the depth control discs/wheels 	Check the seed placement depth	8.7	139
	Check the tillage intensity of the exact following harrow	8.11	147
	Check the tillage intensity of the roller harrow	8.12.3	152

10.3.2 Check the seed rate using the "AMALOG+" control terminal as an example

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 on-board computer. The seeding shaft connected to the Vario gearbox also rotates. The implement sows the seed.

When the implement is sowing, a small circle flashes in the display (Fig. 218/1) under the arrow and the figure (Fig. 218/2) shows the forward speed [km/h].

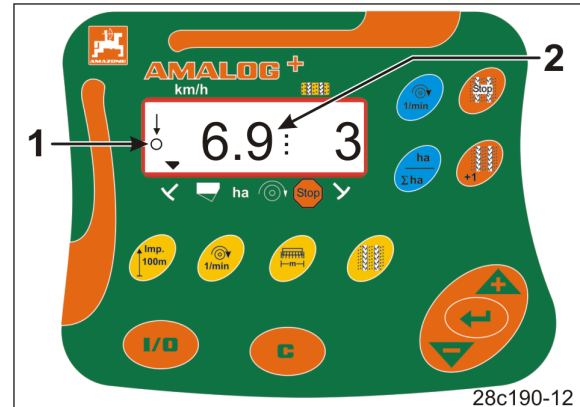


Fig. 218

If seeding is interrupted, e.g.

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



Fig. 219

10.3.3 Track marker

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

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



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

10.3.4 Fill level indicator

A fill level indicator (Fig. 220/1) shows the filling level in the seed box.



Fill the seed box before the zero mark is reached.

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



Fig. 220

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.
4. Start the field run.

10.5 End of work in the field

Move the seeding combination into transport position, see section 9.1, page 162.



DANGER

Folding in and locking the track markers

.

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.

10.6 Emptying the seed box and seed housing



CAUTION

Before working on the implement

- couple the seed drill and tractor or 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 radar pulses.



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. The seed drill and tractor are coupled to each other.
2. Secure the tractor and implement against unintentional start-up and rolling.



When emptying the seed box, 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.



If the seed drill is equipped with the AmaDrill+ control terminal and electronically regulated seed rate adjustment (see section "Seed rate, electronic regulation", page 62), further settings can be found in the AmaDrill+ operating manual.



Section "Hydr. seed rate remote control" on page 132 describes the adjustment of the gearbox lever, if equipped accordingly.

3. Put the bottom flap setting lever in hole 1.
4. Set the pointer (Fig. 221/2) of the gearbox lever to the gearbox setting value 100.
5. Firmly tighten the locking knob (Fig. 221/1).

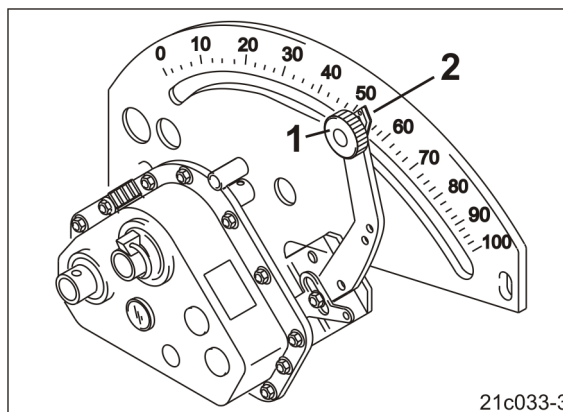


Fig. 221

6. Place the calibration trays (Fig. 222/1) on the funnel rail, (see section "Placing the calibration trays on the funnel rail", page 116).
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 process until the seed box is empty.

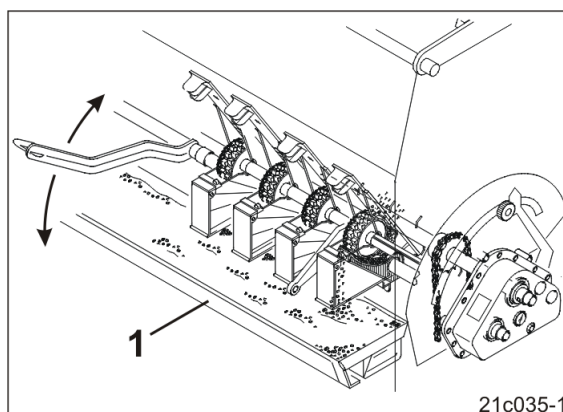


Fig. 222

12. Empty the seed housing.
 - 12.1 Use the tractor to lift the seed drill until the wheels will turn freely.
 - 12.2 Apply the parking brake, switch the tractor engine off and remove the ignition key.
 - 12.3 Insert the calibration crank (Fig. 223/1) into the square tube on the right wheel.
 - 12.4 Fill the calibration trays by turning the seed drill wheel with the calibration crank repeatedly until the seed housings are emptied.

