

Operating manual

AMAZONE

Pack top seed drills

AD-P 3000 Super

AD-P 4000 Super



MG5340
BAH0083-1 03.17

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

en



READING THE INSTRUCTION

manual and to adhere to it should not appear to be inconvenient and superfluous as it is not enough to hear from others and to realise that a machine is good, to buy it and to believe that now everything would work by itself. The person concerned would not only harm himself but also make the mistake of blaming the machine for the reason of a possible failure instead of himself. In order to ensure a good success one should go into the mind of a thing or make himself familiar with every part of the machine and to get acquainted with its handling. Only this way, you would be satisfied both with the machine as also with yourself. To achieve this is the purpose of this instruction manual.

Leipzig-Plagwitz 1872. Rud. Sark.

Identification data

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

Implement number:
(ten digits)

Type:

Year of manufacture:

Basic weight (kg):

Permissible total weight (kg):

Maximum load (kg):

Manufacturer address

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Spare part ordering

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

Please send orders to your AMAZONE dealer.

Formalities of the operating manual

Type: AD-P 30/35/4000 Super

Document number: MG5340

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Foreword

Foreword

Dear Customer,

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

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

Please ensure that all the implement operators have read this operating manual before 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 on use of the operating manual.

1.1 Purpose of the document

This operating manual

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

1.1 Locations in the operating manual

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

1.2 Diagrams

Instructions and responses

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

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

Lists

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

- Point 1
- Point 2.

Item numbers in diagrams

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

- Example (Fig. 3/6):
- Figure 3
 - Item 6

2 General safety instructions

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

2.1 Obligations and liability

Comply with the instructions in the operating manual

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

Obligations of the operator

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

- are aware of the basic workplace safety information and accident prevention regulations.
- have been 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).

Risks in handling the implement

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

- the health and safety of the user or third 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 implement handling.

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



NOTE

Indicates handling tips and particularly useful information.

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

2.3 Organisational measures

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

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



The operation manual

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

Check all the available safety equipment regularly.

2.4 Safety and protective equipment

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

Faulty safety equipment

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

2.5 Informal safety measures

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

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

2.6 User training

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

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

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

Legend: X..permitted —..not permitted

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

Comment:

A qualification equivalent to specialist training can be obtained 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 assemblies 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 modification and accessory parts approved by AMAZONEN-WERKE so that the type approval, for example, remains valid in accordance with national and international regulations.

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



WARNING

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

It is strictly forbidden to

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

2.10.1 Spare and wear parts and aids

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

Use only genuine AMAZONE spare and wear parts or the parts 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 and other labels on the implement



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

Warning symbols – structure

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

A warning symbol consists of two fields:



Field 1

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

Field 2

is a symbol showing how to avoid the danger.

Warning symbols – explanation

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

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

Order number and explanation

Warning symbols

MD076
Risk of drawing-in/entrapment for hand or arm due to moving force-transmission parts!

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

Never open or remove protective equipment,

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


MD 077
Risk of arms being caught or drawn into the implement, caused by accessible, moving parts involved in the work process.

Causes serious, potentially fatal injuries anywhere on the body.

Never reach into the danger area,

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


MD 078
Risk of crushing of fingers/hand by accessible, moving parts of the implement!

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

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



General safety instructions

MD 082

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

Causes serious, potentially fatal injuries anywhere on the body.

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

Make sure that nobody is riding on the implement.



MD 084

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

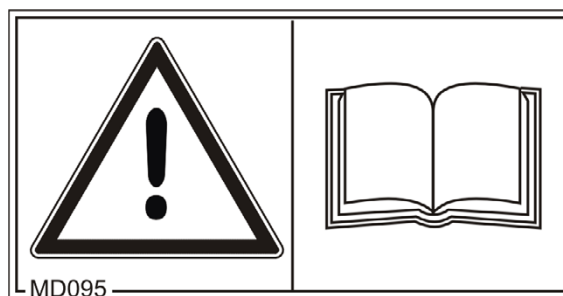
Causes serious, potentially fatal injuries anywhere on the body.

- 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 095

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

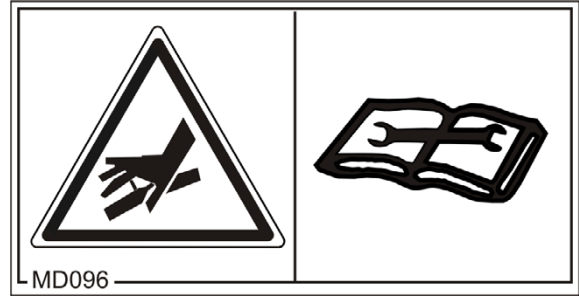


MD 096

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

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

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

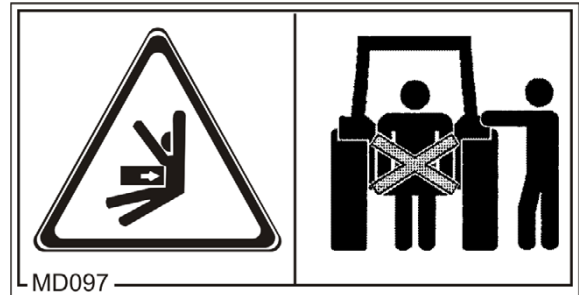


MD 097

Risk of crushing the entire body when standing in the lifting area of the three-point linkage when the three-point hydraulic system is operated!

Causes serious, potentially fatal injuries anywhere on the body.

- It is forbidden to stand in the lifting area of the three-point linkage when actuating the three-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.

These dangers can cause extremely serious and potentially fatal injuries.

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



MD 150

Danger of your fingers and hands being cut or cut off by moving parts involved in the working process!

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

Never open or remove safety equipment from moving parts that are involved in the working process whilst the engine of the tractor is running with the universal joint shaft/hydraulic system/electronic system connected.



MD 154

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

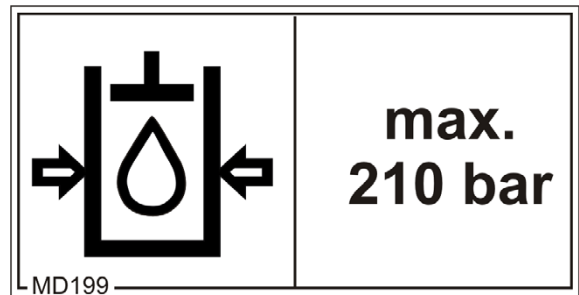
Causes serious, potentially fatal injuries anywhere on the body.

Transportation without a correctly fitted transport safety bar is forbidden.

Install the transport safety bar provided before starting transportation.

**MD 199**

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



2.13.1 Positions of warning symbols and other labels

Warning symbols

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

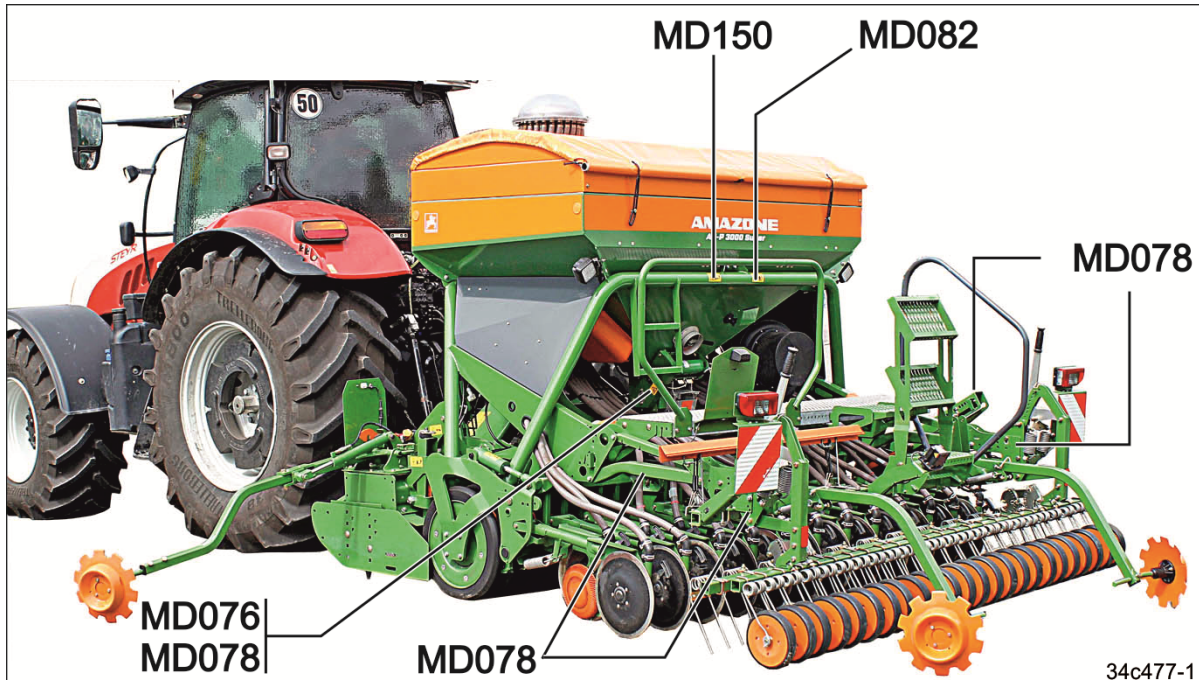


Fig. 1

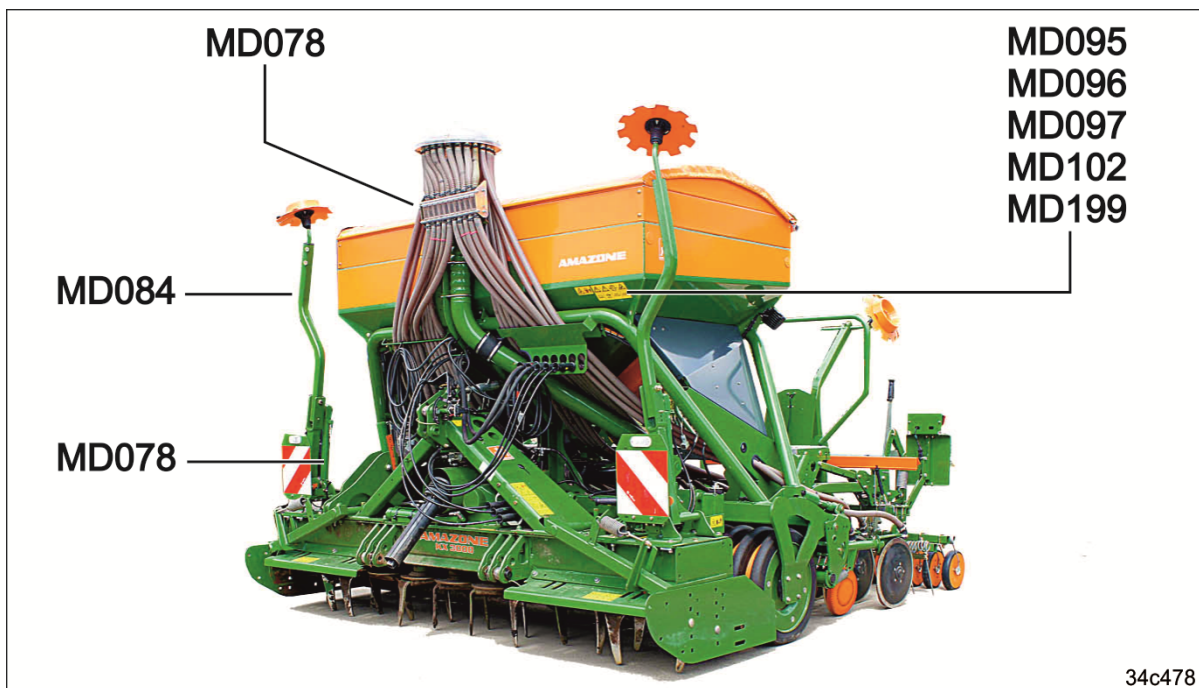


Fig. 2



Fig. 3

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

Non-compliance with the safety instructions

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

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

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

2.15 Safety-conscious working

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

Comply with the accident prevention instructions on the warning symbols.

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

2.16 Safety information for users



WARNING

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

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



CAUTION

Before adjustment, maintenance and repair work

- **couple the pack top seed drill and the soil tillage implement.**
- **lower the implement combination onto level solid ground.**
- **apply the tractor parking brake.**
- **switch off the control terminal.**
- **switch off the tractor engine.**
- **remove the ignition key.**
- **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 movements or 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 three-point hydraulic system, the attachment categories of the tractor and the implement must always be matching!
- 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 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 nip and shear points in the area of the coupling point between the tractor and the implement.
- It is forbidden to stand between the tractor and the implement when actuating the three-point hydraulic system!
- Coupled supply lines:
 - must easily give way to all movements in bends without tensioning, kinking or rubbing.
 - must not chafe against other parts.
- The release ropes for quick action couplings must hang loosely and may not release themselves when lowered.
- Also ensure that uncoupled implements are stable!



Use of the implement

- Before starting work, make sure that you understand all the equipment and control elements of the implement and their functions. There is no time 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 place the implement in service after all protective devices have been attached and are in protective position!
- Comply with the maximum load of the connected implement and the permissible axle and drawbar loads of the tractor. If necessary, drive only with a partially filled tank.
- It is forbidden to stand in the working area of the implement.
- It is forbidden to stand in the turning and swivel range of the implement.
- There are crushing and shearing hazards on implement parts actuated by external force (e.g. hydraulically)!
- Only actuate implement parts actuated by external force if personal are maintaining an adequate safety distance to the implement!
- Secure the tractor against unintentional start-up and rolling, before you leave the tractor.
For this:
 - Lower the implement onto the ground.
 - Apply the tractor parking brake.
 - Switch off the tractor engine.
 - Remove the ignition key.

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.
- 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 fix the front or rear weights to the intended fixing points according to regulations.

- Comply with the maximum load of the connected implement and the permissible axle and drawbar loads of the tractor.
- The tractor must guarantee the prescribed brake delay for the loaded vehicle combination (tractor plus connected implement).
- Check the brake power before moving off.
- When turning corners with the implement coupled, take the wide sweep and centrifugal mass of the implement into account.
- Before 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 transporting, lock the operating lever of the tractor's three-point hydraulic system against the unintentional raising or lowering of the connected or hitched implement.
- Before road transport, check that the required transport equipment, e.g., lighting, warning equipment and protective equipment, is correctly mounted on the implement.
- Before road transport, carry out a visual check that the upper and lower link pins are firmly fixed with the linch pin against unintentional release.
- Adjust your forward speed to the prevailing conditions.
- Before driving downhill, switch to a low gear.
- Before road transport, always switch off the independent wheel braking (lock the pedals).

2.16.2 Hydraulic system

- The hydraulic system is under a high pressure.
- Ensure that the hydraulic hose lines are connected correctly!
- When connecting the hydraulic hose lines, ensure that the hydraulic system is 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.
 - Remove the ignition key.
 - Disconnect the power supply between the tractor and the implement. Disconnect the implement plug (e.g. ISOBUS plug).
- 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 genuine AMAZONE hydraulic hose lines!
- The hydraulic hose lines should not be used for longer than six years, including any storage time of maximum two years. Even with proper storage and approved use, hoses and hose connections are subject to natural aging, thus limiting the duration of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose lines made of thermoplastics, other guide values may be decisive.
- Never attempt to plug leaks in hydraulic hose lines using your hand or fingers.

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

If you are injured by hydraulic fluid, contact a doctor immediately. Risk of infection.
- When searching for leakage points, use suitable aids, to avoid the serious risk of infection.

2.16.3 Electrical system

- When working on the electrical system, always disconnect the battery (negative terminal).
- Only use the prescribed fuses. If fuses are used that are too highly rated, the electrical system will be destroyed – risk of fire.
- Ensure that the battery is connected correctly – firstly connect the positive terminal and then connect the negative terminal. When disconnecting the battery, disconnect the negative terminal first, followed by the positive terminal.
- Always place the appropriate cover over the positive battery terminal. If there is accidental earth contact, there is a danger of explosion!
- Risk of explosion. Avoid sparking and naked flames in the area of the battery.
- The implement may be equipped with electronic components whose function is influenced by electromagnetic interference from other units. Such interference can pose risks to people, if the following safety information is not followed.
 - 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 attaching to the three-point linkage, the attachment categories on tractor and implement must be compatible or an adapter must be used!
- Take note of the manufacturer's instructions.
- Before attaching implements to or removing them from the three-point suspension, shift the operating equipment to a position in which unintended raising or lowering is impossible.
- There is a danger of crushing or shearing injury around the three-point linkage.
- The implement may be transported and towed only by the tractors intended for this purpose.
- There is a risk of injury when implements are coupled to and uncoupled from the tractor.
- Do not step between tractor and implement when operating the external control for the three-point attachment!
- There is a danger of crushing and shearing injury when operating the support devices.
- When mounting implements at the front or rear of a tractor, do not exceed
 - The permissible total tractor weight
 - The permissible tractor axle loads
 - The permissible load-bearing capacities of the tractor tyres.
- Observe the max. working load of the mounted implement and the permissible axle loads of the tractor!
- Always ensure that the tractor lower links are adequately locked against sideways movement before transporting the implement.
- 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.
- Shift all equipment into the transport position before travelling on the road.
- Any mounted implements and ballast weights affect the handling, steering and braking of the tractor!
- The 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 key removed,
 - the control terminal switched off,
 - the implement plug disconnected (e.g. ISOBUS plug).
- Leave safety devices attached and always position them in the protective position.

2.16.5 Operation of the seed drill

- Observe the permissible filling quantity of the hopper!
- Use the steps and the loading board only when 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 the 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 drive is switched off.
 - the tractor engine is at a standstill.
 - the ignition key has been removed.
 - the implement plug is disconnected (e.g. ISOBUS plug).
- 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 way.
- Disconnect the cable to the tractor generator and battery, before carrying out electrical welding work on the tractor and on attached implements.
- Spare parts must meet at least the specified technical requirements of AMAZONEN-WERKE! This is ensured through the use of original AMAZONE spare parts.

3 Upon delivery, loading and unloading the implement

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.

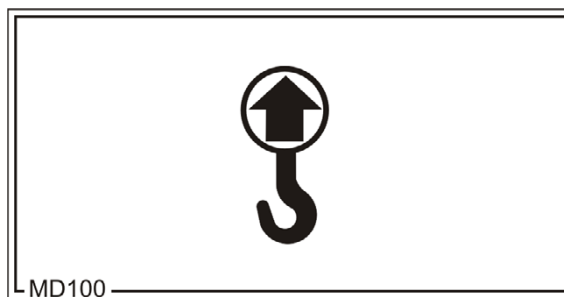


Fig. 4



DANGER

Compliance with this information guarantees 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.

Only load the AD-P Super pack top seed drill together with the roller and the soil tillage implement.

Secure the crane hooks to the 3 eyelets (Fig. 5) in the hopper when loading and unloading

Lash the implement combination onto the transport vehicle according to the instructions.

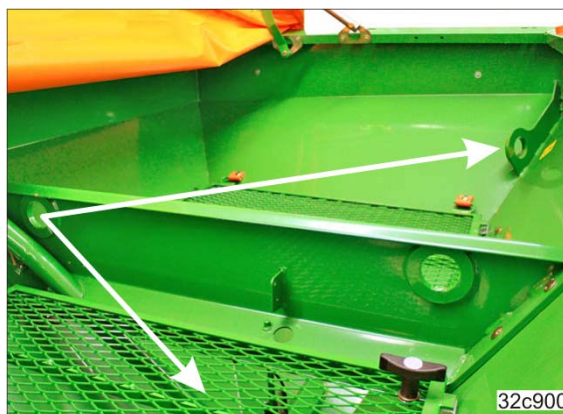


Fig. 5

4 Product description



Fig. 6

Implements of the seeding combination

- (1) Soil tillage implement
- (2) Roller
- (3) Pack top seed drill

Components of the AD-P Super pack top seed drill

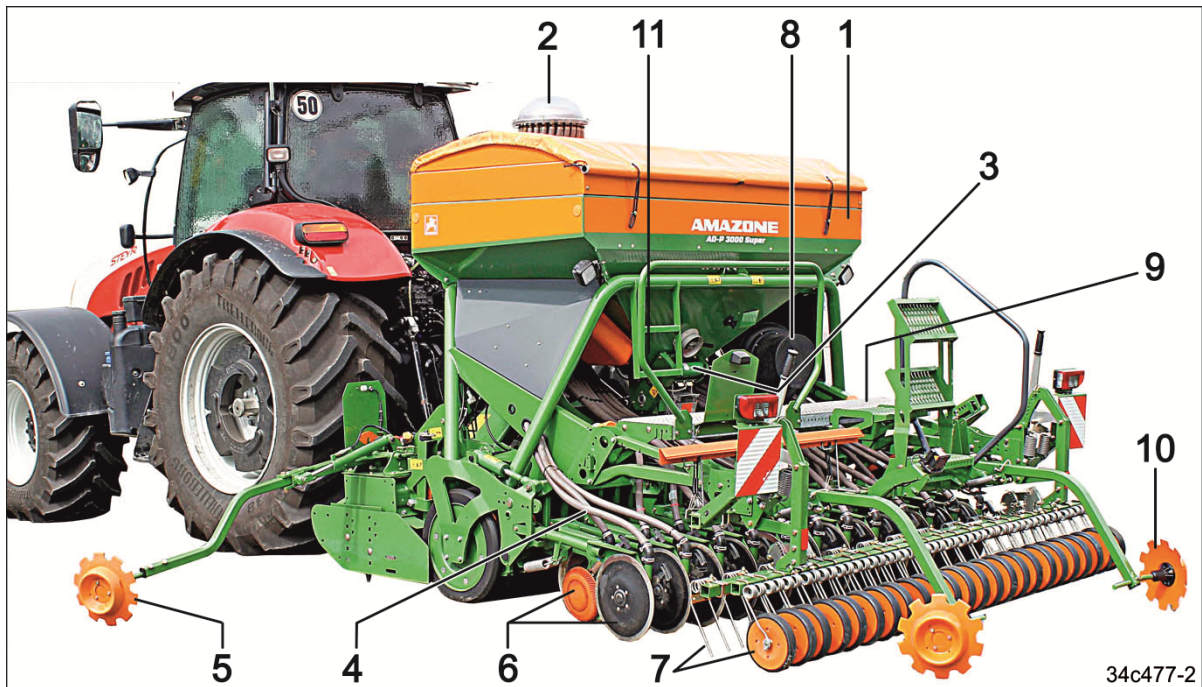


Fig. 7

- | | |
|---|---|
| (1) Hopper with roller tarpaulin | (6) Control coultter RoTeC PRO,
optionally
Control coultter RoTeC |
| (2) Distributor head | |
| (3) Seed metering unit, electrically driven | (7) Roller harrow,
optionally exact following harrow |
| (4) Seed tube hoses | |
| (5) Track marker (secured to cultivator) | (8) Blower fan |
| | (9) Loading board with steps |
| | (10) Tramline marker |

Cabinet
for the supply lines



Fig. 8

- (1) Seed metering unit, electrically driven
- (2) Electric motor
- (3) Injector sluice

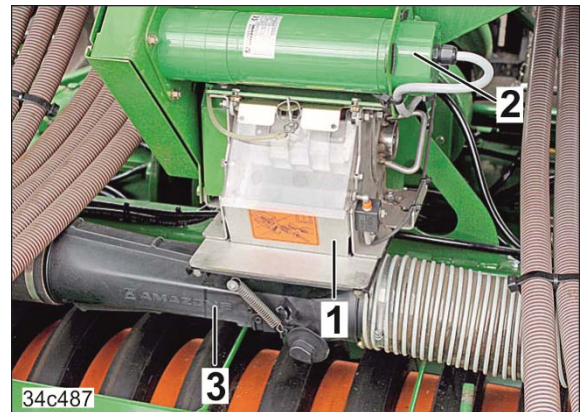


Fig. 9

- (1) Low level sensor
(view without charging sieve)

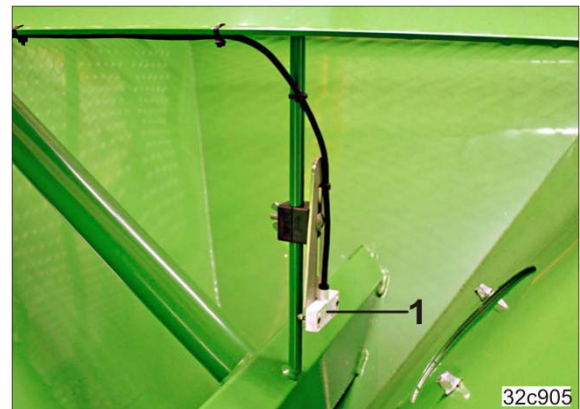


Fig. 10

Control coultter RoTeC PRO,
optionally
Control coultter RoTeC

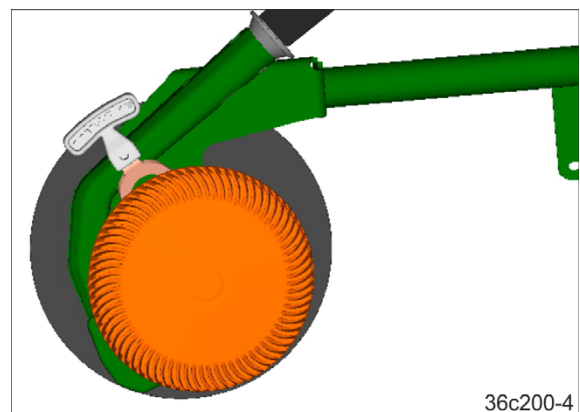


Fig. 11

4.1 Safety and protective equipment

- (1) 2 bars serve as a mechanical transport locking device for the track markers on the soil tillage implement.



Fig. 12

- (1) The riveted fixture prevents removal of the sieve grate when the metering roller is running.



Fig. 13

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

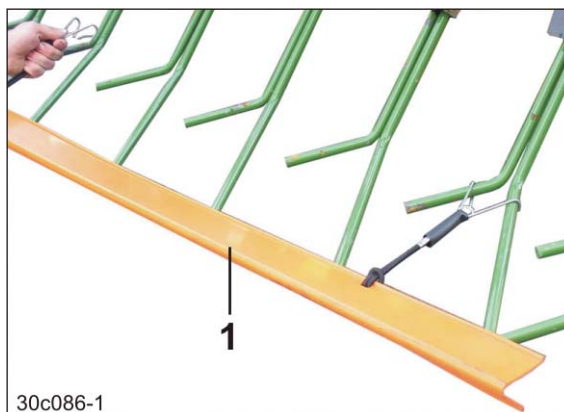


Fig. 14

4.2 Overview – Supply lines/supply cable

4.2.1 Power supply cable

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

4.2.2 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.

