

Operating Manual

AMAZONE

VarioTrail 3000

with precision airplanter module

EDX-VT 6000-C



MG5357
BAH0075-0 01.14



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

en



Reading the instruction

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

Leipzig-Plagwitz 1872. Rud. Sack.

Identification data

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

Implement ID No.:
(10-digit)

Type:

EDX-VT 6000-C

Permissible system pressure in
bar:

Maximum 210 bar

Year of manufacture:

Basic weight (kg):

Permissible total weight (kg):

Maximum load (kg):

Manufacturer's address

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Spare part orders

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

Please send orders to your AMAZONE dealer.

Formalities of the operating manual

Document number: MG5357

Compilation date: 01.14

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Dear Customer,

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

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

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

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

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

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

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1 User information

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

1.1 Purpose of the document

This operating manual

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

1.2 Locations in the operating manual

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

1.3 Diagrams

Instructions and responses

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

1. Instruction 1
→ Implement response to 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 received instruction in working with/on the implement.
- have read and understood this operating manual.

The operator is obliged

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

Obligations of the user

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

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

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

General Safety Instructions

Risks in handling the implement

The implement has been constructed to the state-of-the art and the recognised rules of safety. However, operating the implement may cause risks and restrictions 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
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 "Specialist workshop". The personnel of a specialist workshop shall possess the appropriate knowledge and suitable aids (tools, lifting and support equipment) for carrying out the maintenance and repair work on the implement in a way which is both appropriate and safe.



2.7 Safety measures in normal operation

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

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

2.8 Danger from residual energy

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

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

2.9 Maintenance and repair work, fault elimination

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

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

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

Check all the screw connections for firm seating. On completion of the maintenance work, check the function of the safety devices.

2.10 Design changes

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

Any expansion or modification work shall require the written approval of AMAZONEN-WERKE. Only use modification and accessory parts approved by AMAZONEN-WERKE so that the type approval, for example, remains valid in accordance with national and international regulations.

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



WARNING

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

It is strictly forbidden to

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



2.10.1 Spare and wear parts and aids

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

Use only genuine AMAZONE spare and wear parts or the parts 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 neighbouring warning symbol. The description of the warning symbols is always the same and specifies, in the following order:

1. A description of the danger.

For example: risk of cutting

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

For example: causes serious injuries to fingers or hands.

3. Risk avoidance instructions.

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

Order number and explanation

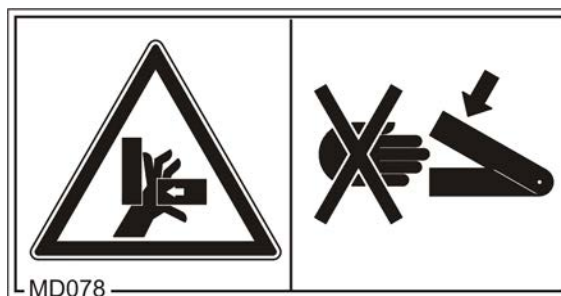
Warning symbols

MD 078

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

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

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

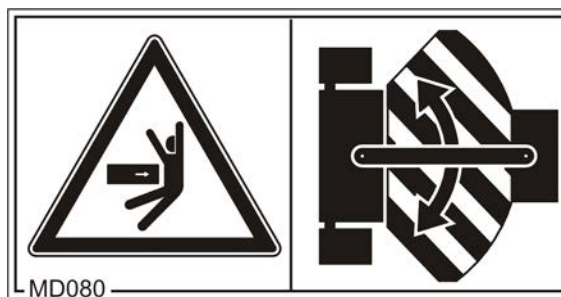


MD 080

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

Causes serious, potentially fatal injuries anywhere on the body.

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



MD 082

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

Causes serious, potentially fatal injuries anywhere on the body.

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

Make sure that nobody is riding on the implement.

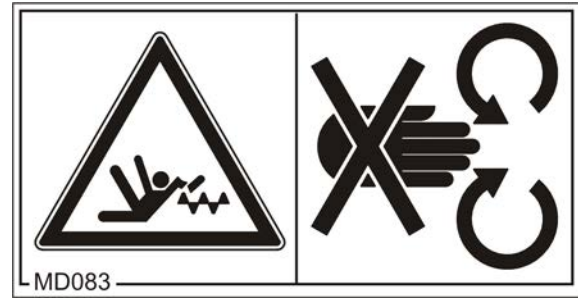


MD 083

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

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

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



MD 084

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

Causes serious, potentially fatal injuries anywhere on the body.

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

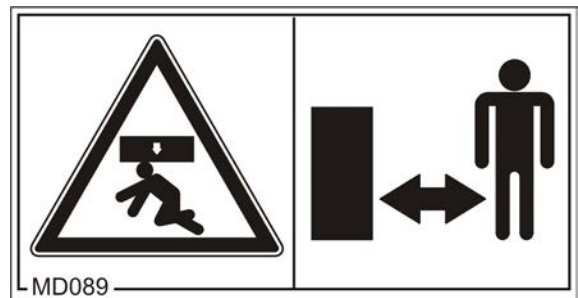


MD 089

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

Causes serious, potentially fatal injuries anywhere on the body.

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



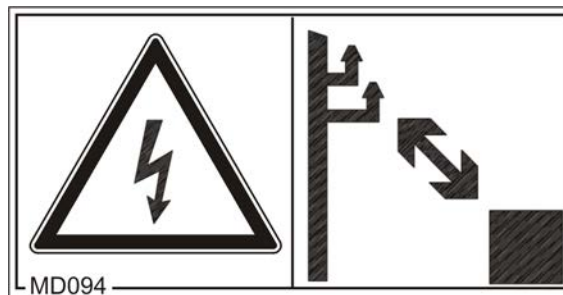
General Safety Instructions

MD 094

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

These dangers can cause extremely serious and potentially fatal injuries.

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

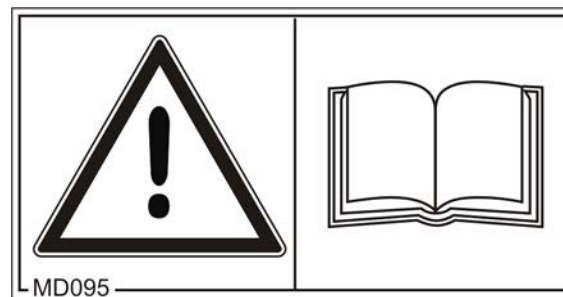


Nominal voltage	Safety distance from transmission lines
-----------------	---

up to 1 kV	1 m
over 1 up to 110 kV	2 m
over 110 up to 220 kV	3 m
over 220 up to 380 kV	4 m

MD 095

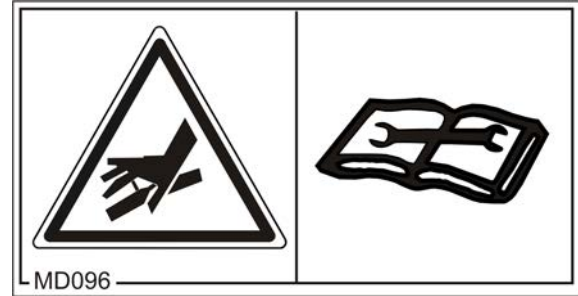
Read and follow the operating manual and safety information before starting up the implement!



MD 096**Danger from escaping high-pressure hydraulic fluid due to leaking hydraulic hose lines.**

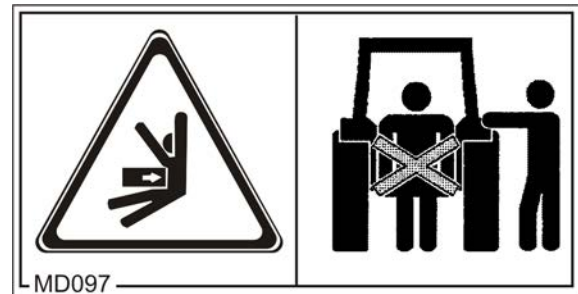
This danger may cause serious injuries, perhaps even resulting in death, if escaping high-pressure hydraulic fluid passes through the skin and into the body.

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

**MD 097****Risk of crushing the entire body by entering/remaining in the stroke area of the three-point suspension when the three-point hydraulic system is operated!**

Causes serious, potentially fatal injuries anywhere on the body.

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



General Safety Instructions

MD 101

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



MD 102

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

These dangers can cause extremely serious and potentially fatal injuries.

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

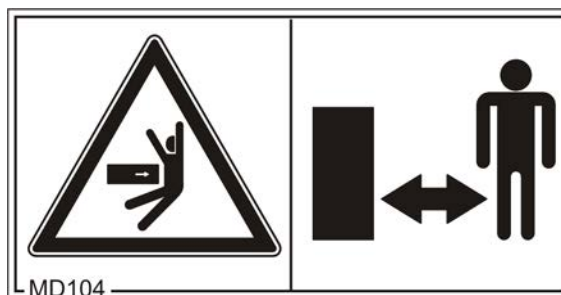


MD 104

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

These dangers can cause extremely serious and potentially fatal injuries.

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

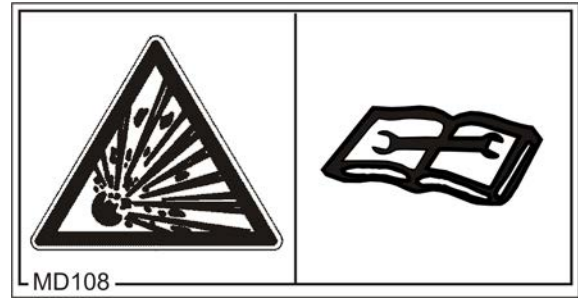


MD 108

Risk of explosion, or danger from hydraulic fluid escaping under high pressure, caused by the pressure accumulator which is under pressure from gas and oil.

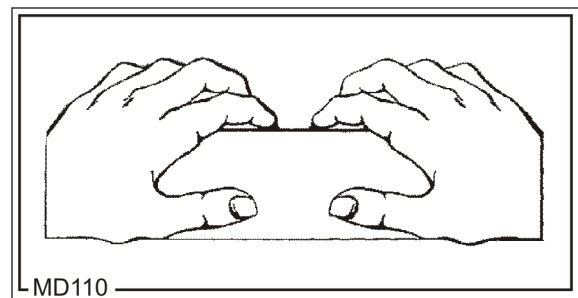
These dangers can cause serious and potentially fatal injuries if highly pressurised, escaping hydraulic fluid penetrates the skin and passes into the body.

- Read and observe the instructions in the operating manual before carrying out any maintenance or repair work.
- If you are injured by hydraulic fluid, contact a doctor immediately.



MD 110

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

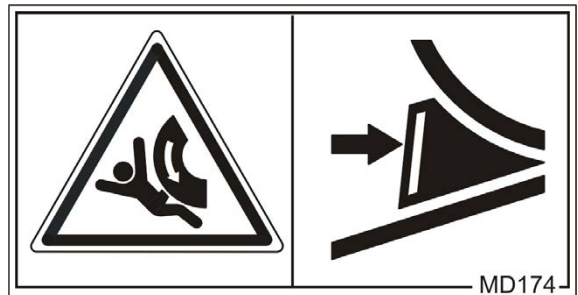


MD 174

Danger from unintended continued movement of the implement.

Will cause serious injuries anywhere on the body or death.

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



General Safety Instructions

MD 181

Check that the wheel nuts are secure.

- After the first 10 operating hours
- After a wheel change



MD 187

Risk of injury to unprotected body parts!

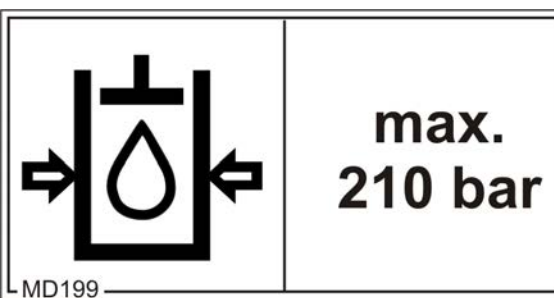
Seed grains may emerge uncontrollably at high speeds and cause injuries particularly to the eyes.

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



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.

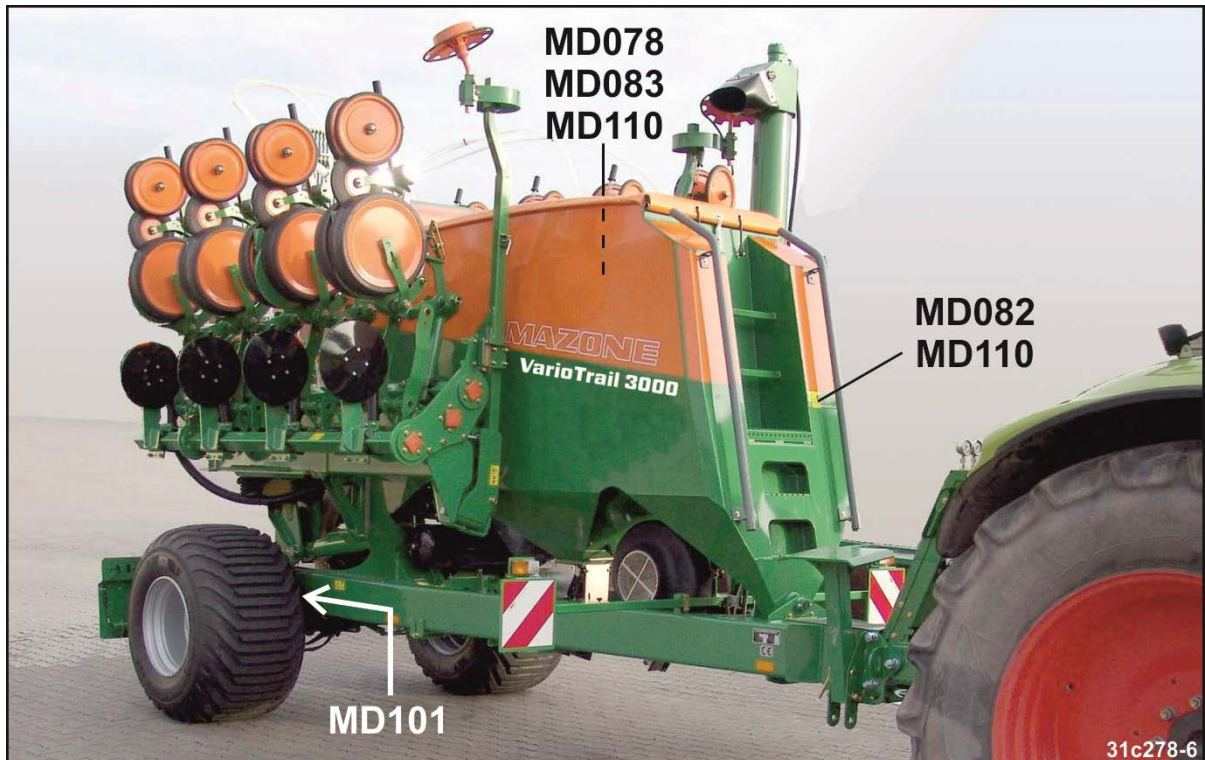


Fig. 1



Fig. 2

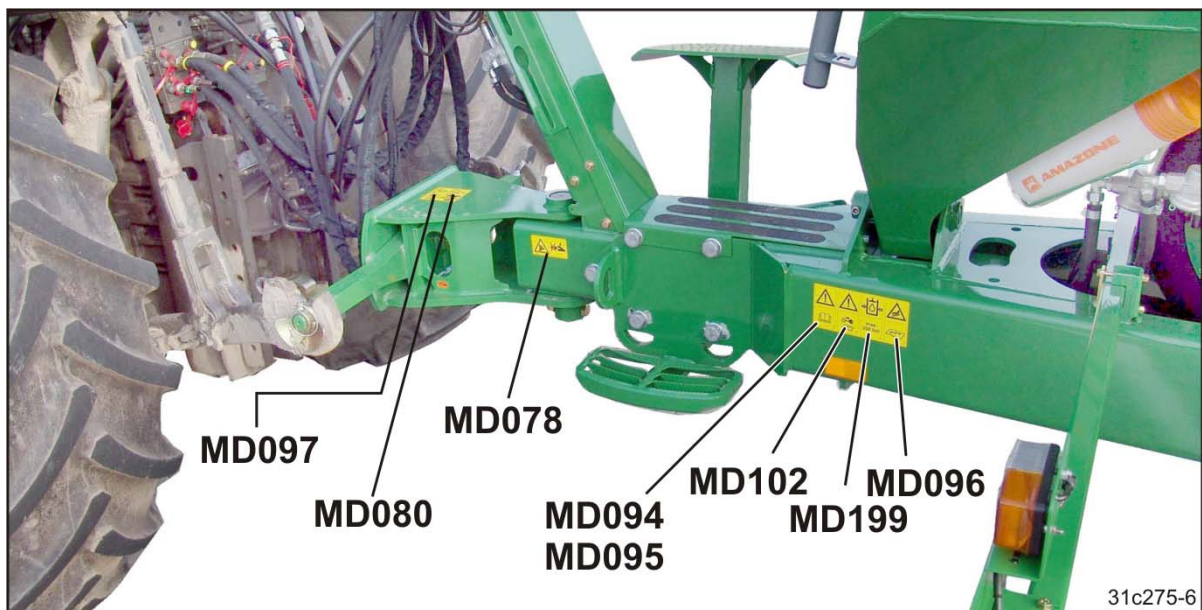


Fig. 3

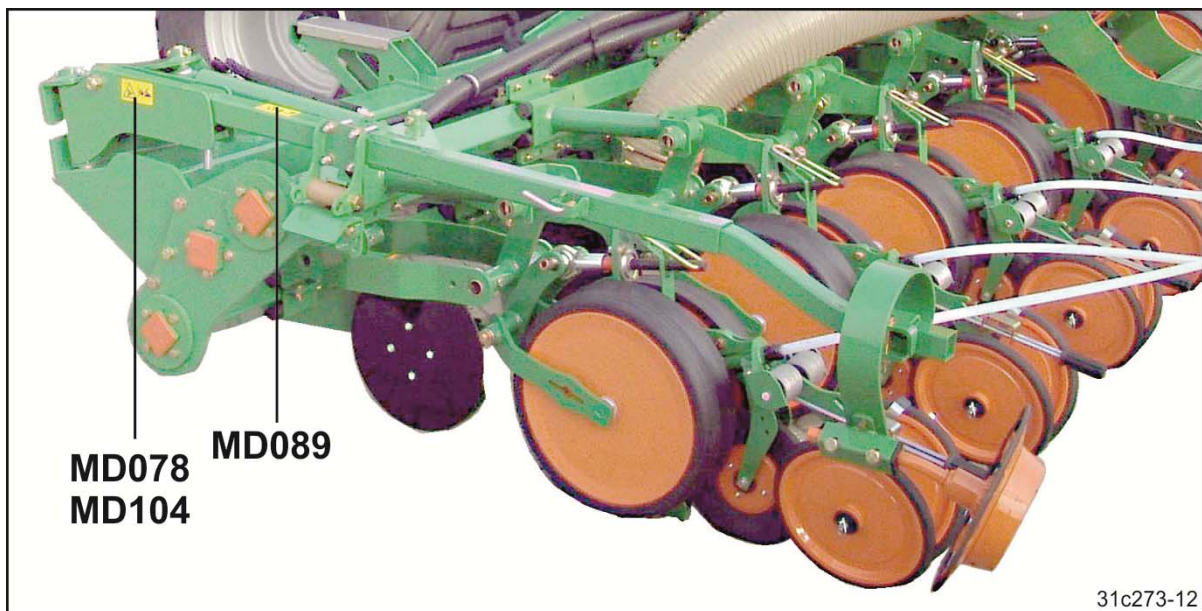


Fig. 4



Fig. 5

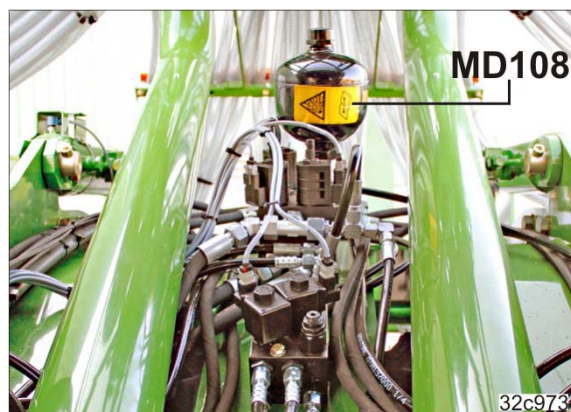


Fig. 6

2.14 Dangers if the safety information is not observed

Non-compliance with the safety information

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

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

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

2.15 Safety-conscious working

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

Comply with the accident prevention instructions on the warning symbols.