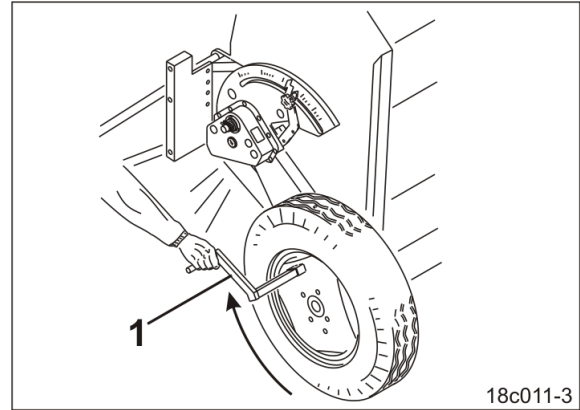


Fig. 223

14. Clean the seed box and the metering unit.
15. Lock the bottom flap setting lever in hole 8 if the implement will be parked for a longer period.
16. Attach the calibration trays to the seed box.
17. 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 left shut, there is the risk of mice trying to get into the hopper because it still smells like grain even when the hopper is empty. If the bottom flaps are closed, the animals may try to nibble at the bottom flaps.

11 Faults



WARNING

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

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

Secure the tractor and the implement against unintentional start-up and rolling away, before you eliminate any faults on the implement (see section "Securing the tractor/implement against unintentional start-up and rolling").

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

11.1 Track marker boom shears off

Only D9 Super:

If the track marker strikes against a solid obstacle, a bolt shears (Fig. 224/1) and the track marker folds backwards.

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

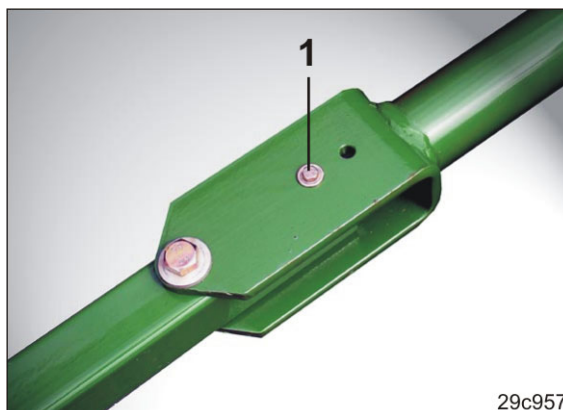


Fig. 224

11.2 Deviations between the preset and actual seeding rates

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

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

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

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

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

2.50 m working width	=100.0 m distance
3.00 m working width	=83.3 m distance
4.00 m working width	=62.5 m distance
4.50 m working width	=55.5 m distance
6.00 m working width	=41.7 m distance.

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

12 Cleaning, maintenance and repairs

12.1 Safety



WARNING

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

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

Secure the tractor and the implement against unintentional start-up and rolling away, before work on the implement (see section "Securing the tractor/implement against unintentional start-up and rolling").



WARNING

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

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

**WARNING****Working on tyres and wheels**

- Repair work on tyres and wheels may only be performed by specialists with suitable installation tools.
- Check the air pressure at regular intervals.
- Inflate tyres to the specified air pressure! There is a risk of explosion if the air pressure in the tyres is too high.
- Before performing any work on the tyres, park the implement safely and secure it against unintentional lowering and rolling away (wheel chocks).
- Tighten or retighten all the fixing screws and nuts in accordance with the specifications of AMAZONEN-WERKE.

**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.

12.2 Cleaning the machine



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 metering unit
- when removing dressing dust.



When cleaning the implement, please note:

- empty the seed hopper and the seed housing before cleaning.
- Observe the statutory requirements for the handling and removal 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. 225



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

- Observe the safety regulations for working with your cleaning device.
- Observe the statutory requirements for the handling and removal 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 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 152.
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. 226

12.4 Lubrication

The lubrication points on the implement are marked with the symbol (Fig. 227).



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.

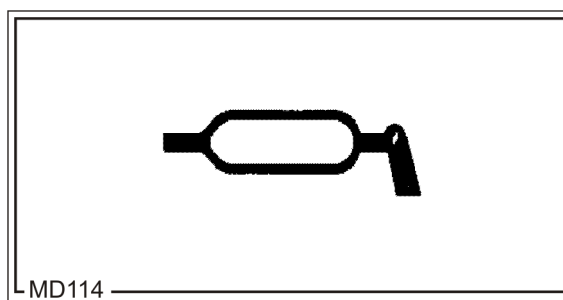


Fig. 227



For lubrication work, use a lithium-saponified multi-purpose grease with EP additives.

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

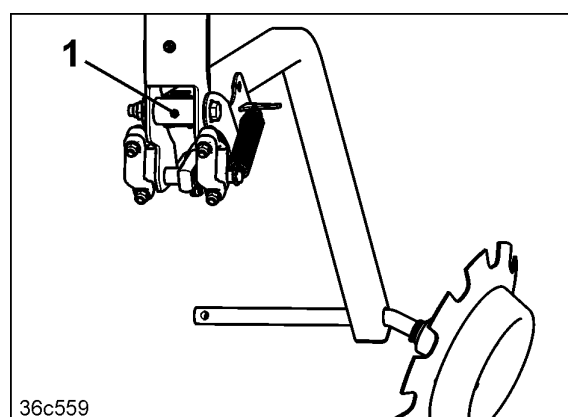


Fig. 228

Fig. 228/...	Component	Number of grease nipples	Lubrication interval
1	Tramline marker	2	50 h

12.5 Maintenance schedule – overview



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

Before each start-up (daily)		
	Visual inspection of the upper and lower link pins	Section 12.8
	Check the hydraulic hose lines for visible defects, damage, chafe marks and wear. Have any defects on the hydraulic hose lines immediately repaired by a specialist workshop.	Section 12.9
	Check all the components of the hydraulic system for leaks	
During operation		
	Overview of checks during operation	Section 10.3.1
After finishing work (daily)		
	Clean the implement (if required)	Section 12.2
Every week		
	Checking tyre pressure	Section 4.9.2
	Check the oil level, in the Vario gearbox	Section 12.6
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 12.9
Every 6 months (at least every 500 operating hours)		
Specialist workshop	Bottom flaps basic position	Section 12.10.5
Specialist workshop	Basic setting of the marker changeover	Section 12.10.6
Specialist workshop	Checking roller chains and chain wheels	Section 12.7

12.6 Checking the oil level in the Vario gearbox

1. Position the implement on a horizontal surface.
2. Check the oil level.

The oil level must be visible in the oil sight glass (Fig. 229/1).