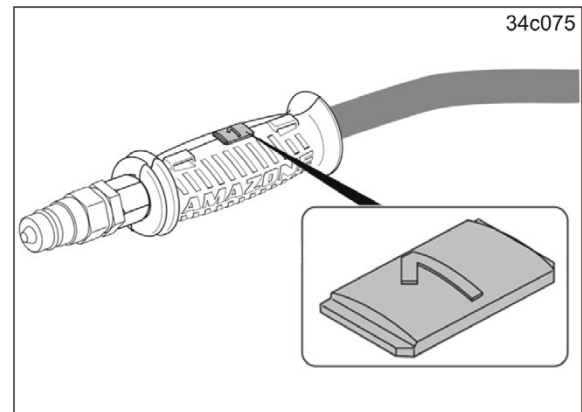


Fig. 15

The symbols show the type of actuation for the following listed tractor control units:



Latched, for a permanent oil circulation




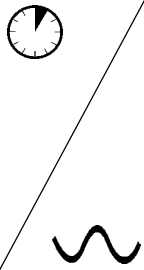








Actuated when the button is pressed, until the action is finished



Float position, free oil flow in the control unit

Product description

4.2.2.1 Identification of the hydraulic hose lines

Identification of hydraulic hose lines		Hydraulic function		Tractor control unit	
Yellow		Lifting and lowering: <ul style="list-style-type: none"> Track marker left Track marker right Lifting and lowering depending on the tramline counter: <ul style="list-style-type: none"> Tramline marker 		Single acting	
Blue		Simultaneous actuation: <ul style="list-style-type: none"> Increasing/reducing the coulter pressure Increasing/reducing the exact following harrow pressure 		Single acting	
Green		Lifting and lowering: <ul style="list-style-type: none"> Coulters Harrow 	Feed	Double acting	
			Return		
Red		Switch blower fan hydraulic motor on and off (see section 6.3, page 94)		Single acting	
				Pressureless return	

4.3 Transportation equipment

- (1) 2 rear-facing warning signs

Only implements with exact following harrow:

- (2) Transport safety bar, two-part
(see section 8.13, page 140)



Fig. 16

- (1) 2 reflectors, red
- (2) 2 rear-facing
turn indicators
- (3) 2 brake and rear lights
- (4) 2 reflectors, red, rectangular

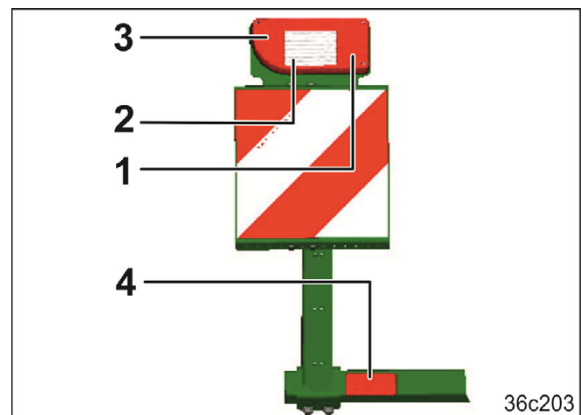


Fig. 17

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

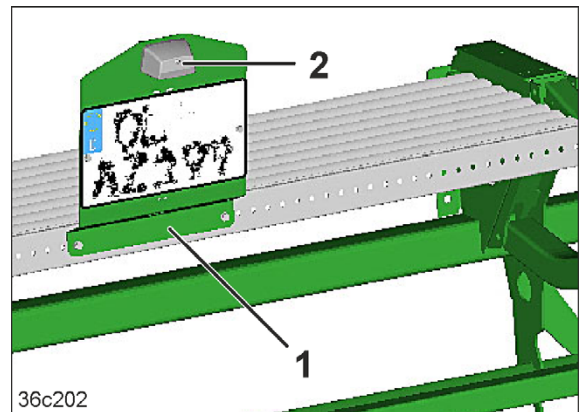


Fig. 18

Product description

- (1) 2 x 1 spotlight, on the sides, yellow



Fig. 19

- (1) 2 forwards-facing warning signs



Fig. 20

- (1) 2 forwards-facing limiting lights



Fig. 21

4.4 Proper use

The implement

- is designed for metering and placing certain commercially available seeds during agricultural work.
- is mounted on a permitted AMAZONE cultivator.
- is coupled to the tractor three-point hitch together with the cultivator and is operated by an additional person.

Slopes can be travelled

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

Intended use also includes

- Compliance with all the instructions in this operating manual.
- Adherence of inspection and maintenance work.
- Exclusive use of genuine AMAZONE spare parts.

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

For any damage resulting from improper use

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

4.5 Danger areas and danger points

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

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

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

No-one may stand in the implement danger area:

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

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.

4.6 Rating plate and CE mark

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

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



Fig. 22

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

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

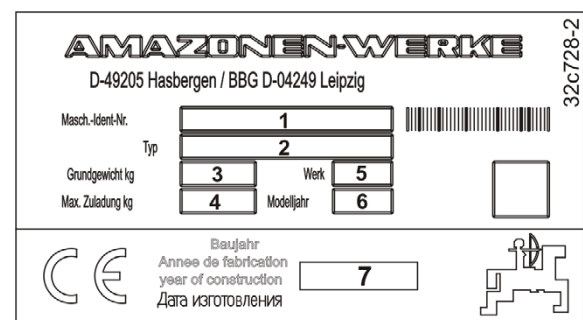


Fig. 23



The permissible total weight [kg] comprises weights of the basic weight [kg] and maximum load [kg].

The load [kg] comprises weights of the possible implement options [kg] and seed [kg].

4.7 Technical data

			AD-P 3000 Super	AD-P 4000 Super
Working width		[m]	3.00	4.00
Transport width		[m]	3.03	4.03
No. of rows			24/18	32/24
Row spacing		[cm]	12.5/16.6	12.5/16.6
Basic weight		[kg]	1450	1830
Max. payload		[kg]	1850	1900
Permissible total weight		[kg]	3300	3730
Hopper content	without extension	[l]	1500	1500
	with extension	[l]	2000	2000
Filling height	without extension	[m]	2.03	2.03
Total height to upper edge of distributor head		[m]	2.67	2.67
Hydraulic fluid 51524 HLP68			●	●
Electrical system 12 V (7-pin)			●	●

● = Standard equipment

❖ = Optional equipment

○ = Special accessory

4.7.1 Combination options

Pack top seed drill	AD-P 3000 Super	AD-P 4000 Super
Rotary harrow	KE 3000 Special/Super	KE 4000 Super
Rotary cultivator	KX 3000 KG 3000 Special/Super	KG 4000 Special/Super
Tooth packer roller	PW 3000/600	PW 4000/600
Wedge ring roller	KW 3000/580-125	KW 4000/580-125
	KW 3000/580-166	KW 4000/580-166
Cracker disc roller	CDW 3000-550	CDW 4000-550

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

The technical data [total weight G_H] and distance (d)] is needed to calculate the tractor weights and tractor axle loads (see page 90).

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

Distance (d) is the distance between the centre of the lower link ball and the centre of gravity of the rear-mounted implement combination. Rear-mounted implement combinations with AD-P 30/35/4000 Super always have the same distance (d).

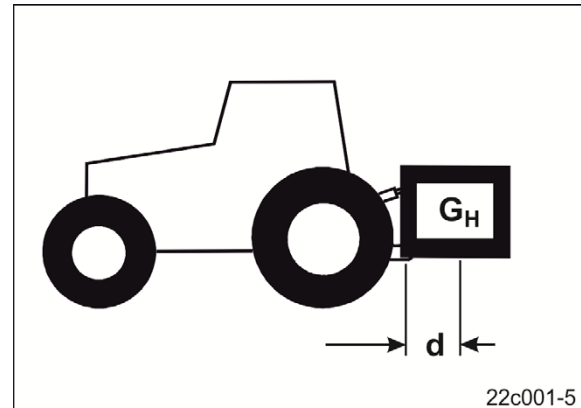


Fig. 24

Distance $d = 0.9$ m

The permissible **total weight (G_H)**

of the rear-mounted implement combination is obtained from the sum of the weights:

- Total weight of the pack top seed drill (basic weight + load)
- Total weight of the soil tillage implement, roller and coupling parts

Implements and accessories		Enter the implement weights here
Basic weight of the pack top seed drill (see rating plate)	[kg]	
Maximum load on the pack top seed drill (see rating plate)	[kg]	
Total weight of the soil tillage implement and the roller (see operating manual for the soil tillage implement).	[kg]	
Coupling parts (= 20 % of the total weight of the soil tillage implement and roller)	[kg]	
Total weight (G_H)	[kg]	

4.1 Required tractor equipment

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

Power requirement	AMAZONE rotary cultivator, KW wedge ring roller and AD-P 3000 Super	Starting at 81 kW (110 bhp)
	AMAZONE rotary cultivator, KW wedge ring roller and AD-P 4000 Super	Starting at 125 kW (170 HP)
Electrical equipment	Battery voltage	12 V (volts)
	Lighting socket	7-pin
Hydraulic system	Tractor control units	See section Overview – Supply lines/supply cable, page 39
	Maximum operating pressure	210 bar
	Tractor pump output	See section "Hydraulic connection for the blower fan drive", page 94
	Hydraulic oil for supplying the implement	see section 4.7, page 46

4.2 Noise production data

The workplace-related emission value (acoustic pressure level) is 73 dB(A), measured in operating condition at the ear of the tractor driver with the cab closed.

Measuring unit: OPTAC SLM 5.

The noise level is primarily dependent on the vehicle used.

5 Layout and function



Fig. 25

The AD-P Super pneumatic pack top seed drill (Fig. 25/1) is used as part of a seeding combination with a soil tillage implement

- AMAZONE rotary cultivator (Fig. 25/2) or
 - AMAZONE rotary harrow
- and
- AMAZONE tooth packer roller PW
 - AMAZONE KW wedge ring roller (Fig. 25/3)
 - CDW cracker disc roller.

For the soil tillage implement to be able to deflect upwards when it hits obstacles, the AD-P Super pack top seed drill is supported by the AMAZONE roller.

This seeding combination optimises loosening of the soil, reconsolidation, uniform placement depth and covering of the seed in one field pass.

The roller is an integral component of the AD-P Super pack top seed drill. Do not separate the combination, including the soil tillage implement.



Fig. 26

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

The seed is carried in the hopper (Fig. 26/1). The metered seed volume passes from the seed metering unit (Fig. 26/2), which is driven by an electric motor, into the air stream generated by the blower fan. The speed of the metering roller automatically adjusts to changing working speeds. The pulses from the radar or the pulse wheel serve to measure the working speed and the distance covered.

The air stream delivers the seed to the distributor head (Fig. 26/4), which distributes the seed uniformly onto all the coulters. The implement is equipped with RoTeC Control coulters or the larger RoTeC PRO Control coulters (Fig. 26/5).

The seed is embedded in the soil compacted in strips by the wedge rings (Fig. 26/6) of the wedge ring roller. The tooth packer roller can be used on very light soils. The cracker disc roller is used on soils with very heavy clods that could not be removed by the soil tillage implement (Fig. 26/7).

The seed is covered with loose soil by the roller harrow (Fig. 26/8). The exact following harrow can be used as an option.

The track markers (Fig. 26/9) mark the next bout at the centre of the tractor.

In combination with the rotary cultivator, the RoTeC Control or RoTeC PRO coulters enable mulch seeding even on fields with large quantities of straw and plant residues. The high coulter pressure and support on the coulter discs allow the coulter to run steadily and enable precise seed placement depth.

5.1 Control terminal for implements with ISOBUS system

The combination can be equipped with an ISOBUS job computer. The ISOBUS system controls the hydraulic cylinder and electric motors through a control terminal in the tractor cab. The control terminal is connected to the ISOBUS job computer, which receives the commands and controls the required hydraulic valves or actuates the electric motors of the implement.

The combination can be connected to any ISOBUS-compatible control terminal. If the tractor has an ISOBUS system, the AMAZONE job computer can also be connected to the existing ISOBUS socket of the tractor and operated with the on-board terminal. As an option, the combination can be delivered e.g. with the AMAZONE AMATRON 3 control terminal.

5.1.1 AMATRON 3 control terminal

The AMATRON 3 control terminal is designed for use with the ISOBUS system and can operate all implements that are equipped with the ISOBUS system.

Instructions for operating

- the AMAZONE job computer can be found in the "ISOBUS Software" operating manual.
- the ISOBUS-compatible control terminal can be found in the "AMATRON 3" operating manual.



Fig. 27

5.1.2 TwinTerminal (optional)

The communication with the ISOBUS-compatible control terminal in the tractor cab takes place through the TwinTerminal (optional). The TwinTerminal is located in the metering area and saves the tractor driver the walk over to the tractor cab, e.g. when starting the calibration procedure or entering the collected calibrated quantity.

For a more detailed description, refer to the "ISOBUS Software" operating manual.



Fig. 28

5.2 AMADRILL+ control terminal (optional equipment)

The AMADRILL+ control terminal does not have a job computer.

The AMADRILL+ consists of the control terminal and the basic equipment (cable and fastening materials).

The AMADRILL+ operating manual explains the operation of the terminal.



31c508-3

Fig. 29

5.3 Distance measurement

To determine the distance covered, the implement either has a radar device or a pulse wheel.

The pulses from the radar device and pulse wheel serve

- to calculate the working speed
- to calculate the worked area
- to calculate the speed of the metering roller and electric motor. For a constant seed rate at different forward speeds.

Use of the pulse wheel or the radar device requires teaching-in the pulses over a calibration distance of 100 m:

- before initial use
- in event of different soils (slippage)
- if the actual seed rate differs from the calibrated seed rate
- in event of deviation between the indicated and the actually cultivated area

The instructions for teaching-in the pulses for implements with the AMADRILL+ control terminal can be found in the "AMADRILL+" operating manual.

The instructions for teaching-in the pulses for implements with the ISOBUS system can be found in the "ISOBUS Software" operating manual.

5.3.1 Measuring the distance covered with a radar device (optional equipment)

The implement can be equipped with a radar device (Fig. 30/1) for measuring the distance travelled.

When a speed is recorded, the radar device is switched on automatically when the combination is in working position.

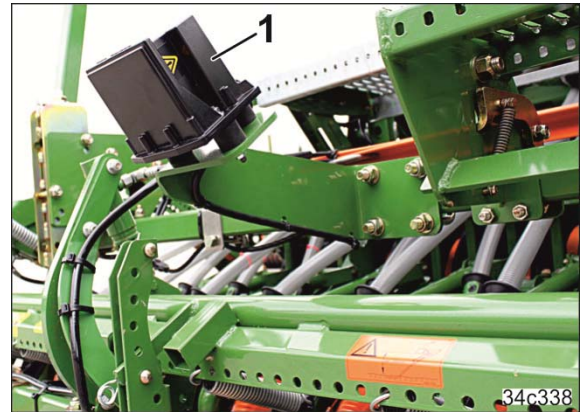


Fig. 30

5.3.2 Measuring the distance covered with a pulse wheel (optional equipment)

The implement can be equipped with a pulse wheel (Fig. 31/1) for measuring the distance travelled.

The pulse wheel can be set in 2 positions

- Working position
- Transport position.

If the pulse wheel is in transport position during operation, the soil is worked without seeding.



Fig. 31

5.4 Implement documentation

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



Fig. 32

5.5 Hopper and loading board

The roller tarpaulin (Fig. 33/1) protects the contents of the seed hopper from water and dust.

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

The hopper extension (Fig. 33/2, optional) enlarges the volume of the seed hopper. Only one hopper extension can be mounted.



Fig. 33

The charging sieve in the seed hopper protects the metering unit from damage caused by foreign objects in the seed. When filling manually, the sieve grating serves as a loading aid.

The sieve's locking mechanism (Fig. 34/1) prevents the user from unintentionally reaching into the rotating metering roller.



Fig. 34

5.6 Low level sensor (optional)

A low level sensor (Fig. 35/1) monitors the seed level in the hopper (shown without the charging sieve).

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

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

Fasten the low level sensor onto the bracket according to the type of seed.

Cereals and legumes:

Attach the sensor in the upper area.

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

Fasten the sensor in the lower area.

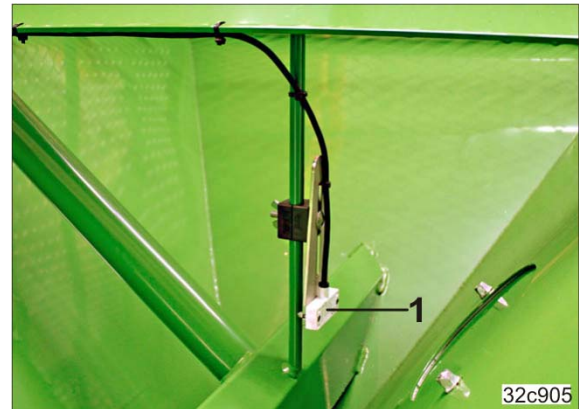


Fig. 35

5.7 Metering

The seed is metered by a metering roller in the metering unit (Fig. 36/1).

The metering roller is driven by an electric motor (Fig. 36/2).

The metered seed falls into the injector sluice (Fig. 36/3) and is directed by the air flow to the distributor head and then to the coulters.

As soon as the implement is raised when turning at the end of a field or when the implement comes to a stop, the electric motor switches off and the metering roller comes to a halt.

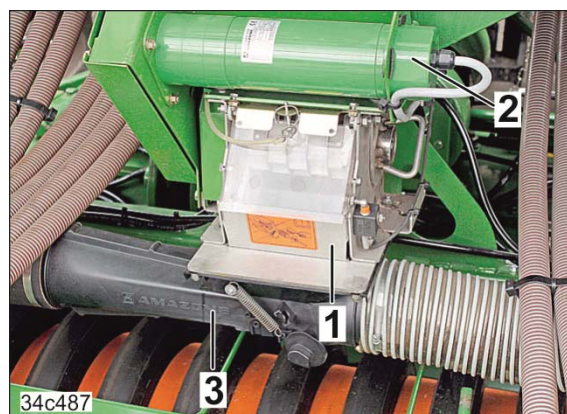


Fig. 36

The speed of the metering roller

- is determined when calibrating the seed.
- determines the seed rate.
The higher the speed of the electric motor, the greater the seed rate for the same working speed.
- automatically adjusts to changing working speeds.

A selection of metering rollers (Fig. 37/1) with different volumes is available.

The required metering roller depending on the seed and the seed rate can be found in the table (see section "Table – metering rollers, seed", page 60).

The selected metering roller volume (cm³) should not be too large but still sufficient to spread the required quantity (kg/ha).

If the seed is not listed, select the metering roller for a seed that has a similar grain size.

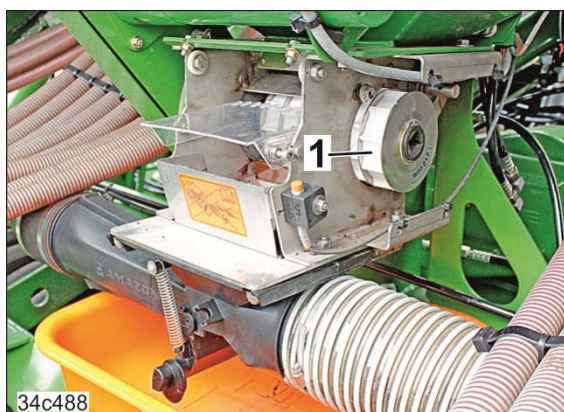


Fig. 37

For seeding particularly large seeds, e.g. large beans, the chambers (Fig. 38/1) of the metering roller can be enlarged by repositioning the wheels and the plates.

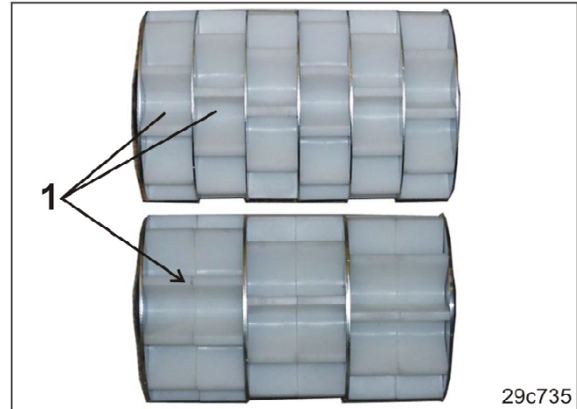



Fig. 38

The volume of some metering rollers can be modified by repositioning/removing the existing wheels and inserting metering wheels without chambers.







Fig. 39

5.7.1 Metering roller diagram table

<p>Metering roller (optional)</p> <p>Volume: 7.5 cm³</p>	
---	--

Layout and function

<p>Metering roller (as a standard)</p> <p>Volume: 20 cm³</p>	 <p>36c210</p>
<p>Metering roller (optional)</p> <p>Volume: 40 cm³</p>	 <p>33c622-1</p>
<p>Metering roller (optional)</p> <p>Volume: 120 cm³</p>	 <p>31c632-2</p>
<p>Metering roller (as a standard)</p> <p>Volume: 210 cm³</p>	 <p>31c631-3</p>

<p>Metering roller (optional) Volume:350 cm³</p>	 <p>34c212-1</p>
<p>Metering roller (as a standard) Volume:600 cm³</p>	 <p>31c630-2</p>
<p>Metering roller (optional) Volume:660 cm³</p>	 <p>31c629-2</p>
<p>Metering roller (optional) Volume:700 cm³</p>	 <p>36c208</p>

5.7.2 Table – metering rollers, seed

Metering rollers Seed	7.5 cm ³	20 cm ³	40 cm ³	120 cm ³	210 cm ³
Beans					
Buckwheat					X
Spelt					
Peas					
Flax (dressed)		X	X	X	X
Barley					X
Grass seed					X
Oats					
Millet				X	X
Caraway		X			
Lupins				X	X
Alfalfa		X	X	X	X
Maize				X	
Poppy	X	X	X		
Oil linen (moist dressing)		X	X		
Fodder radish		X	X	X	X
Phacelia		X	X	X	
Rapeseed/canola	X	X	X		
Rye					X
Red clover		X	X	X	
Mustard		X	X	X	X
Soy					
Sunflowers				X	X
Turnips		X	X		
Triticale					X
Wheat					X
Vetches					X

Seed	Metering rollers			
	350 cm ³	600 cm ³	660 cm ³	700 cm ³
Beans		X	X	X
Buckwheat		X		
Spelt		X		
Peas			X	X
Flax (dressed)				
Barley	X	X		
Grass seed				
Oats		X		
Millet				
Caraway				
Lupins				
Alfalfa				
Maize				
Poppy				
Oil linen (moist dressing)				
Fodder radish				
Phacelia				
Rapeseed/canola				
Rye	X	X		
Red clover				
Mustard				
Soy		X	X	X
Sunflowers				
Turnips				
Triticale		X		
Wheat	X	X		
Vetches				

5.7.3 Calibrating the seed rate

When calibrating the seed rate, the later field pass is simulated. The metering roller speed required to spread the desired seed rate is determined.

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
- after replacing the metering roller
- if the seed hopper is emptied faster/slower than expected.

The required metering roller speed is calculated from the simulated area (e.g. 1/40 ha) and the weight of the collected metered material.

The metered material is collected in a trough (Fig. 40/1) and weighed.

A digital scale is include in the scope of delivery.

The communication with a suitable control terminal in the tractor cab can take place through the TwinTerminal (Fig. 40/2, optional).

A flap protects the TwinTerminal from weather conditions.

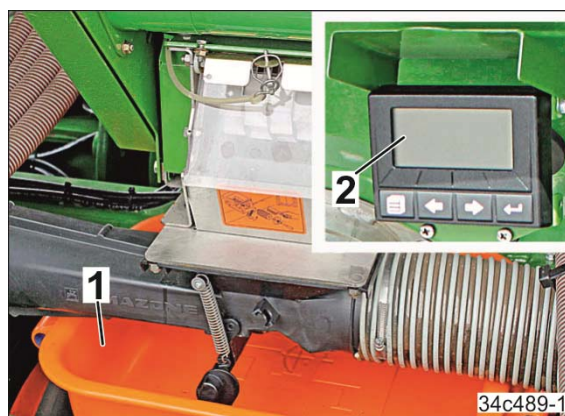


Fig. 40

The calibration procedure is started either by pressing a button on the control terminal in the tractor cab or by pressing a button on the TwinTerminal.

The TwinTerminal button must be kept pressed during the entire calibration procedure. A signal is emitted when the calibration procedure is finished.

The calibration trough is fastened in a holder for transport and secured with a linch pin (Fig. 41/1).



Fig. 41

5.7.4 Automatic seed rate increase (optional)

The coulter pressure and the exact following harrow pressure can be adapted to the soil during operation when changing from normal soil to heavy soil and vice versa. Hydraulic adjustment of the coulter pressure and the exact following harrow pressure is required.

Automatic increase of the seed rate can be switched on. A control terminal with job computer and an adjustable sensor (Fig. 42/1) on the coulter pressure adjustment unit are required.

The control terminal serves to enter the desired rate increase in 5 %-increments.

If the desired rate increase is set to 0 % on the control terminal, the seed rate remains unchanged when the coulter pressure increases.

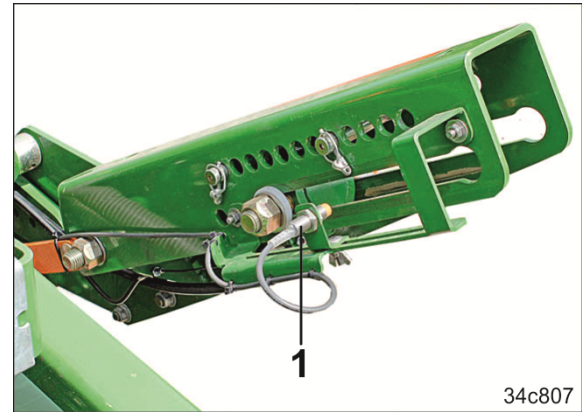


Fig. 42

5.7.5 Seed pre-metering

Seed pre-metering, which meters the seeds in the air current before the implement starts up, can be switched on in the control terminal (e.g. AMATRON).

Seed pre-metering is used when corners are to be seeded that can only be reached when the implement is being reversed or with raised coulters.

The run time of the seed pre-metering is adjustable.

5.7.6 Start-up ramp

The "start-up ramp" can be adjusted on the control terminal, allowing the seed rate to be adapted to the implement acceleration, e.g. after turning.

After turning and actuating the control unit (yellow), the implement moves into working position. Seed is metered into the delivery line. The "start-up ramp" compensates for system-related seed rate reductions during the acceleration phase of the implement. The factory settings can be adapted.

For this purpose, the intended working speed set in the "Calibration menu" is used. The starting speed and the time until the probable working speed is reached can be set as a percentage of the probable working speed.

This time and the percentage value depend on the respective tractor acceleration and prevent the metering of insufficient seed during the acceleration phase.

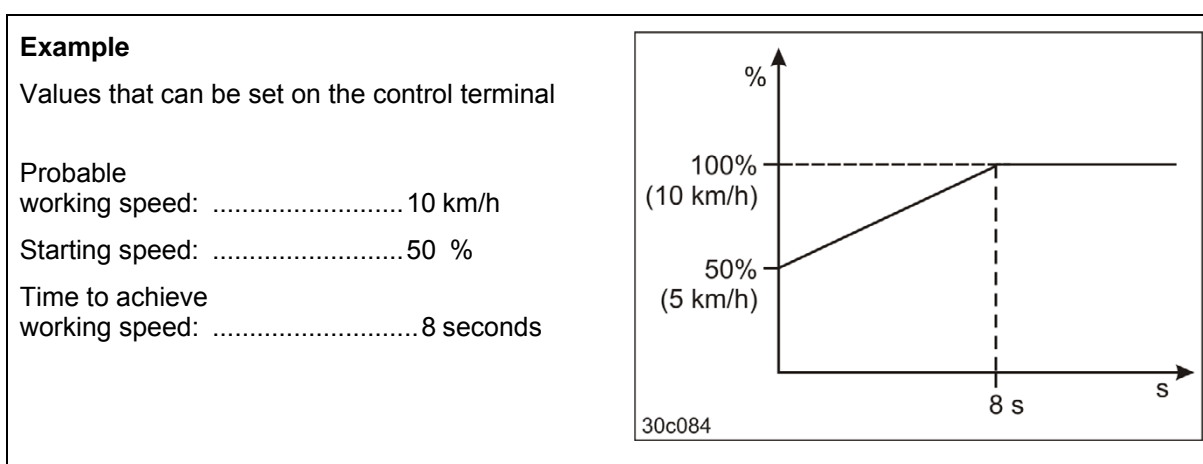


Fig. 43

5.8 Blower fan

The blower fan (Fig. 44/1) generates the air current that carries the seed to the seeding coulters.