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

2.16 Safety information for users



WARNING

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

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



CAUTION

Switch off the on board computer

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

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

2.16.1 General safety instructions and accident prevention instructions

- In addition to these instructions, also comply with the generally valid national and safety and accident prevention regulations!
- The warning and information signs attached on the implement provide important instructions for safe operation of the implement. Compliance with these instructions is essential for your safety!
- Before moving off and starting up the implement, check the immediate area of the implement (children). Ensure that you can see clearly.
- It is forbidden to ride on the 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 the same!
- Connect the implement to the prescribed equipment in accordance with the specifications.
- When coupling implements to the front or the rear of the tractor, the following may not be exceeded:
 - The approved total tractor weight
 - The approved tractor axle loads
 - The approved load capacities of the tractor tyres

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

Use of the implement

- Before starting work, ensure that you understand all the equipment and actuation elements of the implement and their function. There is no time for this when the 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 approved axle and support loads of the tractor. If necessary, drive only with a partially filled tank.
- It is forbidden to stand in the working area of the implement.
- It is forbidden to stand in the turning and swivel range of the implement.
- There are crushing and shearing hazards on implement parts actuated by external force (e.g. hydraulically)!
- Only actuate implement parts actuated by external force if personal are maintaining an adequate safety distance to the implement!
- Secure the tractor against unintentional start-up and rolling, before you leave the tractor.
For this:
 - Lower the implement onto the ground.
 - Apply the 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 on board computer before road transport
- Before moving off, check:
 - the correct connection of the supply lines,
 - the lighting system for damage, function and cleanliness,
 - the brake and hydraulic system for visible damage,
 - that the 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 front tractor axle must always be loaded with at least 20 % of the empty tractor weight, in order to ensure sufficient steering power.
- Always fix the front or rear weights to the intended fixing points according to regulations.

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

2.16.2 Hydraulic system

- The hydraulic system is under a high pressure.
- Ensure that the hydraulic hose lines are connected correctly.
- When connecting the hydraulic hose lines, ensure that the hydraulic system is depressurised on both the implement and tractor sides.
- It is forbidden to block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:
 - are continuous or
 - are automatically locked or
 - require a float position or pressure position due to their function.
- Before working on the hydraulic system,
 - Lower the implement.
 - Depressurise the hydraulic system.
 - Switch off the tractor engine.
 - Apply the tractor parking brake.
 - Take out the ignition key.
- Have the hydraulic hose lines checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose lines if they are damaged or worn. Only use 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 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.
- 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 2004/108/EEC in the appropriate version and carry the CE mark.

2.16.4 Attached implements

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



2.16.5 Brake system

- Only specialist workshops or recognised brake services can carry out adjustment and repair work on the brake system.
- Have the brake system thoroughly checked regularly.
- If there are any functional faults in the brake system, stop the tractor immediately. Have any malfunctions rectified immediately.
- Before performing any work on the brake system, park the implement safely and secure the implement against unintentional lowering and rolling away (wheel chocks)!
- Be particularly careful with welding, burning and drilling work in the vicinity of brake lines!
- Always carry out a braking test after any adjusting or repair work on the braking system.

Pneumatic braking system

- Before coupling the implement, clean any dirt on the sealing rings on the hose couplings of the supply and brake lines.
- Only move off with the implement connected when the pressure gauge on the tractor shows 5.0 bar.
- Before driving without the implement, lock the hose couplings on the tractor.
- Hang the hose couplings of the implement supply and brake lines in the appropriate idle couplings.
- When filling up or replacing the brake fluid, use the prescribed fluid. When replacing the brake fluid, comply with the appropriate regulations.
- Do not make any changes to the specified settings on the brake valves!
- Replace the air reservoir if:
 - The air reservoir can be moved in the tensioning belts
 - The air reservoir is damaged
 - The rating plate on the air reservoir is rusty, loose or missing.

Hydraulic brake system for export implements

- Hydraulic brake systems are not approved in Germany.
- When filling up or replacing the brake fluid, use the prescribed hydraulic fluids. When replacing the hydraulic fluids, comply with the appropriate regulations.

2.16.6 Tyres

- Repair work on tyres and wheels may only be carried out by specialists with suitable installation tools.
- Check the air pressure at regular intervals.
- Inflate tyres to the specified air pressure! If the air pressure in the tyres is too high, then there is a risk of explosions.
- Park the implement in a safe place and lock the implement against unintentional falling and rolling (parking brake, wheel chocks), before carrying out work on the tyres.
- Tighten or retighten all the fixing screws and nuts in accordance with the specifications of AMAZONEN-WERKE.

2.16.7 Operation of the seed drill

- Observe the permissible hopper filling quantity!
- Only use the steps and the platform when filling the hopper. It is forbidden to ride on the implement during operation.
- During the calibration test, note the danger points from rotating and oscillating implement parts.
- Do not place any parts in the hopper!

2.16.8 PTO shaft operation

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

2.16.9 Cleaning, maintenance and repair


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

3 Implement shipping on a transport vehicle

3.1 Loading and unloading the rear module with a crane

Load the rear module, uncoupled from the tractor, with a crane.

The pictogram marks the location at which the lifting gear is to be attached to the implement.



DANGER

Only attach the lifting gear at the marked positions.

Do not stand under suspended loads.

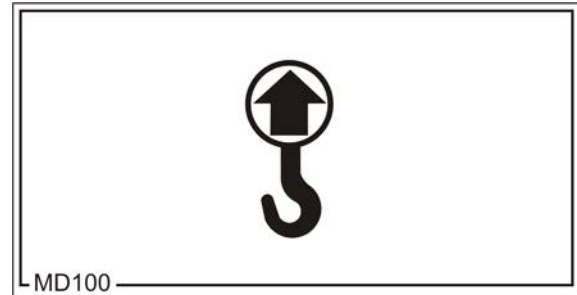



Fig. 7

1. Attach three straps at the marked positions.
2. Place the implement on the transport vehicle and lash it down as prescribed.

3.2 Loading and unloading the implement (with/without rear module) with a tractor



WARNING

- There is a risk of an accident if the tractor is unsuitable and the implement brake system is not connected to the tractor. The implement can also be equipped without its own brake system.
- You may only couple and transport the implement on a tractor that fulfils the power requirements.
- A marshalling person is required for the loading and unloading.

Important information for folding the implement booms



Before unfolding/folding the implement boom,

- connect all hydraulic supply lines to the tractor.
- connect the AMATRON and switch it on.

If the pressure-free return flow is not connected, the swivelling rear lighting can collide with the rear module.

Figure (Fig. 8/1) shown the rear lighting system in road transport position.



Fig. 8

When the supply lines are properly connected, the rear lighting system (Fig. 9/1) swivels away before the implement booms are unfolded. The swivelling of the lighting system prevents collisions with the booms (see section 5.11, page 84).



Fig. 9

Dismantling of individual implement parts before transport

In Germany and in many other countries, the permitted total height of the loaded lorry is 4.0 m. Individual implement parts must be dismantled in order to comply with the permitted transport height

1. Label and remove the seed tubes (Fig. 10/1).

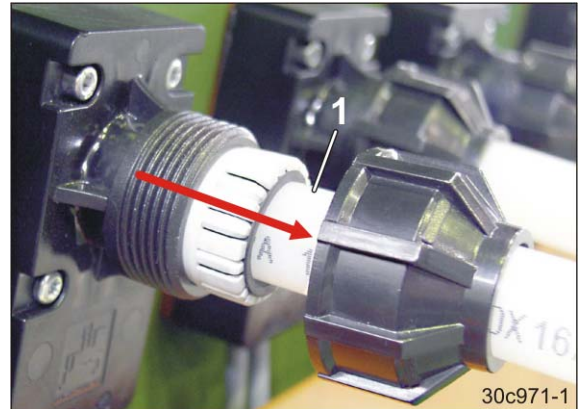


Fig. 10

The opto-sensor wrench (Fig. 11/1) is used to loosen and fasten the union nuts, especially for narrow-row seed drills.



Fig. 11

2. Dismantle the loading board (Fig. 12/1).
Each loading board is attached with 4 bolts (Fig. 12/2).

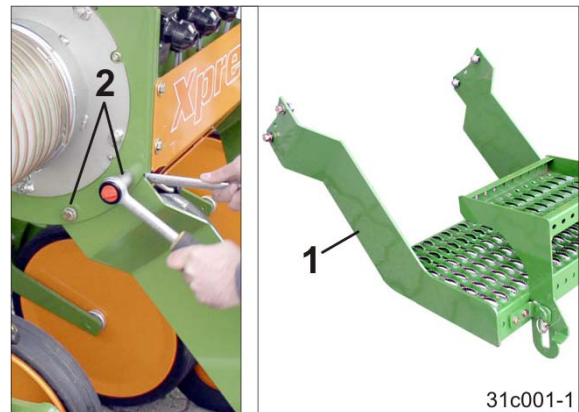


Fig. 12

3.2.1 Loading the implement with a tractor

1. Attach the implement to a suitable tractor for loading onto a transport vehicle, see
 - o "Commissioning", page 94;
 - o Section "Coupling and uncoupling the trailer and rear module", page 103.
2. Move the implement into transport position, see section "Set the implement to road transport mode", page 160.



Fig. 13

3. Push the implement carefully backwards onto the transport vehicle.
A marshalling person is required for loading.

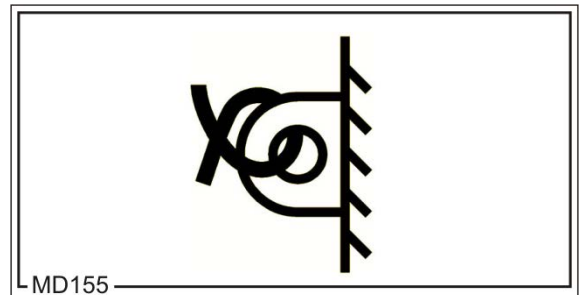


Fig. 14

4. Apply the implement's parking brake (if equipped) as soon as the implement has reached its transport position on the transport vehicle.
5. Secure the implement correctly onto the transport vehicle. The attachment points (Fig. 15/1) are marked. Bear in mind that the implement might not have a parking brake.

**Fig. 15**

The (Fig. 16) symbol marks the lashing points on the implement.

**Fig. 16**

6. Uncouple the tractor from the implement. (see the section "Uncoupling the implement").

**Fig. 17**

3.2.2 Unloading the implement with a tractor

1. Attach the implement to a suitable tractor for unloading from the transport vehicle, see
 - o "Commissioning", page 94;
 - o "Coupling and uncoupling the trailer and rear module", page 103.



Fig. 18

2. Remove the transport securing device.
3. Pull the attached implement carefully away from the transport vehicle. A marshalling person is required for unloading.
4. Unfold the implement (see section " Important information for folding the implement booms", page 40).
5. Install the loading board (see page 41).
6. Install the seed tubes (see section "Fastening the seed tube hoses", page 199).
7. Disconnect the implement from the tractor (see section Uncoupling the trailer from the tractor, page 122).

4 Product description

4.1 Main assembly groups of the combination

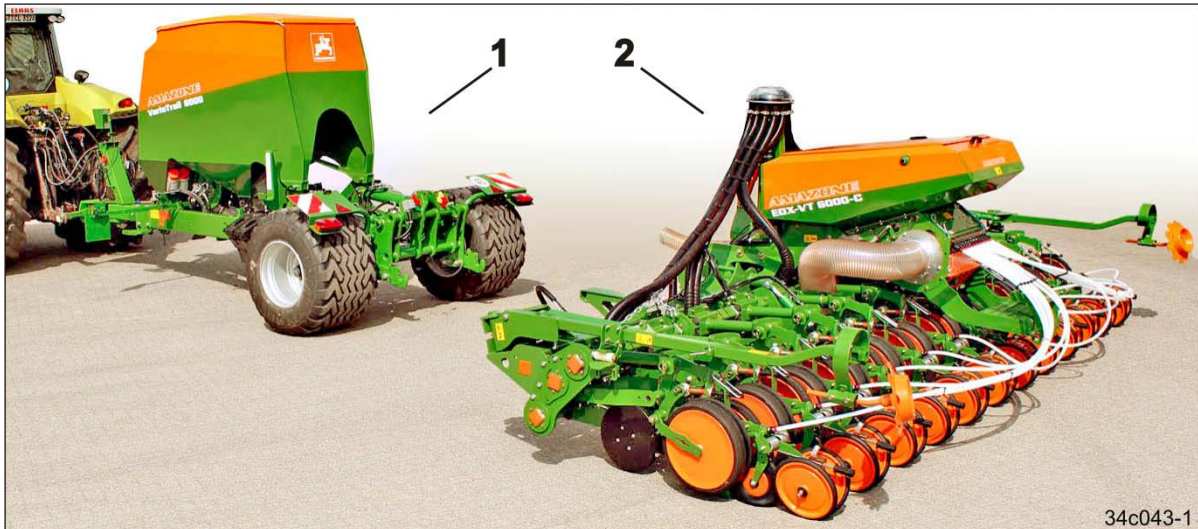


Fig. 19/...

- (1) VarioTrail 3000
- (2) EDX-VT 6000-C rear module

4.2 Overview of assembly groups

Fig. 20/...

- (1) Case for stowing
 - o of the operating manual
 - o the dosing roller
 - o of the digital scale



Fig. 20

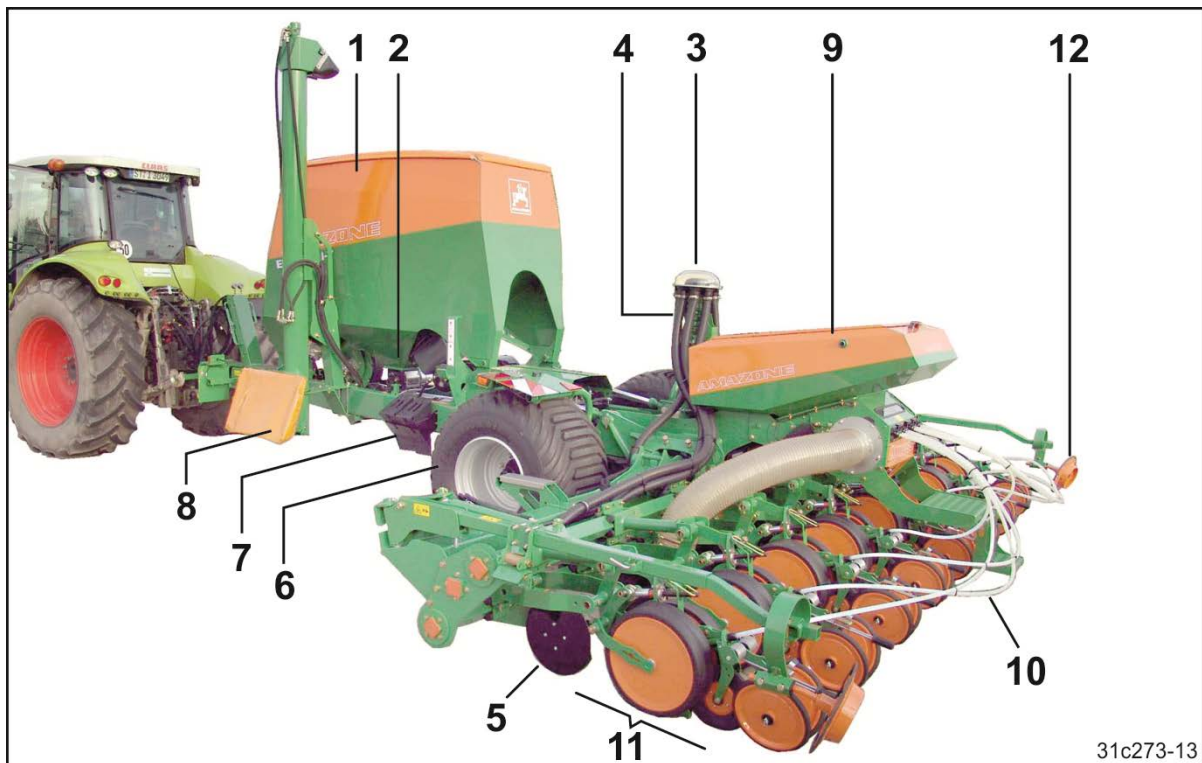


Fig. 21/...

- | | |
|---|---|
| (1) Fertiliser hopper | 9. Seed hopper and singling unit |
| (2) Fertiliser metering | (10) Seed hose |
| (3) Fertiliser distributor head | (11) Double disc seeding coulters with hydraulic coulters pressure adjustment |
| (4) Fertiliser hose | (12) Track marker |
| (5) Fertiliser coulters with hydraulic fertiliser coulters adjustment | |
| (6) Running gear | |
| (7) Wheel chocks | |
| (8) Filling auger (optional) | |

Fig. 22/...

AMATRON3 control terminal



Fig. 22

Fig. 23/...

- (1) Radar



Fig. 23

Fig. 24/...

- (1) Draw rail
- (2) Drawbar, extendable
- (3) Hose cabinet

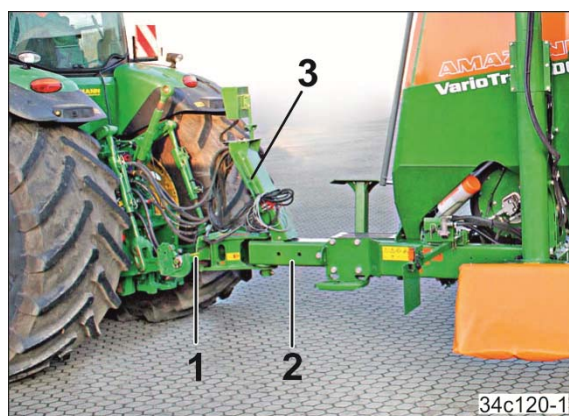


Fig. 24

Fig. 25/...

- 1 Fertiliser dosing unit
- (2) Injector sluice
- (3) Electric motor (metering roller drive)
- (4) Calibration trough in mounting for the calibration test

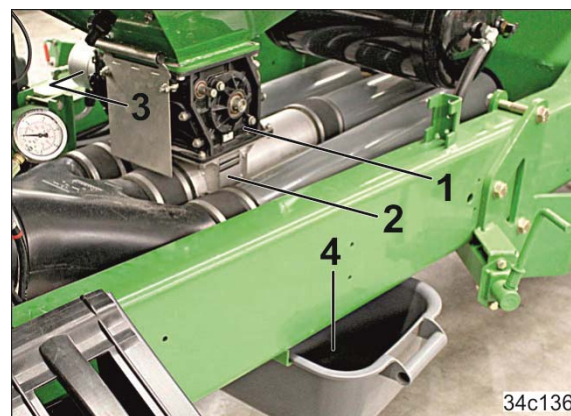


Fig. 25

Fig. 27/...

- (1) Fertiliser coulter

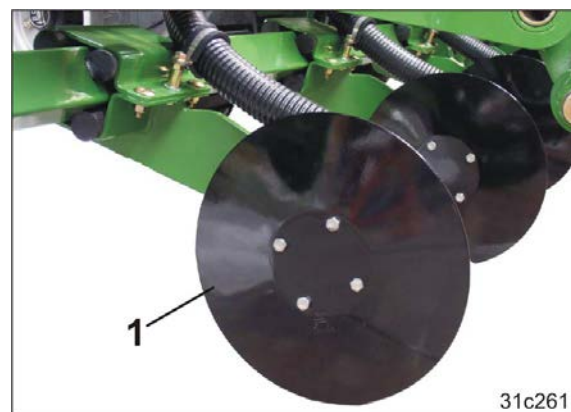


Fig. 26

Product description

Fig. 27/...

- (1) Fill level sensor (seed)
- (2) Sensor (compressed air in the singling unit)

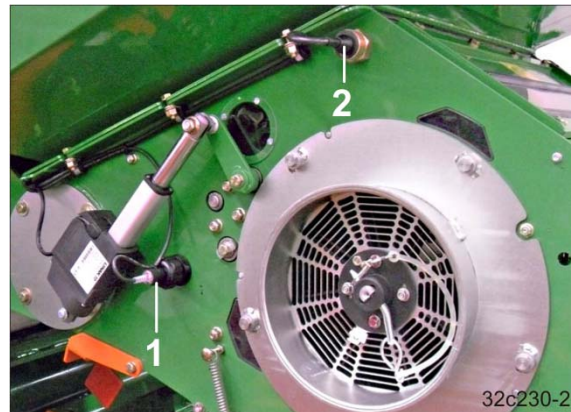


Fig. 27

Fig. 28/...

- (1) Setting lever for the seed shutter



Fig. 28

Fig. 29/...

- (1) Setting lever for the air deflector



Fig. 29

Fig. 30/...

- (1) Setting lever for the sealing lip



Fig. 30

Fig. 31/...

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



Fig. 31

Fig. 32/...