There is no need to change the oil.

The oil filler neck (Fig. 229/2) is used to top up the Vario gearbox.

Refer to the table (Fig. 230) for the grade of transmission oil required.

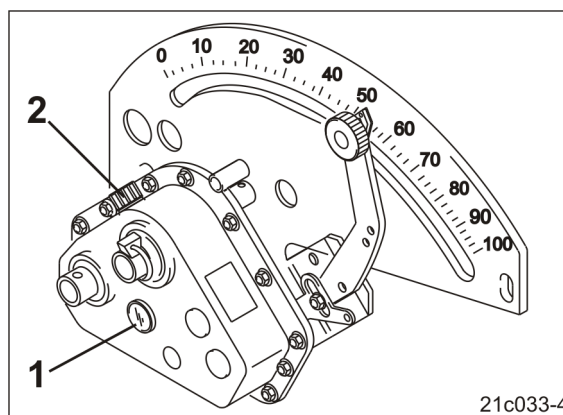


Fig. 229

Hydraulic fluid grades and fill level of the Vario gearbox	
Total filling level	0.9 litres
Transmission fluid ISO VG 22 (as required)	Wintershall Wintal UG22 WTL-HM (ex-works)
	Fuchs Renolin MR5 VG22

Fig. 230

12.7 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.

12.8 Visual inspection of the upper and lower link pins



WARNING

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

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

12.9 Inspection criteria for hydraulic hose lines

Have the hydraulic hoses replaced by a specialist workshop if you determine the following inspection criteria during the inspection:

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

The date of manufacture of the hydraulic hose line on the valve chest is decisive plus 6 years. If the date of manufacture on the valve chest is "2018", then the hose should not be used beyond February 2024. For more information, see "Labelling of hydraulic hose lines".



WARNING

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

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

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

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



- When connecting the hydraulic hose lines to the hydraulic system of connected implements, ensure that the hydraulic system is depressurised on both the drawing vehicle and the trailer.
- Ensure that the hydraulic hose lines are connected correctly.
- Regularly check all the hydraulic hose lines and couplings for damage and impurities.
- Have the hydraulic hose lines checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose lines if they are damaged or worn. Only use our original AMAZONE hydraulic hose lines.
- The hydraulic hose lines should not be used for longer than six years, including any storage time of maximum two years. Even with proper storage and approved use, hoses and hose connections are subject to natural aging, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose lines made of thermoplastics, other guide values may be decisive.
- Dispose of old oil in compliance with regulations. If you have problems with disposal, contact your oil supplier.
- Keep hydraulic fluid out of the reach of children!
- Ensure that no hydraulic fluid enters the soil or waterways.

12.9.1 Labelling of hydraulic hose lines

The valve chest identification provides the following information:

Fig. 231/...

- (1) Manufacturer's marking on the hydraulic hose line (A1HF)
- (2) Date of manufacture of the hydraulic hose line (18/02 = year/month = February 2018)
- (3) Maximum approved operating pressure (210 BAR).

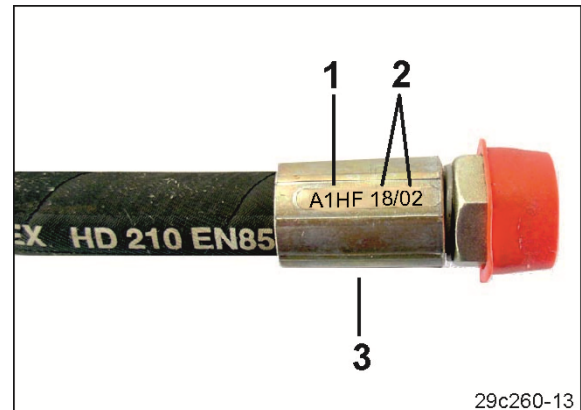


Fig. 231

12.9.2 Installation and removal of hydraulic hose lines



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

- Only a specialist workshop may carry out work on the hydraulic system.
 - Only use original AMAZONE hydraulic hose lines
 - Ensure cleanliness.
 - You must always install the hydraulic hose lines so that, in all states of operation:
 - There is no tension, apart from the hose's own weight.
 - There is no possibility of jolting on short lengths.
 - Outer mechanical influences on the hydraulic hose lines are avoided.
- Use appropriate arrangements and fixing to prevent any scouring of the hoses on components or on each other. If necessary, secure hydraulic hose lines using protective covers. Cover sharp-edged components.
- The approved bending radii may not be exceeded.
 - When connecting a hydraulic hose line to moving parts, the hose length must be appropriate so that the smallest approved bending radius is not undershot over the whole area of movement and/or the hydraulic hose line is not over-tensioned.
 - Fix the hydraulic hose lines to the intended fixing points. There, avoid hose clips, which impair the natural movement and length changes of the hoses.
 - It is forbidden to paint over hydraulic hose lines!