The blower fan hydraulic motor (Fig. 44/2) drives the blower fan.

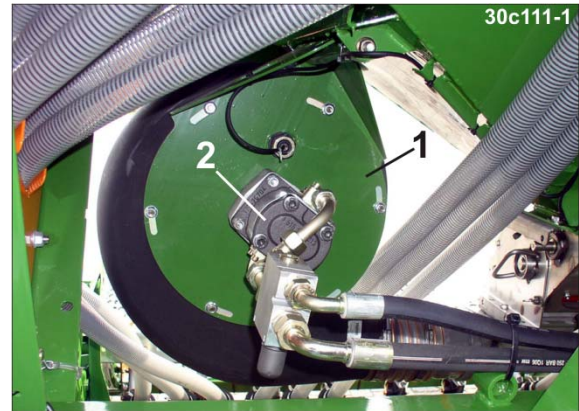


Fig. 44

The blower fan hydraulic motor is connected to the tractor hydraulic system.

Set the blower fan speed

- at the flow control valve of the tractor (see section 8.4.1).
- at the pressure relief valve of the hydraulic motor (see section 8.4.2), if the tractor has no flow control valve.

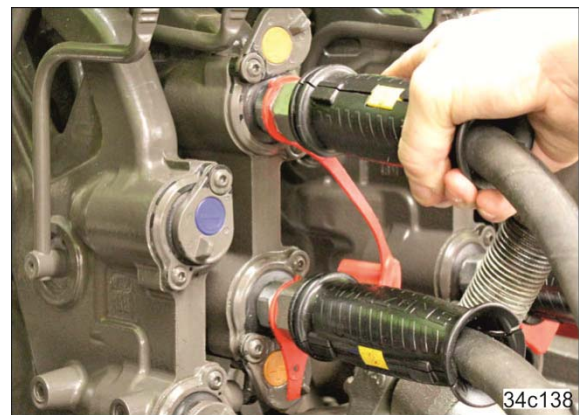


Fig. 45

The blower fan speed determines the air volume of the air current. The higher the blower fan speed, the greater is the air volume generated. The required target blower fan speed can be found in the following table (Fig. 46, page 66).

During operation, the control terminal displays the current actual blower fan speed. The maintenance of the target blower fan speed can be monitored. If the blower fan speed deviates from the target speed, an acoustic signal is issued along with a screen display. The percent deviation of the actual blower fan speed from the target blower fan speed at which a warning is triggered can be adjusted (see "Control terminal" operating manual).

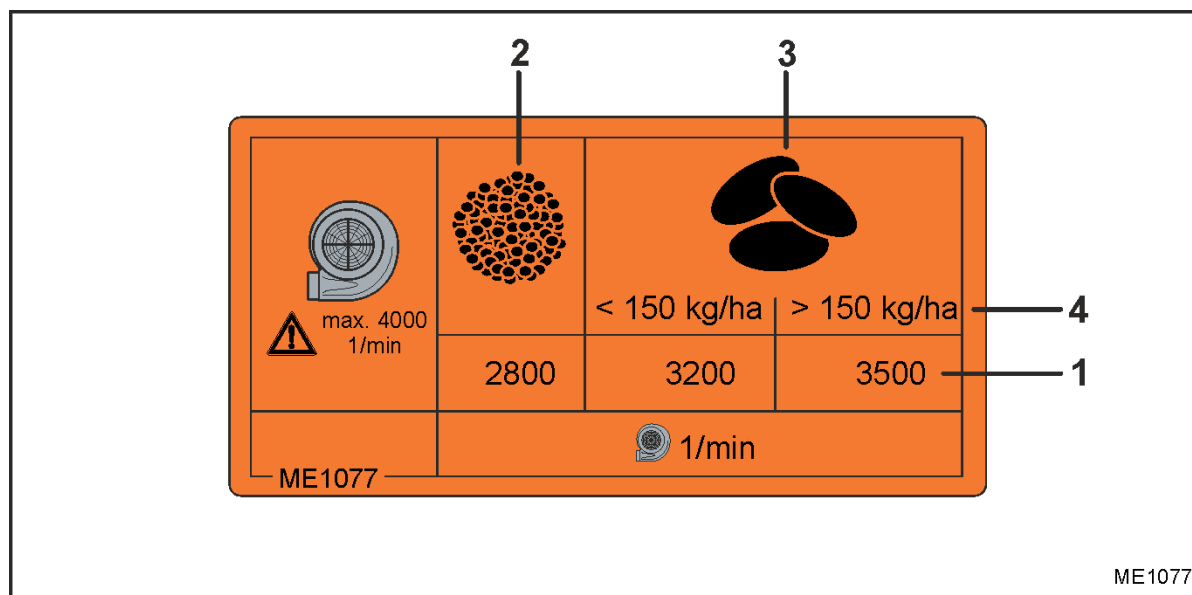


Fig. 46

The required blower fan speed (Fig. 46/1) depends on the seed

- Fine seed types (Fig. 46/2), e.g. rapeseed or grass seed
- Grains or legumes (Fig. 46/3) and the seed rate (Fig. 46/4).

Example:

Seed type:..... Cereal (Fig. 46/3)

Seed rate: 130 kg/ha (Fig. 46/4)

Required blower fan speed (Fig. 46/1): 3200 rpm.

The suction guard screen (optional) prevents the suction of straw residues into the blower fan under very dry conditions.

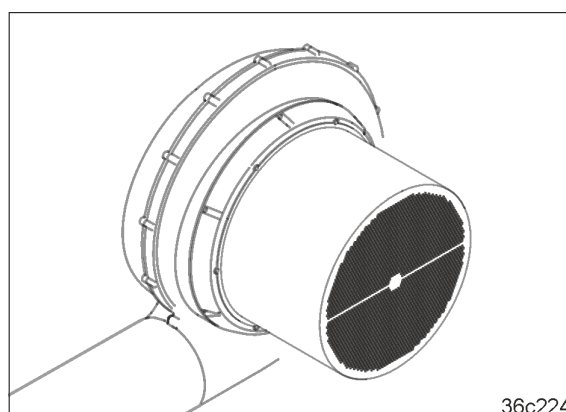


Fig. 47

5.9 Distributor head

In the distributor head (Fig. 48/1), the metered material is distributed evenly over all of the connected seed lines and delivered to the coulters.

When creating the tramlines

- a symbol appears on the control terminal.
- the flaps in the flap box (Fig. 48/2) interrupt the seed supply to the seed lines (Fig. 48/3) of the tramline coulters. An electric motor (Fig. 48/4) actuates the flaps.
- the tramline coulters do not deposit any seeds in the soil.
- the seed is returned to the hopper by the tramline coulter.

Tramline flaps (Fig. 49/1) open and close the seed tubes to the tramline coulters.

A sensor checks if the tramline flaps in the flap box are working properly. In the event of faulty position, a warning message appears on the control terminal.

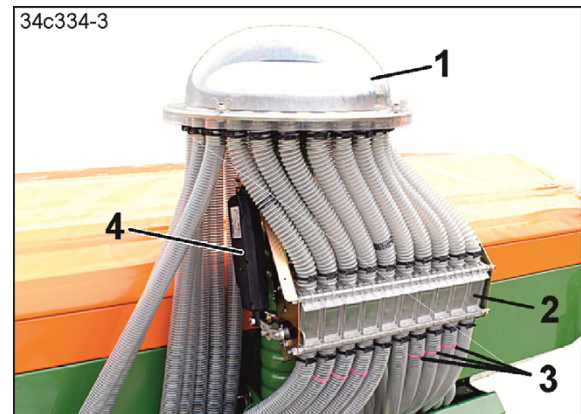


Fig. 48

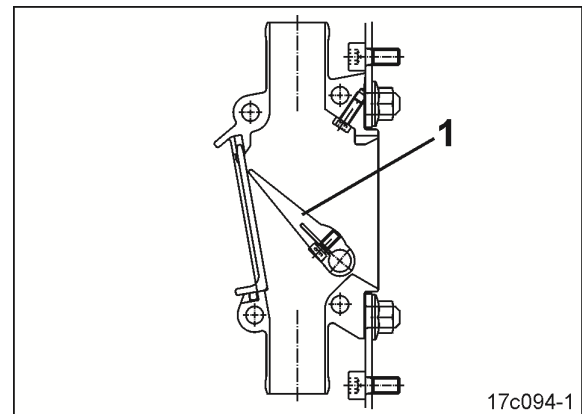


Fig. 49

5.9.1 Seed tube monitoring (optional)

The seed tube hoses represent the connection between the distributor head and the coulters.

Each seed tube hose can be equipped with a sensor (Fig. 50/1) that detects the seed flow.

A warning message is issued when the seed flow in a monitored seed line hose is interrupted or large deviations occur in the flow rate between the monitored seed line hoses.



Fig. 50

Connect the seed tube monitoring, also in combination with the AMADRILL+, to an ISOBUS-compatible control terminal, e.g. AMATRON 3 (see "Seed tube monitoring" operating manual).

As a standard, the seeding combination is equipped with a working position sensor, which transmits the pulses to switch the electric motor for the metering roller drive on and off. The equipment of your seed drill with seed tube monitoring requires a second working position sensor. This working position sensor supplies the pulse for switching the seed tube monitoring on and off.

The working position sensors can be installed as follows:

Implement combination with ISOBUS system:

- Analogue working position sensor (Fig. 51/1) for an implement combination with ISOBUS system
- Working position sensor (Fig. 51/2) for seed tube monitoring with adjustment magnet (Fig. 51/3).

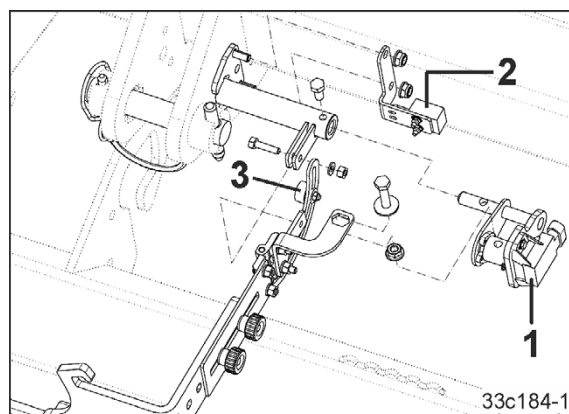


Fig. 51

Implement combination with AMADRILL+:

- Digital working position sensor (Fig. 52/1) for an implement combination with AMADRILL+
- Working position sensor (Fig. 52/2) for seed tube monitoring with adjustment magnet (Fig. 52/3).

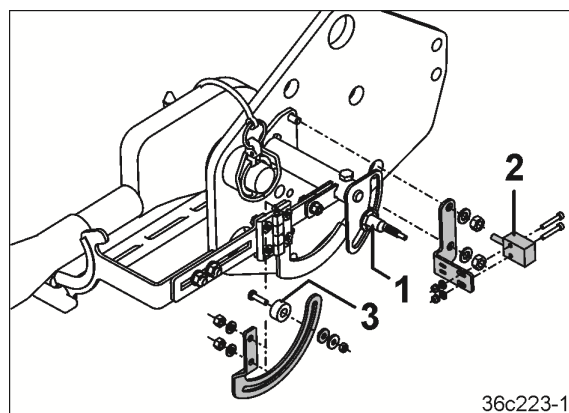


Fig. 52

5.10 RoTeC and RoTeC PRO Control coulters

For seeding on ploughed and mulched soils, seed drills with RoTeC Control coulters or the larger RoTeC PRO Control coulters are used.

Thanks to the support of the coulter on the shallow seeding disc or the cleaning disc and the high coulter pressure, the coulter runs very smoothly and precisely maintains the seed placement depth.

The shallow seeding disc (Fig. 53/1) and the cleaning disc (see below) are used for

- limiting the seed placement depth,
- cleaning the rear side of the steel disc (Fig. 53/2).

For limiting the seed placement depth, the coulter discs can be adjusted in 3 positions. The handle (Fig. 53/3) is used for actuation.

The shallow seeding disc (Fig. 53/1) enables shallow seeding even on very light soils with increased coulter pressure.

The cleaning disc (Fig. 54/1) is used on heavy soils.

If the seed placement depth cannot be reached, the coulter discs can be removed from the coulters.

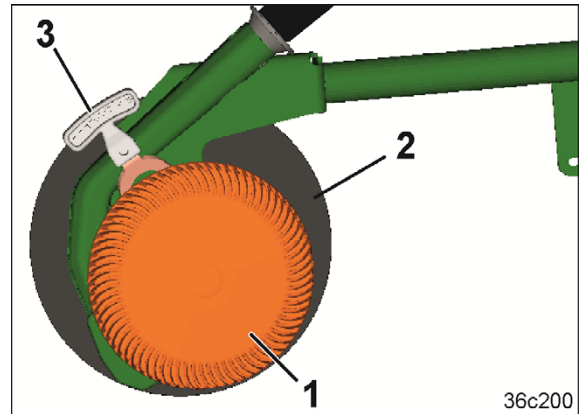


Fig. 53

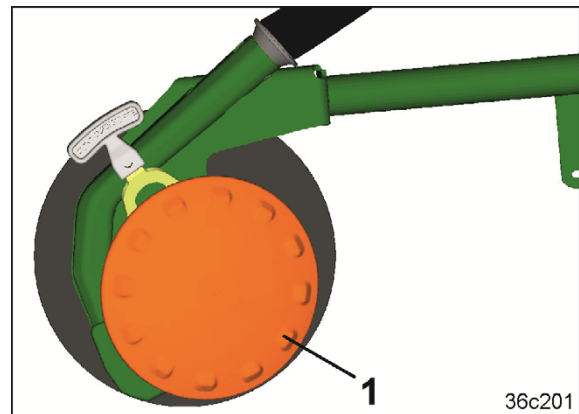


Fig. 54

The seed placement depth depends on the factors

- Soil type (light to heavy)
- Forward speed
- Position of the shallow seeding disc/cleaning disc
- Coulter pressure

5.11 Coulter pressure, seed rate increase and coulters lifting

Adaptation of the coulter pressure to the soil is required to achieve uniform seed placement depth. The seed placement depth depends on the factors

- Soil type (light to heavy)
- Forward speed
- Coulter pressure

The coulter pressure is adjusted hydraulically. The hydraulically actuated coulter pressure adjustment allows the coulter pressure to be adapted to the soil during operation, when changing from normal soil to heavy soil.

To achieve uniform levelling with the exact following harrow even on heavy soils, the exact following harrow pressure is also increased when the coulter pressure is increased. At the same time, more seed can be spread.

As an option, your seed drill can be equipped with all or only selected hydraulic functions. The hydraulic functions are actuated by the tractor control unit (blue). The "exact following harrow pressure" hydraulic function is described in section 5.12, page 71.

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

2 pins (Fig. 55/1) in an adjuster segment act as the stop for the hydraulic cylinder.

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

The numbers on the scale (Fig. 55/2) are provided for guidance. The higher the number, the greater the coulter pressure.

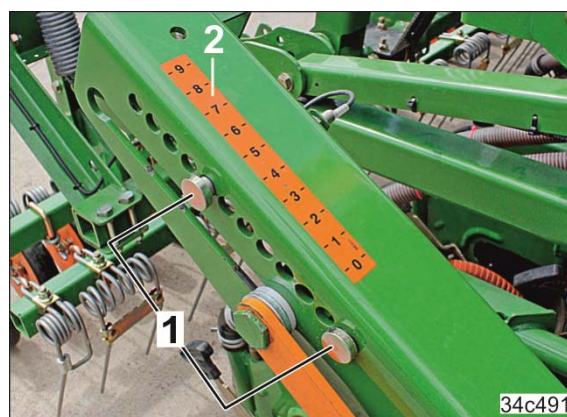


Fig. 55

During work, the coulter pressure can be read on a second scale in the tractor cabin (Fig. 56/1).

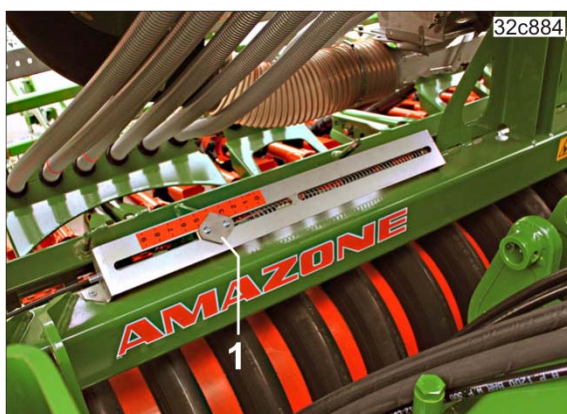


Fig. 56

The control unit (blue) serves to change the coulter pressure and the exact following harrow pressure. When the control unit is actuated, depending on equipment and settings, there is a simultaneous increase/decrease in the coulter pressure and the exact following harrow pressure. By increasing the coulter pressure, more seed can be spread.

5.11.1 Lifting the coulters and harrow - soil tillage without seeding

For soil tillage without seeding, the coulters can be lifted together with the harrow (optional).

The tractor control valve (green) is used to lift and lower the coulters and harrow.

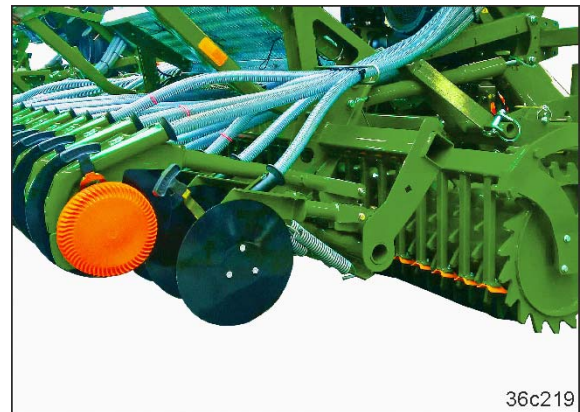


Fig. 57

5.12 Exact following harrow (optional equipment)

The exact following harrow (Fig. 58/1) 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 position using a spindle,
- the exact following harrow pressure mechanically or hydraulically.

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

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 when driving in reverse, the exact following harrow tines deflect upwards from the obstacle (see Fig. 59), without being damaged.

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

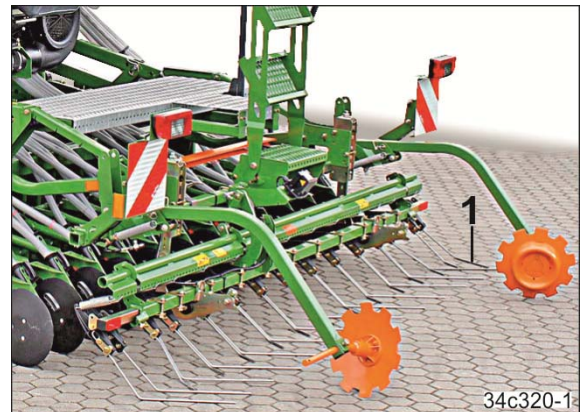


Fig. 58

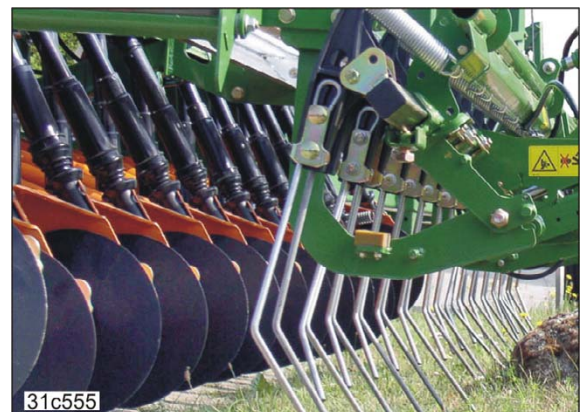


Fig. 59

5.12.1 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
- have 5-8 cm clearance beneath.

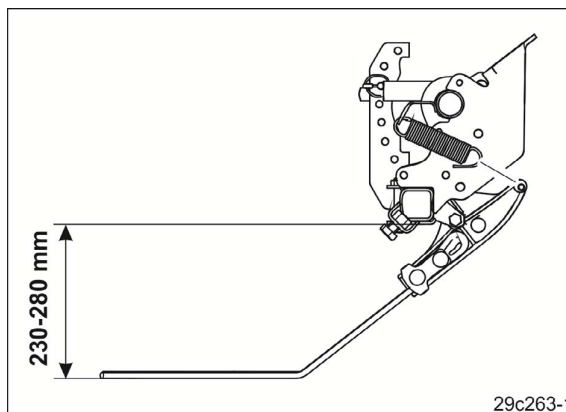


Fig. 60

The supplied ratchet serves to adjust the distance "A".

Turning to the right:
Distance A (Fig. 60) gets bigger

Turning to the left:
Distance A (Fig. 60) gets smaller.



Fig. 61

5.12.2 Exact following harrow pressure adjustment - Mechanical adjustment

The exact following harrow pressure is generated by tension springs that are tensioned using a lever (Fig. 62/1).

The lever is in contact with a bolt (Fig. 62/2) in the adjuster segment. The higher the pin is inserted in the group of holes, the greater the exact following harrow pressure.

Adjust the exact following harrow pressure so that all seed rows are evenly covered with earth.

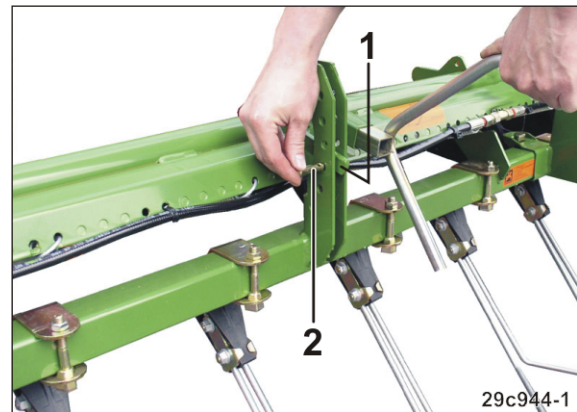


Fig. 62

5.12.3 Exact following harrow pressure adjustment - Hydraulic adjustment

The exact following harrow pressure can be adapted to the soil during operation when changing from normal soil to heavy soil and vice versa (optional).

2 pins (Fig. 63/1) in an adjuster segment act as the stop for the lever (Fig. 63/2). If pressure is applied to the control unit, the exact following harrow pressure increases and the lever rests against the top pin. In floating position, the lever rests on the lower pin.

Adjust the exact following harrow pressure so that all seed rows are evenly covered with earth.



Fig. 63

When the control unit (blue) is actuated, depending on equipment and settings, the coulter pressure and the exact following harrow pressure can be adjusted simultaneously. As an option, more seed is automatically spread.

5.13 Roller harrow with contour guidance (optional equipment)

The roller harrow consists of

- the harrow tines (Fig. 64/1),
- the press rollers (Fig. 64/2).

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.

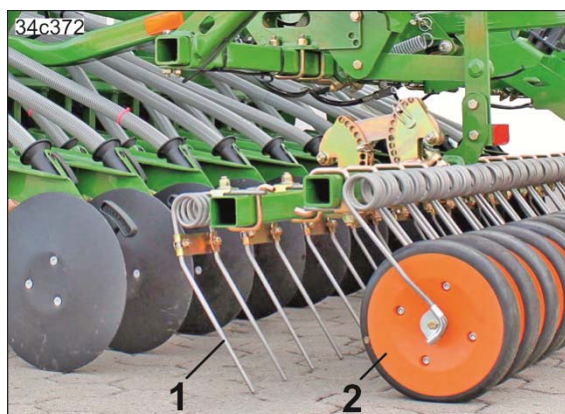


Fig. 64

The following are adjustable

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

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

5.14 Track markers (optional)

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 (Fig. 65/1) 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 cultivator.



Fig. 65

It is possible to set:

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

A description can also be found in the "Soil tillage implement" operating manual.

Raise the active track marker on the field before passing obstacles. If the track marker still strikes against a solid obstacle, a bolt shears off and the track marker deviates around the obstacle. The soil tillage implement is equipped with a cassette containing spare shear bolts.

Both track markers (Fig. 66/1) must be raised for transporting the implement and when turning at the end of the field.

During transport, each track marker must be secured with a bar.

For a more detailed description, refer to the "Soil tillage implement" operating manual.



Fig. 66

5.15 Tramlines

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

The tramline can also be created as an interval tramline. In doing so, the tramline is seeded in recurring freely selectable intervals.



Fig. 67

When creating the tramlines

- a symbol appears on the control terminal.
- the tramline flaps in the flap box (Fig. 68/1) interrupt the seed supply to the seed lines (Fig. 68/2) of the tramline coulters. An electric motor (Fig. 68/3) actuates the tramline flaps.
- the tramline coulters do not deposit any seeds in the soil.
- the seed is returned to the hopper by the tramline coulter.

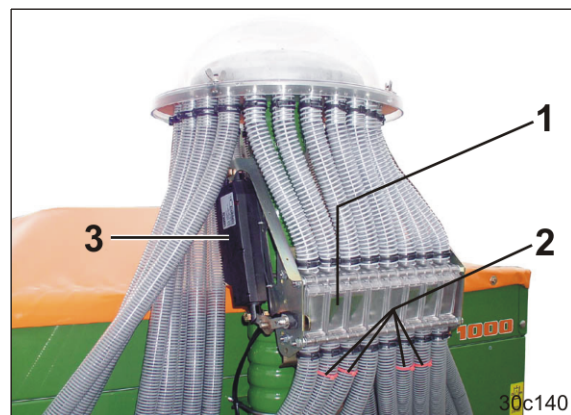


Fig. 68

The active flaps of the flap box are marked. Red cable ties (Fig. 68/2) on the seed tubes mark the active tramline flaps.

Tramline flaps (Fig. 69/1) open and close the seed tubes to the tramline coulters.

A sensor checks if the tramline flaps in the flap box are working properly. In the event of faulty position, a warning message appears on the control terminal.

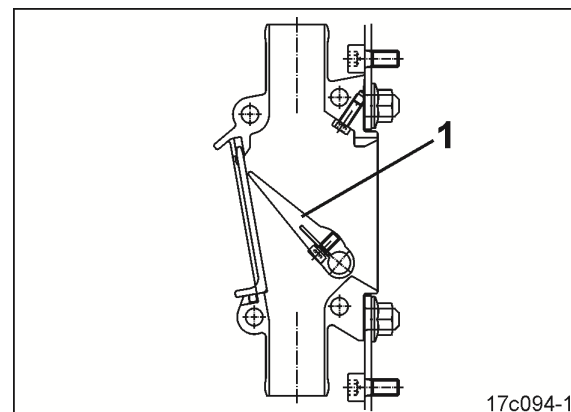
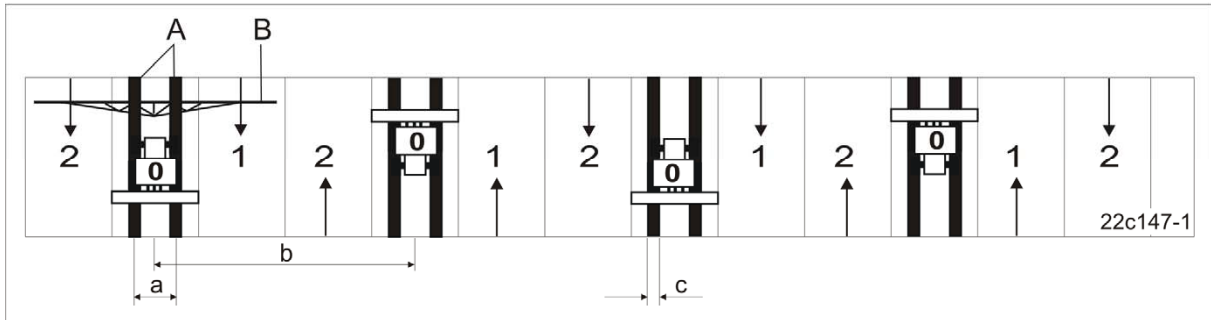


Fig. 69


Fig. 70

The tramline control allows the creation of tramlines (A) at pre-selected intervals on the field.