- (1) Indicator
for the electrically adjustable seed scraper

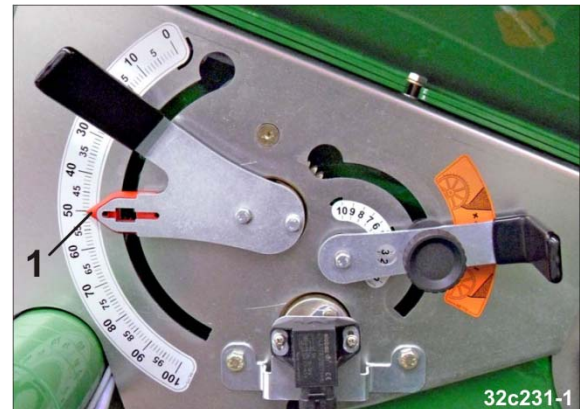


Fig. 32

Fig. 33/...

- (1) Opto-sensor,
records the entry of the seed grains in the
seed tube. The opto-sensor signals faults to
the on-board computer, which then triggers
an alarm.



Fig. 33

Fig. 34/...

Double disc seeding coulter



Fig. 34

4.3 Safety and protective equipment

Fig. 35/...

- (1) Blower fan guard



Fig. 35

Fig. 36/...

- (1) Ladder
- (2) Charging sieve
(acts as guard screen in the hopper)

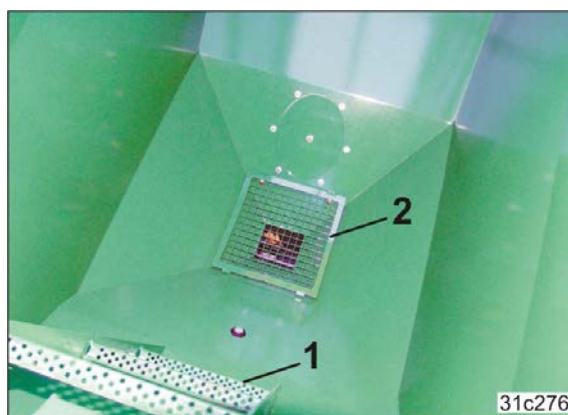


Fig. 36

Fig. 37/...

- (1) Transport bracket
for the implement booms in transport
position



Fig. 37

4.4 Transportation equipment

Fig. 38/...

- (1) 2 rear-facing warning signs
- (2) 1 speed sign



Fig. 38

Fig. 39/...

- (1) 2 rear-facing turn indicators
- (2) 2 reflectors, yellow.
- (3) 2 brake and rear lights
- (4) 2 red reflectors
- (5) 1 light for licence plate
- (6) 2 Reflectors, triangular

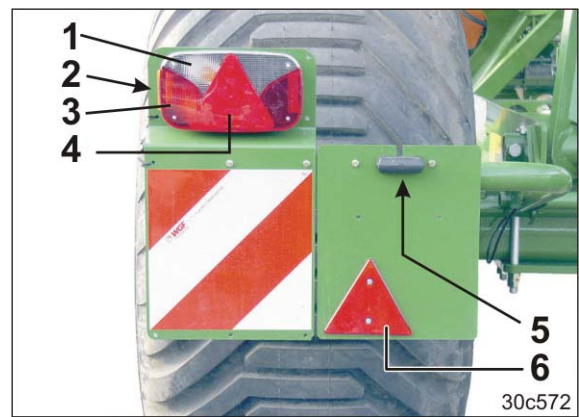


Fig. 39

Fig. 40/...

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

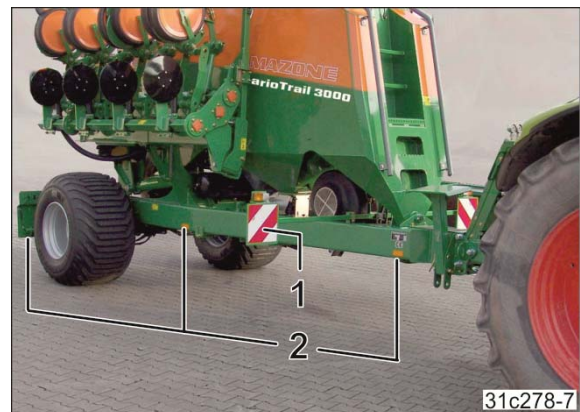


Fig. 40

Fig. 41/...

- (1) 2 forwards-facing limiting lights
- (2) 2 forwards-facing turn indicators

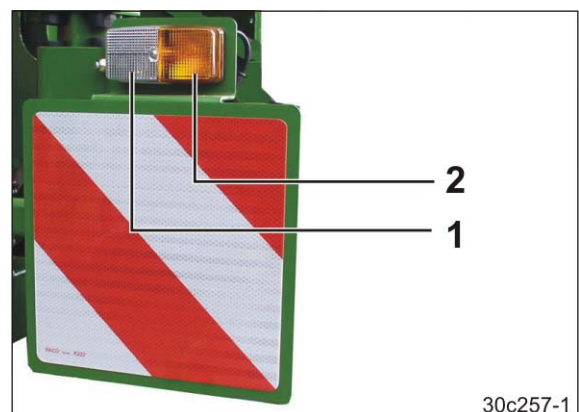


Fig. 41

4.5 Intended use

The trailer

- Is coupled to the tractor using the tractor three-point hitch attachment and is controlled by an operator.
- Is designed for coupling various implements for working on agricultural fields.
- Is designed for carrying and metering commercially-available types of seeds and fertilisers, depending on the carried rear module.

The EDX-VT rear module is designed for the

- singling and seeding of commercially-available seed.
- spreading commercially-available types of fertilisers.

Slopes can be travelled

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

Intended use also includes

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

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

For any damage resulting from improper use

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

4.6 Danger areas and danger points

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

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

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

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

Danger points exist

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

4.7 Rating plate and CE mark

4.7.1 VarioTrail 3000 rating plate and CE mark

The diagram shows the position (Fig. 42/1) 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. 42

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

- (1) Implement ID no.
- (2) Type
- (3) Basic weight [kg]
- (4) Permissible total weight [kg]
- (5) Permissible drawbar load [kg]
- (6) Permissible rear axle load [kg]
- (7) Permissible system pressure [bar]
- (8) Factory
- (9) Model year
- (10) Year of manufacture


AMAZONE		34c044
Amazonen-Werke H.Dreyer GmbH&Co.KG Am Amazonenwerk 9-13 D-49205 Hasbergen		
Fahrz.-/Masch.-Ident.-Nr.	1	
Typ	2	
Grundgewicht kg	3	zul. Gesamtgewicht kg 4
zul. Stuetzlast kg	5	Werk 8
zul. Achslast hinten kg	6	Modell jahr 9
zul. Systemdruck bar	7	
 Baujahr Année de fabrication year of construction Дата изготовления		10

Fig. 43

4.7.2 EDX-VT 6000-C rating plate and CE mark

The diagram shows the position (Fig. 42/1) 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. 44

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

AMAZONE		34c112
Amazonen-Werke H.Dreyer GmbH&Co.KG Am Amazonenwerk 9-13 D-49205 Hasbergen		
Masch.-Ident.-Nr.	1	
Typ	2	
Grundgewicht kg	3	Werk 5
max. Zuladung kg	4	Modelljahr 6
		Baujahr Année de fabrication year of construction Дата изготовления 7
		

Fig. 45

4.8 Noise production data

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

Measuring unit: OPTAC SLM 5.

The noise level is primarily dependent on the vehicle used.

4.9 Technical data

Technical data		VarioTrail 3000 without EDX-VT 6000-C
Net weight	[kg]	3000 - 4500
Hopper volume	[l]	3000
Filling height	[mm]	2850
Draw rail (optional equipment)		Cat. II Cat. III Cat. IV (N)
Tyres (optional equipment)		700/40-22.5 16PR 710/40-22.5 16PR
Electrical system	[V]	12 (7-pin)
Implement hydraulic fluid		Transmission/hydraulic fluid Utto SAE 80W API GL4

Technical data		VarioTrail 3000 with EDX-VT 6000-C
Number of seeding units		See table (Fig. 46)
Row spacing		
Working width		
Empty weight (basic weight)	[kg]	5700 - 8100
Fertiliser hopper volume	[l]	3000
Seed hopper volume	[l]	600
Working speed	[km/h]	8 - 15
Oil flow rate (minimum)	[l/min]	80
Max. hydraulic working pressure	[bar]	210
Maximum drawbar load with full seed hopper (on the field)	[kg]	4100

Road transport data			VarioTrail 3000 without EDX-VT 6000-C	VarioTrail 3000 with EDX-VT 6000-C
Transport length		[m]	5.95	5.95
Transport width		[m]	2.80 - 2.90	2.95
Overall height		[m]	2.70 - 3.95	2.70 - 3.95
Maximum payload	In Germany and in many other countries	[kg]	2800	2800
	In France	[kg]	200	200
Permissible total weight		[kg]	10900	10900
Perm. axle load		[kg]	6800	6800
Permissible drawbar load (F_H) when driving on the road • See also rating plate • See also section 6.1.1.1, page 97	In Germany and in many other countries	[kg]	4100	4100
	In France	[kg]	3000	3000
Service brake system			<ul style="list-style-type: none"> • Dual-circuit pneumatic service brake system • Hydraulic service brake system The hydraulic service brake system is not allowed in Germany and several other EU countries! • Without service brake system The implement may be equipped <u>without</u> a service brake system. Operation without a service brake system is not permitted in Germany, in all of the EU countries and in several other countries. 	

4.9.1 Working widths

Implement type	Number of seeding units	Row spacing [cm]	Working width [m]
EDX-VT 6000-C	8	70	5.6
	8	75	6.0
	8	80	6.4
	10	55	5.5
	10	60	6.0
	12	45	5.4
	12	50	6.0
	16	38	6.0

Fig. 46

4.9.2 Necessary tractor equipment

Tractor power	Engine rating	Starting at 125 kW / 170 HP (with EDX rear module)
	Electr. output (alternator)	12.5V to 13V / 130A
	Socket for the road traffic lights	12 V (7-pin)
Hydraulic system	Tractor control units	See Overview – Supply lines, page 105
	Operating pressure	210 bars
	Tractor pump capacity, minimum	80 l/min (at 150 bar)
Service brake system (optional equipment)	Dual-circuit pneumatic service brake system	<ul style="list-style-type: none"> 1 hose coupling (red) for the supply line 1 hose coupling (yellow) for the brake line
	Hydraulic service brake system The hydraulic service brake system is not approved in Germany and several other EU countries.	1 hydraulic coupling in accordance with ISO 5676
	Without service brake system The implement may be equipped <u>without</u> a service brake system. Operation without a service brake system is not permitted in Germany, in all of the EU countries and in several other countries.	

5 Layout and function



Fig. 47

The VarioTrail enables the spreading of various seeds with one implement. By replacing the rear module, the required tools are available for virtually all seeding methods.

Depending on the seeding method, the hopper of the trailer serves to carry seed or fertiliser.

A precision airplanter consists of the VarioTrail 3000 trailer (Fig. 47/1) and the EDX-VT 3000-C rear module (Fig. 47/2). In this combination, the hopper of the trailer is filled with fertiliser.



Fig. 48

The trailer has a main frame (Fig. 48/1) with running gear and hopper (Fig. 48/2). The attachment of the rear module on the trailer is carried out using a quick coupling (Fig. 48/3).



Fig. 49

The coulters on the rear module are

- raised by the quick coupling (Fig. 49/1) before turning at the end of the field.
- folded in together with the implement booms (Fig. 49/2) for transport.

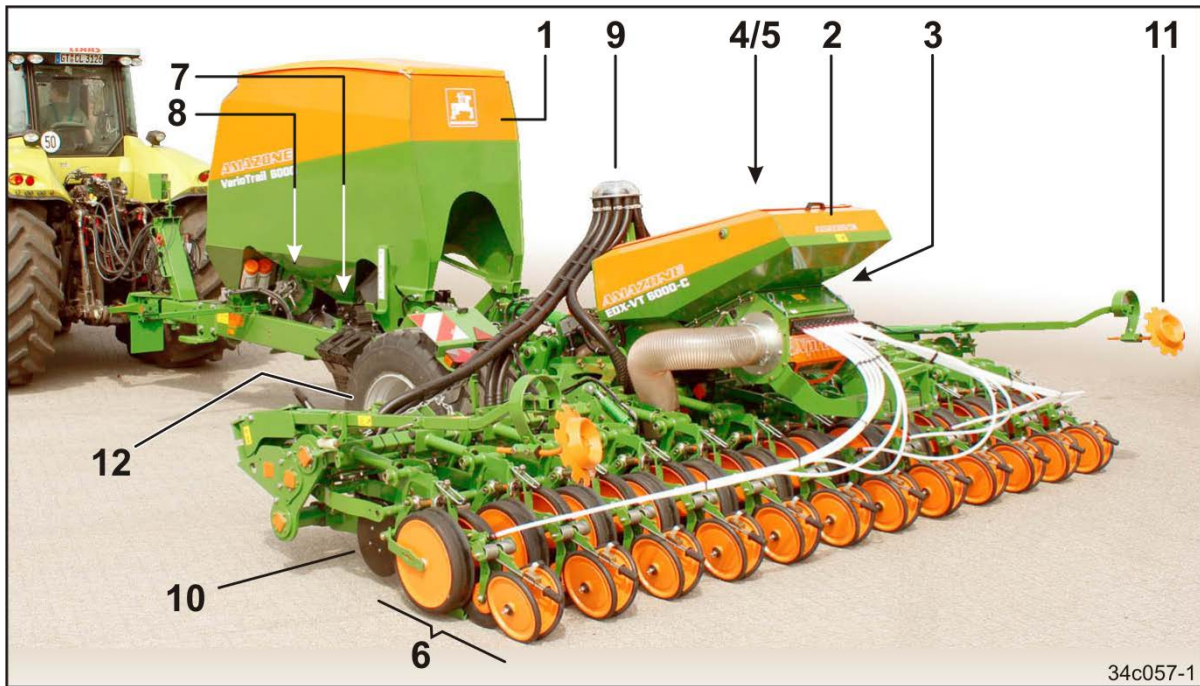


Fig. 50

The precision airplanter consists of the VarioTrail 3000 trailer (Fig. 50/1) and the EDX-VT 3000-C rear module.

The EDX-VT 3000-C rear module is equipped with a central seed hopper (Fig. 50/2). The seeding rate is adjusted by entering the desired value using the keys on AMATRON on-board computer. The AMATRON measures the working speed and the distance from the radar pulses.

An electric motor below the seed hopper drives the singling drum [shown in window (Fig. 50/3)] depending on the spread rate and working speed set.

The central adjustment (Fig. 50/4) for the scrapers that prevent multiple occupancy of seed grains on the drum and the central adjustment (Fig. 50/5) for the air guides are conveniently accessible.

The figure (Fig. 51) shows the progression of the seed grains from singling unit through to placement in the seed furrow by the double disk seeding coulter (Fig. 50/6).

The filling auger (optional) is used to fill the hopper (Fig. 50/1). The required quantity of fertiliser is metered by a metering roller in the metering unit (Fig. 50/7). The metering roller is driven by an electric motor. The drive speed of the metering roller is determined by the working speed and set fertiliser quantity.

The air current generated by the blower fan (Fig. 50/8) is distributed for conveying the fertiliser and for singling the seed.

The fertiliser is conveyed from the injector sluice to the distributor head (Fig. 50/9) and then distributed evenly onto all fertiliser coulters (Fig. 50/10).

Track markers mark the field connection run (Fig. 50/11) in the centre of the tractor.

The VarioTrail has a running gear (Fig. 50/12) to turn at the end of the field and for road transport. The implement can be folded to a transport width of 3 m. The VarioTrail can be transported on the road both with and without the rear module.

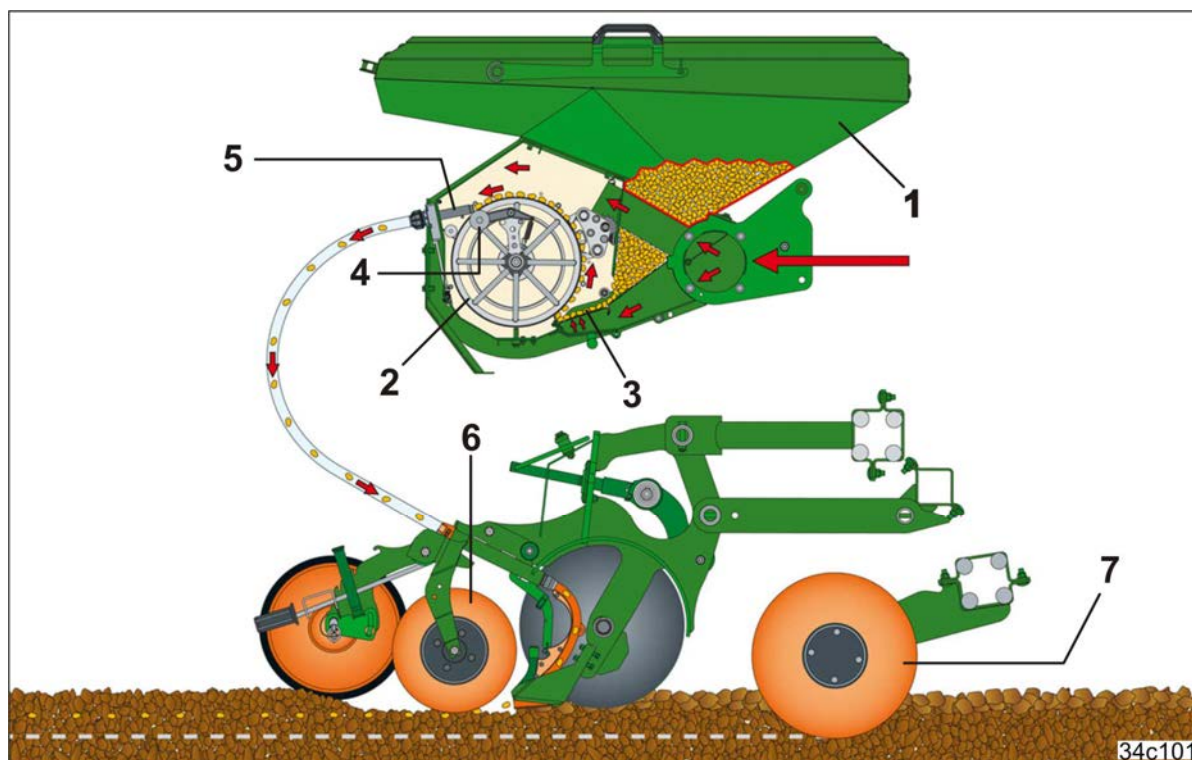


Fig. 51

The seed hopper (Fig. 51/1) has a singling drum (Fig. 51/2) on which the precise pneumatic singling of seed grains takes place.

The centrally adjustable air flow sets the gains in the fluid bed (Fig. 51/3) in motion. Every hole in the drum is closed by a seed grain. Surplus seed grains are removed by centrally adjustable scrapers in the event of multiple occupancy.

The suction force that acts on the grain is interrupted by a roller (Fig. 51/4) runs along the inside of the drum. The roller closes the hole directly in front of the outlet nozzle to which the seed tube (Fig. 51/5) will subsequently be attached. The overpressure escapes through the seed tube. The grain is released from the drum, is accelerated rapidly by the flow and emerges with high velocity at the coulter. A catcher roller (Fig. 51/6) softly intercepts the seed grain and presses it firmly into the furrow.

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

The cross-section of the furrow generated is rectangular. A positive closure is formed between the catcher roller and the edge of the furrow which ensures optimum placement, even with varying ground conditions and at high working speeds.

The fertiliser is placed in the soil beside the seed. The depth of the fertiliser coulters (Fig. 51/7) is adjusted centrally by actuating a tractor control unit.

As an option, each seed tube (Fig. 52/1) can be closed off by a swivelling module (Fig. 52/2).

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

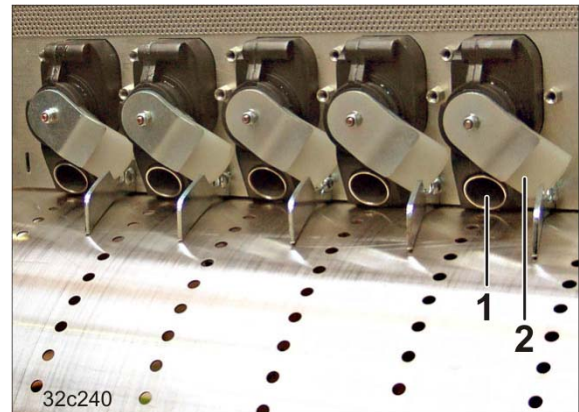


Fig. 52

By closing the seed tubes using the modules (Fig. 53/1),

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

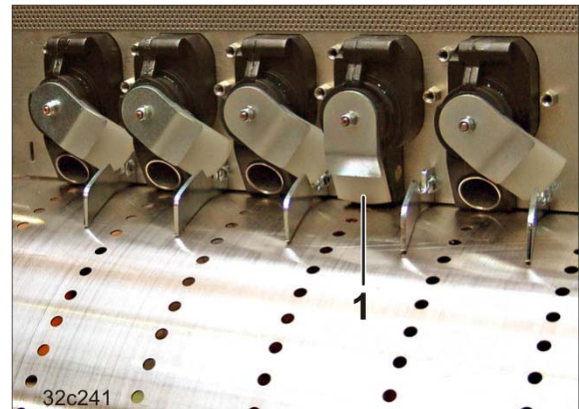


Fig. 53

5.1 Service brake system

The implement can be equipped with a

- Dual-circuit pneumatic service brake system
- Hydraulic service braking system ¹⁾

¹⁾ The hydraulic service brake system is not approved in Germany and several other EU countries!