12.10 Work to be performed in a specialist workshop



DANGER

Only allow a person with professional training to perform the maintenance work in this section, (see section "User training", page 15).

12.10.1 Adjusting the wheel scrapers

1. Loosen the bolts (Fig. 232/2).
2. Adjust the wheel scraper (Fig. 232/1).

Distance between scraper and wheel

- approx. 1 cm on inside
- approx. 2 cm on outside.

3. Tighten bolts.

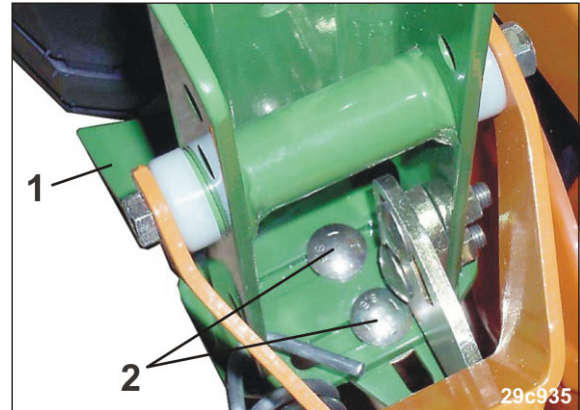


Fig. 232

12.10.2 Setting the control box to control the tramline marker

1. Actuate the operating lever repeatedly until the number "1" appears in the window of the control box.
2. Loosen the set collar (Fig. 233/1).
3. Press the control valve lever (Fig. 233/1) backwards.
4. Attach the set collar.
5. Check that the tramline marker is working.

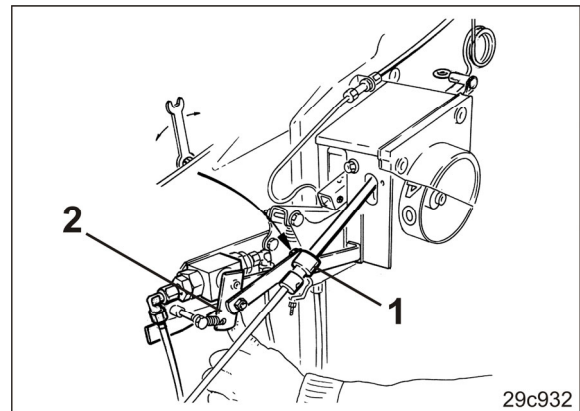


Fig. 233

12.10.3 Replacing the coulter tip (WS coulter)

1. Press in the studs (Fig. 234/1) of the funnel into the coulter body.
2. Pull the funnel out of the coulter body.
3. Remove the bolts (Fig. 234/2) (bolt tightening torque 45 Nm).
4. Lift the share tip (Fig. 234/3) out of its mount.
5. Attach the new share tip in reverse order

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

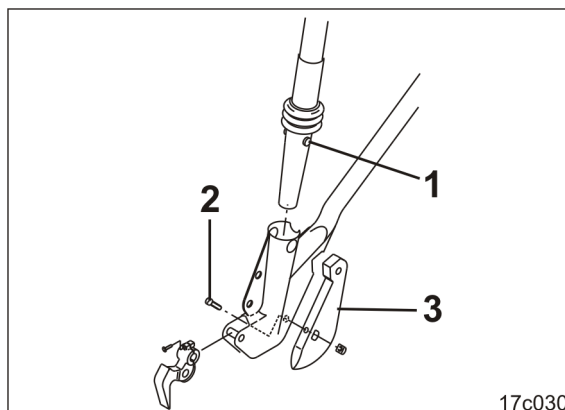


Fig. 234

12.10.4 Replacing the wear tip (RoTeC-Control coulter)

1. Remove the depth control disc (Fig. 235/1) (see section "Mounting the depth control disc/wheel", page 142).
2. Release the cylinder screw (Fig. 235/2) (screw tightening torque 30-35 Nm).
3. Replace the wear tip (Fig. 235/3) and install in reverse sequence.

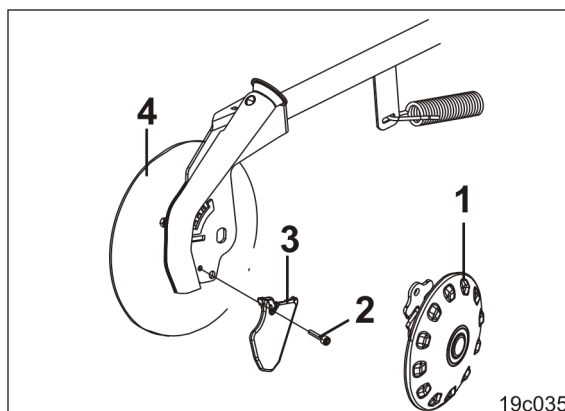


Fig. 235



The wear tip (Fig. 235/3) must not project beyond the edge of the seeding disc (Fig. 235/4). If necessary, replace the seeding disc.

12.10.5 Bottom flaps basic position

1. Empty the seed box and seed housing.
2. Check that the bottom flaps (Fig. 236/1) are easy to move.
3. Insert the bottom flap lever into hole 1 and secure it.
4. Check whether the specified distance "A" is adhered to every seed housing. While doing so, rotate the seed metering wheel to be tested by hand on the seeding shaft.