The tramline spacing (b) corresponds to the working width of the cultivating implements (B), e.g. fertiliser spreader and/or field sprayer, which are used after seeding.

To configure the tramline control, the required tramline rhythm must be entered on the control terminal.

The figure (Fig. 70) shows the tramline rhythm 3. During operation, the field passes are numbered consecutively (tramline counter) and displayed on the control terminal.

In tramline rhythm 3, the tramline counter shows the field passes in the following order: 2-0-1-2-0-1-2-0-1...etc.

When creating a tramline, the tramline counter displays the tramline value "0".

The required tramline rhythm (see table Fig. 73) is obtained from the desired tramline spacing (b) and the seed drill working width.

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.

Layout and function

If not ordered otherwise, the track width (Fig. 71/a) of the tramline is set to 1.80 m.

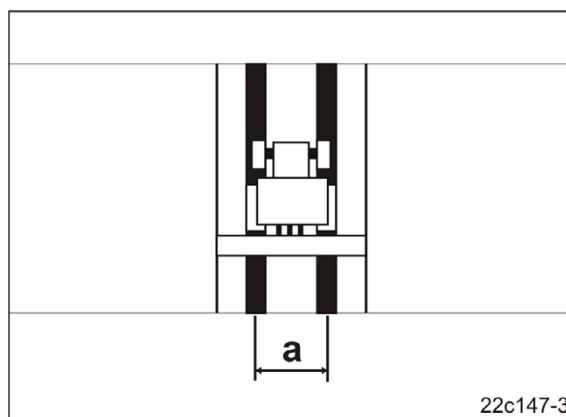


Fig. 71

If not ordered otherwise, the wheelmark width (Fig. 72/c) of the tramline is set to 40 cm.

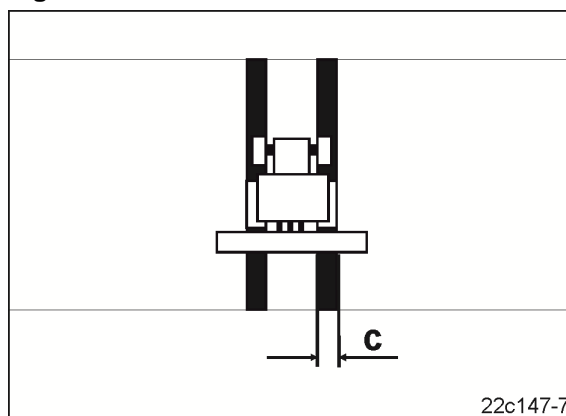


Fig. 72

5.15.1 Tramline rhythms

To configure the tramline control, the required tramline rhythm must be entered on the control terminal. The required tramline rhythm (see table Fig. 73) is obtained from the desired tramline spacing and the seed drill working width. Other tramline rhythms can be found in the control terminal.

Tramline rhythm	Seed drill working width		
	3.0 m	3.5 m	4.0 m
	Tramline spacing (working width of the fertiliser spreader and field sprayer)		
3	9 m	-	12 m
4	12 m	-	16 m
5	15 m	-	20 m
6	18 m	21 m	24 m
7	21 m	-	28 m
8	24 m	28 m	32 m
9	27 m	-	36 m
2	12 m	-	16 m
21	18 m	21 m	24 m

Fig. 73

5.15.2 Examples for creating tramlines

The creation of tramlines is shown using various examples (see Fig. 74):

A = Working width of the seed drill

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

C = Tramline rhythm

D = Tramline counter (during operation, the field passes are numbered consecutively and displayed on the control terminal).

Example:

Working width of seed drill: 3 m

Working width
fertiliser spreader/field sprayer: 18 m (tramline spacing)

1. In the following table (Fig. 74), look for the following:
in column A, the seed drill's working width (3 m) and
in column B, the tramline spacing (18 m).
2. On the same line column "C", read the tramline rhythm (tramline rhythm 3) and enter it on the control terminal.
3. On the same line in column "D" under the "START" heading, take the reading of the tramline counter for the first field pass (tramline counter 2).
Only set this value on the control terminal just before commencing the first field pass.

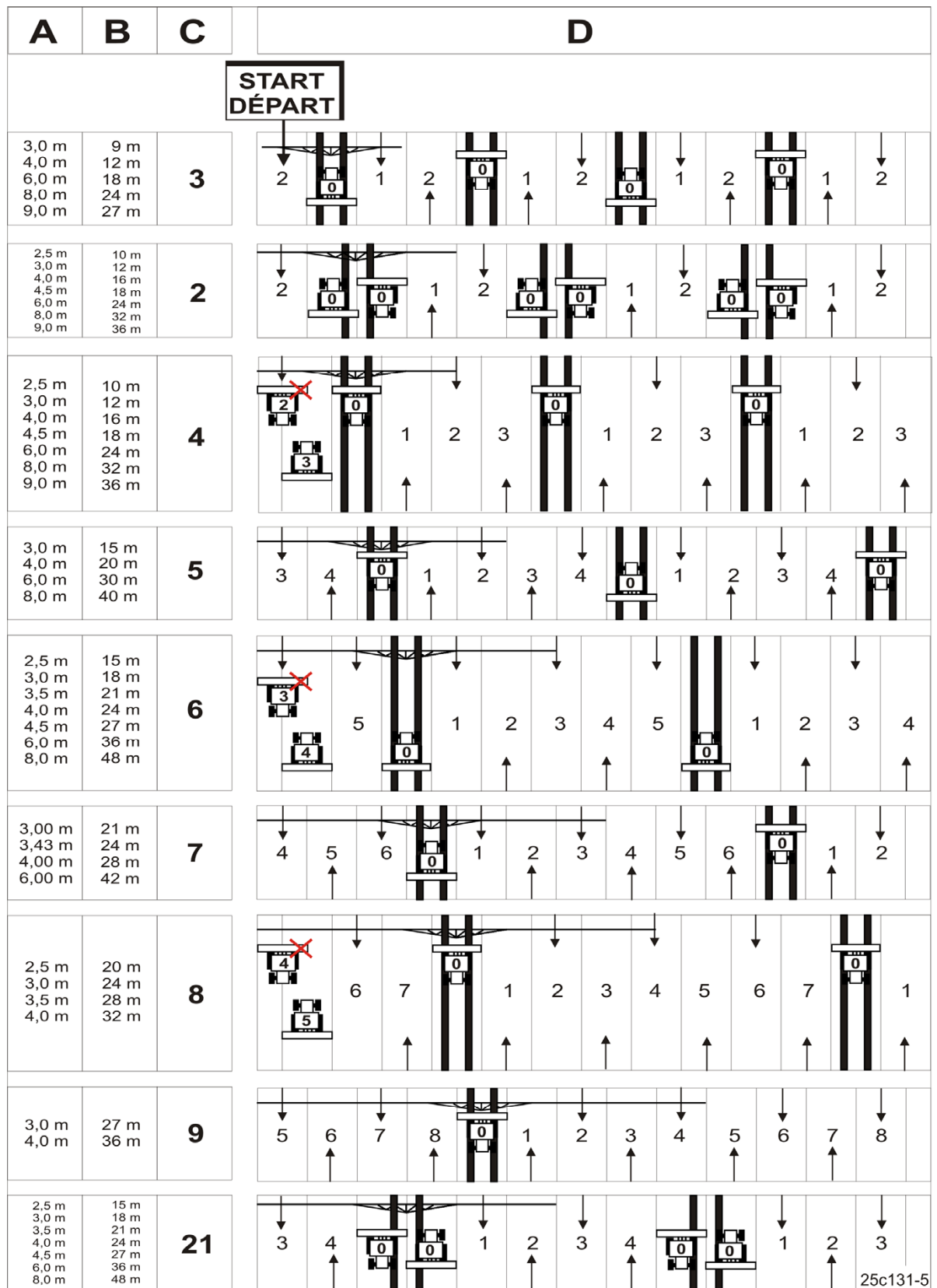


Fig. 74

5.15.3 Tramline rhythm 2 and 21

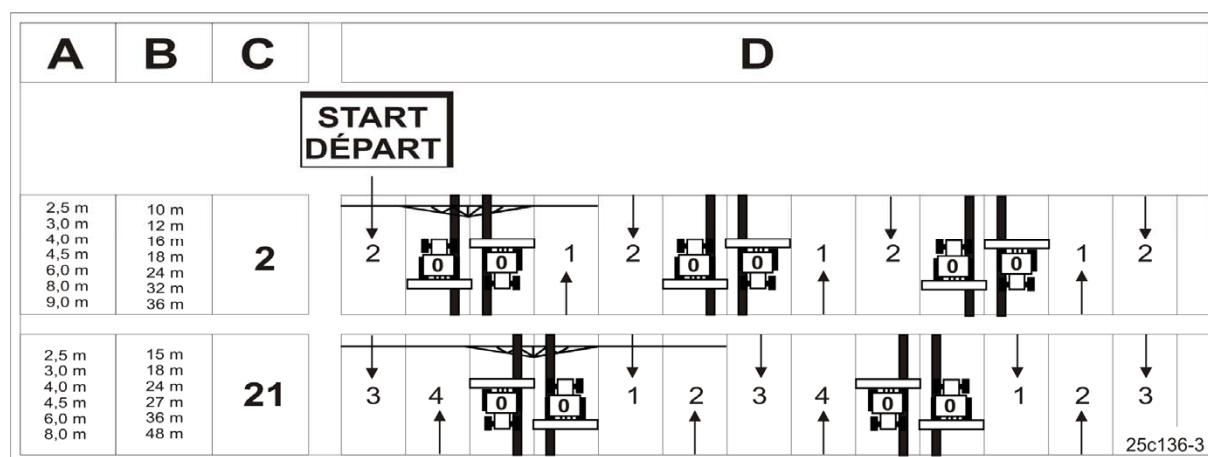


Fig. 75

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

The seed delivery to the tramline coulters is interrupted for implements with

- tramline rhythm 2 only on the right side of the implement,
- tramline rhythm 21 only on the left side of the implement.

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

5.15.4 Tramline rhythms 4, 6, and 8

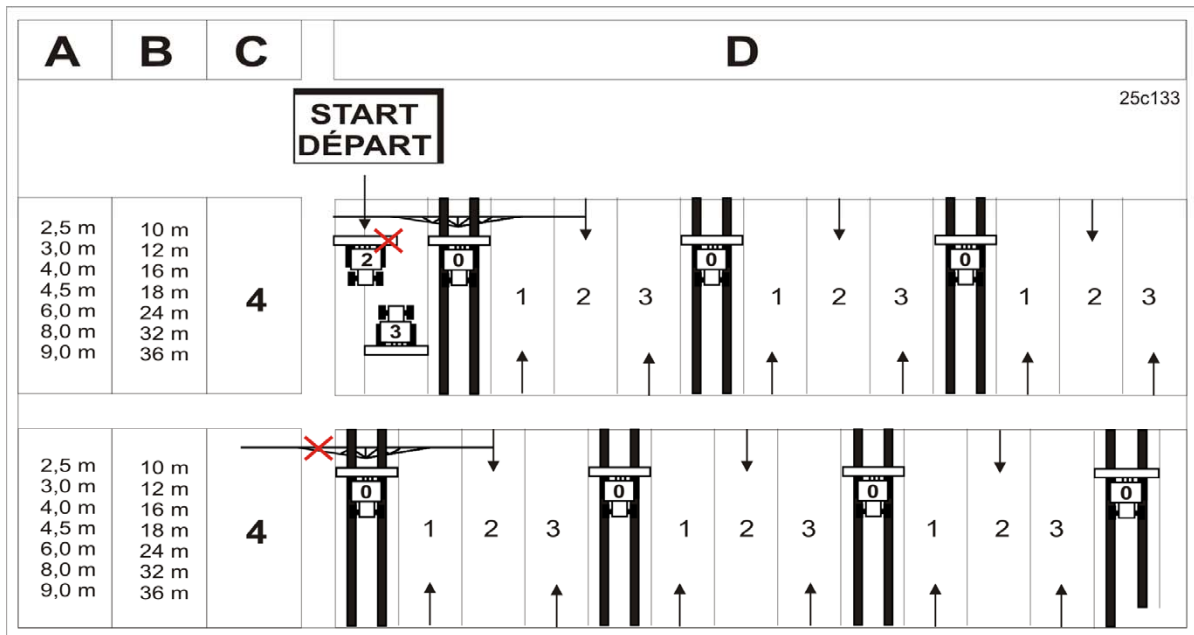


Fig. 76

During the first field pass, the seed drill works with tramline rhythm 4, 6 and 8 with half the working width (part-width section).

Work can also begin with the full working width and the creation of a tramline (see Fig. 76). In this case, the cultivating implement works with half the working width during the first field pass.

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

5.15.5 Working with half working width (part-width section)

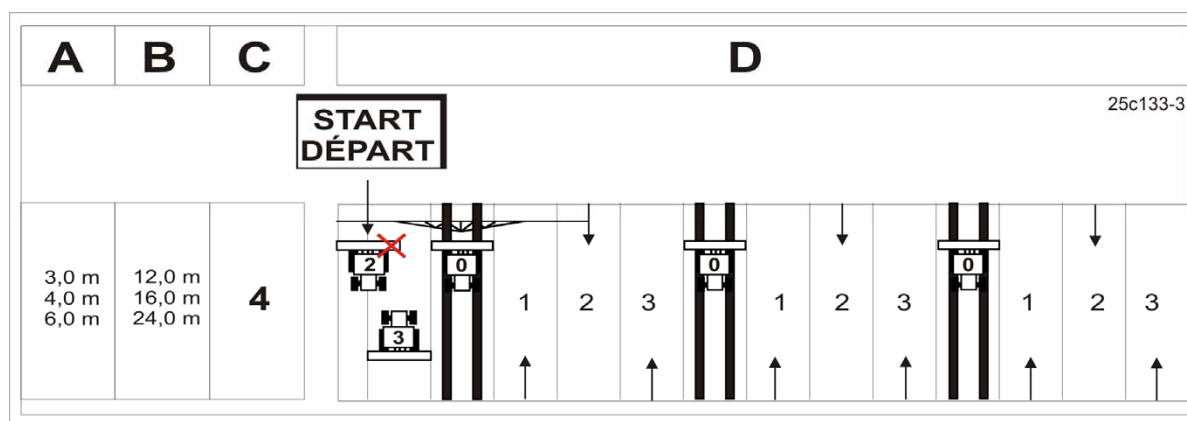


Fig. 77

During the first field pass, the seed drill works with tramline rhythm 4, 6 and 8 with half the working width (part-width section). The coulter on the left side of the implement does not place seeds in the soil.

The installation of an insert (Fig. 78/1) in the distributor head interrupts the seed supply to the coulters of one implement half.

Halve the seed rate when working with half a working width.

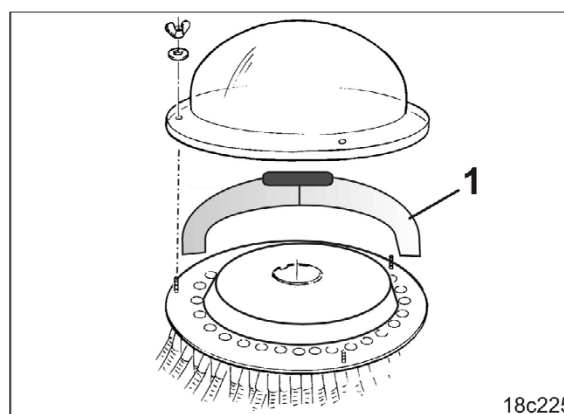


Fig. 78

5.15.6 Tramline marker (optional)

When tramlines are being created, the track discs (Fig. 79/1) lower automatically and mark the tramline that has just been created. This makes the tramlines visible before the seed has germinated.

The following are adjustable

- the track width of the tramline (cultivating tractor track),
- the working intensity of the track discs.

When working on the field, the track discs are raised if no tramline is being created.

For road transport of the implement, each section (Fig. 80/1) is raised and secured with a pin and linch pin.



Fig. 79

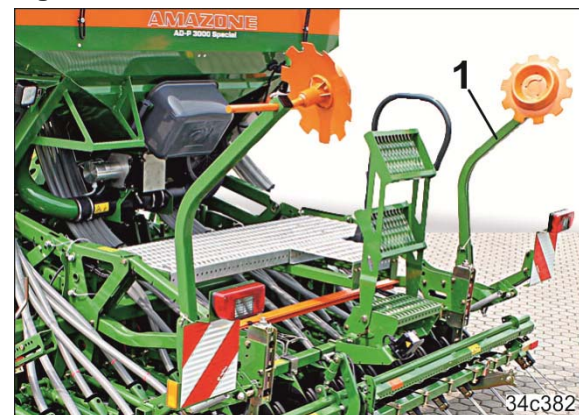


Fig. 80

5.16 Work floodlights (optional)

The work floodlights (Fig. 81/1) allow visibility of the implement tools and the worked area even in the dark.

For design reasons, the floodlights are switched on and off

- on the control terminal or
- with an on/off switch in the tractor cab.

When transporting the implement on public roads, switch off the work floodlights.



Fig. 81

5.17 Camera system (option)

The camera (Fig. 82/1) at the rear of the combination increases safety when manoeuvring, e.g. to the loading vehicle.

The monitor is characterised by the clear, glare-free representation of multiple camera images simultaneously.

The camera system can be quickly mounted and dismantled with simple plug connections.

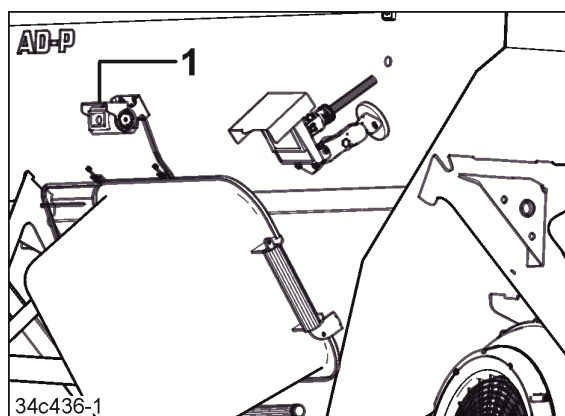


Fig. 82

6 Initial commissioning

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 notice 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)

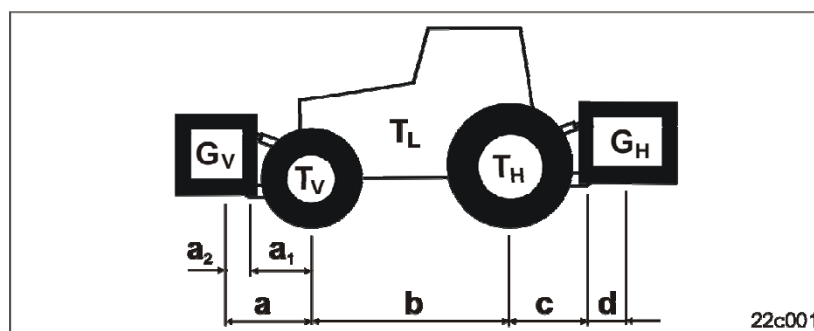


Fig. 83

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 47
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 hitch	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 hitch	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 47

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 the permissible tyre load-bearing capacity (2 tyres)
Minimum ballast weight front/rear	<div>/ kg</div>	--	--
Total weight	<div>kg</div>	<div>kg</div>	--
Front axle load	<div>kg</div>	<div>kg</div>	<div>kg</div>
Rear axle load	<div>kg</div>	<div>kg</div>	<div>kg</div>



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



WARNING

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

- unintentional lowering of the unsecured implement raised using the tractor's 3-point hydraulic system.
- unintentional lowering of raised, unsecured implement parts.
- unintentional start-up and rolling of the tractor-implement combination.

Secure the tractor and the implement against unintentional start-up and rolling before 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 key is inserted in the tractor and the tractor engine can be started unintentionally with the hydraulic system connected.
- if the tractor is not secured against unintentional rolling using the parking brake.
- if moving parts are not blocked against unintentional movement.
- as long as the power supply between the tractor and the implement is not disconnected. Disconnect the implement plug (e.g. ISOBUS plug).

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

1. Park the tractor and the implement on solid, level ground only.
2. Lower any raised, unsecured implement/raised, unsecured implement parts.
→ This is how to prevent unintentional lowering.
3. Switch off the tractor PTO shaft.
4. Shut down the tractor engine.
5. Remove the ignition key.
6. Apply the tractor parking brake.
7. Disconnect the power supply between the tractor and the implement.
Disconnect the implement plug (e.g. ISOBUS plug).

6.3 Hydraulic connection for the blower fan drive

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

Connection diagram for the hydraulic blower fan drive

Fig. 84/...

- (A) On the implement side
(B) On the tractor side
- (1) Hydraulic fan motor
 $N_{max.} = 4000 \text{ rpm.}$
 - (2) Filter
 - (3) Single- or double-acting control unit with priority
 - (4) Hydraulic fluid tank
 - (5) Feed line:
pressure line with priority
(marking: 1 red)
 - (6) Return flow:
Unpressurised line with
large hydraulic coupling
(Marking: red T)

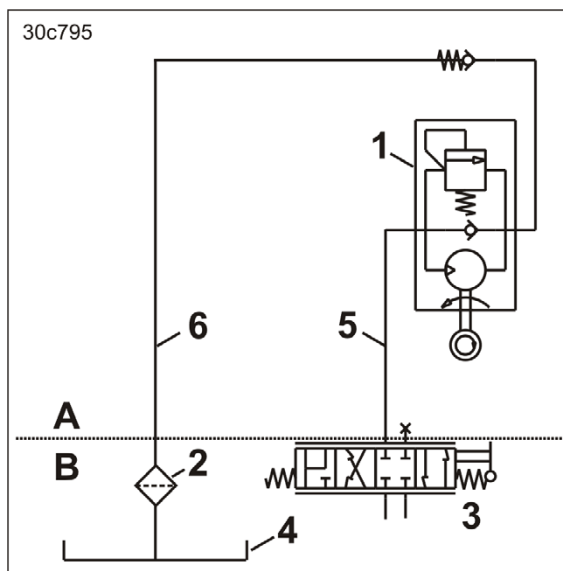


Fig. 84

For a steady blower fan drive, the back pressure in the return line (red T) may not exceed 10 bar. Connect the blower fan hydraulic lines to your tractor as shown in the blower fan drive connection diagram:

- Connect the pressure line (red 1) of the blower fan hydraulic motor to a single-acting or double-acting tractor control unit with priority.
- Connect the return line (red T) to an unpressurised tractor connection with direct access to the hydraulic fluid tank. Only the large hydraulic coupling with the label "T" may be connected.

If your tractor does not have a connection for the hydraulic coupling with the label "T", retroactive installation in a specialised workshop is required. Only install DN 16, z.B. Ø 20 x 2.0 mm pipes. During installation, make sure that the return flow path to the hydraulic fluid tank is short.

- The hydraulic fluid must not overheat.

High oil flow rates in conjunction with small oil tanks encourage rapid heating of the hydraulic fluid. The capacity of the tractor's oil tank should be at least twice the oil flow rate. If the hydraulic fluid overheats, the installation of an oil cooler is required at a specialist workshop.

6.4 Initial installation of the transport safety bar bracket

Bolt 2 brackets (Fig. 85/1) onto the frame (Fig. 85/2) of the seed drill.

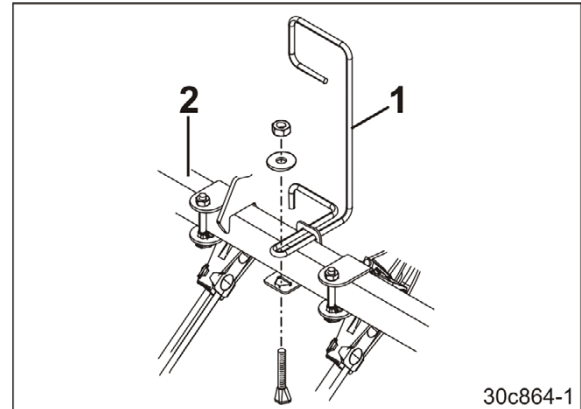


Fig. 85

During work, the transport safety bars (Fig. 86/1) are attached to the brackets (Fig. 86/2).

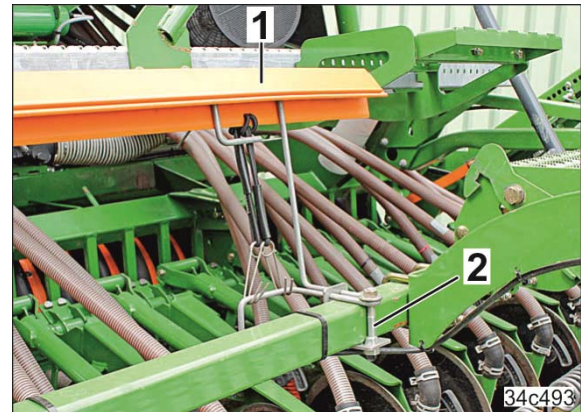


Fig. 86

7 Coupling and uncoupling the implement

Only park the AD-P Super pack top seed drill together with the roller and the soil tillage implement.



Fig. 87

This section describes the procedure for coupling and uncoupling the soil tillage implement on the tractor.



Fig. 88

**CAUTION**

When coupling and uncoupling the implement, take heed of the section "Safety information for users".

**CAUTION**

Before adjustment, maintenance and repair work

- couple the pack top seed drill and the soil tillage implement.
- lower the implement combination onto level solid ground.
- apply the tractor parking brake.
- switch off the control terminal.
- switch off the tractor engine.
- remove the ignition key.
- 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 movements or radar pulses.

**WARNING**

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

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

**WARNING**

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

Actuate the operating controls for the tractor's 3-point hydraulic system

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

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.

1. Put the tractor control units into the float position.
2. Clean the coupling part.
3. Connect the hydraulic lines to the tractor control units (markings of the hydraulic lines, see section 4.2).



Fig. 89

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. 90

7.2 Coupling the tractor with the combination



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.



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 control unit (yellow) is actuated more frequently than any other control unit. Assign the connections of the control unit (yellow) to an easily accessible 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 of the tractor and soil tillage implement with ISOBUS system

Combinations with the ISOBUS system have an analogue working position sensor. The analogue working position sensor transmits the pulses to switch the electric motor for the metering roller drive on and off.

The equipment of your seed drill with seed tube monitoring requires installation of a second working position sensor. The second working position sensor transmits the pulse for switching the seed tube monitoring on and off.

Attach the working position sensors on the soil tillage implement before coupling to the tractor.

1. Installation of the analogue working position sensor and the working position sensor for seed drills with seed tube monitoring (see section 7.2.1.1, page 102).
2. Couple the soil tillage implement and the tractor (see "Soil tillage implement" operating manual).