Implements with a dual-circuit pneumatic service brake system and hydraulic service brake system are fitted with a parking brake. The crank (Fig. 54) is used to activate the parking brake.

Applying the parking brake:
turn the crank to the right (R)

Releasing the parking brake:
turn the crank to the left (L)



Fig. 54

The implement may also be delivered without a service brake system. Operation of the implement without a service brake system is not permitted in Germany, in all of the EU countries and in several other countries.

5.1.1 Dual-circuit pneumatic service brake system

In Germany, the implement is equipped with a dual-circuit pneumatic service braking system.

The dual-circuit pneumatic service brake system controls two brake cylinders, which actuate the brake shoes in the brake drums.

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

5.1.2 Hydraulic service brake system

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

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

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

5.2 AMATRON 3 on-board computer

The implement is equipped with the AMATRON 3 on-board computer.

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

The AMATRON 3 on-board computer consists of

- the control terminal (Fig. 55),
- the basic equipment (cable and fastening material),
- the job computer on the implement.



Fig. 55

The AMATRON 3 is used

- to input implement-specific data.
- to input job-related data.
- to activate the electromagnetic control block hydraulic functions before the hydraulic functions can be executed via the appropriate control unit.
- to monitor and control implement functions.
 - track marker actuation
- to change the seeding rate during seeding.
 - adjustment of seeding rate to working speed
 - adjustment of seeding rate to different soils.

The AMATRON 3 displays

- the current forward speed [km/h]
- the current spread rate [kg/ha]
- the current hopper content [kg]
- the remaining distance [m] until the hopper is empty
- the track marker working position
- the blower fan speed
- the singling drum speed
- the singling pressure

For a commenced task, the AMATRON 3 stores

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

The AMATRON 3 issues an alarm

- if there is deviation from the target blower fan speed.
- if the seed level in the hopper falls below the set minimum fill level.

5.2.1 Controlling the implement with the on-board computer

The hydraulic functions of the implement are actuated via the electrohydraulic control block (Fig. 56/1).

First, the desired hydraulic function has to be selected on the AMATRON before the hydraulic function can be executed using the appropriate control unit.

This activation of the hydraulic functions in the AMATRON allows operation of all hydraulic functions with only a few tractor control units.

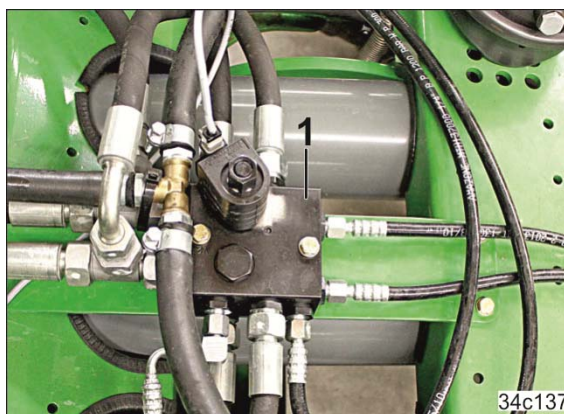


Fig. 56

5.3 Cartridge

The cases (Fig. 57/1) contain:

- the pack with the operating manual,
- a metering roller in park position,
- the scales for the calibration test.



Fig. 57

5.4 Radar

The radar (Fig. 58/1) records movement data during operation and transmits the data to the on-board computer.

On the basis of these data, the on-board computer calculates

- the forward speed,
- the worked area (hectare counter),
- the required speed for the speed of the metering roller(s).



Fig. 58

5.5 Blower fan

The blower fan (Fig. 59/1) generates the air current

- for the seed singling unit,
- for the fertiliser delivery.

The blower fan is driven by a hydraulic motor (Fig. 59/2).

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

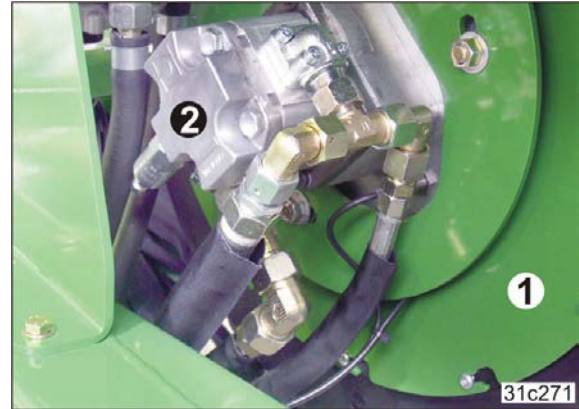


Fig. 59

The hydraulic motor can be driven by

- the tractor hydraulics (see section 5.5.1).
- via the tractor PTO shaft (see section 5.5.2).

Required blower fan speed

The blower fan speed is properly adjusted when the AMATRON displays an air pressure of 55 mbar in the singling unit (see on-board computer operating manual).

The air pressure in the singling housing is measured by a pressure sensor (Fig. 60/1).

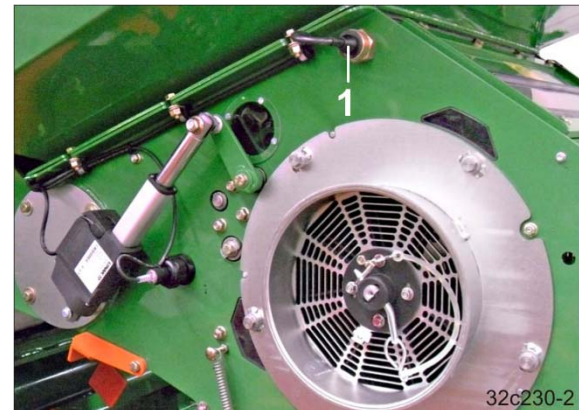


Fig. 60

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

The required air pressure is built up and maintained

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

The AMATRON+ issues an alarm if holes in the singling drum are not occupied by seed grains. The alarm is triggered if no seed is detected by the opto-sensors (Fig. 33/1).

5.5.1 Connecting the blower fan to the tractor hydraulics

When the blower fan hydraulic motor is connected to the tractor hydraulic system, the tractor must be equipped with the right hydraulic connections (see section "Installation instructions for hydraulic blower fan connection to tractor hydraulics", page 102).

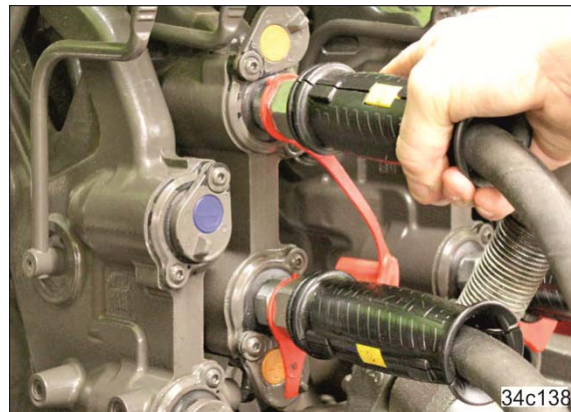


Fig. 61

Adjust the blower fan speed (see section 8.4, page 153)

- using the tractor's flow control valve or
- using the pressure relief valve of the hydraulic motor, if the tractor has no flow control valve.

5.5.2 Blower fan connection at the tractor PTO shaft (optional)

A hydraulic pump (Fig. 62/1) fitted on the tractor's PTO shaft drives the hydraulic motor of the blower fan.



Fig. 62

The pictogram (Fig. 63) aims to remind the tractor driver that the maximum speed of 1000 rpm may not be exceeded.

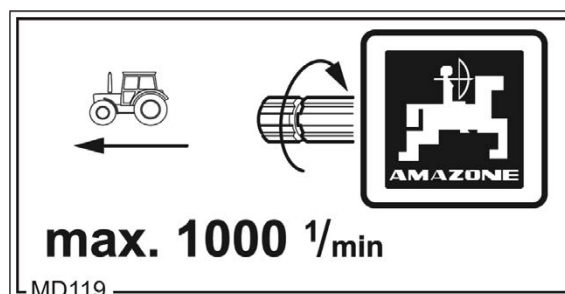


Fig. 63

5.6 Seed singling and spreading

5.6.1 Seed hopper

The seed hopper is equipped with a pressure-tight lockable cover (Fig. 64/1). The cover is actuated using a lockable lever (Fig. 64/2).

A gas pressure spring assists the opening of the cover.



Fig. 64

The seed hopper (Fig. 65/1) is positioned above the housing of the singling drum (Fig. 65/2).

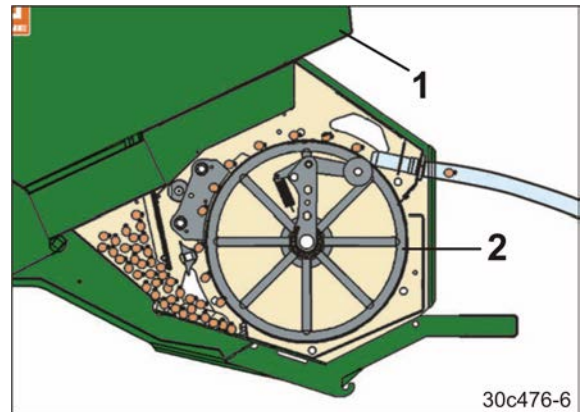


Fig. 65

5.6.2 Singling drum

Different seed types require adjustment of the singling drum for the seed type. The required singling drums can be selected from Table (Fig. 67) and installed (see section "Removing/installing the singling drum", page 196).

The singling drums differ in the number of rows (Fig. 66/1) and in the hole diameters.

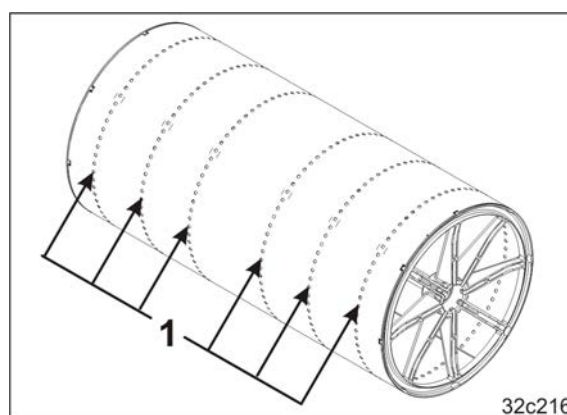


Fig. 66

Seed	Singling drum							Note
	Number of rows per singling drum						Hole [mm]	
Maize	6	8	9	10	12	16	Ø 5.5	Standard singling drum for maize starting at 230 TGW
	6	8	9	10	12	16	Ø 4.5	Singling drum for maize up to 250 TGW (small maize grains)
Sunflowers	6	8	9	10	12	16	Ø 3.0	
	6	8	9	10	12	—	Ø 2.5	
Sorghum	6	8	—	10	12	16	Ø 2.0	
Rapeseed	—	—	9	10	12	16	Ø 1.6	
	—	—	9	10	12	16	Ø 1.2	

Fig. 67

Recommendation for the selection of the correct maize singling drum

Two singling drums are available for seeding maize with hole diameters of Ø 4.5 mm and Ø 5.5 mm.

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

As a reference value, depending on the thousand grain weight of the seed, use the drum

with Ø 4.5 mm holes for maize up to 250 TGW

with Ø 5.5 mm holes for maize starting at 230 TGW

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

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

5.6.3 Seed shutter

The seed flows from the seed hopper to the fluid bed (Fig. 68/1) directly in front of the singling drum.

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

If too much seed enters the fluid bed, reduce the feed quantity by adjusting the seed shutter (Fig. 68/2).

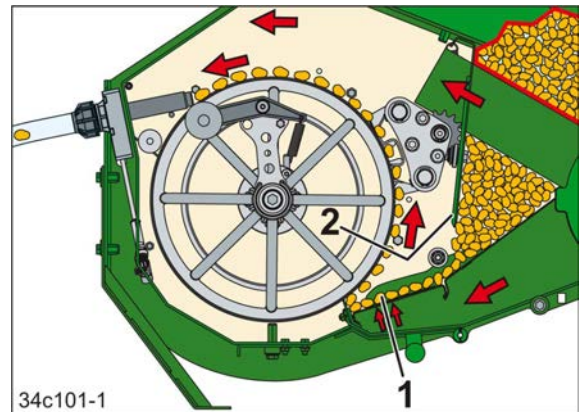


Fig. 68

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

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



Fig. 69

Layout and function

Actuate the seed shutter with the lever (Fig. 70/1).

The numbers on the scale indicated by the indicator (Fig. 70/2) on the lever are provided for guidance.

The setting values can be found in Table (Fig. 71) .



Fig. 70

Seed	Scale value Seed shutter
Maize	2 - 3
Sunflowers	2.0
Sorghum	1.0
Rapeseed	0.5

Fig. 71

The table values (Fig. 71 to) are reference values. Verify the results of the setting through the viewing window (Fig. 50/3) and readjust accordingly using the lever.

The fluid bed contains too much seed: Move the lever (Fig. 70/1) clockwise (-).

The fluid bed contains too little seed: Move the lever (Fig. 70/1) anti-clockwise (+).

If the lever points to the scale value "0", the inlet from the seed hopper is closed.

5.6.4 Air guide

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

The air quantity is correctly metered when the seed grains

- move loosely at the viewing window (Fig. 72) (without jumping).
- are not thrown across the singling drum.



Fig. 72

Set the required air quantity for the fluidised bed by adjusting the air deflector using the lever (Fig. 73/1).

The numbers on the scale indicated by the indicator (Fig. 73/2) on the lever are provided for guidance.

The setting values can be found in Table (Fig. 74).



Fig. 73

Seed	Scale value Air deflector
Maize	0.6
Sunflowers	0.5
Sorghum	0.7
Rapeseed	0.7

Fig. 74

The table values (Fig. 74 to) are reference values. Small free-flowing corn grains require less air than large corn grains with a sticky dressing. Check the results of the adjustment in the viewing window (Fig. 50/3).

Reduce the air volume in the fluid bed:

Move the lever (Fig. 73/1) clockwise (-).

Increase the air volume in the fluid bed:

Move the lever (Fig. 73/1) anti-clockwise (+).

5.6.5 Seed scraper

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

Mechanically or electrically adjustable seed scrapers remove excess seed grains.

Adjustment of the indicator (Fig. 75/1) changes the scraper position.

If there is double occupancy:

move the indicator counterclockwise to the higher scale value.

If there are gaps:

move the indicator clockwise to the lower scale value.



Fig. 75

Seed	Scale value Seed scraper
Maize	60
Sunflowers	60
Sorghum	70
Rapeseed	85

Fig. 76

5.6.5.1 Seed scraper, mechanically adjustable

Adjustment of the lever (Fig. 77/1) changes the scraper position.

The numbers on the scale indicated by the indicator (Fig. 77/2) on the lever are provided for guidance.

The setting values can be found in Table (Fig. 76). The table values are reference values.

Correct the scraper position if at working speed the AMATRON indicates gaps or double occupancy.

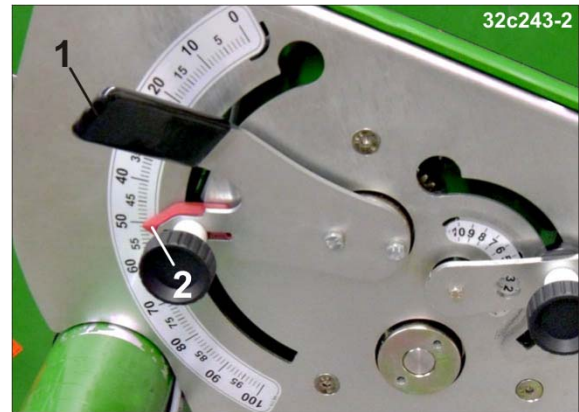


Fig. 77

5.6.5.2 Seed scraper, electrically adjustable

Read the setting values from Table (Fig. 76) and set on the on-board computer (see AMATRON operating manual). The table values are reference values.

The set scraper position is displayed

- by the indicator (Fig. 78/1),
- by the AMATRON.

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

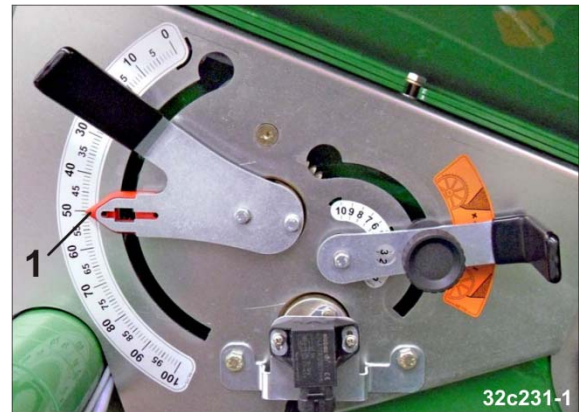


Fig. 78

An electrical setting motor (Fig. 79/1), controlled by the AMATRON, adjusts the seed scraper.



Fig. 79

5.6.6 Baffle plate (optional), for working on slopes

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

Baffle plates (Fig. 80/1) help to prevent the seed from slipping in the fluid bed.

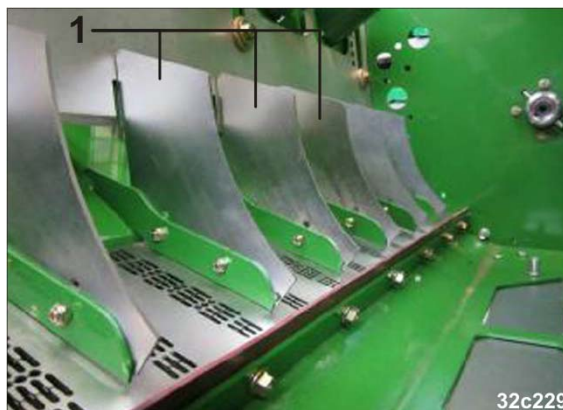


Fig. 80

5.6.7 Digital seed fill level monitoring

A fill level sensor (Fig. 81/1) monitors the seed level in the hopper.

When the seed level reaches the fill level sensor, the AMATRON issues a warning message. An alarm signal sounds at the same time.

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



Fig. 81

5.7 Double disc seeding coulters

The double disc seeding coulters (Fig. 82/1) is supported by the two carrier rollers (Fig. 82/2) and maintains a constant working depth. The diameters of the double disc seeding coulters and carrier rollers are especially large.

Plant residues in front of the furrow former (Fig. 82/3) are moved to the side by the double disc seeding coulters.

The adjustable press rollers (Fig. 82/4) close and press on the seed furrow.

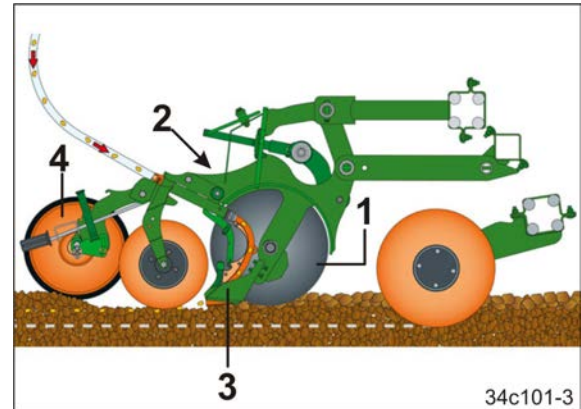


Fig. 82

5.7.1 Carrier roller scraper (optional)

Each carrier roller can be equipped with a scraper arm (Fig. 83/1).

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

The scrapers (Fig. 83/2) are adjustable.



Fig. 83

5.7.2 Seed placement depth

The seed placement depth is adjusted via a spindle (Fig. 84/1). The scale (Fig. 84/2) is provided as an adjustment aid.

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

The maximum placement depth is 10 cm.

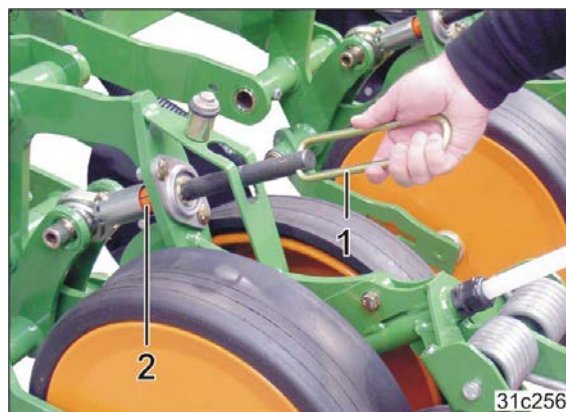


Fig. 84

5.7.3 Coulter pressure (double disc seeding coulter)

The maximum adjustable coulter pressure is 200 kg/unit. The required seed placement depth is only achieved when the coulter pressure is correctly set.