The distance "A" (Fig. 236) between the bottom flap and seed metering wheel is 0.1 mm to 0.5 mm.

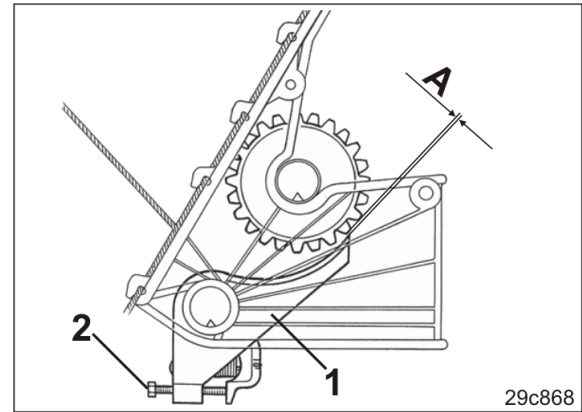


Fig. 236

5. Use the bolt (Fig. 236/2) to set it to the required distance.

12.10.6 Basic setting of the marker changeover

1. Actuate control valve 1.
- Apply pressure to the hydraulic cylinder of the marker changeover.
2. Unscrew the lock nut on the bracket bolt.
 3. Rotate the piston (Fig. 237/1) of the hydraulic cylinder with a flat spanner until the leaf spring (Fig. 237/2) on the marker changeover audibly locks into place and a gap of 1 to 2 mm has been set between the leaf spring and the tooth.
 4. Tighten the lock nut.
 5. Check that the marker changeover is working.

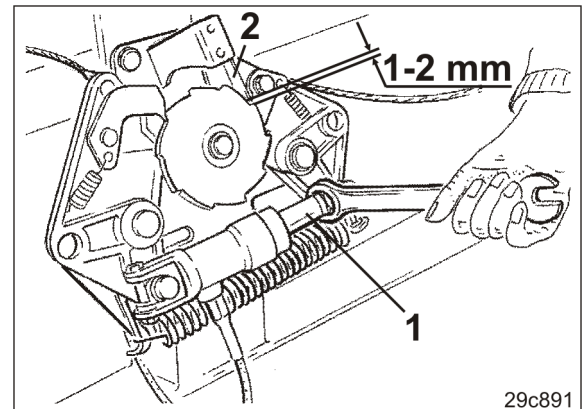


Fig. 237

12.10.7 Folding down the lay shaft

1. Pull the calibration trays (Fig. 238) upwards out of the bracket.



Fig. 238

2. Remove the tension springs (Fig. 239/1) on the lay shaft bearing (Fig. 239/2).



Fig. 239

3. Fold down the lay shaft (Fig. 240/1).



Fig. 240

- At the same time, a bracket (Fig. 241/1) that axially secures the lay shaft will be pulled out of the recess in the seed housing.



Fig. 241

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



Fig. 242

12.10.8 Folding up the countershaft

4. Fold up the lay shaft.
- When doing so, insert the bracket (Fig. 243/1) 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. 243/2).

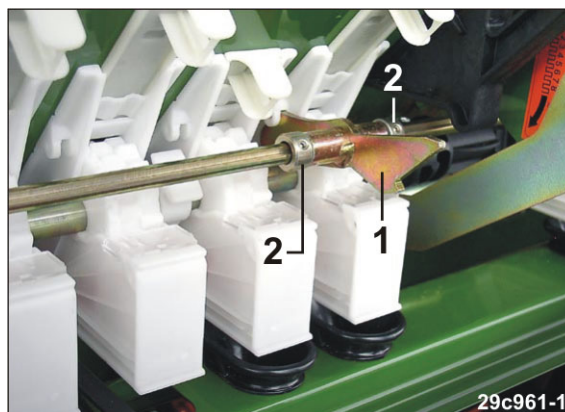


Fig. 243

6. Mesh the teeth (Fig. 244/1) of the drive pinion and the tramline fine seed metering wheels.
7. Tighten the hexagon socket screws (Fig. 244/1) of the drive pinion in the notch of the lay shaft without tension.

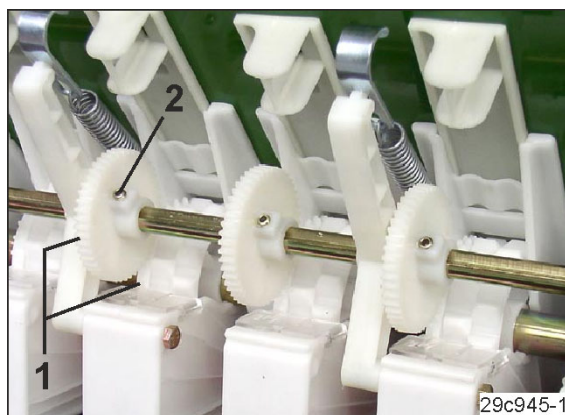


Fig. 244

8. Mesh the cogs (Fig. 245/1) of the lay shaft coupling and the seeding shaft spur gear.
9. Hook in the tension springs (Fig. 245/2) on the pivot bearings (Fig. 245/3).
10. Check that the seed metering wheel tramline control is working.