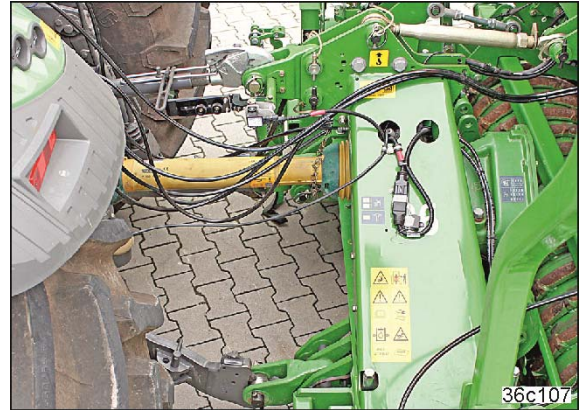


Fig. 91

3. Hook the tensioning element (Fig. 92/1) onto the top link bracket (Fig. 92/2).
4. The working and transport position of the combination must be calibrated after each coupling of tractor and implement (see Fig. 172, page 148).

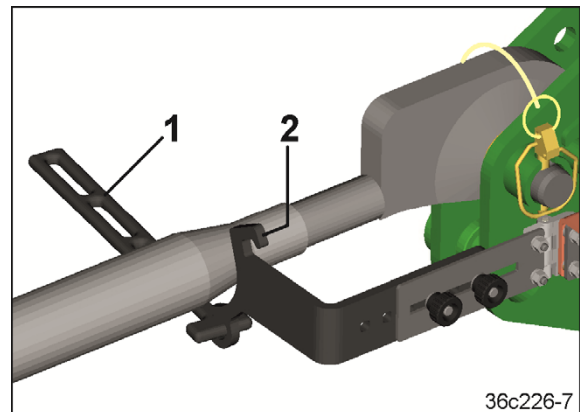


Fig. 92

7.2.1.1 Installation of the analogue working position sensor and the working position sensor for the seed tube monitoring

Without seed tube monitoring:

1. Bolt the holder (Fig. 93/1) onto the upper coupling point.

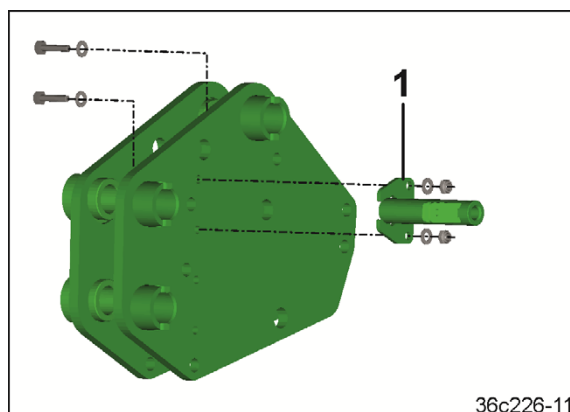


Fig. 93

With seed tube monitoring:

2. Bolt the holder (Fig. 94/1) and sensor bracket (Fig. 94/2) onto the upper coupling point.

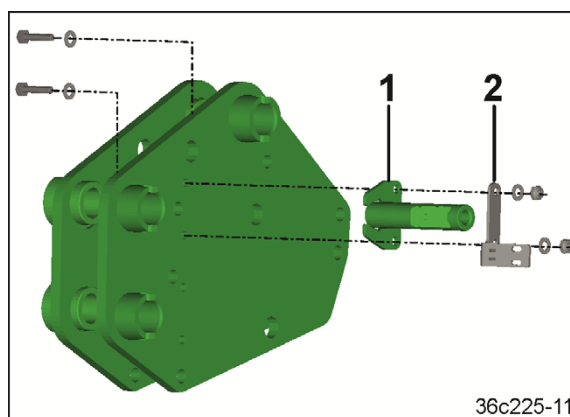


Fig. 94

Without seed tube monitoring:

3. Bolt the middle part (Fig. 95/1) with the top link bracket (Fig. 95/2) and section (Fig. 95/3).

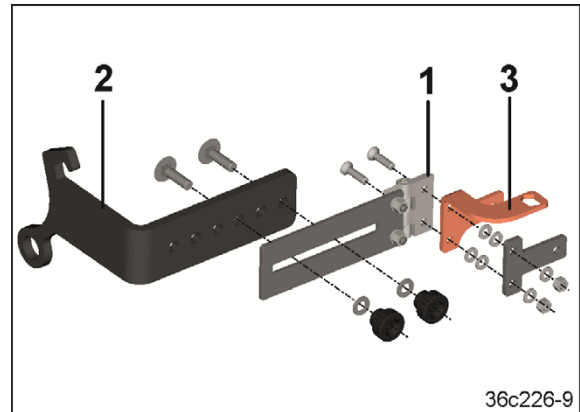


Fig. 95

With seed tube monitoring:

4. Bolt the middle part (Fig. 96/1) with the top link bracket (Fig. 96/2), section (Fig. 96/3) and guide (Fig. 96/4) for the magnets.

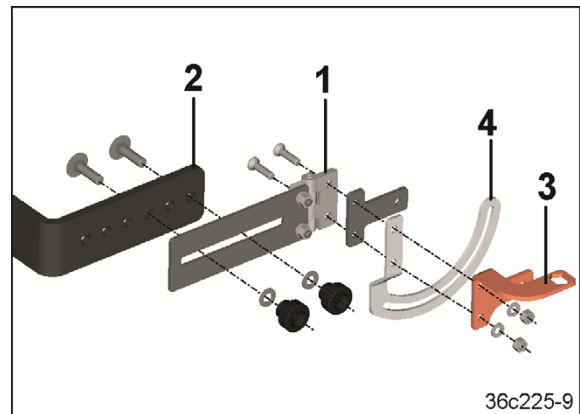


Fig. 96

Without seed tube monitoring:

5. Bolt the section (Fig. 97/1) with a hex. bolt (Fig. 97/2) onto the holder (Fig. 97/3).

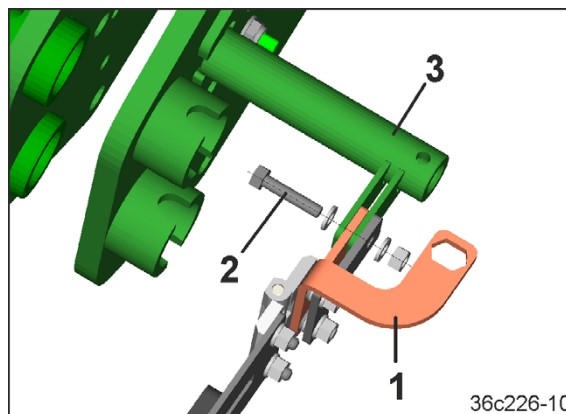


Fig. 97

With seed tube monitoring:

6. Bolt the section (Fig. 98/1) with a hex. bolt (Fig. 98/2) onto the holder (Fig. 98/3).

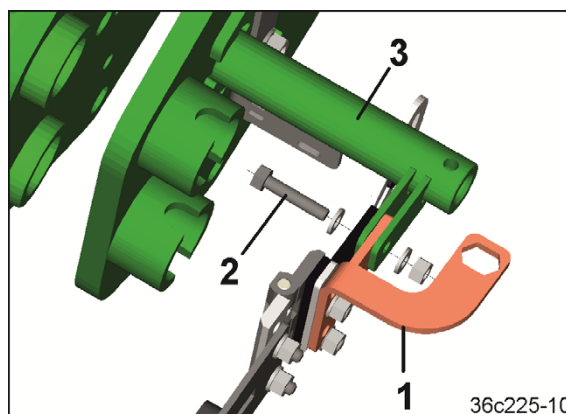


Fig. 98

All types:

7. Insert the torque support (Fig. 99/1) into the holder (Fig. 99/2) and fasten with a hex. bolt (Fig. 99/3).
8. Connect the potentiometer (Fig. 99/4) with a hex. bolt (Fig. 99/5) and hex. nut (Fig. 99/6) with the section (Fig. 99/7).

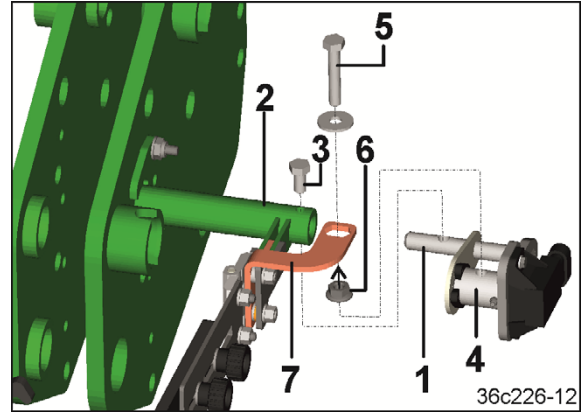


Fig. 99

With seed tube monitoring:

9. Fasten the working position sensor (Fig. 100/1) and the adjustment magnet (Fig. 100/2).

The working position sensor (Fig. 100/1) transmits the pulse for switching the seed tube monitoring on and off.

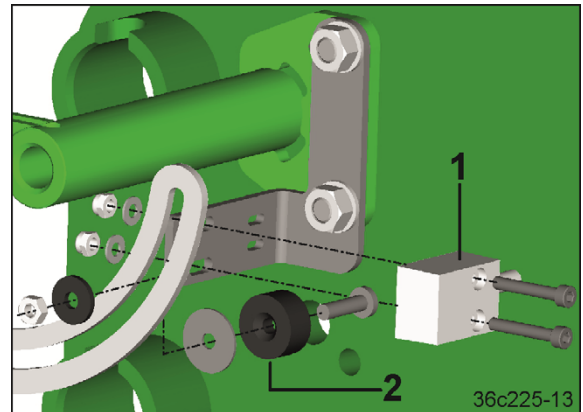


Fig. 100

7.2.2 Coupling of the tractor and soil tillage implement with AMADRILL+ control terminal

Combinations with the AMADRILL+ control terminal have a digital working position sensor. The digital working position sensor transmits the pulses to switch the electric motor for the metering roller drive on and off.

The equipment of your seed drill with seed tube monitoring requires installation of a second working position sensor. The second working position sensor transmits the pulse for switching the seed tube monitoring on and off.

Attach the working position sensors on the soil tillage implement before coupling to the tractor.

1. Installation of the digital working position sensor (see section 7.2.2.1, page 107).
2. Installation of the working position sensor for seed drills with seed tube monitoring (see section 7.2.2.2, page 107).
3. Couple the soil tillage implement and the tractor (see "Soil tillage implement" operating manual).

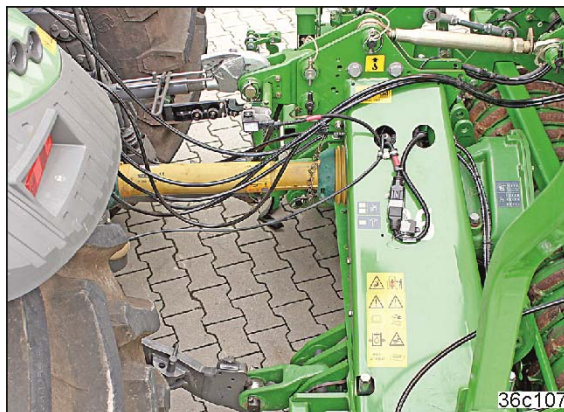


Fig. 101

4. Hook the tensioning element (Fig. 102/1) onto the top link bracket (Fig. 102/2).
5. The working and transport position of the combination must be calibrated after each coupling of tractor and implement (see Fig. 172, page 148).

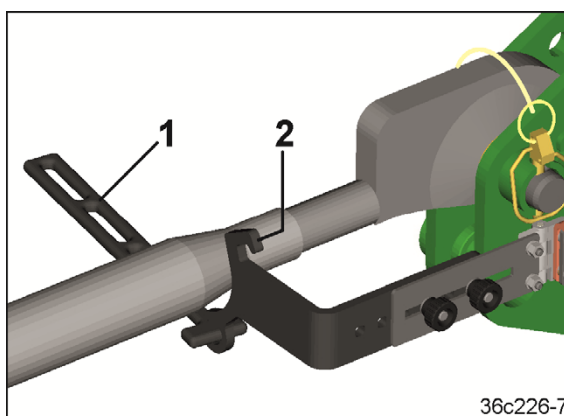


Fig. 102

7.2.2.1 Installation of the digital working position sensor

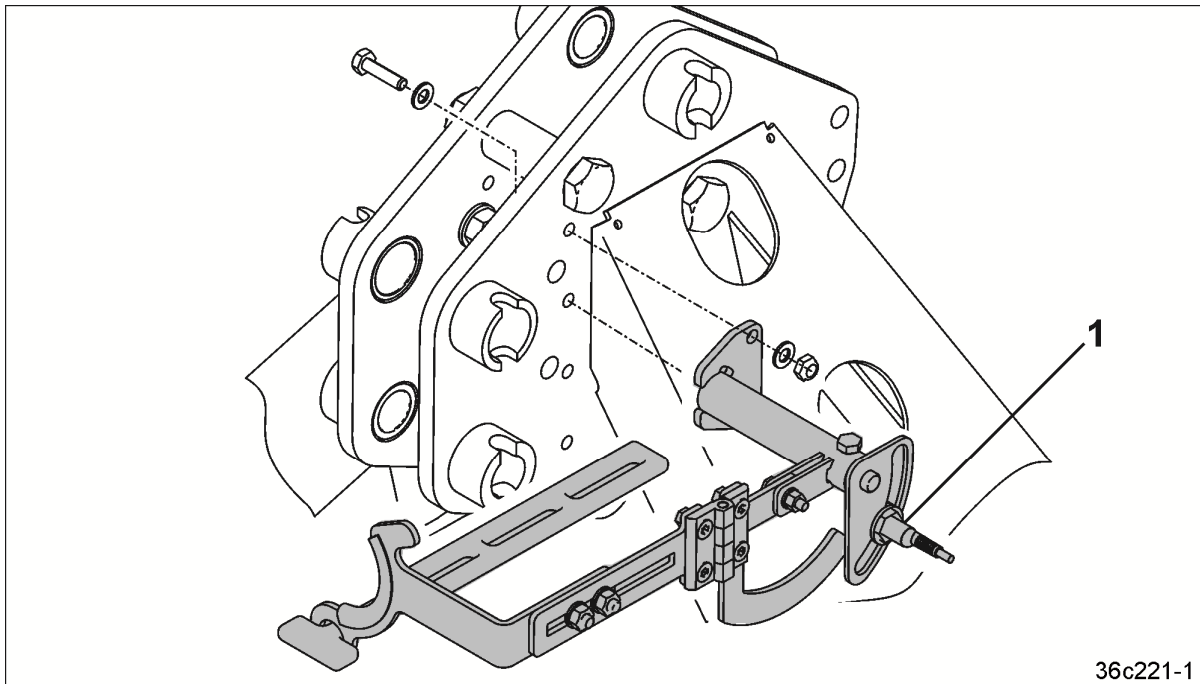


Fig. 103 Fasten the digital working position sensor (Fig. 103/1) onto the upper coupling point of the soil tillage implement using the supplied assembly instructions.

7.2.2.2 Installation of the working position sensor for seed drills with seed tube monitoring

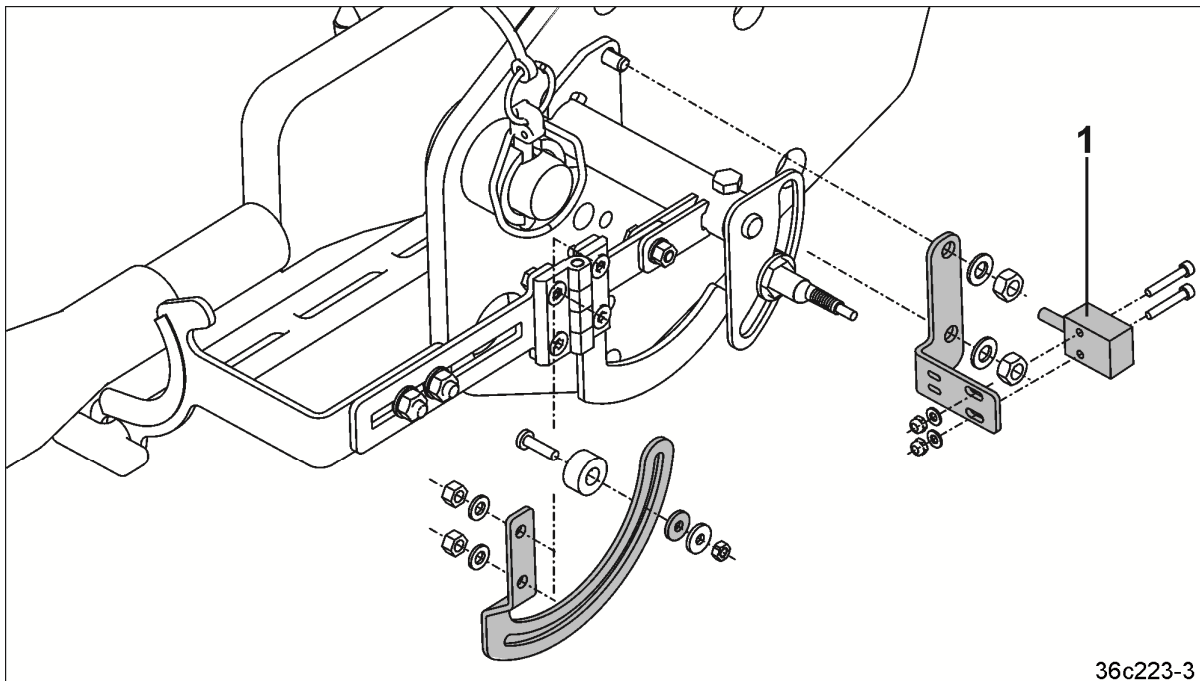


Fig. 104 Fasten the working position sensor (Fig. 104/1) onto the upper coupling point of the soil tillage implement using the supplied assembly instructions.

7.2.3 Checking the tramline track width

When the implement is delivered or when buying a new tractor, check that the tramline is set to the track width (Fig. 105/a) of the tractor.

If necessary, adjust the tramline track width to the track width of the cultivating tractor (see section "Setting the tramline track width", page 163).

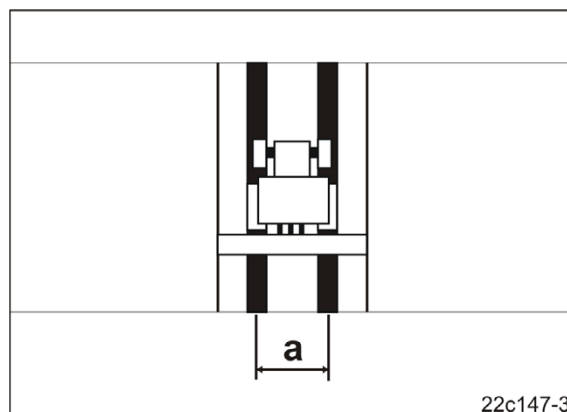


Fig. 105

7.2.4 Checking the tramline wheelmark width

When the implement is delivered or when buying a new cultivating tractor, check that the tramline is set to the wheelmark width (Fig. 106/a) of the cultivating tractor.

With an increasing number of adjacent tramline coulters, the track (Fig. 106/c) becomes wider.

If necessary, adjust the tramline wheelmark width to the wheelmark width of the cultivating tractor (see section "Adjusting the tramline wheelmark width", page 163).

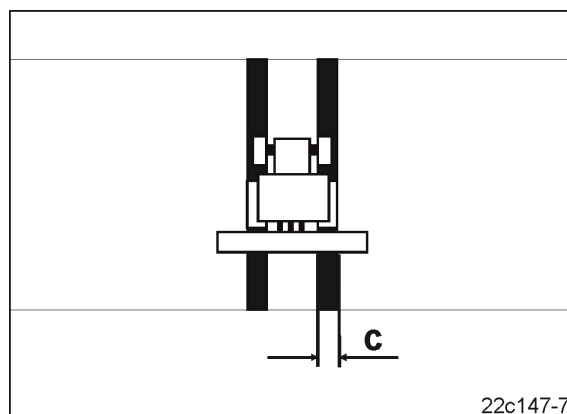


Fig. 106

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 of the tractor-implement combination.

Secure the tractor and the implement against unintentional start-up and rolling before working on the implement.



WARNING

Before performing adjustment, maintenance and repair work,

- couple the pack top seed drill and the soil tillage implement.
- switch off the tractor PTO shaft.
- 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 key.
- 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 movements or radar pulses.

8.1 Folding the steps up and down



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

8.1.1 Folding down the steps

1. Take hold of the steps (Fig. 107/1).

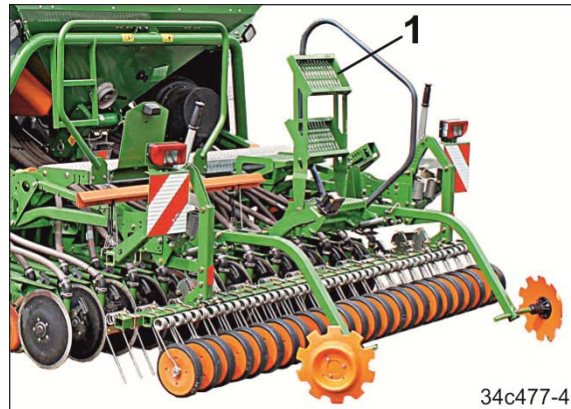


Fig. 107

2. Pull up the lever (Fig. 108/1).

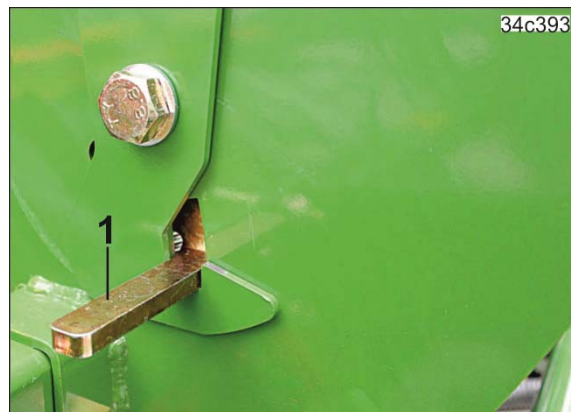


Fig. 108

3. Fold down the steps carefully.



Fig. 109

8.1.2 Folding up the steps.

1. Fold in the steps (Fig. 110/1).

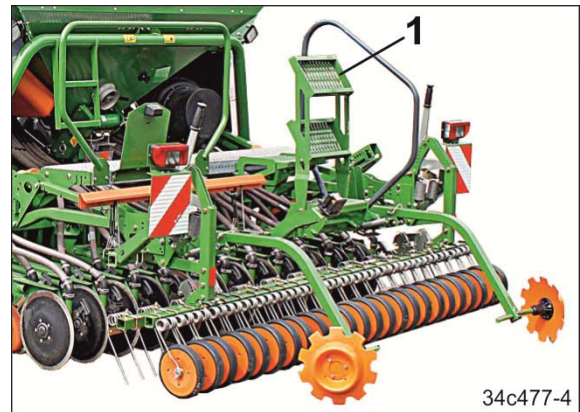


Fig. 110

2. Make sure that the bar (Fig. 111/1) locks into place.



Fig. 111

8.2 Fill the seed hopper



DANGER

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

Observe the permissible fill levels and total weights.



WARNING

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

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



WARNING

Risk of crushing when filling the hopper using Big Bags!

Do not climb into the seed hopper when filling is in progress.

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 may escape when filling the implement. Wear a face mask and protective goggles and gloves.

1. Couple the implement combination to the tractor.
2. Park the combination on a level surface.
3. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
4. Fold down the steps (see section 8.1, page 110).
5. Step onto the loading board via the steps.
6. Open the roller tarpaulin.

The belt (Fig. 112) serves to open and close the roller tarpaulin.
The roller tarpaulin opens when the belt is released.

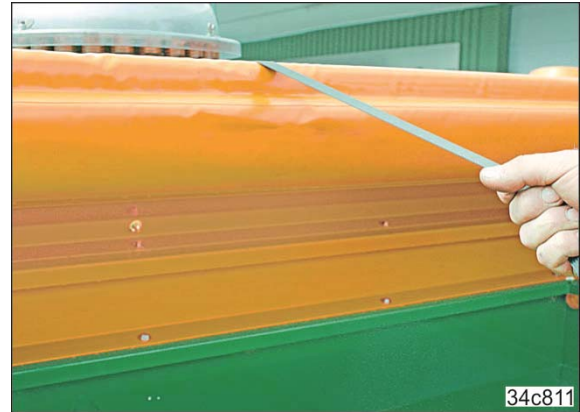


Fig. 112

7. Adjust the height of the low level sensor according to the required residual seed volume.
 - 7.1 Hold the adjustment rod (Fig. 113/1) with the low level sensor.
 - 7.2 Loosen the wing nuts (Fig. 113/2) and adjust the height of the low level sensor according to the required residual seed volume.
 - 7.3 Secure the setting with the wing nut.



The charging sieve (Fig. 113/3) protects against contact with the rotating metering roller and cannot be removed.

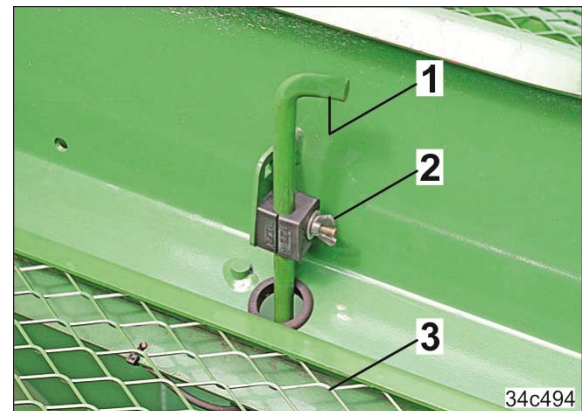


Fig. 113

8. Fill the hopper
 - o with bagged goods from a supply vehicle
 - o with a filling auger
 - o from Big Bags.
9. Close the roller tarpaulin (Fig. 114/1).
10. Fold up the steps (see section 8.1, page 110).
11. If known, enter the filling quantity [kg] on the control terminal (only possible with a suitable control terminal).



Fig. 114

8.3 Calibrating the seed rate

1. Couple the implement combination to the tractor (see section "Coupling the tractor with the combination", page 99).
2. Park the combination on a level surface.
3. Apply the tractor parking brake and switch off the tractor engine. Do not remove the ignition key. It is required to operate the control terminal and the metering roller drive motor.
4. Fill at least 1/3 of the seed hopper with seed (accordingly less for fine seed) (see section "Fill the seed hopper", page 112).
5. Place the trough under the injector sluice.

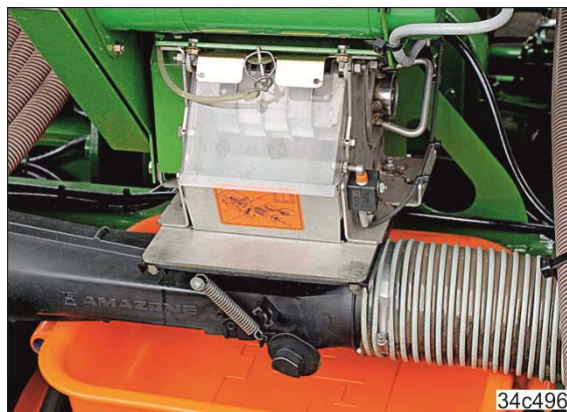


Fig. 115

6. Open the injector sluice flap (Fig. 116/1).

Only hold the injector sluice flap by the handle (Fig. 116/2), otherwise there is a risk of injury when the spring loaded flap snaps closed.



CAUTION

Danger of getting crushed. Never insert your hand between the injector sluice flap and the injector sluice!