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

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

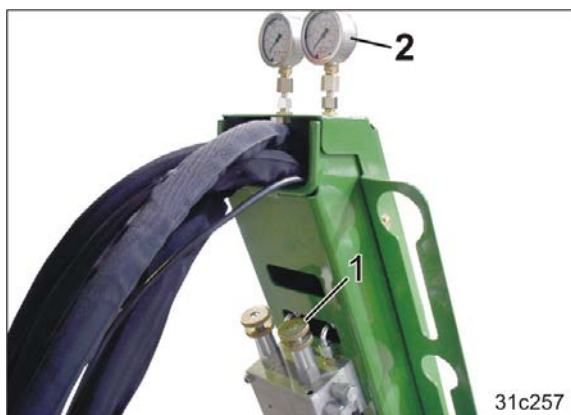


Fig. 85



Fig. 86

Adjust the coulter pressure by operating

- the valve (Fig. 85/1) or
- a setting motor (Fig. 86/1, optional), which is operated via the AMATRON in the tractor cab.

Read out the coulter pressure

- on the pressure gauge (Fig. 85/2) or
- on the AMATRON display (with the option "setting motor").

5.7.4 Ground contact pressure and intensity of press rollers

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

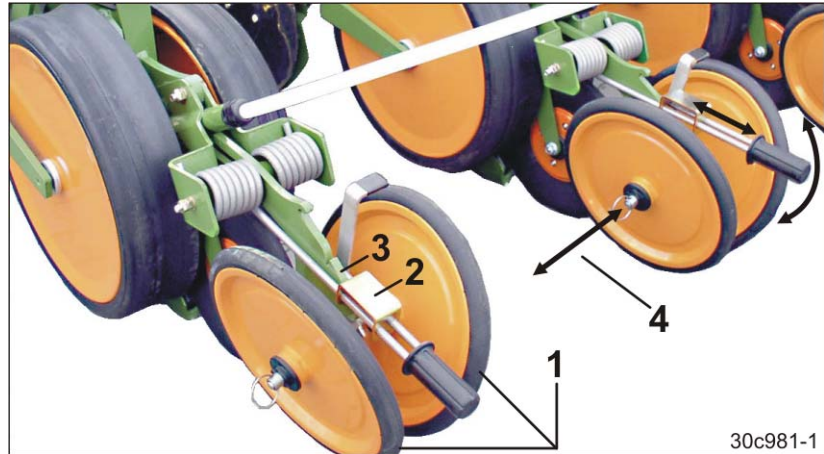


Fig. 87

Ground contact pressure of the press rollers

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

Intensity of the press rollers

The intensity of the press rollers changes according to the axial adjustment of the press rollers (Fig. 87/4). Adjust the position of the press rollers to the ground or the seed furrow.

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

The lever (Fig. 88/1) serves for adjustment.

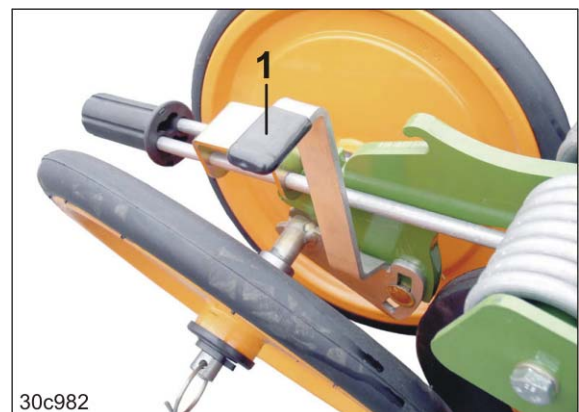


Fig. 88

5.7.5 Star clearer (optional)

The star clearers (Fig. 89/1) level out the seed furrow tracks.

The star clearers can be used for mulch seeding.

The star clearers (Fig. 89/1) are adjustable.

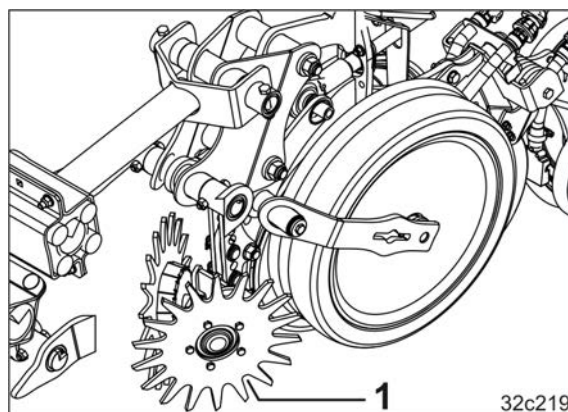


Fig. 89

5.7.6 Clod clearer (optional)

The clod clearers (Fig. 90/1) level out the seed furrow track.

The clod clearers can be used for mulch seeding.

The clod clearers (Fig. 90/1) are adjustable.

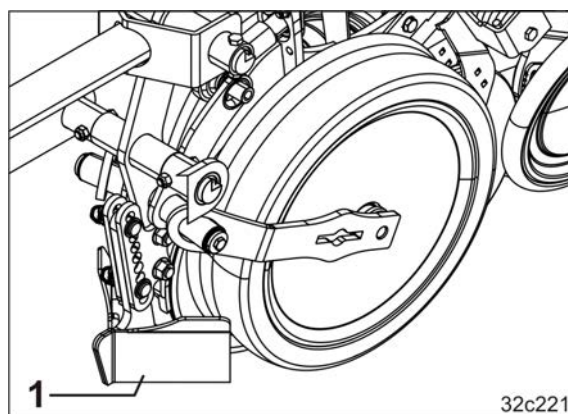


Fig. 90

5.8 Fertiliser hopper

The hopper (Fig. 91/1) is easily accessible for filling, calibration, and residual emptying.

The shape of the hopper ensures an unobstructed view of the tools during work.

The full-area opening of the hopper allows rapid filling.



Fig. 91

The tarpaulin (Fig. 91/2) protects transported goods from rain and dust.



Fig. 92

The interior lighting of the hopper is coupled with the driving lights of the tractor.

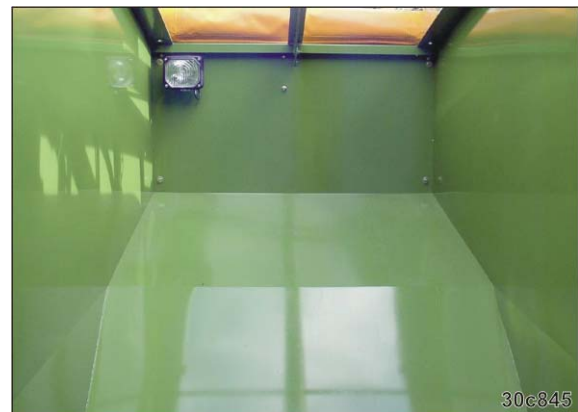


Fig. 93

5.8.1 Digital fertiliser fill level monitoring

A fill level sensor monitors the fertiliser level in the fertiliser hopper.

When the fertiliser level reaches the fill level sensor, the AMATRON issues a warning message. An alarm signal sounds at the same time. This alarm signal is intended to remind the tractor driver to fill up the fertiliser again.

The height of the fill level sensor (Fig. 94/1) can be adjusted from the outside by fastening in one of the brackets.

Fasten the fill level sensor according to the spread rate.

Attaching the sensor

- to the upper mount if the spread rate is large;
- to the lower mount if the spread rate is small.



Fig. 94

5.9 Filling auger (optional)

The large hopper can be equipped with a filling auger (Fig. 95/1). A tarpaulin prevents rain water from getting into the funnel of the filling auger.

The filling auger is swivelled hydraulically into the correct position. During seeding operation and for transport, the filling auger is resting closely on the hopper.

The control lever is directly beside the filling auger.

One control lever is used to fold and unfold the filling auger. The second control lever is used to switch the filling auger on and off.

The filling auger is driven by a hydraulic motor and must be connected to a single-acting tractor control unit. When folding the filling auger and filling the hopper, the tractor engine must also be running.



Fig. 95

5.10 Weighing system (optional)

When the power supply is switched on, the terminal (Fig. 96) shows the weight [kg] of the hopper contents.

To display the correct hopper content, the implement must be tared.

For implements with weighing equipment, the operating manual is included.

The button (Fig. 96/1) on the right side of the weighing terminal is used for

- Scrolling in the menu
- Executing and confirming.

The hopper is fastened with three pins on the frame. With weighing equipment, the pins are used as measuring pins (Fig. 97/1).

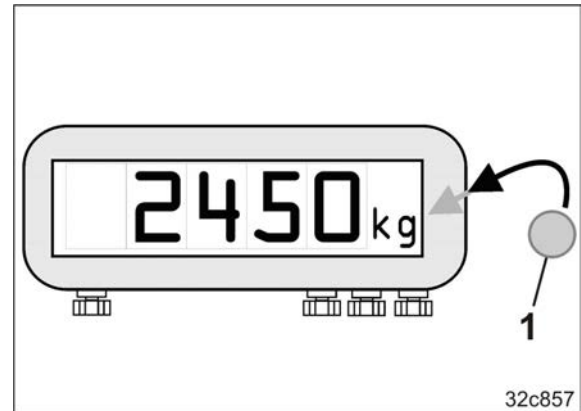


Fig. 96



Fig. 97

5.11 Fertiliser dosing unit and injector sluice

A roller (Fig. 98/1) is used for metering.



Fig. 98

The metering roller is driven by an electric motor (Fig. 99/1) (full metering).

The speed of the dosing rollers:

- determines the spread rate. The higher the speed of the electric motor, the larger the spread rate.
- automatically adjusts to changing working speeds.

As soon as the coulter are raised, e.g. when turning at the end of a field, the electric motor switches off.

The seed falls into the injector sluice (Fig. 99/2) and is directed by the air flow to the distributor head and then to the coulters.



Fig. 99

For the calibration test and for emptying, the seed falls through an opening in the floor of the injector sluice. A rotary shutter closes the opening. The rotary shutter is actuated by means of a lever (Fig. 1001). Make sure that the lever engages when opening and closing.

The opening at the bottom of the injector sluice is closed when the lever (1) points to the left in the driving direction (arrow), as shown.

Always make the lever (1) engage in one of the two positions

- Rotary slide closed
- Rotary slide open

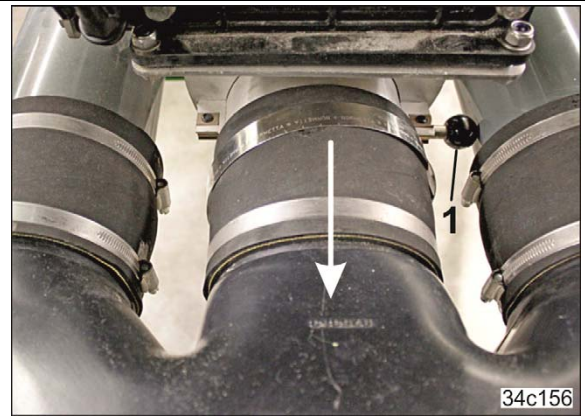


Fig. 100

The exchangeable nozzles (Fig. 101/1) of the injector sluice have the designation

Nozzle 62-125 (for higher conduit)
Nozzle 68-125.

The nozzles from the VarioTrail 3000 are used depending on the mounted module.

VarioTrail 3000

- with EDX-VT 6000-C: Nozzle 62-125
- with XTill-VT 6000-C: Nozzle 62-125
- with CITAN-VT 6000-C: Nozzle 68-125.

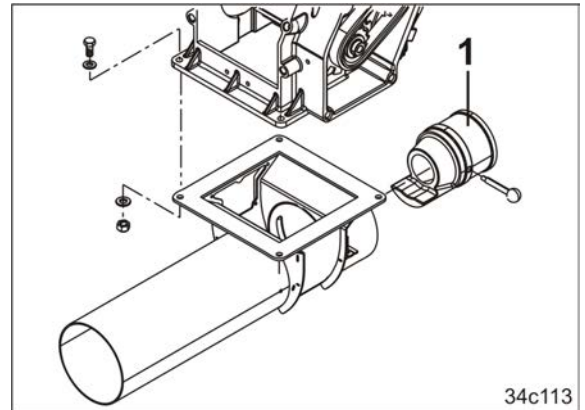


Fig. 101

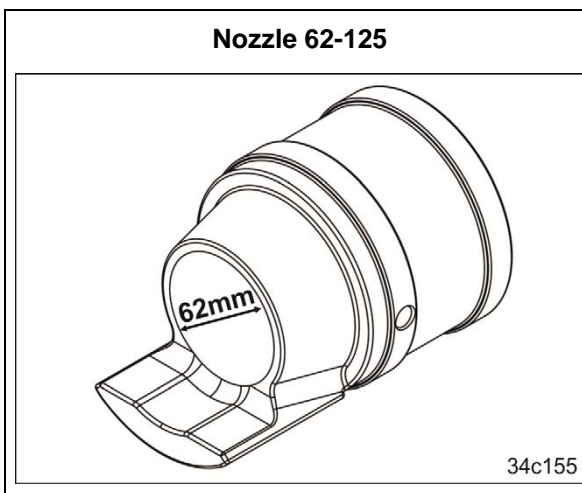


Fig. 102

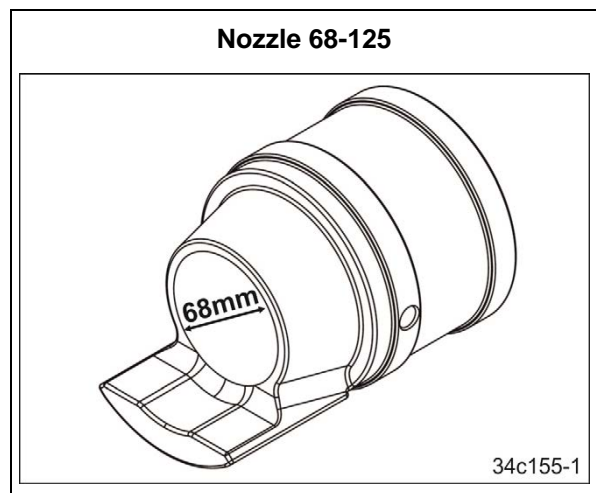


Fig. 103

Layout and function

The on-board computer measures the working speed from the impulses of the radar (Fig. 104/1).



Fig. 104

When there is a change from normal soil to heavy soil, the spread rate can be increased during operation by the press of a button on the AMATRON.

5.11.1 Adjusting the spread rate with a calibration test

Enter the desired spread rate on the on-board computer (see on-board computer operating manual).

The on-board computer uses this value and the adjusted implement working width to calculate the theoretical speed of the metering roller.

The calibration test is used to determine the accurate speed of the dosing roller.

The calibration test checks whether the spread rate set on the on-board computer and the actual spread rate are the same.

Always carry out a calibration test

- when changing the sort.
- if the same type of fertiliser is used, but with a different grain size and specific weight.
- if there are any differences between the spread rate determined by the AMATRON and the actual spread rate.

The seed for the calibration test drops into the calibration trough.

The calibration trough is suspended in a transport bracket and secured with a lynch pin (Fig. 105/1).

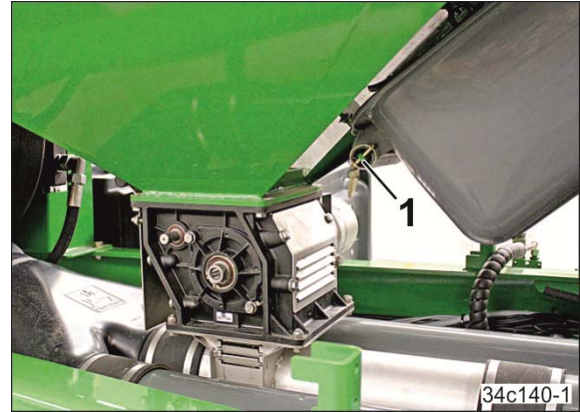


Fig. 105

Run the first calibration test and enter the weight of the collected seed quantity on the on-board computer.

Using this value, the on-board computer calculates the number of rotations of the electric motor that are required for the field work later on.

A second calibration test is essential. The required application quantity is usually reached during the second calibration test. Otherwise, repeat the calibration test until the required seed quantity is reached.

Always carry out a calibration test

- 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 hopper takes more/less time than expected to empty. In this case, the actual application rate does not match the application quantity determined in the calibration test.

5.11.2 Table – Fertiliser metering rollers

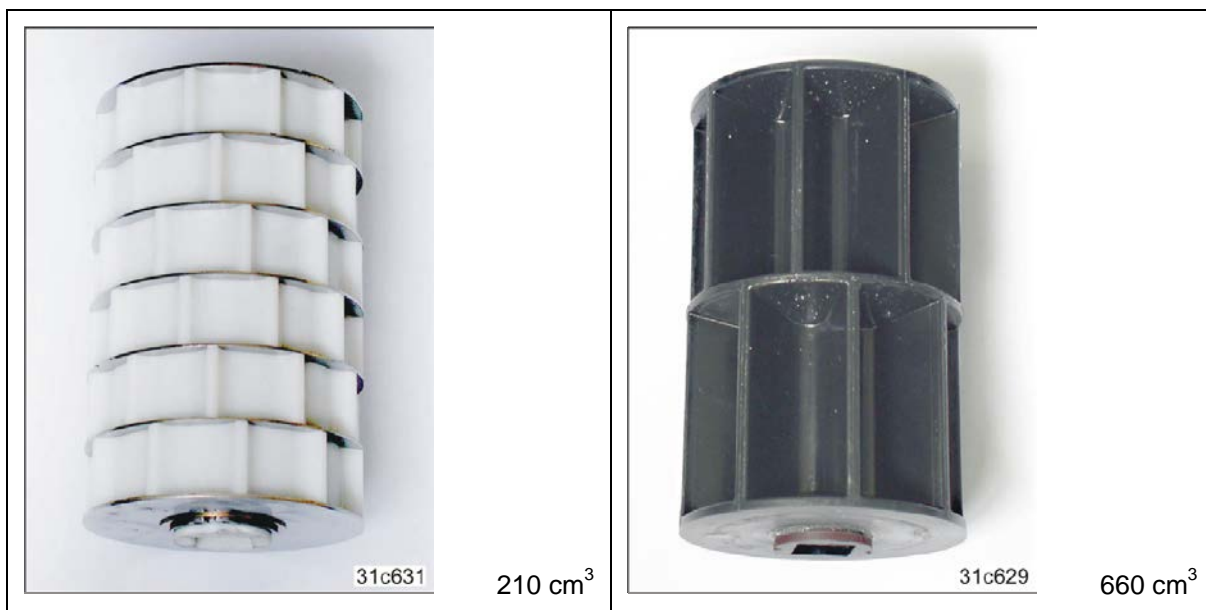


Fig. 106

5.12 Fertiliser distributor head

The fertiliser is distributed evenly amongst all fertiliser coulters in the distributor head (Fig. 107/1).



Fig. 107

5.13 Single disc type fertiliser coulters

The single disc type fertiliser coulters (Fig. 108/1) is suitable for spreading fertiliser on ploughed and mulched soil.

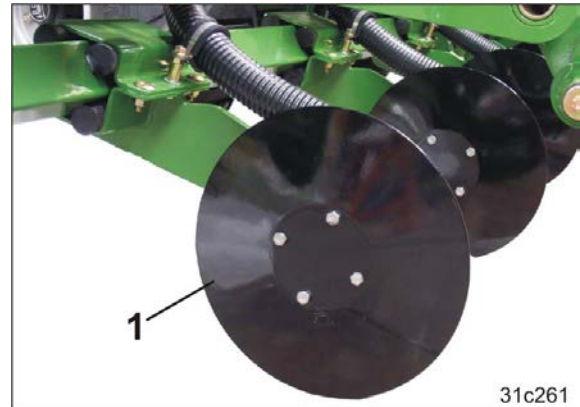


Fig. 108

The fertiliser placement depth is adjustable.
The maximum fertiliser placement depth is 15 cm.

Read off the pressure that is being applied to the central adjustment

- on the pressure gauge (Fig. 109/1)
- on the AMATRON display (with the option "setting motor").

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

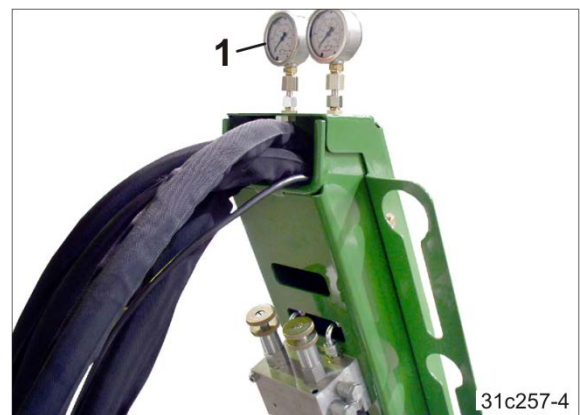


Fig. 109

The distance between the fertiliser and seed placement can be adjusted (specialist workshop).
5 cm is the distance set at the factory between fertiliser and seed placement.