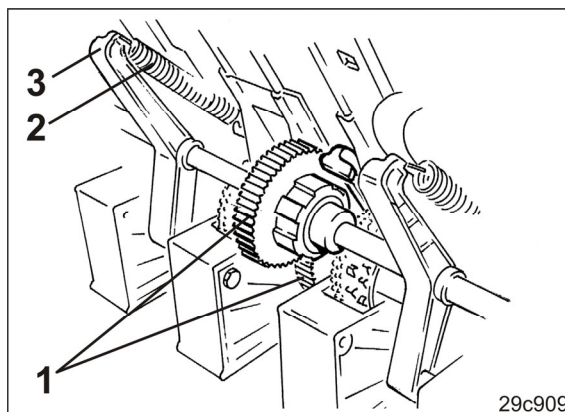


Fig. 245

12.10.9 Setting the tramline spacing, track width and wheelmark width

1. Fold down the lay shaft, see section "Folding down the lay shaft", page 194.
2. Mark new tramline seed metering wheels by inserting the fine seed metering wheel brushes (Fig. 246/1) 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.

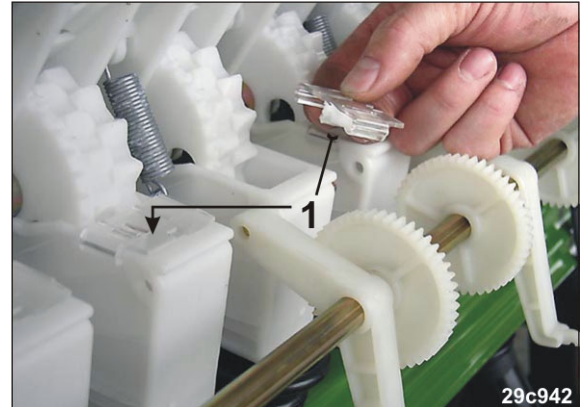


Fig. 246



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. 247/1) on the new tramline seed metering wheels until the new tramline seed metering wheels can turn freely on the seeding shaft.

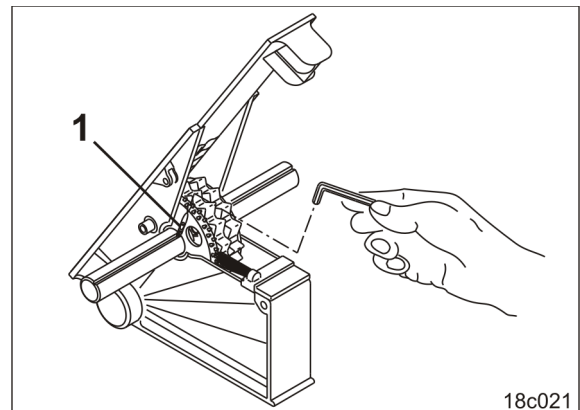


Fig. 247

Cleaning, maintenance and repairs

4. Remove (Fig. 248/1) bolts.
5. Loosen the hexagon socket screws (Fig. 248/2).
6. Push the swivel bearing and the driving pinion onto the lay shaft.
7. Screw the swivel bearing onto the new tramline seed housings.

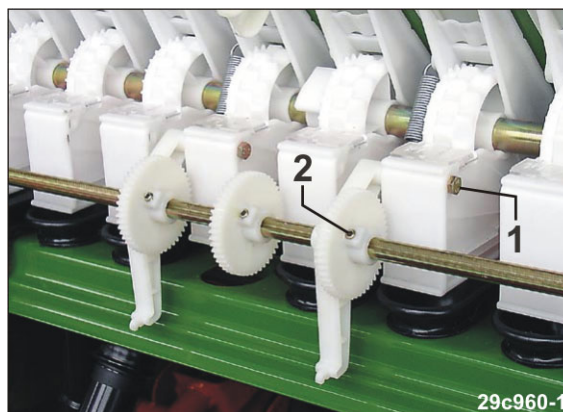


Fig. 248

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

Screw the hexagon socket screw (Fig. 249/1) 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.

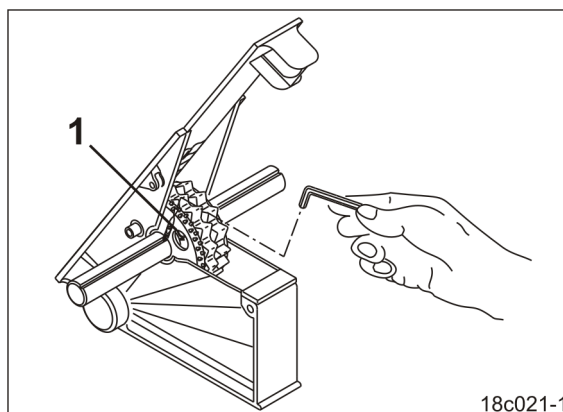


Fig. 249

9. Fold up the lay shaft, see section "Folding up the countershaft", page 196.

12.10.10 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 194.
2. Do not remove the detent plate for the bottom flaps.
3. Open the seeding shaft contact pressure bearings (Fig. 250/1).