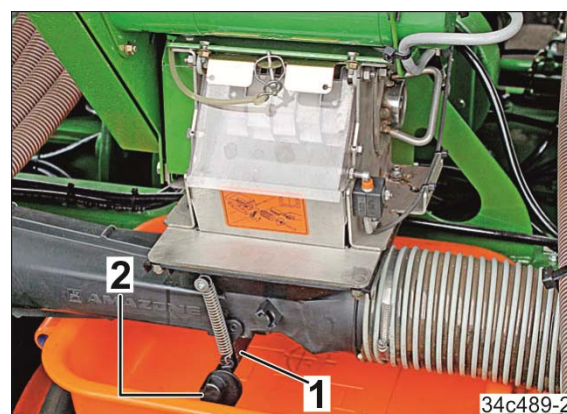


Fig. 116

7. Calibrate the seed drill according to the "AMADRILL+" operating manual or the "ISOBUS Software" operating manual. Repeat the calibration test until the desired seed rate is achieved.
8. Close the injector sluice flap.
9. Secure the trough on the transport bracket (see section "Calibrating the seed rate", page 62).

8.3.1 Adjusting the automatic seed rate increase (optional)

1. Adjust the coulter pressure with the hydraulic coulter pressure adjustment (see section 8.6.1, page 121).
2. Select the coulter pressure adjustment on the control terminal.
3. Direct people out of the danger area and extend the piston rod of the hydraulic cylinder.
 - 3.1 Apply pressure to tractor control unit (blue).
4. Set the adjustable sensor (Fig. 117/1) flush with the bolt (Fig. 117/2) of the extended piston rod.
5. Tighten the thumb nut (Fig. 117/3).
6. Depressurize the tractor control unit (blue).
7. Set the desired increased rate on the control terminal (see control terminal operating manual).

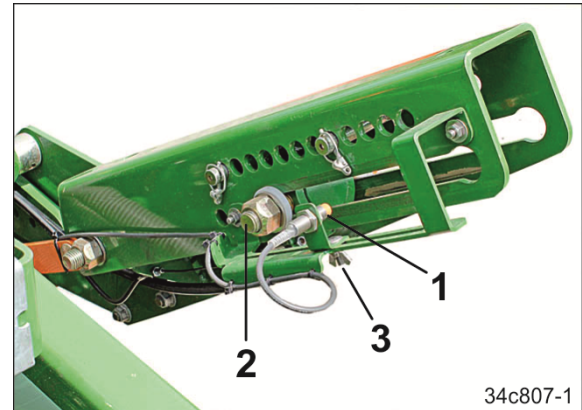


Fig. 117

8.4 Setting the blower fan speed



DANGER

Do not exceed the maximum blower fan speed of 4000 rpm.



The blower fan speed changes until the hydraulic fluid has reached its operating temperature.

During initial operation, correct the blower fan speed until the operating temperature is reached.

If the blower fan is put back into operation after a longer standstill period, the set blower fan speed is only reached once the hydraulic fluid has heated up to operating temperature.

The setting of the blower fan speed depends on the version of the pressure relief valve.

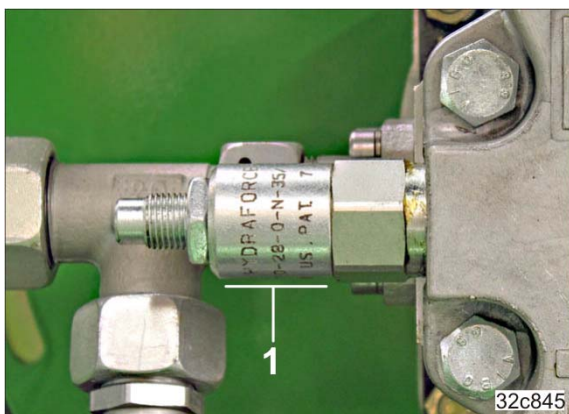


Fig. 118



Fig. 119

The pressure relief valve of the blower fan can be installed in 2 versions

- with round outer contour (Fig. 118/1),
- with hexagonal outer contour (Fig. 119/1).

8.4.1 Setting the blower fan speed via the flow control valve of the tractor

1. Perform the basic setting of the pressure relief valve according to section 8.4.3.1 or section 8.4.4.1 (depending on the version of the pressure relief valve).
2. The required blower fan speed can be found in the following table (Fig. 46, page 66).
3. Set the blower fan speed via the flow control valve of the tractor.

8.4.2 Setting the blower fan speed on tractors without flow control valve

1. The required blower fan speed can be found in the following table (Fig. 46, page 66).
2. Set the blower fan speed according to section 8.4.3.2 or section 8.4.4.2 (depending on the version of the pressure relief valve).

8.4.3 Pressure relief valve with round outer contour



Fig. 120

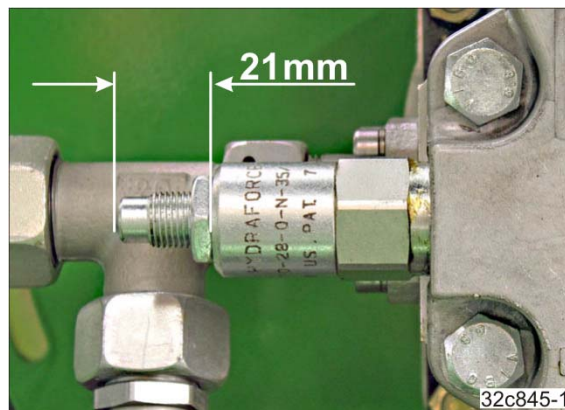


Fig. 121

8.4.3.1 Basic setting of the pressure relief valve

1. Loosen the lock nut (Fig. 120).
2. Adjust the pressure relief valve to the factory-set dimension "21 mm" (Fig. 121).
 - 2.1. Turn the bolt with the hexagonal socket wrench (Fig. 120/1) accordingly.
3. Tighten the lock nut.

8.4.3.2 Blower fan speed setting

This setting should only be carried out when the blower fan hydraulic motor is connected to the tractor hydraulic system and the tractor is not equipped with a flow control valve.

1. Loosen the lock nut (Fig. 120).
2. Adjust the target blower fan speed on the pressure relief valve using the hexagon socket wrench (Fig. 120/1). Do not exceed the maximum blower fan speed of 4000 rpm.

Blower fan speed

Turning to the right: increases the nominal blower fan speed.

Turning to the left: reduces the nominal blower fan speed.

3. Tighten the lock nut.

8.4.4 Pressure relief valve with hexagonal outer contour



Fig. 122



Fig. 123

8.4.4.1 Basic setting of the pressure relief valve

1. Loosen the lock nut (Fig. 122).
2. Completely screw in the bolt with the hexagon socket wrench (Fig. 122/1) (to the right).
3. Using the hexagon socket wrench, unscrew the bolt by 3 turns.
4. Tighten the lock nut.

8.4.4.2 Blower fan speed setting

This setting should only be carried out when the blower fan hydraulic motor is connected to the tractor hydraulic system and the tractor is not equipped with a flow control valve.

1. Loosen the lock nut (Fig. 122).
2. Adjust the target blower fan speed on the pressure relief valve using the hexagon socket wrench (Fig. 122/1). Do not exceed the maximum blower fan speed of 4000 rpm.

Blower fan speed

Turning to the right: increases the nominal blower fan speed.

Turning to the left: reduces the nominal blower fan speed.

3. Tighten the lock nut.

8.5 Adjusting and checking the seed placement depth

The seed placement depth depends on the factors

- Soil type (light to heavy)
- Working speed
- Coulter pressure
- Position of the coulter discs

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

1. Adjust the coulter pressure (see section "Setting the coulter pressure", page 121).
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. The coulter pressure must be
 - o increased if the placement depth is too shallow
 - o reduced if the placement depth is too deep.
6. If the desired placement depth cannot be achieved with RoTeC Control coulters by adjusting the coulter pressure, adjust all coulter discs equally (see section "Adjusting the coulter discs", page 123).
7. Repeat the procedure until the desired seed placement depth is achieved.

8.6 Setting the coulter pressure



This setting influences the placement depth of the seed.

Check the placement depth after every adjustment.

8.6.1 Hydraulic coulter pressure adjustment



WARNING

Direct people out of the danger area.

The hydraulic cylinders for the coulter and exact following harrow pressure adjustment are actuated simultaneously.

2 pins in an adjuster segment (Fig. 55/1) act as the stop for the hydraulic cylinder.

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

Each hole in the adjuster segment is numbered. The numbers on the scale are provided for guidance. The higher the number, the greater the coulter pressure.

The coulter pressure increases when the pin is positioned at higher numbers.



Fig. 124

1. Move the piston rods of the hydraulic cylinders out and in one after another.
 - 1.1 Actuate the tractor control valve (blue).
2. Insert one pin each (Fig. 125/1) below and above the stop (Fig. 125/2) into the adjuster segment and secure with linch pins (Fig. 125/3).

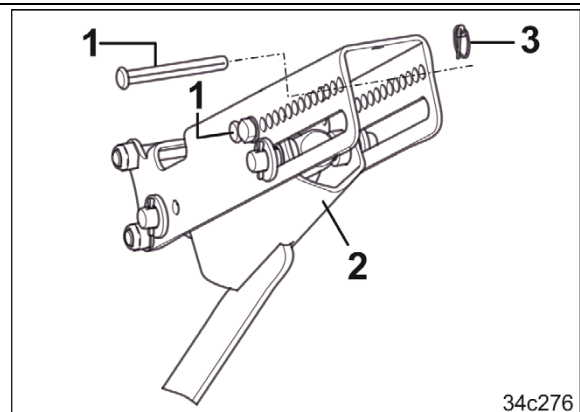


Fig. 125

8.6.2 Lifting the coulters and harrow (soil tillage without seeding)



WARNING

Before actuating the tractor control valve, direct all persons out of the swivelling range of the coulters and harrow.



Always move the hydraulic cylinder (Fig. 126/1) to the end position.

Lifting the coulters and harrow

1. Park the combination on the field.
2. Reduce the coulters pressure.
 - 2.1 Actuate the tractor control valve (blue).
3. Lift the coulters and harrow.
 - 3.1 Keep actuating the tractor control valve (green 1) until the hydraulic cylinder (Fig. 127/1) is moved to the end position.

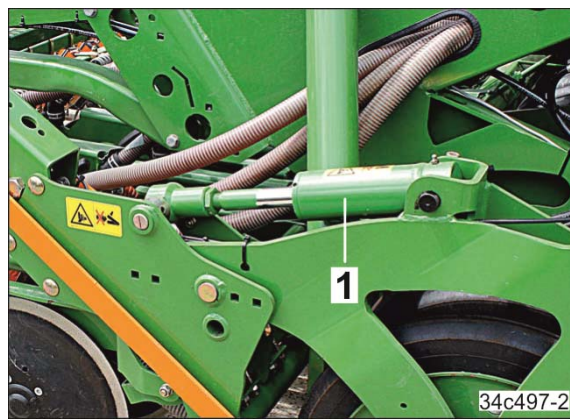


Fig. 128

4. Interrupt the seed metering during soil tillage with lifted coulters. To do so, switch off the electric motor that drives the metering wheel,
 - with ISOBUS system:See "ISOBUS Software" operating manual.
 - with AMADRILL+:Switch off the control terminal.

Lowering the coulters and harrow

1. Park the combination on the field.
2. Lower the coulters and harrow.
 - 2.1 Keep actuating the tractor control valve (green 2) until the hydraulic cylinder (Fig. 129/1) is moved to the end position.
3. Switch on the electric motor that drives the metering wheels.
 - with ISOBUS system:See "ISOBUS Software" operating manual.
 - with AMADRILL+:Switch on the control terminal.
4. Adjusting and checking the seed placement depth (see page 120).

8.7 RoTeC control coulters

8.7.1 Adjusting the coulters discs



This setting influences the placement depth of the seed.

Check the placement depth after every adjustment.

Each coulter disc can be engaged in 3 positions on the coulter or be removed from the coulter. Engage the lever in the same position for all of the coulters.


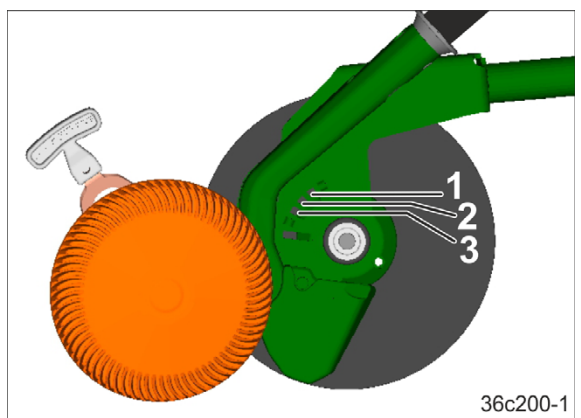
Position	Placement	
1	Shallow  Deep	
2		
3		
Seeding without coulter disc		

Fig. 130

Positioning the coulters discs

Engage the lever (Fig. 131/1) in one of the 3 possible positions (see Fig. 130).

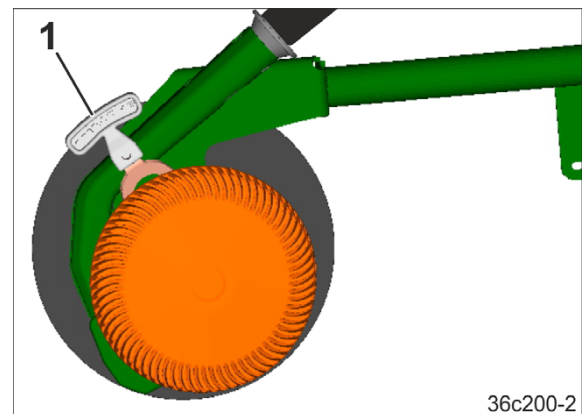


Fig. 131

Removing coulters discs

1. Engage the lever beyond the catch (Fig. 132/1) in the elongated slot (Fig. 132/2).
2. Push the coulter disc in the elongated slot (Fig. 132/2) until the coulter disc is released from the locking mechanism (Fig. 132/3).
3. Pull the coulter disc off of the coulter.

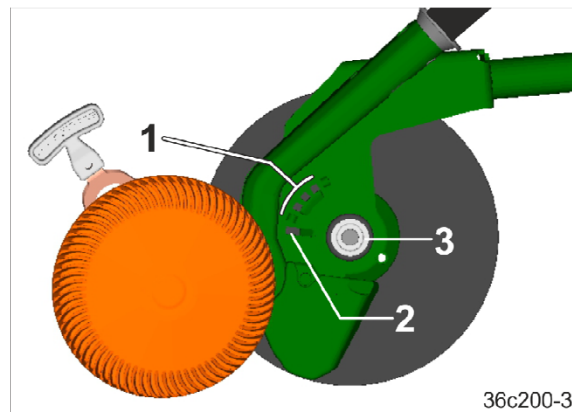


Fig. 132

Mounting the coulter disc



Attachment of the coulter disc with

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

1. Insert the coulter disc onto the locking mechanism (Fig. 133/3). In doing so, the shoulder of the coulter body engages in the elongated slot (Fig. 133/2).
2. Push the coulter disc into the elongated slot (Fig. 133/2) until the coulter disc engages in the locking mechanism. A light knock on the centre of the disc helps to latch it into position.
3. Pull the shoulder out of the elongated slot using the lever and allow it to engage in the catch (Fig. 133/1).

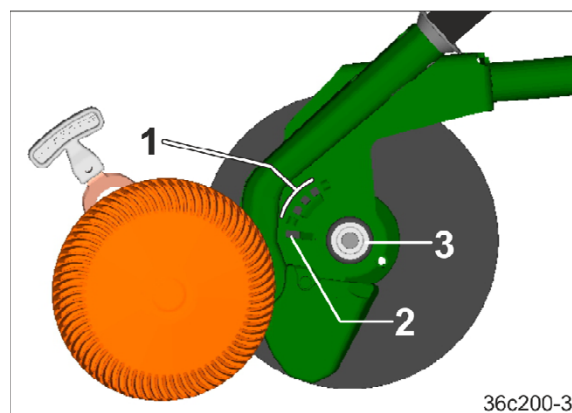


Fig. 133

8.8 Adjusting the exact following harrow

8.8.1 Exact following harrow tine position

1. Switch off the tractor PTO shaft and wait until it comes to a complete stop.
2. Park the combination on the field.
3. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
4. Remove the linch pin (see below).
5. Insert the ratchet.
6. Set the distance "A" (Fig. 60).
 - 6.1 Adjustments are made by uniformly turning the spindle (Fig. 134) on all of the adjuster segments.
7. Insert the ratchet into the cartridge (Fig. 32).
8. Secure the adjustment by inserting a linch pin (Fig. 135/1).



Fig. 134

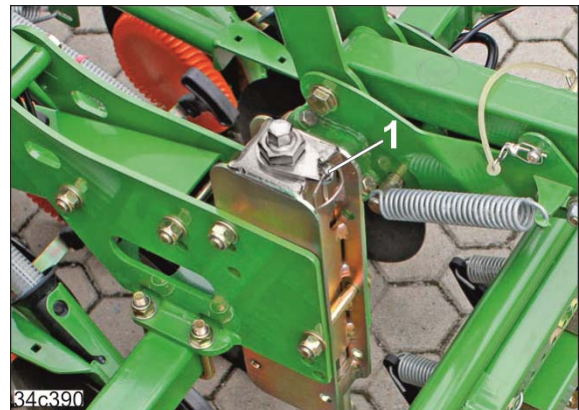


Fig. 135

8.8.2 Setting the exact following harrow pressure - mechanically

1. Tension the lever (Fig. 136/1) with the crank handle.
2. Insert the pin (Fig. 136/2) into a hole below the lever.
3. Relieve the lever.
4. Secure the bolt with a safety splint.
5. Apply the same setting to all adjuster segments.



Fig. 136

8.8.3 Setting the exact following harrow pressure - hydraulically



WARNING

Direct people out of the danger area.

The hydraulic cylinders for the coulter and exact following harrow pressure adjustment are actuated simultaneously.

1. Select the exact following harrow pressure adjustment.
2. Actuate the tractor control unit (blue).
 - 2.1 Extend and retract the piston rods of the hydraulic cylinders consecutively.
3. Insert one pin (Fig. 137/1) below and above the stop (Fig. 137/2) into the adjuster segment and secure with linch pins.

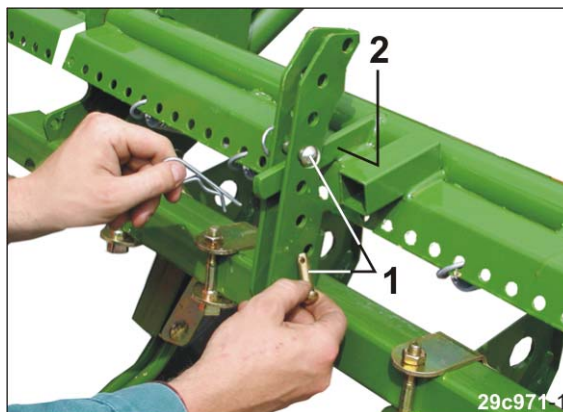


Fig. 137

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

8.8.4.1 Move the exact following harrow into working position

The roller and the coulters force the soil outwards to different extents depending on the forward speed and condition of the soil. Set the outer harrow such that the soil is guided back and a trackless seed bed is created. The greater the working speed, the further the square tubes (Fig. 138/1) have to be pushed outwards.

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

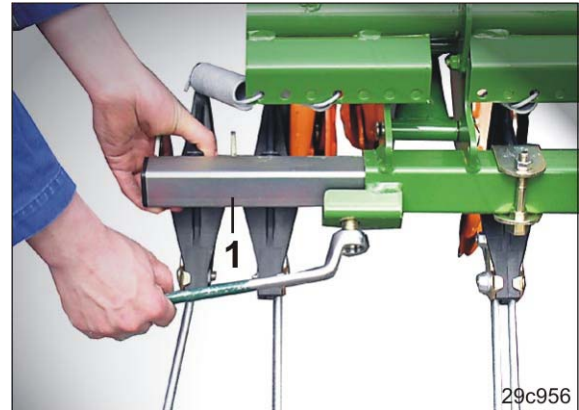


Fig. 138

8.8.4.2 Moving the exact following harrow into transport position

The outer tines of the exact following harrow can exceed the permissible transport width during transport (see section "Legal regulations and safety", page 143) and protrude into the traffic area. To avoid exceeding the permissible transport width, insert both square tubes (Fig. 138/1) with the outer harrows into the harrow carrier tube up to the stop.

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

8.9 Adjusting the roller harrow

8.9.1 Setting the pitch of the tines to the ground

1. Raise the implement until the harrow tines are directly above the ground, but not touching it.
2. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
3. Change the pitch of the tines to the ground by repositioning the safety pin for the tube (Fig. 139/1)
 - o below the link (Fig. 139/2),
 - o in all segments,
 - o in the same hole.

The deeper the safety pin for the tube (Fig. 139/1) is inserted in the adjuster segment, the flatter the pitch.

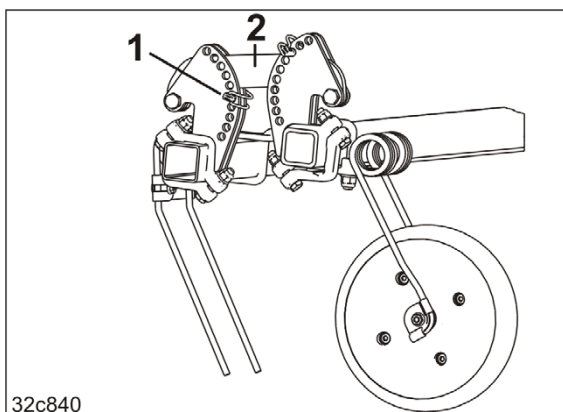


Fig. 139

8.9.2 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 key.
3. The working depth of the harrow tines is adjusted by repositioning the safety pin for the tube (Fig. 140/1)
 - o above the link (Fig. 140/2),
 - o in all segments,
 - o in the same hole.

The lower the safety pin for the tube (Fig. 140/1) is inserted in the adjusting segment, the greater the working depth.

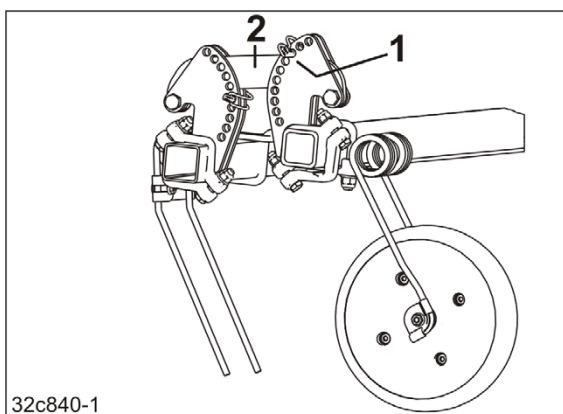


Fig. 140

8.9.3 Setting the roller contact pressure

1. Move the implement on the field to the working position.
2. Swivel both handles (Fig. 141/1) up.



Fig. 141

The two spring-loaded levers (Fig. 142/1) serve to adjust the roller contact pressure on the ground.

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

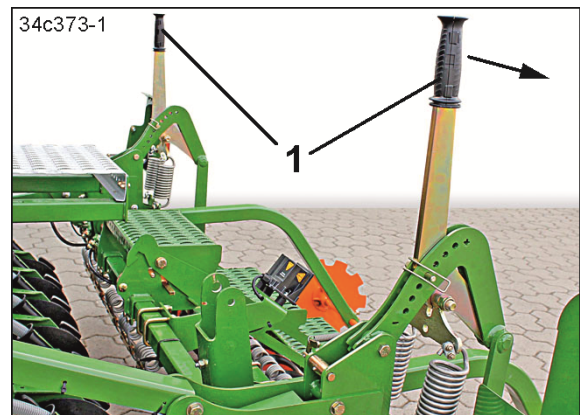


Fig. 142

Settings

4. Secure the position of the lever (Fig. 143/1) with a safety pin for the tube (Fig. 143/2).
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. 143/2) is inserted in the hole beside the plus symbol (Fig. 143/3).

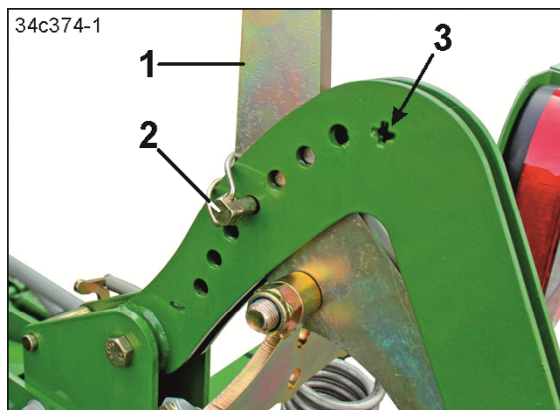


Fig. 143

6. Check the roller contact pressure, e.g. with a spring balance (see Fig. 144).

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



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

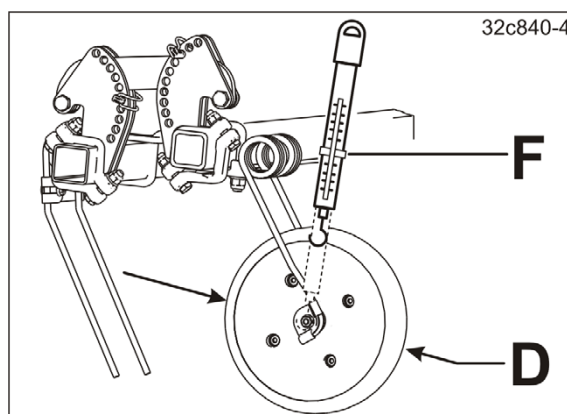


Fig. 144

8.9.4 Lifting/lowering the roller harrow

8.9.4.1 Lifting the roller harrow (deactivate)

1. Set the implement down on a level surface.
2. Briefly pull on the lever (Fig. 145/1) and remove the safety pin for the tube (Fig. 145/2).

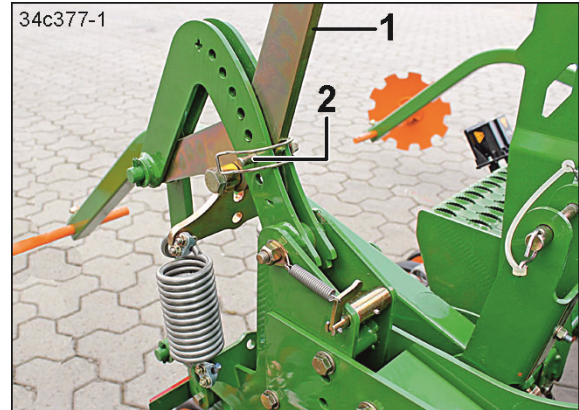


Fig. 145

3. Swivel the handle (Fig. 146/1) down.



Fig. 146

4. Push the lever (Fig. 147/1) in the direction shown by the arrow until the clamping plate (Fig. 147/2) engages.
5. Insert the safety pin for the tube in a free hole in parking position.
6. Repeat the procedure for the second lever.

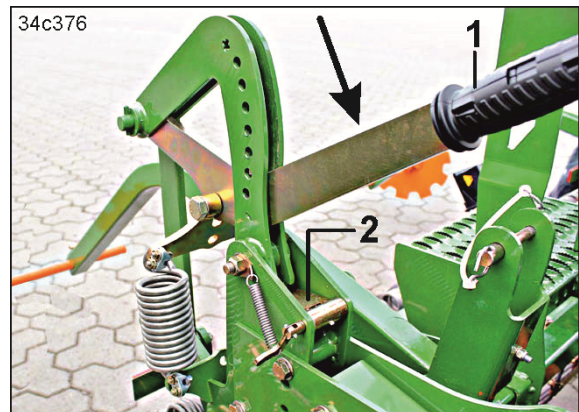


Fig. 147

8.9.4.2 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. 148/1) up.