The working depth is adjusted

- mechanically, by actuating the valve (Fig. 110/1) or



Fig. 110

Layout and function

- electronically, by actuating a setting motor (Fig. 111/1, optional), which is operated using the AMATRON in the tractor cab.



Fig. 111

Only very light soils, the single-disc fertiliser coulters can be guided by the seeding coulters down into the soil using an adjustable chain (optional, Fig. 112/1).

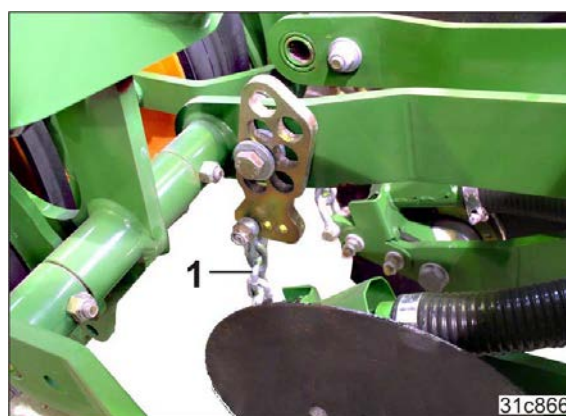


Fig. 112

5.14 Track markers (optional)

The hydraulically-actuated track markers (Fig. 113/1) dig into the ground alternately on the left and the right of the implement.

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

During operation, the inactive track marker rests closely on the implement.

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



Fig. 113

It is possible to set:

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



Fig. 114

To pass obstacles the active track marker can be folded and unfolded on the field.

If the track marker still encounters hard obstacles, the overload protection system of the hydraulic system responds and the hydraulic cylinder gives way to the obstacle and thus protects the track marker against damage.

After passing the obstacle the tractor driver unfolds the track marker again by actuating the control unit.

5.15 Tractor wheel mark eradicator (optional)

The wheel mark eradicators (Fig. 115) eliminate the tyre tracks caused by the tractors.

Stones deviate away from the wheel mark eradicator. A gas pressure shock absorber moves the wheel mark eradicator back into working position.

The wheel mark eradicators can be adjusted horizontally and vertically.



Fig. 115

The coulters of the tractor wheel mark eradicator can be adapted to the soil:

- Tine coulters (Fig. 116/1)
- Wing coulters (Fig. 116/2)



Fig. 116

5.16 Implement wheel mark eradicator (optional)

The wheel mark eradicators (Fig. 117/1) loosen the compacted tyre track and produce fine soil for covering the seed furrow.

The wheel mark eradicators can be adjusted horizontally and vertically.



Fig. 117

5.17 Lighting of the work tools (optional)

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

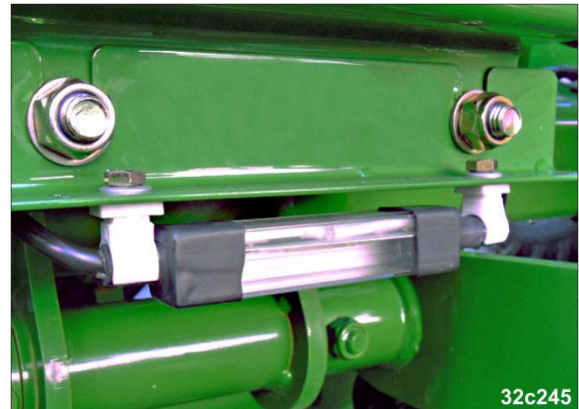


Fig. 118

The plug for the lighting is connected to the 12 Volt power socket in the tractor cab.

The switch (Fig. 119) for the lighting can be fastened to the implement or in the tractor cab.



Fig. 119

6 Commissioning

This section contains information

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



- Before operating the implement for the first time the operator must have read and understood the operating manual.
- Follow the instructions given in the section "Safety information for the operator" when
 - Coupling and uncoupling the implement
 - Implement transportation
 - Use of the implement
- Only couple and transport the implement to/with a tractor which is suitable for the task.
- The tractor and implement must meet the national road traffic regulations.
- The operator and the user shall be responsible for compliance with the statutory road traffic regulations.



WARNING

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

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

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

6.1 Checking the suitability of the tractor



WARNING

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

- Check the suitability of your tractor before you attach or hitch the implement to the tractor.
You may only connect the implement to tractors suitable for the purpose.
- Carry out a brake test to check whether the tractor achieves the required braking delay with the implement connected.

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

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

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

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

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

The requirements for the suitability of the tractor can also be found in the section "Necessary tractor equipment", page 58.

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



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

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



This notice applies only to Germany.

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

6.1.1.1 Data required for the calculation (hitched implement)



The calculations are based on the data for the implement with rear module.

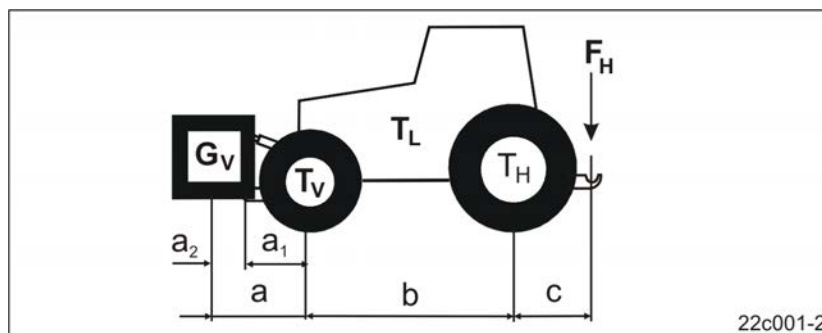


Fig. 120

T_L	[kg]	Tractor empty weight	See tractor operating manual or vehicle documentation
T_V	[kg]	Front axle load of the empty tractor	
T_H	[kg]	Rear axle load of the empty tractor	
G_V	[kg]	Front weight (if available)	See technical data of the front weight, or weigh
F_H	[kg]	Maximum drawbar load	See section "Technical data", page 56
a	[m]	Distance between the centre of gravity of the front implement mounting or the front weight and the centre of the front axle (total $a_1 + a_2$)	See technical data of tractor and front implement mounting or front weight or measurement
a_1	[m]	Distance from the centre of the front axle to the centre of the lower link connection	See tractor operating manual or measurement
a_2	[m]	Distance between the centre of the lower link connection point and the centre of gravity of the front-mounted implement or front ballast (centre of gravity distance)	See technical data of front implement mounting or front weight or measurement
b	[m]	Tractor wheel base	See tractor operating manual or vehicle documents or measurement
c	[m]	Distance between the centre of the rear axle and the centre of the lower link connection	See tractor operating manual or vehicle documents or measurement

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

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

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

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

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

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

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

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

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

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

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

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

6.1.1.6 Tyre load capacity

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

6.1.1.7 Table

	Actual value according to calculation	Approved value according to tractor instruction manual	Double approved load capacity (two tyres)
Minimum ballast front/rear	<div style="border: 1px solid black; padding: 10px; text-align: center;">/ kg</div>	--	--
Total weight	<div style="border: 1px solid black; padding: 10px; text-align: center;">kg</div>	≤ <div style="border: 1px solid black; padding: 10px; text-align: center;">kg</div>	--
Front axle load	<div style="border: 1px solid black; padding: 10px; text-align: center;">kg</div>	≤ <div style="border: 1px solid black; padding: 10px; text-align: center;">kg</div>	≤ <div style="border: 1px solid black; padding: 10px; text-align: center;">kg</div>
Rear axle load	<div style="border: 1px solid black; padding: 10px; text-align: center;">kg</div>	≤ <div style="border: 1px solid black; padding: 10px; text-align: center;">kg</div>	≤ <div style="border: 1px solid black; padding: 10px; text-align: center;">kg</div>



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


WARNING

Risk of contusions, cutting, catching, drawing in and knocks through insufficient stability and insufficient tractor steering and brake power.

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

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



You must use a front weight, which is equal to at least the required minimum front ballast ($G_{V \min}$).

6.1.2 Requirements for tractor operation with attached implements



WARNING

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

Ensure:

- that the connection device on the tractor has a sufficient permissible noseweight for the noseweight actually in question.
- that the axle loads and weights of the tractor altered by the drawbar load are within the approved limits. If necessary, weigh them.
- that the static actual rear axle load of the tractor does not exceed the permissible rear axle load.
- that the permissible total weight of the tractor is complied with.
- that the approved load capacities of the tractor tyres are not exceeded.

6.1.3 Implements without their own brake system

The implement may not be delivered with a service brake system. Operation of the implement without a service brake system is not permitted in Germany, in all of the EU countries and in several other countries.



WARNING

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

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

If the implement does not possess its own brake system:

- Then the actual tractor weight must be greater than or equal to (\geq) the actual weight of the connected implement.
Some countries have regulations that deviate. In Russia, for example, the weight of the tractor must be twice as high as that of the implement connected.
- the maximum permissible forward speed is 25 km/h. In Russia, for example, the maximum permissible forward speed is 10 km/h.

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



WARNING

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

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

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

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

- while the implement is being driven.
- when the tractor's engine is running and the tractor's PTO shaft/hydraulic system is connected.
- if the ignition key is inserted in the tractor when the tractor's PTO shaft/hydraulic system is connected and the tractor engine could be started unintentionally.
- if the tractor and implement have not each been prevented from unintentionally rolling away by applying their parking brakes and/or securing them with wheel chocks.
- if moving parts are not blocked against unintentional movement.

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 falling:

3. Shut down the tractor engine.
4. Remove the ignition key.
5. Apply the tractor parking brake.
6. Secure the implement with wheel chocks against unintentionally rolling away.

6.3 Installation instructions for hydraulic blower fan connection to tractor hydraulics

The back pressure of 10 bar must not be exceeded. The installation regulations therefore have to be complied with when connecting the hydraulic fan connection.

- Connect the hydraulic coupling of the pressure hose (Fig. 121/5) to a single-acting or double-acting tractor control unit with priority.
- Connect the large hydraulic coupling of the return line (Fig. 121/6) only to an unpressurized tractor connection with direct access to the hydraulic fluid tank (Fig. 121/4).
In order that the banking-up pressure of 10 bar is not exceeded, do not connect the return line to a tractor control unit.
- For retro-installation of the tractor return line, use only piping with ND 16, e.g. 20 id. x 2.0 mm with a short return path to the hydraulic fluid tank.

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

Fig. 121/...

- | | |
|-----|---|
| (A) | On the implement face |
| (B) | On the tractor face |
| (1) | Hydraulic fan motor
$N_{max.} = 4000 \text{ rpm.}$ |
| (2) | Filter |
| (3) | Single-acting or double-acting control unit
<u>with priority</u> |
| (4) | Hydraulic fluid tank |
| (5) | Feed:
pressure line with priority (approx. 38 l/min)
(marking: 1, red) |
| (6) | Return:
unpressurised line with "large" push-fit
coupling (marking: 2, red) |

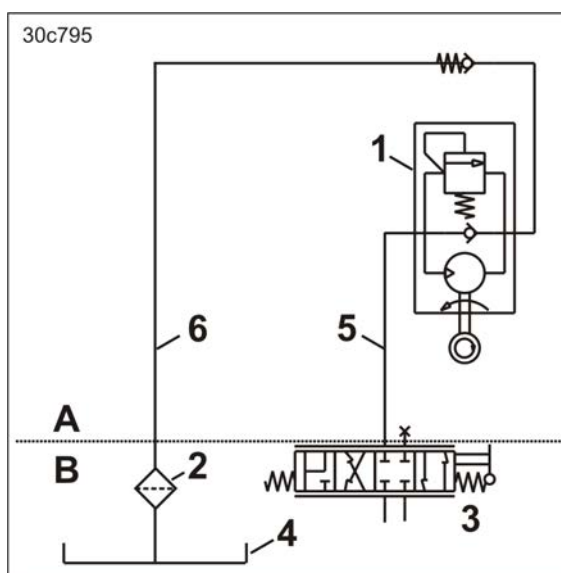


Fig. 121



The hydraulic fluid must not overheat.

High oil flow rates in conjunction with small oil tanks encourage rapid heating-up of the hydraulic fluid. The capacity of the tractor's oil tank (Fig. 121/4) should be at least twice the oil flow rate. If the hydraulic fluid heats up excessively, the installation of an oil cooler is required at a specialist workshop.

7 Coupling and uncoupling the trailer and rear module



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



CAUTION

Switch off the on board computer

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

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



WARNING

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

Direct persons out of the danger area between the implements.

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



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.

The same applies for the danger zone between the trailer and the rear module.



WARNING

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

Actuate the setting controls for the three-point hydraulic system of the tractor and the trailer

- from the workplace provided.
- never if you are inside of the danger area between the tractor and the implement or between the trailer and the rear module.



DANGER

Risk of contusions when coupling and uncoupling the implement!

With the implement extended, lower the rear frame or coultter completely before uncoupling the implement from the tractor. When the coultters are raised, the tensioned cross-member may move rapidly upwards when the tractor's lower link is released.



CAUTION

Only establish the implement connections once the tractor and implement or the trailer and rear module have been coupled, the tractor engine is switched off, the tractor parking brake is applied and the ignition key is removed!



WARNING

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

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

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

7.1 Overview – Supply lines

Interface	Assembly:	Function		Notes
Tractor/trailer	Dual-circuit pneumatic service brake system	Brake line	Yellow	section 7.2, page 106
		Supply line	Red	
	Hydraulic service brake system	Not permitted in Germany and some other EU countries		section 7.3, page 112
	Plug (7-pin)	Road traffic lighting system (optional)		
	PTO shaft driven hydraulic pump (optional)	Blower fan hydraulic motor drive for fertiliser transport and singling		section 7.8, page 134

Interface	Assembly:	Function	Notes
Tractor/trailer and Trailer/rear module	Implement connector	On-board computer data cable	

Interface	Implement side Identification of the hydraulic lines		Control unit			implement functions
Tractor/trailer	Blue	1	Feed	single acting	No. 3	Filling auger (optional) <ul style="list-style-type: none">• Folding• Auger motion
Tractor/trailer and Trailer/rear module	Yellow	1	Feed	double acting	No. 1	<ul style="list-style-type: none">• Track marker actuation• Raise/lower rear frame
		2	Return			
	Green	1	Feed	double acting	No. 2	Folding the implement boom in/out
		2	Return			
	Red	1	Feed line: Pressure hose with priority (approx. 38 l/min.)	Single- or double-acting	No. 4	<ul style="list-style-type: none">• Blower fan hydraulic motor (Fertiliser transport and singling)• Coulter pressure (Seeding and fertiliser coulter)
		2	Return flow: pressureless line (see section 6.3, page 102)			
	Red	P	Load-sensing system (Connection not required)			Without function with EDX-VT 6000-C rear module
		T				
		LS				

7.2 Dual-circuit pneumatic service brake system

The dual-circuit pneumatic service brake system has:

- one supply line with coupling head (red)
- one brake line with coupling head (yellow)



Fig. 122



WARNING

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

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

The brakes are released immediately with a full compressed air tank when the supply line (red) is connected to the tractor. For this reason, the implement must be connected to the lower links of the tractor and the parking brake of the implement and tractor must be applied before the supply line (red) is connected. The wheel chocks may not be removed until the implement is connected to the lower links of the tractor and the parking brake is applied.

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

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

The air slowly but continuously escapes from the compressed air tank. This causes the braking force to fall, leading to complete brake failure unless the compressed air tank is refilled. This is why the implement may only be parked with the implement's parking brake applied and using wheel chocks.

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

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

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

**DANGER**

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

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



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

7.2.1 Coupling the brake and supply lines**WARNING**

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

- When coupling the brake and supply line, ensure that:
 - the sealing rings of the hose couplings are clean.
 - the sealing rings of the hose couplings form a proper seal.
- Always replace damaged seals immediately.
- Only move off with the implement connected when the pressure gauge on the tractor shows 5.0 bar!

**WARNING**

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

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

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

1. Couple the implement to the tractor.
2. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.

Coupling and uncoupling the trailer and rear module

3. Open the covers (Fig. 123/1) of the coupling heads on the tractor.
4. Check the sealing rings of the hose couplings for damage and cleanliness.
5. Clean dirty seals, replace damaged seals.
6. Fasten the hose coupling of the brake line (yellow) in the coupling marked yellow (Fig. 123/2) on the tractor, in accordance with regulations.
7. Fasten the hose coupling of the supply line (red) in the coupling marked red on the tractor, in accordance with regulations.
8. Release the parking brake.

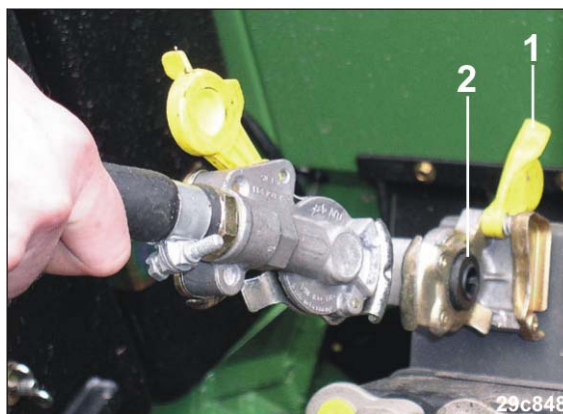


Fig. 123

7.2.2 Uncoupling the supply and brake line



DANGER

Secure the implement with wheel chocks before uncoupling the implement from the tractor.



WARNING

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

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

When the supply line (red) is uncoupled from the tractor, the service brake of the implement moves to braking position if the pressure tank is full. If the pressure tank is empty, the implement is unbraked when the supply line (red) is disconnected.

Apply the parking brake of the implement before uncoupling the implement from the tractor and do not release it until after the implement has been coupled to the tractor.

1. Secure the implement against unintentional rolling by
 - o applying the tractor parking brake
 - o using the wheel chocks
2. Release the hose coupling (Fig. 124) of the supply line (red).
3. Release the hose coupling of the brake line (yellow).
4. Fasten the hose couplings in the idle coupling points.
5. Close the tractor hose couplings caps.



Fig. 124

7.2.3 Control element of the dual-circuit pneumatic service braking system

If the implement is uncoupled from the tractor, the implement is braked:

- via the parking brake.
- via the service brake (emergency brake), if the compressed air tank is filled.

The service brake can be released, for example for manoeuvring in a workshop (see Fig. 125).

Releasing the service brake:

Press the button (1)

Engaging the service brake:

Pull out the button (1).



Actuation is possible only if the compressed air tank is filled. If the compressed air tank is empty, the implement is unbraked.



Fig. 125



DANGER

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

7.2.4 Position of the brake load adjustment lever of the dual-circuit pneumatic service braking system

The dual-circuit pneumatic service braking system is equipped with a brake load adjustment lever (Fig. 126/1). The brake pressure is set according to the weight of the implement using the brake load adjustment lever.

The brake load adjustment lever can be adjusted in three positions.

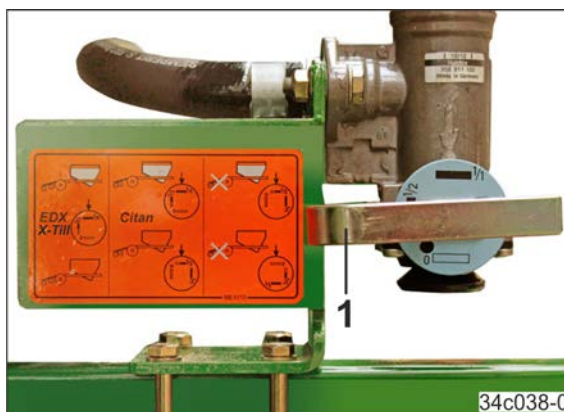


Fig. 126

The pictogram (Fig. 127) shows the position of the brake load adjustment lever depending on

- the implement equipment
 - VarioTrail with EDX rear module
 - VarioTrail with X-Till rear module
 - VarioTrail with Citan rear module
 - VarioTrail without rear module
- the fill level of the trailer hopper
 - Trailer hopper full
 - Trailer hopper empty.

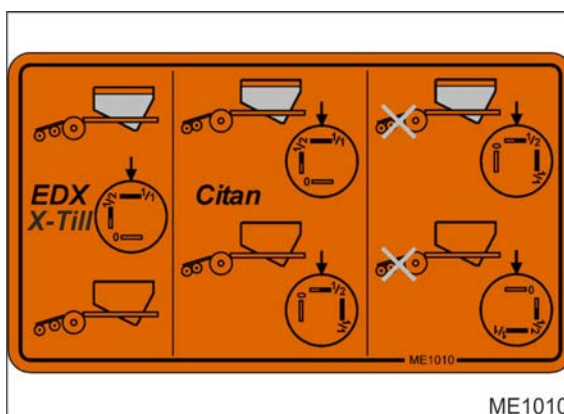


Fig. 127

Examples

Position of the brake load adjustment lever (Fig. 128/1):

VarioTrail

- with empty hopper and EDX rear module.