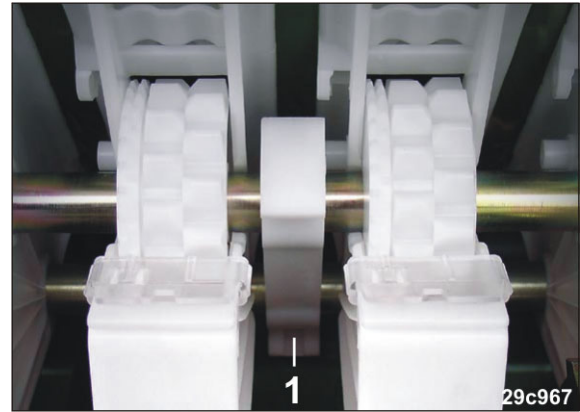


Fig. 250

4. Unscrew the bolts (Fig. 251/1).
5. Slide the connecting sleeve on the seeding shaft.
6. Lift out the seeding shaft.

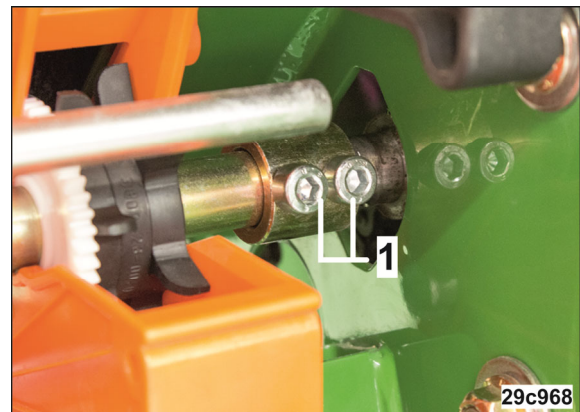


Fig. 251



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.

Cleaning, maintenance and repairs

7. The bean seeding shaft is installed in reverse sequence.
8. Mount the gear wheel (Fig. 252/1) onto the bean seeding shaft.

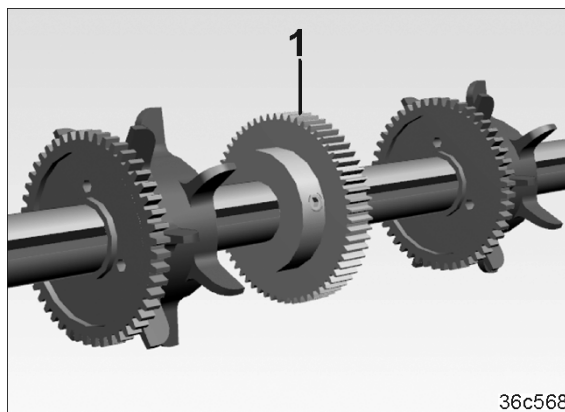


Fig. 252

9. Remove the triangular carriers (Fig. 253/1) 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. 253/1) of the other bean seed metering wheels grip into the recess on the seeding shaft.

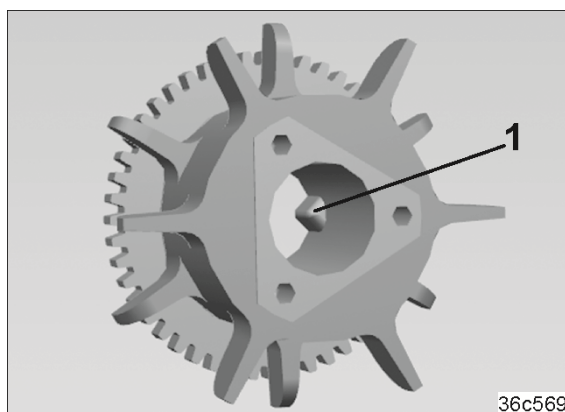


Fig. 253

10. Fold up the lay shaft, see section "Folding up the countershaft", page 196.
 - 10.1 Make sure that the cogs (Fig. 254/1) of the gear wheels are meshed.

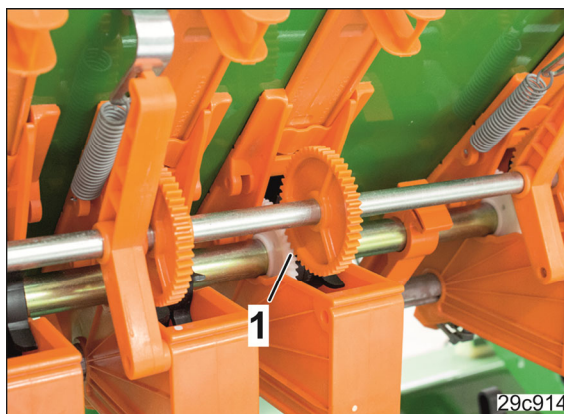


Fig. 254

- 10.2 Rotate the axial lock (Fig. 255/1) 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. 255/1) around and insert the long arm into the recess on the seed housing.

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

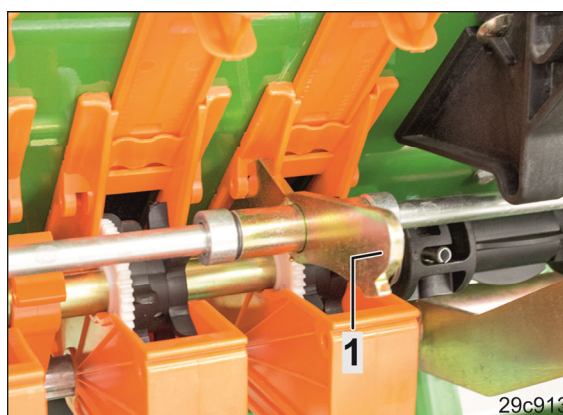
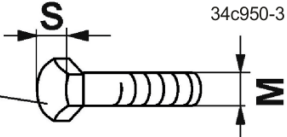
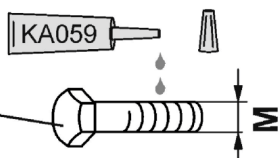