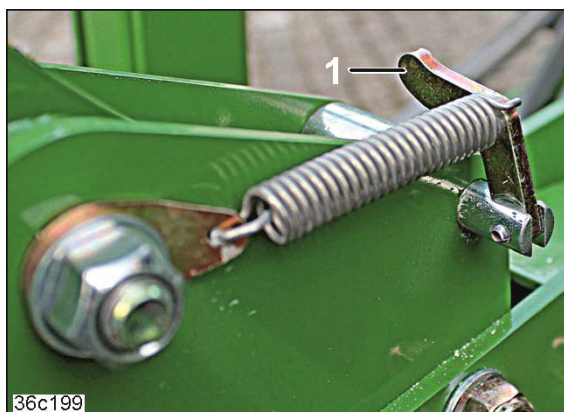


Fig. 148

4. Pull the lever (Fig. 149/1) 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 129).

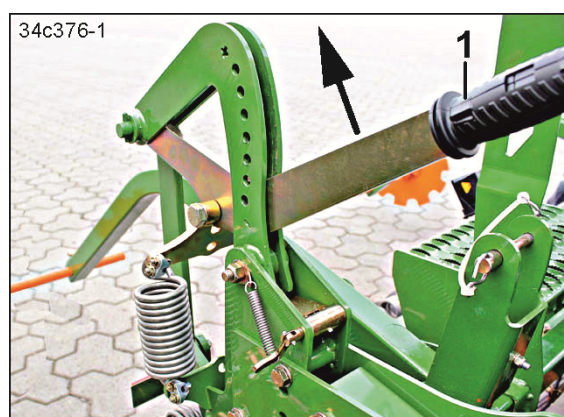


Fig. 149

8.10 Moving the track marker to the working/transport position



DANGER

Secure the track markers immediately after work on the field (transport lock).

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

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



WARNING

Direct people out of the danger area.

The hydraulic cylinder of the track marker and of the tramline marker can be actuated simultaneously in certain constellations.

8.10.1 Moving the track marker into working position

Each track marker is secured with a bar (Fig. Fig. 150/1).



Fig. 150

1. Position the implement on the field.
2. Unlock both of the track markers (see the "Soil tillage implement" operating manual).



Fig. 151

8.10.2 Adjusting the track marker length

1. Direct people out of the swivel area of the track marker.
2. Move track markers into working position.
3. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
4. Loosen the 2 bolts (Fig. 152/1).
5. Set the track marker length to length "A" [see table (Fig. 153)].
6. Turn the track marker disc to adjust the working intensity of the track marker so that it runs roughly parallel to the direction of travel on light soils and is set more to grip on heavier soil.
7. Tighten up the screws (Fig. 152/1).

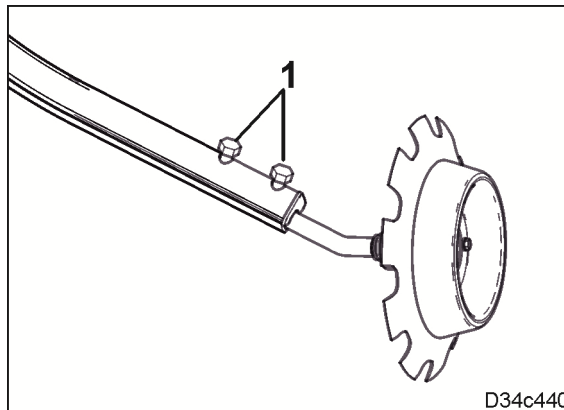


Fig. 152

Working width	Distance A ¹⁾
AD-P 3000 Super	3.0 m
AD-P 4000 Super	4.0 m

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

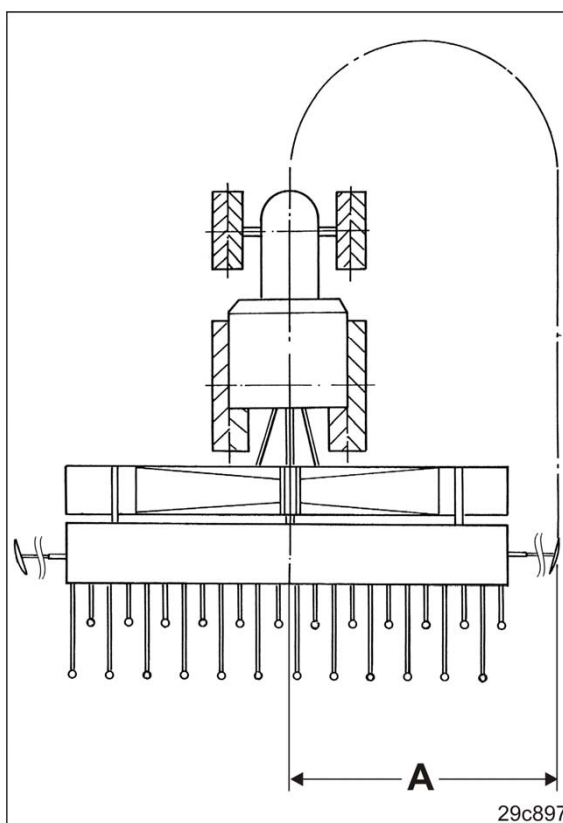


Fig. 153

8.10.3 Moving the track marker to transport position

Secure the track markers immediately after work on the field.

1. Direct people out of the swivel area of the track marker.
 2. Actuate the tractor control unit (yellow).
 - Swivel both track markers into transport position (Fig. 154/1).
 3. Position the implement on the field.
 4. Switch off the tractor PTO shaft, apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
 5. Secure the track markers according to the "Soil tillage implement" operating manual.
- 2 bars (Fig. 155/1) serve to secure the track marker.



Fig. 154



Fig. 155

8.11 Half-sided switching off

1. Remove the outer distributor cover (Fig. 156/1).
2. Fit the insert (Fig. 156/2) so that the seed supply of the respective coulter is interrupted.
3. Halve the seed rate (see the "ISOBUS Software" operating manual or "AMADRILL+" operating manual).

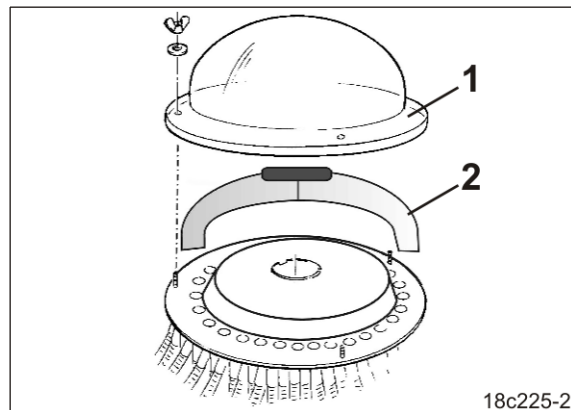


Fig. 156

8.12 Moving the tramline marker into working/transport position



WARNING

Direct people out of the danger area.

The hydraulic cylinders of the track marker and of the tramline marker can be actuated simultaneously.

8.12.1 Moving the tramline marking device into working position

1. Park the combination on the field.
2. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
3. Take hold of the track disc carrier.

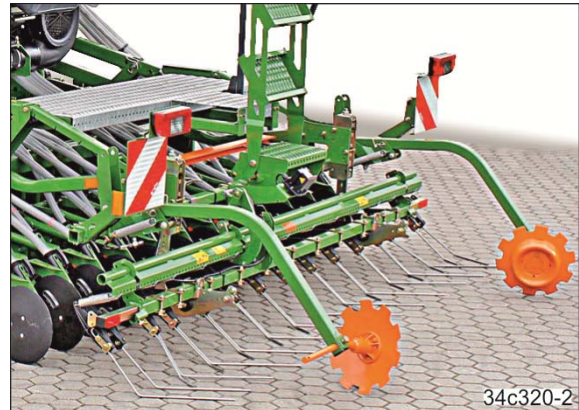


Fig. 157

4. Remove the pin that is secured with a linch pin (Fig. 158/1).


Fig. 158

5. Swivel the track disc carrier down.


Fig. 159

Position the track disc carrier with a pin (Fig. 160/1) and secure with a linch pin.


Fig. 160

6. Direct people out of the swivel area of the track discs of the track marker and the tramline marker.
7. Set the tramline counter to "zero"
(see the "ISOBUS Software" operating manual or "AMADRILL+" operating manual).
8. Actuate the tractor control unit (yellow) to lower the tramline marker.
9. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.

Settings

10. Set the track discs so that they mark the tramline created by the tramline coulters.
11. Turn the discs to adjust the working intensity of the tramline marker so that it runs roughly parallel to the direction of travel on light soils and stand more on grip on heavier soils.
12. Tighten the screws (Fig. 161/1) firmly.



Fig. 161



When marking the track, soil is scattered from the track discs. This soil may not cover the seeds additionally.

Mount the track discs somewhat offset in the track that is not being seeded. The scattered soil is then deposited in the track.

8.12.2 Moving the tramline marker into transport position

1. Direct people out of the swivelling range of the track discs of the track marker and the tramline marker.
2. Set the tramline counter to a number greater than "zero" (see the "ISOBUS Software" operating manual or "AMADRILL+" operating manual).
3. Actuate the tractor control unit (yellow).
 - 3.1 Raise the track disc carrier.
4. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
5. Remove the bolt (Fig. 162/1).



Fig. 162

6. Lift the track disc carrier (Fig. 163/1).



Fig. 163

7. Position the track disc carrier with a pin (Fig. 158/3) and secure with a linch pin.

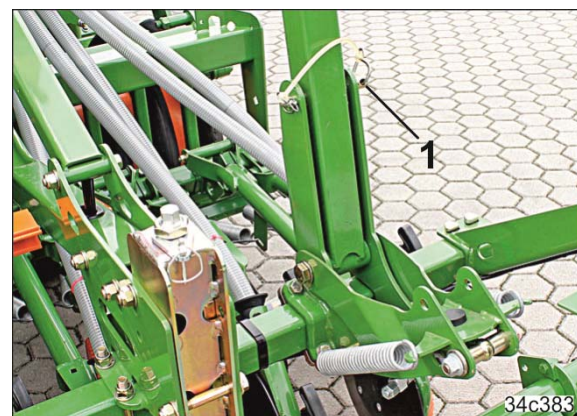


Fig. 164

8.13 Moving the transport safety bar into road transport/parking position

8.13.1 Moving the transport safety bar to transport position

1. Push the multi-part transport safety bar (Fig. 165/1) over the tine tips of the exact following harrow.
2. Fasten the transport safety bar to the exact following harrow with spring holders (Fig. 165/2).

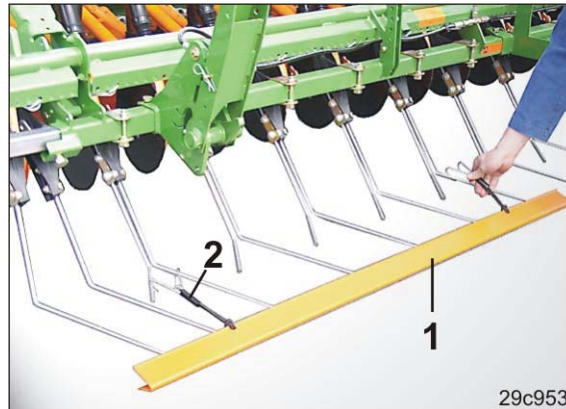


Fig. 165

8.13.2 Moving the transport safety bar into parking position

1. Insert the multi-part transport safety bar (Fig. 166/1) into one-other and secure to the transport holder (Fig. 166/2) with the spring holders.



Fig. 166

8.14 Moving the pulse wheel into the working/transport position

8.14.1 Moving the pulse wheel to working position

The lever (Fig. 167/1) locks the raised pulse wheel in the transport position.

1. Hold the pulse wheel firmly.
2. Pull up the lever (Fig. 167/1).
3. Swivel the pulse wheel to the working position.

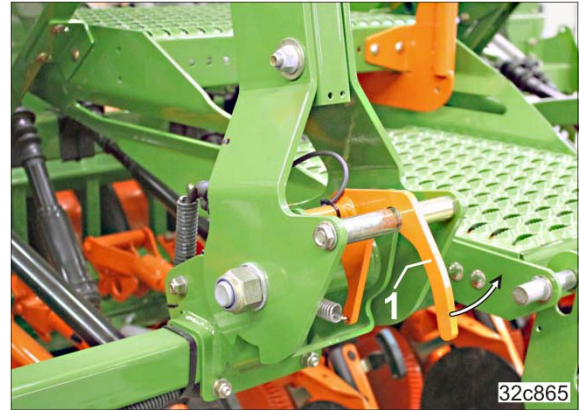


Fig. 167

In its working position (Fig. 168/1), the pulse wheel is secured as a pendulum.



Fig. 168

8.14.2 Moving the pulse wheel to transport position

Raise the pulse wheel before transportation. The pulse wheel will engage on the spring-loaded lever (Fig. 169/1).

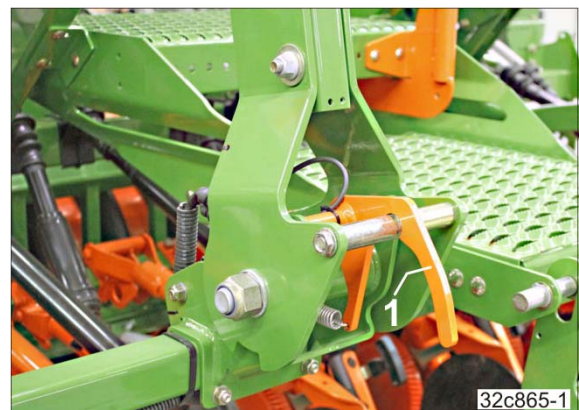


Fig. 169

9 Transportation



DANGER

In Germany and several other countries, the transport of implements hitched to 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 pack top seed drill on the transport vehicle in accordance with regulations. Do not exceed the max. transport height of 4.0 m.

The transport width for your seed drill can be found in the "Technical Data" section (page 46).



Fig. 170

9.1 Moving the seeding combination into transport position

1. Switch off the blower fan [tractor control unit (red)].
2. Press the STOP button (if required).
Pressing the STOP button on your control terminal before folding the track markers prevents the tramline counter from advancing by one digit.
3. Fold and lock the track markers Page 135
4. Check if the permissible values for the total tractor weight, axle loads and tyre load-bearing capacity are maintained when the seed hopper is full Page 88
5. If necessary, empty the hopper Page 152
6. Close the roller tarpaulin of the seed hopper.
7. Fold up the steps Page 110
8. Move the tramline marker into transport position Page 136
9. Move the pulse wheel into transport position Page 141
10. Switch off the work floodlights Page 86
11. Switch off the control terminal
(see the "Control terminal" operating manual or "AMADRILL+" operating manual)
12. Move the exact following harrow into transport position Page 127
13. Move the transport safety bar of the exact following harrow into transport position Page 140
14. Check the lighting system including the warning signs for proper function and cleanliness Page 41
15. Disable the tractor control units required for operating the implement
(see also tractor operating manual).
16. Read and observe section 9.2:
Legal guidelines and the safety instructions before and during road transport.
17. Before starting to drive, switch on the warning beacon (if equipped) and check for proper function.

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

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 transportation, visually check that the top and lower link pins are secured against accidental loosening with the original linch pins.



DANGER

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

Perform a visual inspection before transportation to check whether 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 implement.
In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected or coupled implement.
- Before transportation, fasten the side locking device of the tractor lower link so that the mounted or towed implement cannot swing back and forth.

**WARNING**

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

These risks pose serious injuries or death.

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

**WARNING**

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

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

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

**WARNING**

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 transport safety bar is forbidden when the implement is equipped with an exact following harrow.

**WARNING**

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

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

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

**CAUTION**

Switch off the control terminal during road transport.

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

**DANGER**

**Lock the tractor control units during road transport.
There is a risk of accident caused by operation errors.**



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

10 Use of the implement

When using the implement, observe

- the section "Warning symbols and other labels on the implement" (see page 18),
- the section "Safety information for users" (see page 26).

Observing these sections is important for your safety.



Fig. 171



WARNING

Actuate the tractor's control units only in the tractor cab.



WARNING

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

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



WARNING

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

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

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



WARNING

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

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

10.1 Moving the implement from transport into working position

1. Move the transport safety bar of the exact following harrow to the parking position..... Page 140
2. Move the exact following harrow into working position..... Page 127
3. Move the tramline marker into working position Page 136
4. Move the pulse wheel into working position Page 141

10.2 Work commencement

1. Move the implement to the working position at the start of the field
2. Check all of the implement settings (see section "Settings")..... Page 109
3. Instruct any people in the area to stand at a minimum distance of 20 m from the implement.
4. Release the track marker transport lock Page 133
5. Switch on the control terminal.

6. Calibrate the working position (A) and transport position (B) on the field
 - o with ISOBUS system: see "ISOBUS Software" operating manual
 - o with AMADRILL+: see supplied assembly instructions
 - o with seed tube monitoring: see supplied assembly instructions.

The settings can be made so that the electric motor that drives the metering roller

- o starts rotating as soon as the seed drill coulters penetrate into the soil.
- o comes to a stop as soon as the seed drill coulters come out of the soil.

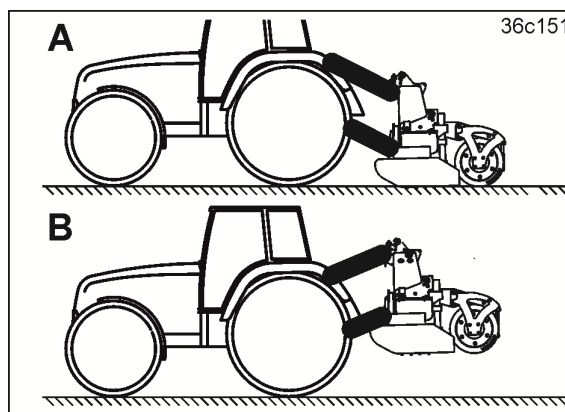


Fig. 172

7. Check the tramline rhythm, correct if necessary.
8. Run the blower fan up to nominal speed Page 116
9. Actuate the control unit (yellow):
 - Lower the active track marker
 - Advance the seed metering wheel tramline control
 - Only if tramline display is "0":
 - o Creation of tramlines
 - o Lowering the tramline marker
10. Refer to the table for the tramline counter of the first field pass Page 81
11. Set the tramline counter immediately before starting the first field pass (see the "ISOBUS Software" operating manual or "AMADRILL+" 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.

10.3 During operation

10.3.1 Overview of checks

Time intervals	Checks	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 adjusting the coulter pressure Hourly or each time the hopper is refilled After adjusting the coulter discs of the RoTeC Control coulters 	Seed placement depth	8.5	120
	Working intensity of the exact following harrow	8.8	125
	Working intensity of the roller harrow	8.9	128
	Check for and remove any dirt <ul style="list-style-type: none"> in the seed metering unit in the seed hoses in the blower fan suction guard screen 		
<ul style="list-style-type: none"> During operation at regular intervals from the tractor cab Hourly or each time the hopper is refilled After finishing work, with an intensive visual check from the outside. 	Check the distributor head for impurities through the transparent distributor hood. Impurities may block the distributor heads and must be removed immediately.	12.2.1	161

10.3.2 Turning at end of the field



DANGER

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

1. Actuate the control unit (yellow).
 - Raise the active track marker
 - Advance the tramline counter.
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 metering roller in the metering unit. With the blower fan in operation, seed emerges from the coulters until the seed tubes are empty.

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 control unit (yellow) for at least 5 seconds so that all hydraulic functions are fully executed.
 - Lower the active track marker.

Only in switch position "0":

Creation of tramlines

- Divert the seed flow in the flap box back to the hopper.
 - Lower the track discs of the tramline marker (optional).
4. Start the field run.

10.3.3 Track marker

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

On the control terminal, 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 End of work in the field

Move the seeding combination into transport position (see section 9.1, page 142).



DANGER

Secure the track markers immediately after work.

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



Empty and clean the metering unit after use!

In metering units that are neither emptied nor cleaned,

- a viscous to solid mass may form there is water enters under the metering roller. The metering roller is braked strongly and deviations may occur between the pre-set and actual seed rates.
- seed residues may swell or germinate in the metering units. As a result, rotation of the metering rollers is blocked and damage can be caused to the drive!

The pictogram (Fig. 173) should remind the tractor driver to empty and clean the metering unit after finishing the seeding work (see section 10.4, page 152).



The metering unit must be emptied and cleaned after completing the seeding work in all cases.

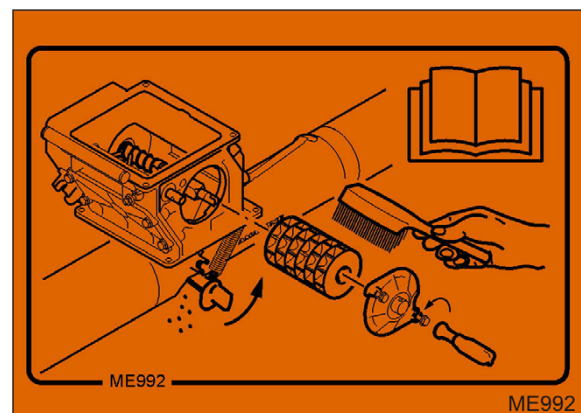


Fig. 173

10.4 Emptying the hopper and/or the metering unit and replacing the metering roller



DANGER

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

When emptying the seed hopper and the seed housing or when removing dressing dust, e.g. with compressed air, wear a protective suit, face mask, safety glasses and gloves.



CAUTION

Before adjustment, maintenance and repair work

- couple the pack top seed drill and the soil tillage implement.
- switch off the tractor PTO shaft.
- 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 key.
- 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 movements or radar pulses.

10.4.1 Quick emptying of the hopper (optional)

Actuate the quick emptying with the shutter (Fig. 174).



A commercially available hose (DN 140) can be fitted.



Fig. 174



A residual quantity remains in the hopper underneath the quick emptying.

The metering unit serves to empty the residual quantity. (see section 10.4.2, page 153).

10.4.2 Emptying the hopper and/or the metering unit and replacing the metering roller



CAUTION

Switch off the control terminal and 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 movements or radar pulses.

Open the inspection flap on the seed metering unit only for cleaning.

1. Couple the implement combination to the tractor.
2. Park the combination on a level surface.
3. Switch off the control terminal.
4. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
5. Close the opening between the hopper and the metering unit (only necessary when hopper is full).
 - 5.1 Remove the linch pin (Fig. 175/2). The linch pin secures the shutter (Fig. 175/1) during operation.

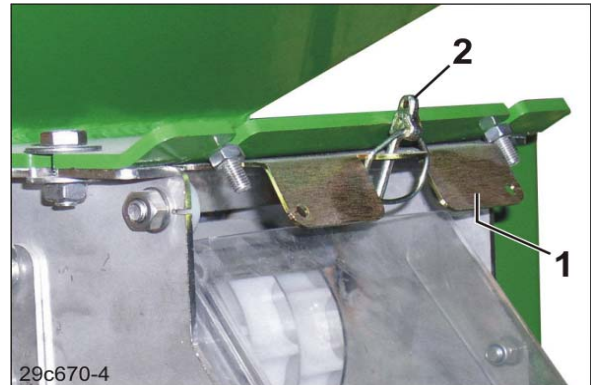


Fig. 175

- 5.2 Push the shutter (Fig. 176/1) into the metering unit up to the stop.

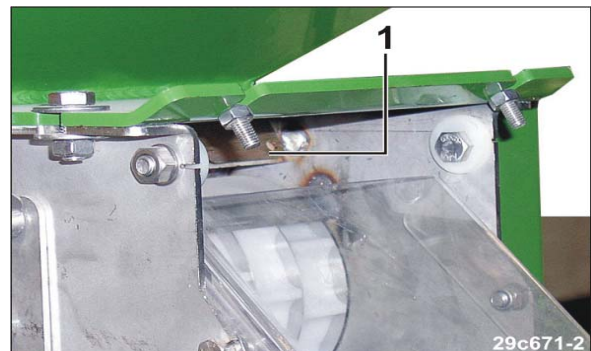


Fig. 176

Use of the implement

6. Empty the metering unit.
 - 6.1 Place the trough (Fig. 177/1) under the metering unit and open the injector sluice flap (see section 8.3, page 114).
 - The contents of the metering unit drop into the trough.

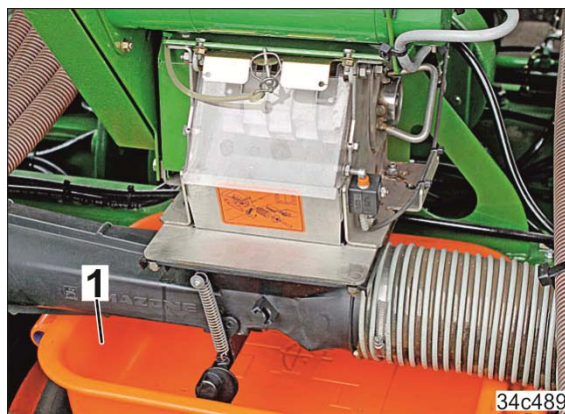


Fig. 177

- 6.2 Open the emptying flap (Fig. 178/1) by turning the handle (Fig. 178/2).
 - The contents of the metering unit drop into the trough.

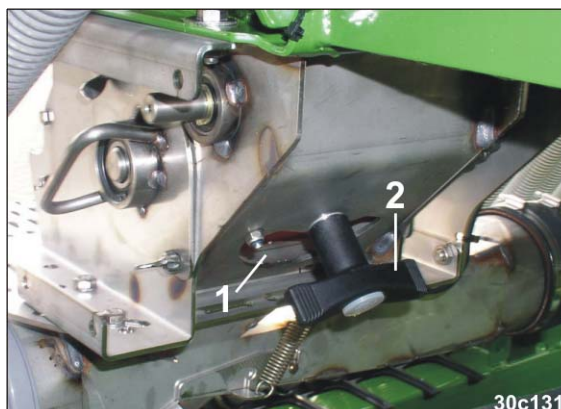


Fig. 178

7. Remove the metering roller.
 - 7.1 Remove the spanner (Fig. 179/1) from the transport bracket.

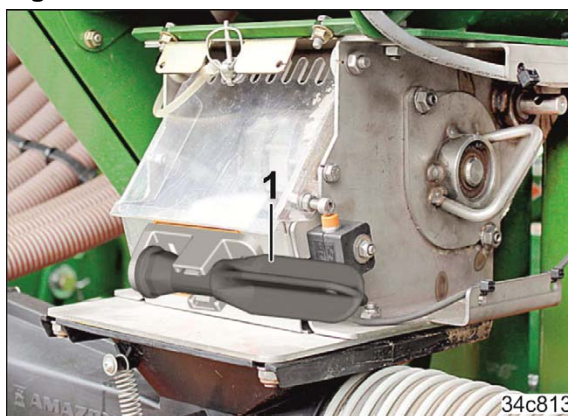


Fig. 179

- 7.2 Loosen the 2 hexagonal nuts (Fig. 180/1), but do not remove.

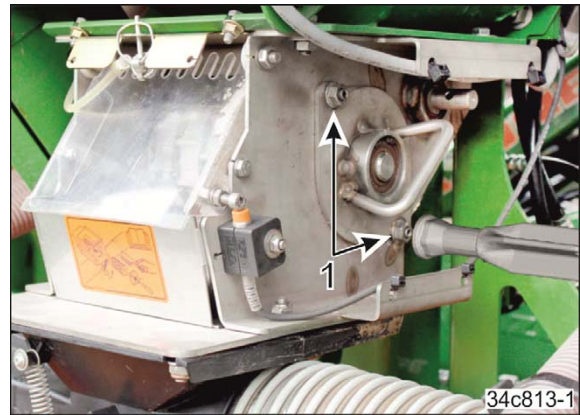


Fig. 180

- 7.3 Turn the bearing cover until the locking devices (Fig. 181/1) are released.
- 7.4 Pull off the bearing cover.