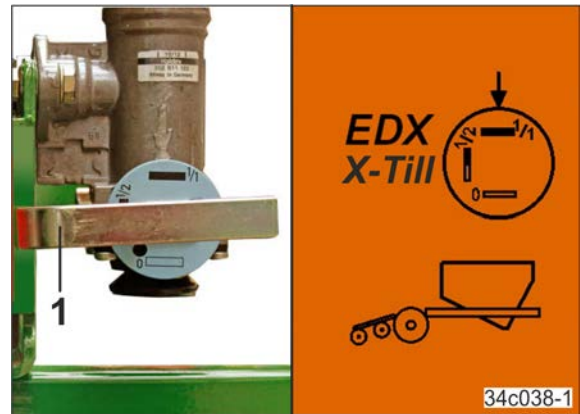


Fig. 128

Position of the brake load adjustment lever (Fig. 129/1):

VarioTrail

- with full hopper and Citan rear module.

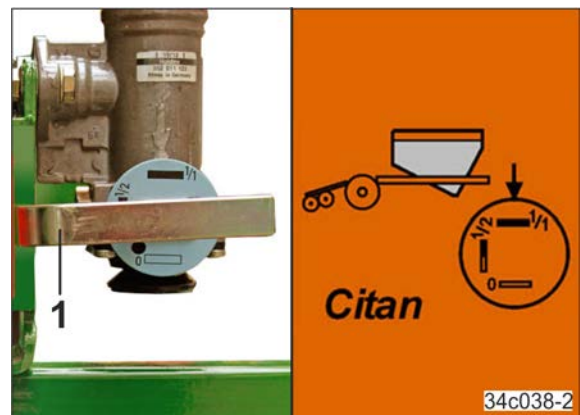


Fig. 129

Position of the brake load adjustment lever (Fig. 130/1):

VarioTrail with empty hopper and without rear module.

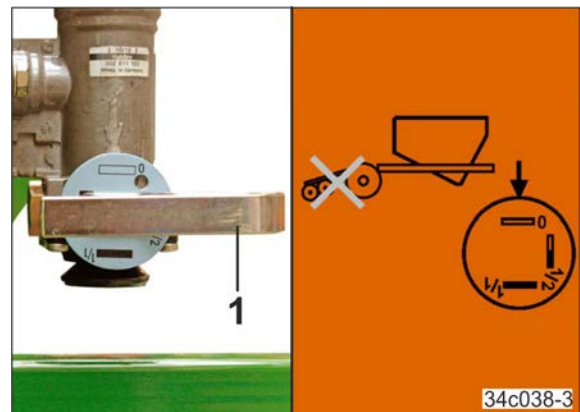


Fig. 130

7.3 Hydraulic service brake system

After the implement has been coupled up and the hydraulic service brake system has been connected, actuate the tractor brake pedal for at least 10 seconds with the engine running. This fills the hydro accumulator. The implement's service brake system responds when the hydro reservoir is full when the tractor brake pedal or the tractor parking brake is actuated.

When uncoupling the implement from the tractor, first apply the implement's parking brake, then release the hydraulic socket of the hydraulic service brake. Otherwise the implement will be unbraked once the hydraulic socket of the tractor is released.

The crank is used to activate the parking brake.

Engaging the parking brake:

turn the crank to the right (R).

Releasing the parking brake:

turn the crank to the left (L)



34c121

Fig. 131



CAUTION

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



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

7.3.1 Coupling the hydraulic service brake system

1. Apply the implement's parking brake.
2. Couple the implement to the tractor.
3. Remove the protective cap (Fig. 132/1).



Fig. 132

4. Clean the hydraulic socket (Fig. 133) and the tractor-side hydraulic connector.
5. Couple the hydraulic socket to the hydraulic connector.



Fig. 133



Only couple clean hydraulic sockets and connectors.



DANGER

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

Coupling and uncoupling the trailer and rear module

6. Release the implement parking brake.
7. Connect the break-away valve to the tractor via the cable (Fig. 134/1).

If the implement is separated from the tractor due to an accident, the implement will be braked.

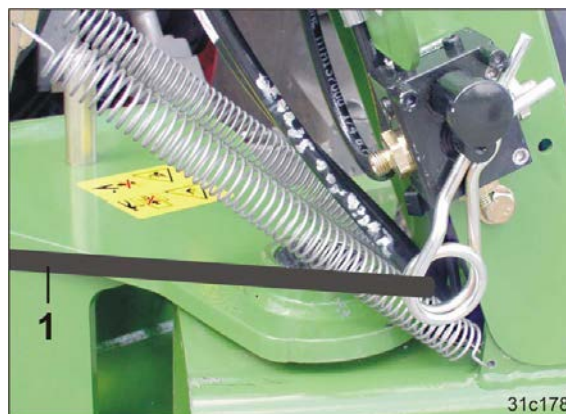


Fig. 134

8. Fill the hydro reservoir (Fig. 135) before moving off.
 - 8.1 Press the brake pedal of the tractor for at least 10 seconds.

This fills the hydro accumulator.



To ensure the full effectiveness of the service brake system, fill the hydro reservoir before moving off.



Fig. 135

7.3.2 Uncoupling the hydraulic service brake system

1. Empty the hydro accumulator (Fig. 136).



Fig. 136

2. Actuate the valve (Fig. 137/1).
This drains the hydro reservoir.

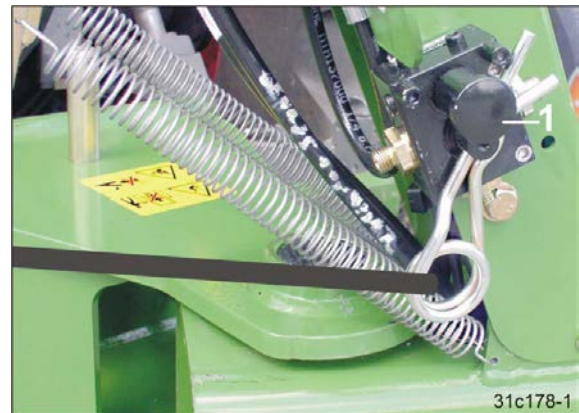


Fig. 137

3. Apply the implement's parking brake.
4. Uncouple the hydraulic socket (Fig. 138).



The hydraulic socket cannot be coupled to the tractor again unless the hydro accumulator is empty.

5. Protect the hydraulic socket and the hydraulic connector against soiling using protective caps (Fig. 138/1).
6. Place the hydraulic lines in the hose cabinet.



Fig. 138

7.4 Hydraulic hose lines



WARNING

Danger of infection from escaping hydraulic fluid at high pressure!

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

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

Identification of the hydraulic lines on the implement side

On the implement side, each hydraulic hose line has a handle that should allow easier decoupling.

Each handle is marked by colours in order to avoid confusion. The colour markings on the handles are provided with a code number or a code letter.

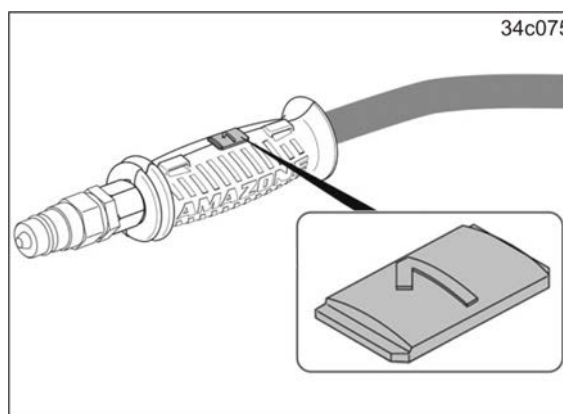


Fig. 139

7.4.1 Coupling the hydraulic hose lines



WARNING

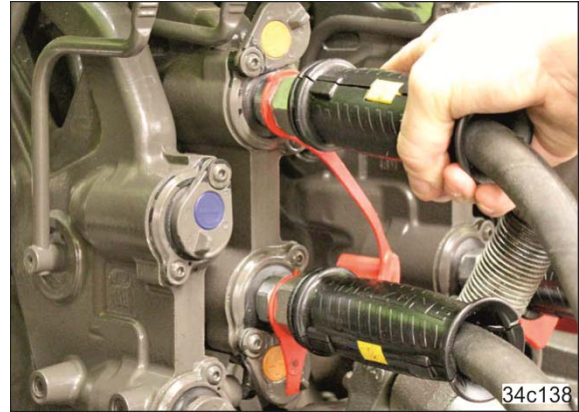
Risk of being crushed, cut, caught, drawn in or struck due to faulty hydraulic functions when the hydraulic hose lines are connected incorrectly!

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 the tractor.
Do not mix any mineral oils with biological oils.
- Observe the maximum approved hydraulic fluid pressure of 210 bar.
- Only couple clean hydraulic connectors. Minor oil contamination with particles can cause a failure of the hydraulic system.
- Push the hydraulic push-fit connector(s) into the hydraulic sockets until the hydraulic connector(s) perceivably lock(s).
- Check the coupling points of the hydraulic hose lines for a correct, tight seat.

1. Swivel the actuation lever on the control valve on the tractor to float position (neutral position).
2. Clean the hydraulic connectors of the hydraulic hose lines before you couple the hydraulic hose lines to the tractor.
3. Connect the hydraulic hose line(s) to the tractor control unit(s).

**Fig. 140**

7.4.2 Uncoupling the hydraulic hose lines

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

**Fig. 141**

7.5 Trailer and tractor



DANGER

If the tractor has been separated from the implement, always

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



Implements with rear module can be folded in or out, or be uncoupled.

7.5.1 Coupling the trailer to the tractor



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, it is vital to ensure that the tractor mount categories of the tractor and the implement are the same.



DANGER

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

When turning the combination, the tractor tyre must not collide with the implement frame.

The implement is equipped with a telescopic drawbar pipe (Fig. 142/1). Three distances can be adjusted between the lower link and the implement frame by moving the drawbar pipe (see section "Drawbar pipe length adjustment", page 196).



Fig. 142

Coupling the implement:

1. Apply the implement's parking brake.
2. Secure the implement with wheel chocks (Fig. 143/1).
3. Attach a ball sleeve (Fig. 144/1) with collecting tray to each tensioned crosspiece.
 - o Tensioned crosspiece category (see the section "Technical Data").
 - o Design of the ball sleeve with collecting tray (see the tractor operating manual).
4. Secure each ball sleeve with a lynch pin.



Fig. 143



Fig. 144



CAUTION

Danger of getting crushed in the area of the moving draw rail.

Coupling and uncoupling the trailer and rear module

5. Open the tractor lower link securing device, i.e. it must be ready for coupling.
6. Align the tractor lower link hooks so that they are flush with the pivot points of the implement.
7. Instruct persons to get out of the danger area between the tractor and the implement.
8. Drive the tractor in reverse up to the implement pick up the ball sleeves of the implement with the lower link hooks of the tractor.
- The lower link hooks lock automatically.
9. Raise the tractor's lower link until the jack comes free of the ground.
10. Secure the tractor against unintentional start-up and unintentional rolling.
11. Check whether the securing device of the tractor's lower link locking system is closed and secured (see tractor's operating manual).
12. Connect all supply lines to the tractor
 - o Overview: see section "Overview – Supply lines", page 105
 - o Dual-circuit pneumatic service braking system: see section "Coupling the brake and supply lines", page 107
 - o Hydraulic service brake system: see section "Coupling the hydraulic service brake system", page 113
 - o Coupling the hydraulic pump (optional): see section "Connecting the hydraulic pump to the tractor PTO shaft", page 134
 - o Tractor control units: see section "Coupling the hydraulic hose lines", page 116.

During operation, tractor control unit 1 is actuated more frequently than all other control units. Assign the connections of control unit 1 to an easily reachable control unit in the tractor cabin.

13. Fold up the jack (Fig. 145) and secure. (see section "Jack – Support and transport position", page 124).



Fig. 145

14. Push the wheel chocks into the holders and secure.

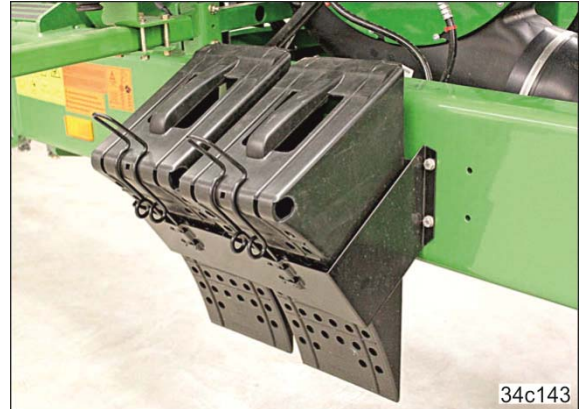


Fig. 146

15. Insert the plug (Fig. 147/1) for the lighting into the socket in the tractor cabin.

The switch (Fig. 147/2) is for switching the lighting on and off (Fig. 147/3).

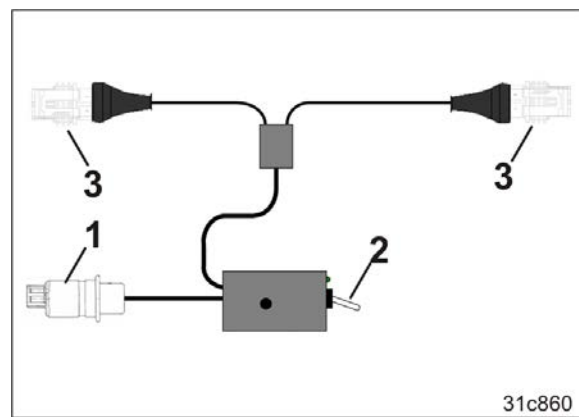


Fig. 147

16. Release the parking brake of the implement.
17. Before moving off:
- o Check the route of the supply lines.
 - o Check the function of the braking and lighting system.
 - o Perform a brake test.

7.5.2 Uncoupling the trailer from the tractor

1. Align the combination in a straight line on a level surface with solid ground.
2. Lower the coultter frame completely when the implement booms are unfolded.



WARNING

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

When the implement booms are unfolded, completely lower the coultter frame before uncoupling the implement. The implement is tail-heavy with the coultter frame half raised. The draw rail may move rapidly upwards when the tractor's lower link is released.

3. Set the implement down on the jack (see section "Jack – Support and transport position", page 124).



WARNING

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

The stand must not sink into the ground. If the stand does sink into the ground, it will be impossible to recouple the implement.



Fig. 148

4. Secure the tractor and implement against unintentional start-up and rolling (see section 6.2, page 101).
5. Apply the implement's parking brake (see section "Service brake system", page 64).
6. Secure the implement against rolling away
 - o with 2 wheel chocks (Fig. 149/1)
 - o with 4 wheel chocks if the implement does not have its own service brake system.



DANGER

Secure the implement with wheel chocks before uncoupling.



Fig. 149

7. Empty the fertiliser hopper (see section "Emptying the fertiliser hopper and/or the metering unit", page 183). Uncouple the implement from the tractor only when the fertiliser hopper is empty.
8. Empty the seed hopper (see section "Emptying the seed hopper and/or seed singling unit", page 180). Uncouple the implement from the tractor only when the seed hopper is empty.
9. Switch off the on-board computer (see on-board computer operating manual).
10. Disconnect all supply lines:
 - o Uncoupling the hydraulic hose lines:
see section "Uncoupling the hydraulic hose lines", page 117
 - o Uncoupling the dual-circuit pneumatic service braking system:
see section "Uncoupling the supply and brake line", page 108
 - o Uncoupling the hydraulic service brake system:
see section "Coupling the hydraulic service brake system", page 113
 - o Uncoupling the hydraulic pump (optional)
see section "Uncoupling the hydraulic pump", page 135.



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

11. Hang the supply lines in the hose cabinet (Fig. 150).

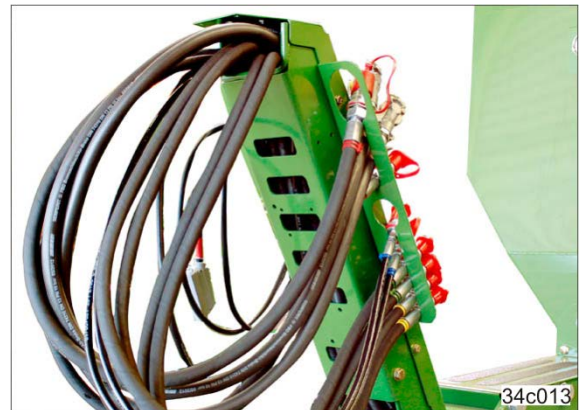


Fig. 150

12. Open the securing device of the tractor's lower link (see tractor operating manual).
13. Uncouple the tractor's lower link.
14. Pull the tractor forwards.



DANGER

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



Fig. 151

7.6 Jack – Support and transport position

Support position

15. Fold down the stand, fix it with the pin (Fig. 152/1) and secure with the lynch pin.



Fig. 152

Transport position

16. Fold up the stand, locate it with the pin (Fig. 153/1) and secure with the lynch pin.



Fig. 153

7.7 Coupling and uncoupling the rear module



The injector sluice has a replaceable nozzle, which is used depending on the rear module (see section 5.11, page 84).

Check the injector sluice nozzle before coupling the rear module to the trailer and replace if necessary.

7.7.1 Replacing the injector sluice nozzle

1. Couple the trailer to the tractor (see section "Trailer and tractor", page 118).
2. Secure the tractor and implement against unintentional start-up and rolling (see section 6.2, page 101).
3. Release the quick coupling of the jubilee clip (Fig. 154/1).
4. Unscrew the four bolts (Fig. 154/2) that fasten the injector sluice to the metering unit.
5. Push the injector sluice (Fig. 155/1) to the side.

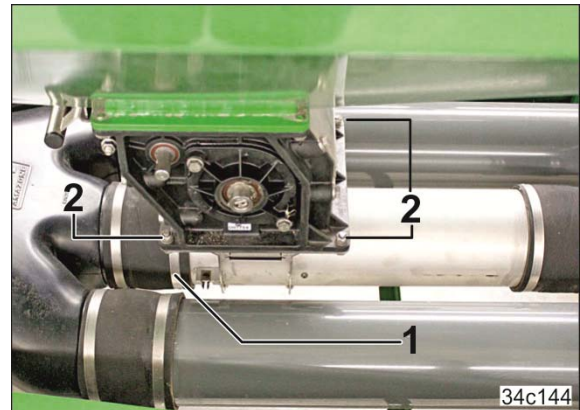


Fig. 154

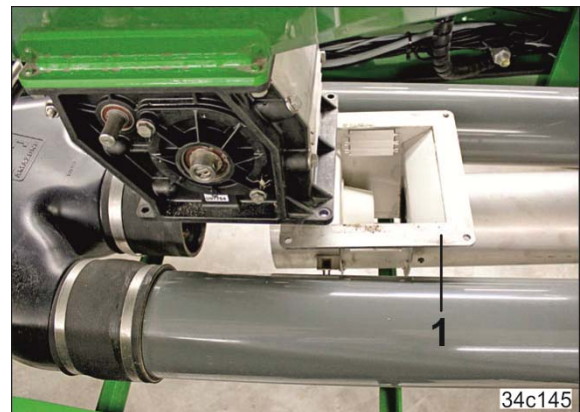


Fig. 155

Coupling and uncoupling the trailer and rear module

6. Screw off the lever (Fig. 156/1).

A glance from the bottom shows the mounted lever. The lever is screwed hand-tight together with the injector sluice nozzle (Fig. 156/2).

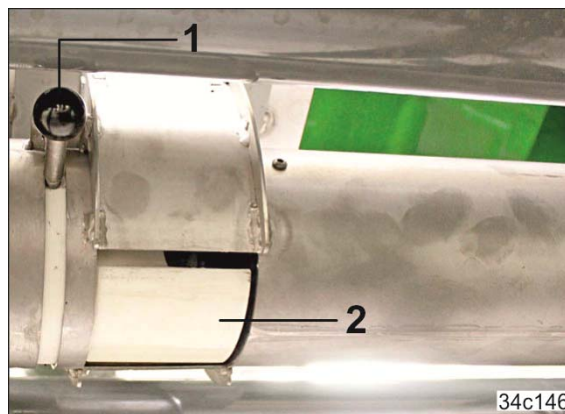


Fig. 156

7. Pull the nozzles (Fig. 157/1) out of the injector sluice and replace. The nozzle with the screwed on lever (Fig. 157/2) is shown.



Fig. 157

8. Installation takes place in the reverse sequence.

In doing so, note that the earthing plate (Fig. 158/1) is screwed together with the injector sluice (Fig. 158/2) on the metering unit.



Fig. 158

7.7.2 Coupling the rear module to an AMAZONE-VarioTrail 3000

**DANGER**

Only couple the rear module to an AMAZONE-VarioTrail 3000.

It is forbidden to couple the rear module to a different carrier vehicle.