Fig. 255

12.11 Bolt tightening torques

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> 8.8 10.9 12.9 </div>  </div>		<p>The tightening torques listed in this table do <u>not</u> apply for coated bolts.</p> <p>If coated bolts are fitted, you can find the tightening torques beside the instruction.</p>		
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)

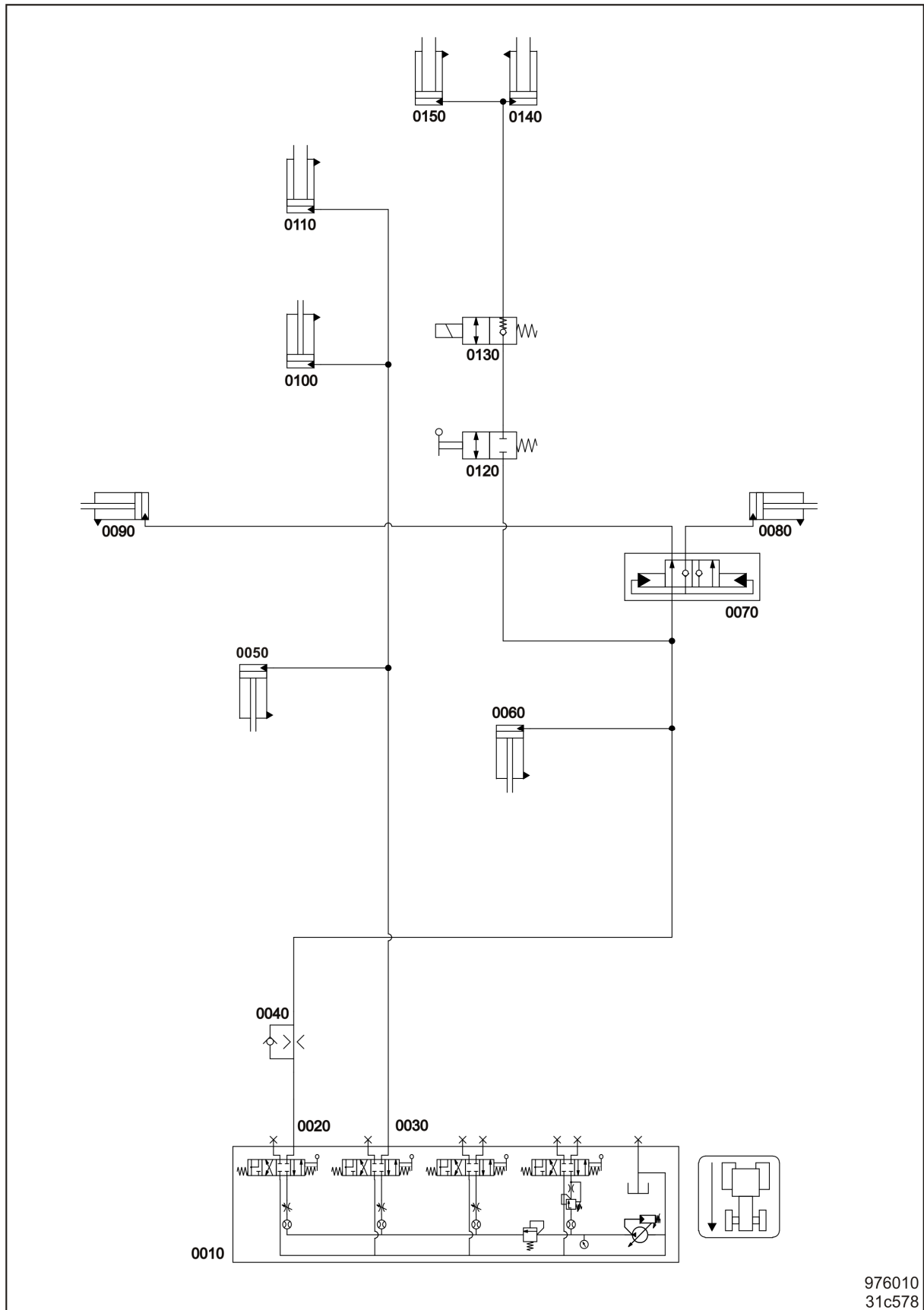
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> 34c951-1 <div style="border: 1px solid black; padding: 5px; display: inline-block;"> A2-70 A4-70 </div> </div>  </div>												
M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
Nm	2.4	4.9	8.4	20.6	40.7	70.5	112	174	242	342	470	589

13 Hydraulic diagram

13.1 Hydraulic diagram - D9 Super / D9 Special

Fig. 256/...	Designation	Note
0010	Tractor hydraulics	
0020	Handle no. 1 yellow	
0030	Handle no. 1 blue	
0040	Throttle check valve	
0050	Seed rate remote control	
0060	Tramline control box	
0070	Track marker shuttle valve	
0080	Track marker left	
0090	Track marker right	
0100	Coulter pressure	
0110	Harrow pressure	
0120	VAM control valve (with control box)	
0130	VAM solenoid (with on-board computer)	
0140	Tramline marker (VAM)	
0150	Tramline marker (VAM)	

All position specifications in direction of travel



976010
31c578

Fig. 256



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