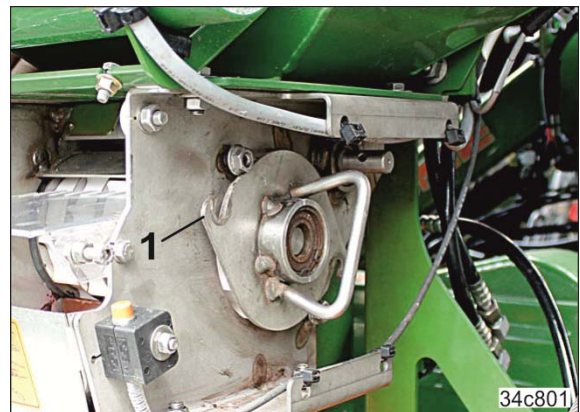


Fig. 181

- 7.5 Pull out the metering roller (Fig. 182/1).

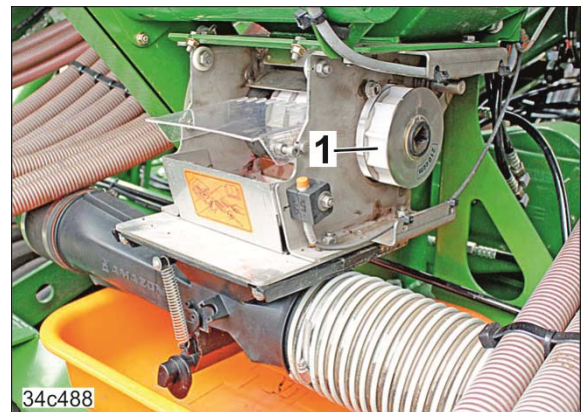


Fig. 182

Use of the implement

8. Empty the residual contents of the hopper.
 - 8.1 Close the housing cover (Fig. 183/1). Do not insert the metering roller into the metering unit.
 - 8.2 Pull the shutter (Fig. 183/2) slowly out of the metering unit.
 - The contents of the hopper drop into the trough.
 - 8.3 Thoroughly clean the hopper, metering unit and the metering roller.



Fig. 183

9. Reassembly
 - 9.1 Reassembly takes place in the reverse sequence.



Pull the shutter (Fig. 184/1) out of the metering unit and secure with a linch pin (Fig. 184/2).

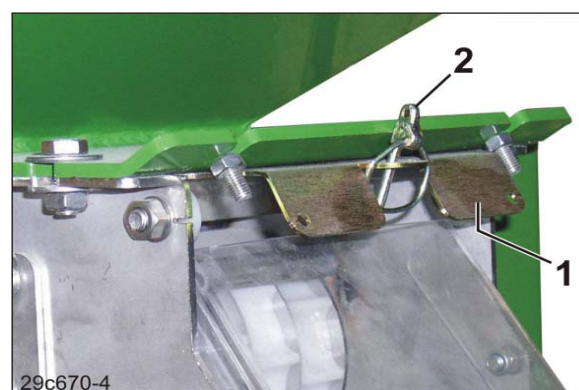


Fig. 184

11 Faults



WARNING

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

- **unintentional lowering of the implement raised using the tractor's 3-point hydraulic system.**
- **unintentional lowering of raised, unsecured implement parts.**
- **unintentional start-up and rolling of the tractor-implement combination.**

Secure the tractor and the implement against unintentional start-up and rolling before eliminating faults on the implement.

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



CAUTION

Before adjustment, maintenance and repair work

- couple the pack top seed drill and the soil tillage implement.
- switch off the tractor PTO shaft.
- 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 key.
- 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 movements or radar pulses.

11.1 Residual seed volume indicator

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

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

11.2 Deviations between the set and actual seed rate

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

- For recording the worked area and the required seed rate, pulses from the radar or pulse wheel are required over a calibration distance of 100 m.

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

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

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

- When seeding with moist dressed seeds, deviations between the set and actual seed rate may occur if there is a period of less than 1 week (2 weeks recommended) between the dressing and seeding.
- A defective or wrongly set metering lip (Fig. 185/1) will cause metering errors.

Set the metering lip so that it is lying lightly up against the metering roller (Fig. 185/2).

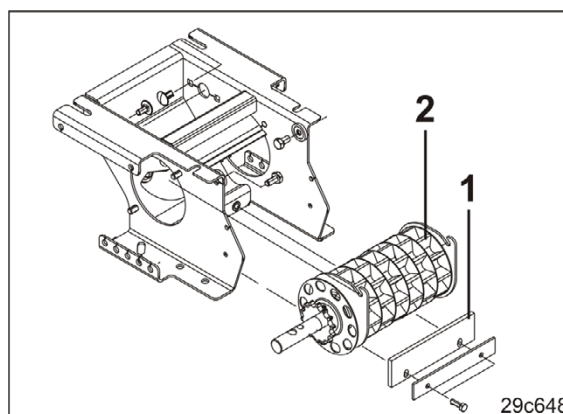


Fig. 185

12 Cleaning, maintenance and repair

12.1 Safety first



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 of the tractor-implement combination.**

Secure the tractor and the implement against unintentional start-up and rolling before working on the implement.



CAUTION

Switch off control terminal

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

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



WARNING

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

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



WARNING

Risk of crushing, shearing, cutting, being caught, wound in, pulled in or trapped by the motorised, unprotected metering roller and agitator shaft.

Never open or remove the safety equipment in the hopper when the metering roller is being driven, or as long as the metering roller can be unintentionally driven.

12.2 Cleaning the implement



DANGER

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

Wear protective clothing, breathing mask, safety glasses and gloves

- when removing dressing dust
- when emptying the hopper and metering unit
- when cleaning the distributor head.



Empty the seed hopper and the metering unit before cleaning.



When using high-pressure cleaners and steam cleaners, please note:

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



The pictogram serves as a reminder never to aim the cleaning jet of the high-pressure cleaner/steam cleaner directly on

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

The components can be damaged.



Fig. 186



Never treat hydraulic hose lines with fuel, benzene, petroleum or mineral oils.



Clean the dirty blower fan guard screen to ensure an unobstructed air flow.

If the required quantity of air is not reached, faults may occur in the seed delivery and distribution.



Clean the blower fan of any deposits. Deposits lead to imbalance and damage to the bearing.

12.2.1 Clean the distributor head

Wear breathing equipment and safety goggles when cleaning the distributor head.

1. Couple the implement combination to the tractor.
2. Lower the combination onto the ground.
3. Apply the tractor parking brake, switch off the engine and remove the ignition key.
4. Empty the hopper.
5. Open the cover.
6. Climb into the hopper using the steps (Fig. 187/1), the loading board and the ladder (Fig. 187/2).



Fig. 187

Cleaning, maintenance and repair

The distributor head can be safely accessed from the hopper.



Fig. 188

7. Loosen the winged nuts (Fig. 189/1) and remove the clean plastic flap (Fig. 189/2) from the distributor head.
8. Remove any impurities with a brush, and wipe out the distributor head and plastic cap with a dry cloth.
9. Install the plastic cap (Fig. 189/2).
10. Fix the plastic cap with winged nuts (Fig. 189/1).

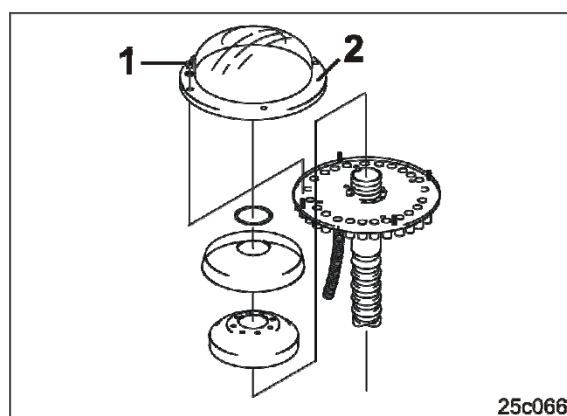


Fig. 189

12.2.2 Shutdown of the implement over a long period of time

Before parking the implement for a longer period of time

- Set the coulter pressure to "0"
- Thoroughly clean and dry the coulters.
- To prevent rust, protect the steel disc of the RoTeC control coulter with an environmentally friendly anti-corrosion agent after cleaning.

12.3 Setting and repair work (specialist workshop)

12.3.1 Setting the tramline track width

When the implement is delivered or when buying a new tractor, check that the tramline is set to the track width (Fig. 190/a) of the tractor.

To adjust the track width, reposition the tramline seed tubes on the coulters.



Adjust the track discs of the tramline marker (if equipped) to the new track width.

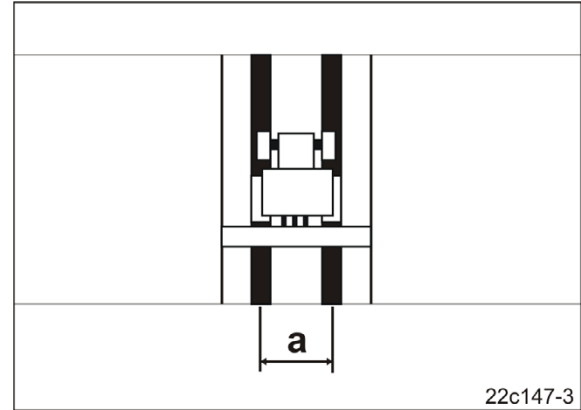


Fig. 190

12.3.2 Adjusting the tramline wheelmark width (specialist workshop)

When the implement is delivered or when buying a new cultivating tractor, check that the tramline is set to the wheelmark width (Fig. 191/a) of the tractor.

With an increasing number of adjacent tramline coulters, the track (Fig. 191/a) becomes wider.

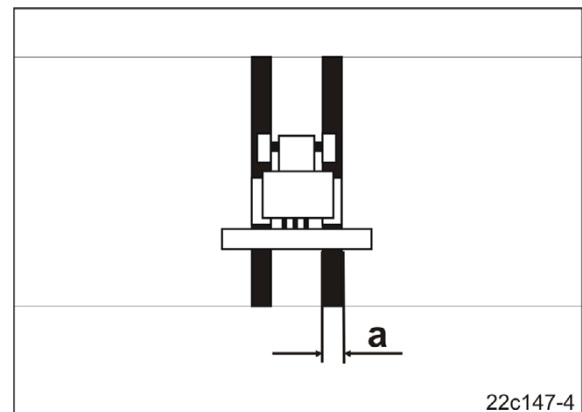


Fig. 191

Additional tramline coulters can be switched on by activating the flaps in the flap box (Fig. 192/1).

Activated flaps direct the seed back to the hopper when tramlines are created.

The flaps in the flap box can be activated or deactivated.

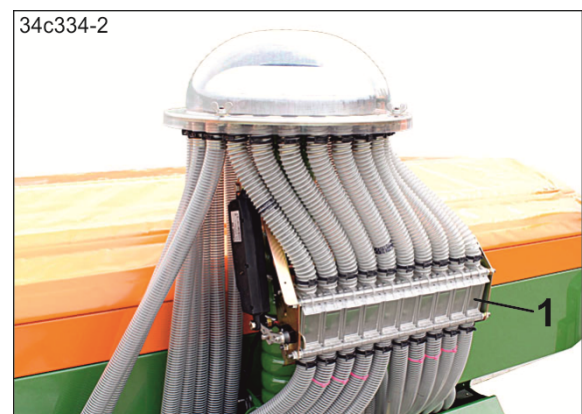


Fig. 192

Activating the flap



The counter of the tramline control must not be at "zero".

1. Advance the counter for the tramline control on the control terminal if the counter is at "zero".
2. Push up the assembly window (Fig. 193/1) and take out of the flap box from the front.
3. Press the flap (Fig. 193/2) against the stop (Fig. 193/3) and screw to the shaft. Do not tighten the hexagon socket head screw (Fig. 193/4) too tightly in order not to deform the flap.
4. Tighten the locking screw (Fig. 193/5) tension-free so that the flap can pass the screw head without obstruction.
5. Close the assembly window.

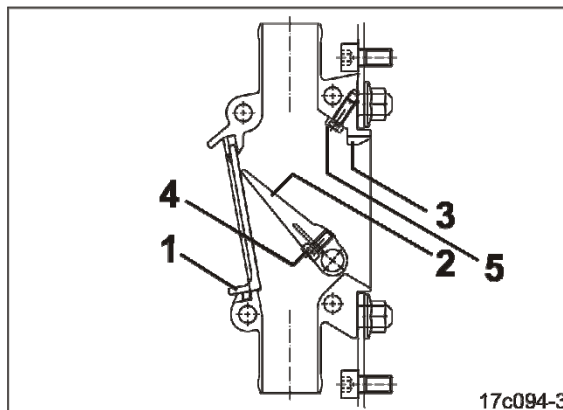


Fig. 193

Deactivating the flap



The counter of the tramline control must not be at "zero".

1. Advance the counter for the tramline control on the control terminal if the counter is at "zero".
2. Push up the assembly window (Fig. 194/1) and take out of the flap box from the front.
3. Press the flap (Fig. 194/2) against the stop (Fig. 194/3) and release the hexagon socket head screw (Fig. 194/4) enough to allow the flap to move freely on the shaft.
4. Unscrew the locking screw (Fig. 194/5) by approx. 5 mm to ensure that the deactivated flap cannot move and the opening to the hopper remains closed.
5. Close the assembly window.

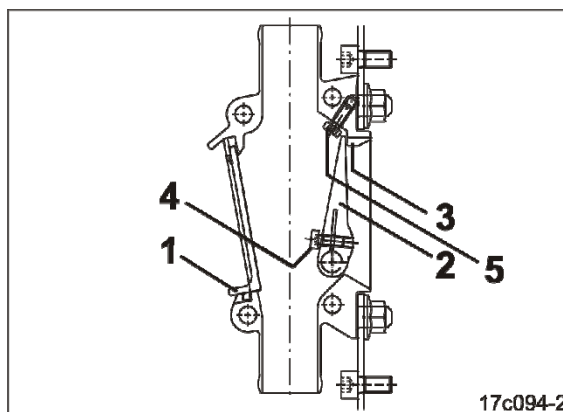


Fig. 194

12.4 Lubrication

The lubrication points on the implement are marked with the symbol (Fig. 195).



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.

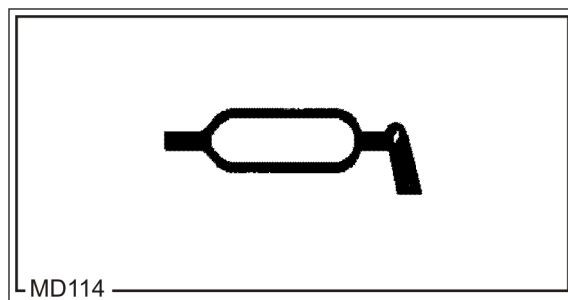


Fig. 195

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

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

12.4.1 Greasing points – overview

	Number of grease nipples	Lubrication interval [h]
Fig. 196/1	2	25
Fig. 197/1	2	25



Fig. 196

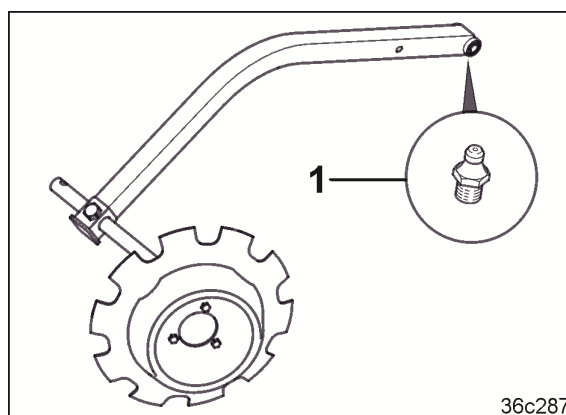


Fig. 197

12.5 Maintenance schedule – overview



Carry out maintenance work when the first interval is reached. The time intervals, kilometre readings or maintenance intervals specified in any third party documentation supplied shall have priority over the maintenance schedule.

Before initial commissioning		
Specialist workshop	Check and perform maintenance on the hydraulic hose lines. This inspection has to be recorded by the operator.	Section 12.5.2
After the first 10 operating hours		
Specialist workshop	Check and perform maintenance on the hydraulic hose lines. This inspection has to be recorded by the operator.	Section 12.5.2
	Check all the components of the hydraulic system for leaks	
Specialist workshop	Check all bolted connections for tight fit	Section 12.6
Before each start-up (daily)		
	Visual inspection of the top and lower link pins	Section 12.5.3
	Check the hydraulic hose lines using the inspection criteria.	Section 12.5.2
	Check all the components of the hydraulic system for leaks	
	Repair any areas of chafing on the hydraulic hose lines and pipes.	
During operation		
	Check the distributor head and remove any dirt	
Hourly or each time the hopper is refilled		
	Check for and remove any dirt <ul style="list-style-type: none"> in the seed metering unit in the seed hoses in the blower fan suction guard screen 	
After finishing work (daily)		
	Empty and clean the seed metering unit	Section 10.4.2
	Clean the implement (if required)	Section 12.2
	Clean the blower fan (eliminate risk of imbalance).	
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 12.5.2

12.5.1 Inspection criteria for hydraulic hose lines before every start-up

- Check the hydraulic hose lines for visible defects.
- Repair any areas of chafing on the hydraulic hose lines and pipes.
- Have any worn or damaged hydraulic hose lines immediately replaced at a specialist workshop.

12.5.2 Inspection criteria for hydraulic hose lines using the maintenance schedule

Have hydraulic hose lines replaced by a specialist workshop when finding any of 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 or the hose line. Both in a depressurized and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
- Leak points. Tighten the screwed connections if necessary.
- Damage or deformation of the hose assembly (sealing function restricted); minor surface damage is not a reason for replacement.
- Movement of the hose out of the panel.
- Corrosion of panel, reducing the function and tightness.
- Installation requirements not complied with.
- Life span of 6 years has been exceeded.

The date of manufacture of the hydraulic hose line on the assembly plus six years is decisive. If the date of manufacture on the assembly is "2017", then the hose should not be used after February 2023. For more information, see "Identification of hydraulic hose lines".



WARNING

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

- Only a specialist workshop may perform work on the hydraulic system!
- Depressurize the hydraulic system before performing 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 the tractor, ensure that the hydraulic system is depressurized on both the tractor side 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 for proper functioning by a specialist at least once a year.
- Replace the hydraulic hose lines if they are damaged or worn. Use only genuine AMAZONE hydraulic hose lines!
- The hydraulic hose lines should not be used for longer than 6 years, including any storage time of maximum 2 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.

12.5.2.1 Identification of hydraulic hose lines

The valve chest identification provides the following information:

Fig. 198/...

- (1) Label of the manufacturer of the hydraulic hose line (A1HF)
- (2) Date of manufacture of the hydraulic hose line (17/02 = year / month = February 2017)
- (3) Maximum permitted operating pressure (210 bar).

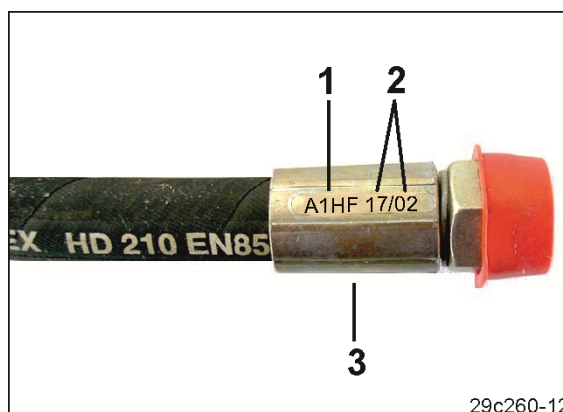


Fig. 198

12.5.2.2 Installing and removing hydraulic hose lines



When installing or removing hydraulic hose lines, be sure to observe the following instructions:

- Only a specialist workshop may perform work on the hydraulic system.
- Use only genuine AMAZONE hydraulic hose lines!
- Ensure cleanliness.
- As a matter of principle, you must install the hydraulic hose lines such that, in all implement situations,
 - There is no tension, apart from the hose's own weight.
 - There is no possibility of jolting on short lengths.
 - External mechanical effects on the hydraulic hose lines are avoided.

Use appropriate arrangements and fixing to prevent any scouring of the hoses on components or on each other. If necessary, secure hydraulic hose lines using protective covers. Cover sharp-edged components.

 - The approved bending radii may not be exceeded.
- When connecting a hydraulic hose line to moving parts, the hose length must be measured such that the smallest approved bending radius is not undershot over the whole range of movement and/or the hydraulic hose line is not over-tensioned.
- Attach the hydraulic hose lines onto the specified attachment points. There, avoid hose clips, which impair the natural movement and length changes of the hoses.
- It is forbidden to paint hydraulic hose lines!

12.5.3 Visual inspection of the top and lower link pins



WARNING

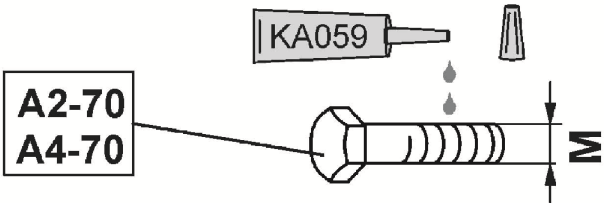

Risk of contusions, catching, and knocks when the implement unexpectedly releases from the tractor!

Check the upper and lower link pins for visible defects whenever the implement is coupled.

Replace the upper and lower link pins in the event of clearly visible wear.

12.6 Bolt tightening torques

Tightening torques for rustproof bolts (inserted with assembly paste)

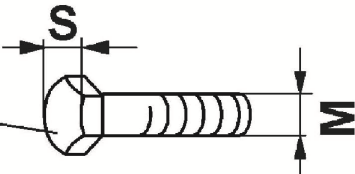
												
34c951												
M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
 Nm	2.4	4.9	8.4	20.6	40.7	70.5	112	174	242	342	470	589

Tightening torques for implement bolts



The tightening torques listed in the following table do not apply for

- coated bolts.
- If coated bolts are fitted, you can find the tightening torques beside the instruction.

<div style="display: flex; align-items: center; justify-content: space-between;"> <div style="border: 1px solid black; padding: 5px;"> 8.8 10.9 12.9 </div>  <div style="text-align: right;">34c950</div> </div>				
M	S	Nm		
		8.8	10.9	12.9
M 8	13	25	35	41
M 8x1		27	38	41
M 10	16 (17)	49	69	83
M 10x1		52	73	88
M 12	18 (19)	86	120	145
M 12x1.5		90	125	150
M 14	22	135	190	230
M 14x1.5		150	210	250
M 16	24	210	300	355
M 16x1.5		225	315	380
M 18	27	290	405	485
M 18x1.5		325	460	550
M 20	30	410	580	690
M 20x1.5		460	640	770
M 22	32	550	780	930
M 22x1.5		610	860	1050
M 24	36	710	1000	1200
M 24x2		780	1100	1300
M 27	41	1050	1500	1800
M 27x2		1150	1600	1950
M 30	46	1450	2000	2400
M 30x2		1600	2250	2700

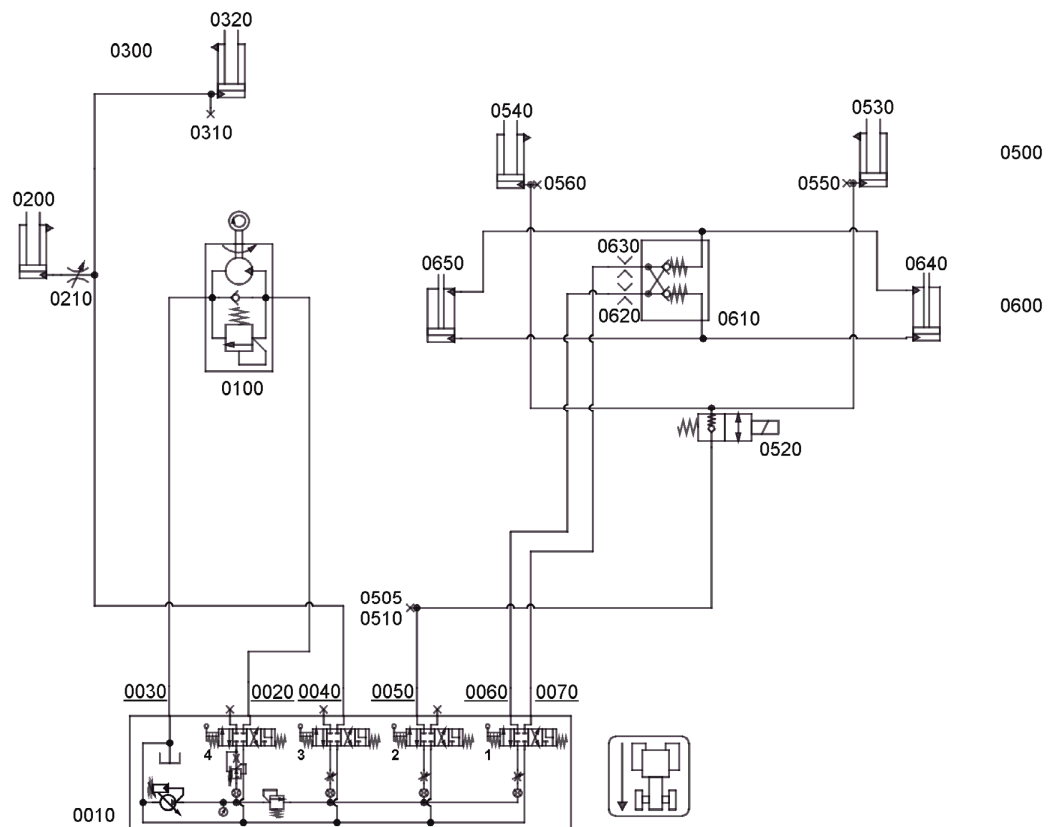
13 Hydraulic diagrams

13.1 AD-P Super hydraulic diagram

Fig. 199/...	Designation
0010	Tractor
0020	Marking red 1
0030	Marking red T
0040	Marking blue 1
0050	Marking yellow 1
0060	Marking green 1
0070	Marking green 2
0100	Blower fan drive
0200	Coulter pressure
210	Coulter pressure throttle valve
0300	Harrow pressure (optional)
0310	Harrow pressure venting
0320	Harrow pressure
0500	Tramline marker (optional)
0505	Tramline marker (connection on the tractor) (optional)
0510	Track marker connection KG/KE
0520	Tramline marker control valve
0530	Tramline marking le
0540	Tramline marking ri
0550	Tramline marking venting le
0560	Tramline marking venting ri
0600	Coulter lifting (optional)
0610	Coulter lifting locking block
0620	Coulter lifting throttle
0630	Coulter lifting throttle
0640	Coulter lifting, left
0650	Coulter lifting, right

All position specifications in direction of travel

AD-P Super



211965
36c273

Fig. 199



14 Check list for implement operation

This check list serves as a reference for important points to check when the implement is used again. Always observe the safety instructions and warnings in this operating manual.

Coupling

Coupling.....	Page 96
Moving the implement from transport into working position	Page 148

Settings

Calibrating the seed rate	Page 114
Setting the blower fan speed	Page 116
Adjusting and checking the seed placement depth	Page 120
Adjusting the exact following harrow	Page 125
Adjusting the roller harrow	Page 128
Adjusting the Moving the track marker	Page 133

Use of the implement

Use of the implement.....	Page 147
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End of work in the field

End of work in the field	Page 151
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Moving the seeding combination into transport position

Moving the seeding combination into transport position	Page 142
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