Fig. 159

1. Lower the tractor lower links (Fig. 159/1).
The traffic safety equipment with the rear lighting (Fig. 159/2) swivels into a horizontal position in the process.



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 implements properly.
- Check the upper and lower link pins for visible defects whenever the implement is coupled. Replace the upper and lower link pins if there are clear signs of wear.
- Secure the upper link pin and the lower link pin against unintentional detachment using lynch pins.

2. Open the locking device for the trailer lower link (Fig. 160/1), i.e. it must be ready for coupling.
3. Drive the trailer towards the rear module, leaving a clearance of approx. 25 cm.
4. Check whether the coupling points of both implements are aligned.
5. Instruct persons to get out of the danger area between the VarioTrail and the rear module.
6. Drive the trailer in reverse up to the rear module and pick up the ball sleeves of the rear module with the lower link hooks of the trailer.
The lower link hooks lock automatically.
7. Position the top link and secure with a lynch pin (Fig. 161/2).
Actuating the lower link makes it easier to position the top link.



Fig. 160

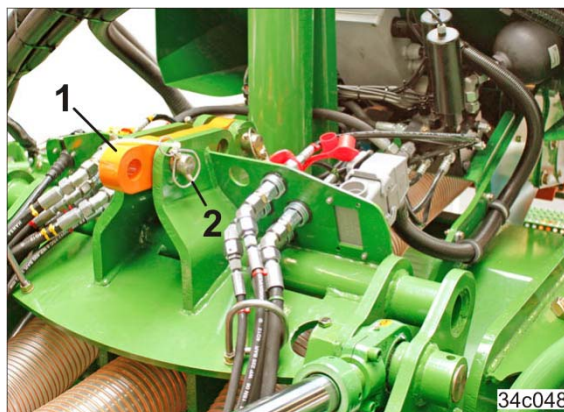


Fig. 161

8. Secure the tractor against unintentional start-up and unintentional rolling.
9. Check whether the securing device of the trailer lower link locking system is closed and secured.

10. Connect the delivery lines.
11. Connect all hydraulic supply lines to the trailer (see section "Overview – Supply lines", page 105).

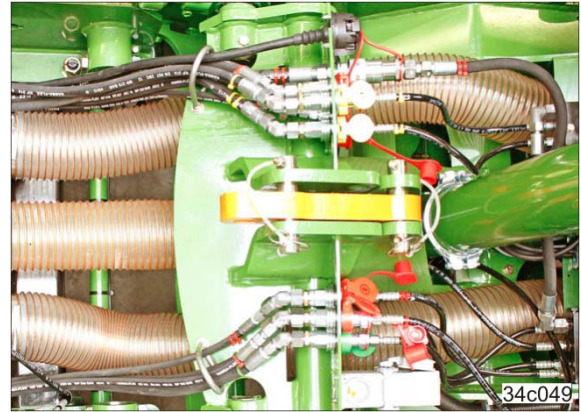


Fig. 162

12. Couple the implement plug and secure the connection.



Fig. 163

13. Insert the plug (Fig. 147/1) for the coultter frame lighting (optional).

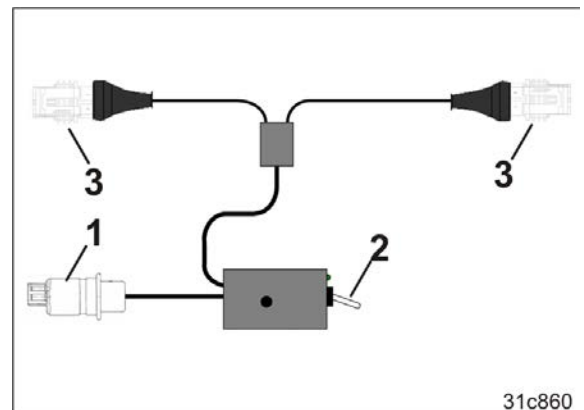


Fig. 164

Coupling and uncoupling the trailer and rear module

14. Push up the jacks (Fig. 165/1) and secure.

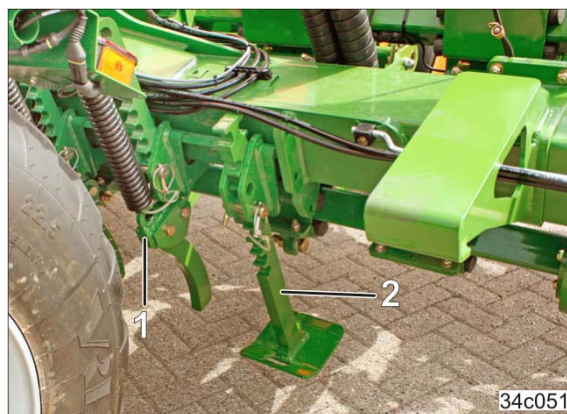


Fig. 165

15. Before moving off:

- o Check the route of the supply lines
- o Check the function of the braking and lighting system.
- o Perform a brake test.

7.7.3 Uncoupling the rear module

**WARNING**

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

Park the combination on a level surface with solid ground.

1. Switch off the blower fan (see section "Adjusting blower fan speed", page 153).
2. Align the combination in a straight line on a level surface with solid ground.
3. Unfold the implement booms.
4. Position the wheel mark eradicator (optional, Fig. 166/1) right at the top and secure (linch pin).
5. Completely lower the rear module.

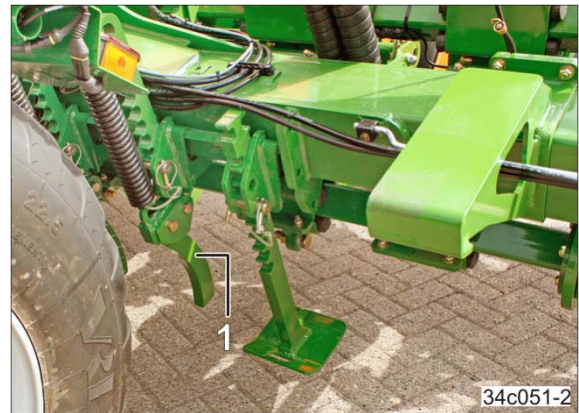


Fig. 166

6. Secure the tractor and implement against unintentional start-up and rolling (see section 6.2, page 101).
7. Empty the seed hopper (see section "Emptying the seed hopper and/or seed singling unit", page 180). Uncouple the rear module from the trailer only when the seed hopper is empty.
8. Switch off the on-board computer (see on-board computer operating manual).

Coupling and uncoupling the trailer and rear module

9. Uncouple all hydraulic hose lines (see section "Uncoupling the hydraulic hose lines", page 117)
10. Disconnect the delivery lines (Fig. 167/1).

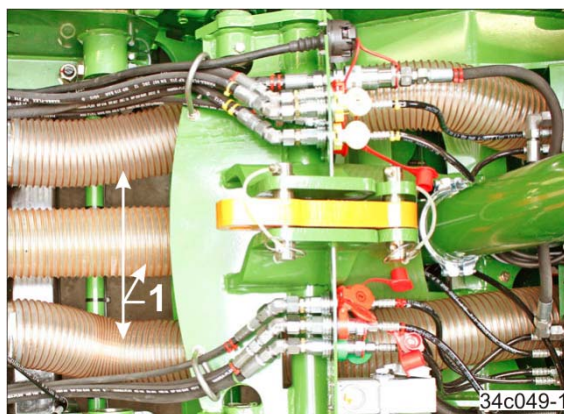


Fig. 167

11. Disconnect the implement plug.



Fig. 168

12. Release the top link (Fig. 169/1).



Fig. 169

13. Raise the lower link and position the jack (Fig. 170/1) in the lowest position and secure (linch pin).



Fig. 170

14. Set the rear module down on the jacks.
15. Open the locking device for the trailer lower link.
16. Direct persons out of the danger area between the implements.
17. Lower the trailer lower links and pull the tractor forward.



DANGER

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

18. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
19. Hang the supply lines in the hose cabinet.
20. Seal delivery lines that are not required with the supplied caps.



Fig. 171



Fig. 172

7.8 PTO shaft driven hydraulic pump



DANGER

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

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



WARNING

**Hot components can cause burns.
Wear gloves.**

7.8.1 Connecting the hydraulic pump to the tractor PTO shaft

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

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

1. Couple the implement to the tractor.
2. Set the implement down on the jack (see section 7.6, page 124).
3. Secure the tractor and implement against unintentional start-up and rolling (see section 6.2, page 101).
4. Wait until the tractor PTO shaft stops moving.
5. Clean and grease the tractor's PTO shaft.



Fig. 173

6. Connect the hydraulic pump (Fig. 174/1) to the tractor's PTO shaft.
The hydraulic pump is equipped with a QC fastener. Make sure that the QC fastener has engaged correctly.
7. Set the adjustment segments (Fig. 174/2) so that the buffers rest against them.



Fig. 174

7.8.2 Uncoupling the hydraulic pump

1. Align the implement in a straight line on a level surface with solid ground.
2. Set the implement down on the jack (see section 7.6, page 124).
3. Secure the tractor and implement against unintentional start-up and rolling (see section 6.2, page 101).
4. Wait until the tractor PTO shaft stops moving.
5. Remove the hydraulic pump (Fig. 176/1) from the tractor's PTO shaft and insert it in the mount.



Fig. 175



Fig. 176

8 Settings



WARNING

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

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

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



WARNING

Before working on the implement (unless otherwise specified)

- Couple the implement to the tractor.
- Unfold the implement booms.
- Switch off the tractor's PTO shaft
- Apply the tractor's parking brake.
- Switch off the tractor's engine.
- Remove the ignition key.



CAUTION

Switch off the on board computer

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

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

8.1 Seed dosing and application



CAUTION

Switch off the on board computer

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

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

8.1.1 Adjusting the seeding rate

Set the following in the AMATRON+ one time:

- the implement type
- the number of seeding units
- the implement equipment
- the row spacing
- the job specification
 - o grain quantity
 - o fertiliser calibration test.

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



Fig. 177

8.1.2 Setting the seed shutter

1. Adjust the seed shutter using the lever (Fig. 178/1). Take the preliminary setting value from Table (Fig. 71).
2. Secure the lever position with the knurled screw (Fig. 178/2).

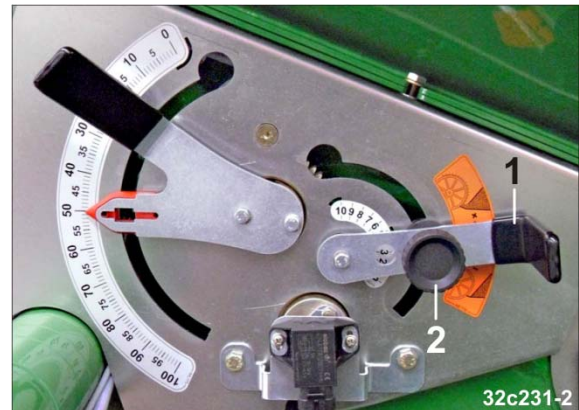


Fig. 178



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

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

8.1.3 Adjusting the air guide

1. Set the air guide with the lever (Fig. 179/1) (see setting instructions, section 5.6.4, page 73).
2. Hold the sprung lever when loosening the knurled screw (Fig. 179/2).
3. Secure the lever position with the knurled screw.

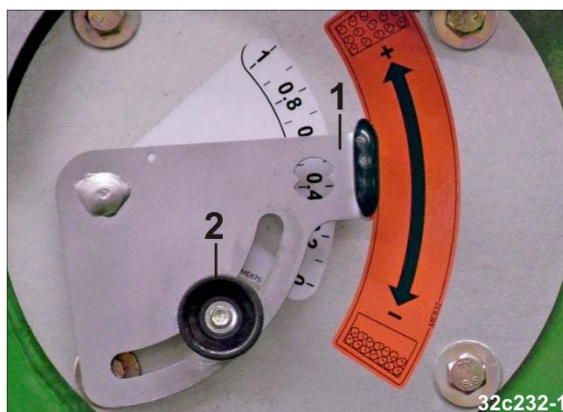


Fig. 179



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

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

8.1.4 Setting the seed scraper



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

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

Seed scraper (mechanical adjustment)

1. Adjust the seed scraper with the lever (Fig. 180/1). Take the preliminary setting value from Table (Fig. 76).
2. Secure the lever position with the knurled screw (Fig. 180/2).



Fig. 180

Seed scraper (electronic adjustment)

Adjust the indicator (Fig. 181/1) of the seed scraper on the AMATRON. Take the preliminary setting value from Table (Fig. 76).

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

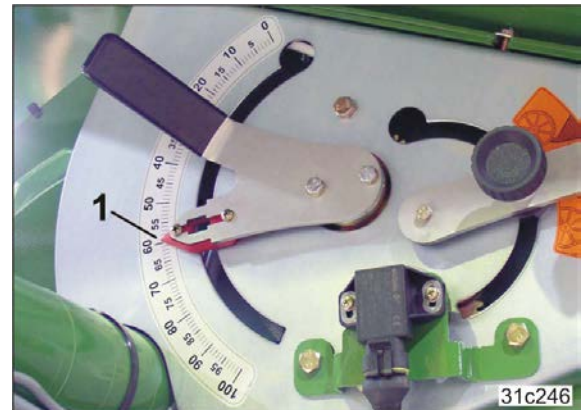


Fig. 181

8.1.5 Aligning the rear module on the field

After coupling to the tractor, level the rear module so that it is horizontal, so that the catcher rollers (Fig. 182/1) in the shaped grooves are always in contact with the ground.

If the implement is not level, the catcher rollers might lift up from the ground and the seeds shoot out under the catcher roller after coming out of the shoot pipe (Fig. 182/2).

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

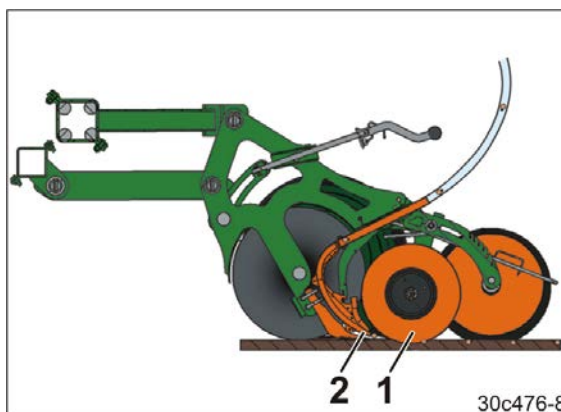


Fig. 182

1. Spread seed for approx. 100 m at working speed on the field.
2. Adjust the tractor lower link such that the horizontal spirit level (Fig. 183/1) on the coulter frame indicates a horizontal position.



Fig. 183

8.1.6 Adjusting the seed placement depth



Check the placement depth and grain spacing

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

1. Move the implement on the field to the working position.
2. Set the desired placement depth by turning the spindle (Fig. 184/2) with the clamp (Fig. 184/1).

Spindle adjustment

Turn to right: reduce working depth

Turn to left: increase working depth.

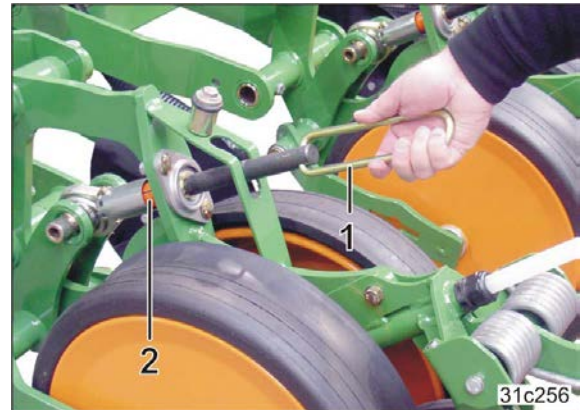


Fig. 184

3. Secure the clamp (Fig. 185/1) against rotation.



Fig. 185

4. Check the placement depth of the first seeding unit and adjust if required (see section "Checking the placement depth and grain spacing", page 144).



Check the placement depth after each adjustment.

5. If the spindle adjustment does not produce the required seed placement depth, adjust the coulter pressure (see section "Setting the coulter pressure", page 142).
6. Adjust all seeding units to match the value of the first seeding unit and check the placement depth of each seeding unit.

Settings

8.1.6.1 Setting the coulter pressure



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



The pressure is set to 20 bar at the factory.

1. Unscrew the lock nut (Fig. 186/1).
 2. Adjust the coulter pressure by turning the valve screw (Fig. 186/2).
- Read of the pressure at the pressure gauge (Fig. 186/3).
3. Tighten the lock nut.

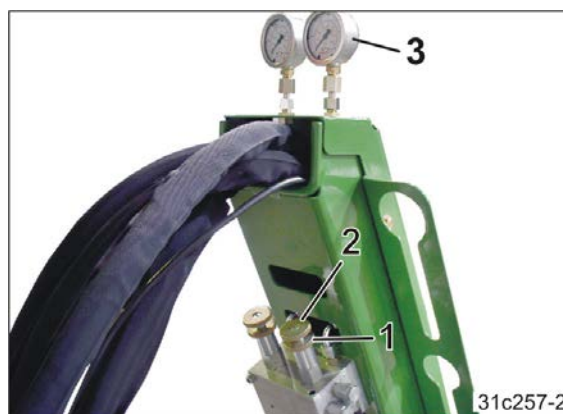


Fig. 186



The pressure indicated on the pressure gauge (Fig. 186/3) changes until the fan blower driven by the tractor hydraulics is running at constant speed.



This setting influences the placement depth of the seed.
Check the setting (see section "Checking the placement depth and grain spacing" page, 144).

8.1.7 Closing the seed furrow by adjusting the press roller

1. Lift up the lever (Fig. 187/1) briefly and locate the tab (Fig. 187/2) in the toothed segment (Fig. 187/3).
2. Make the same axial adjustment at each of the press rollers (Fig. 187/4) and secure (circlip, Fig. 187/5).
3. Adjust the position of the tab and axial adjustment of the press rollers until the required working result is achieved.

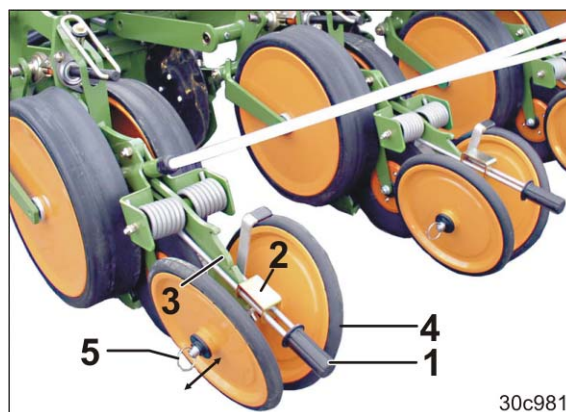


Fig. 187



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

4. Rotate the axle by moving the lever (Fig. 188/1).
5. Secure the lever position with the screw (Fig. 188/2).
6. Make the same settings on all seeding units.

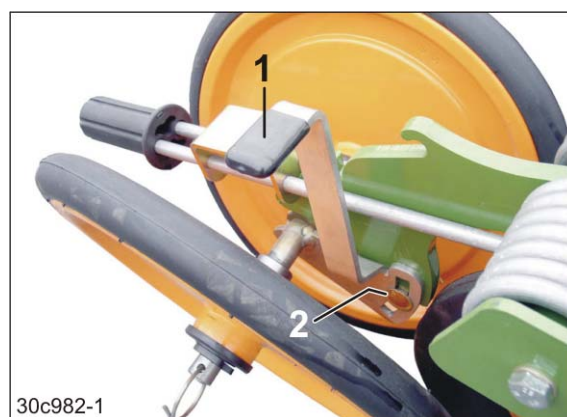


Fig. 188

8.1.8 Adjusting the star clearers

Position the star clearers (Fig. 189/1) with two pins (Fig. 189/2) and 4 washers (Fig. 189/3) on the coulters. Secure the pins with linch pins (Fig. 189/4).

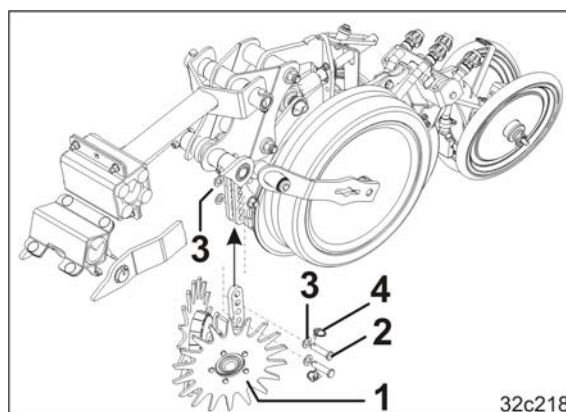


Fig. 189

8.1.9 Adjusting the clod clearers

Position the clod clearers (Fig. 190/1) with two pins (Fig. 190/2) and 4 washers (Fig. 190/3) on the coulters. Secure the pins with linch pins (Fig. 190/4).

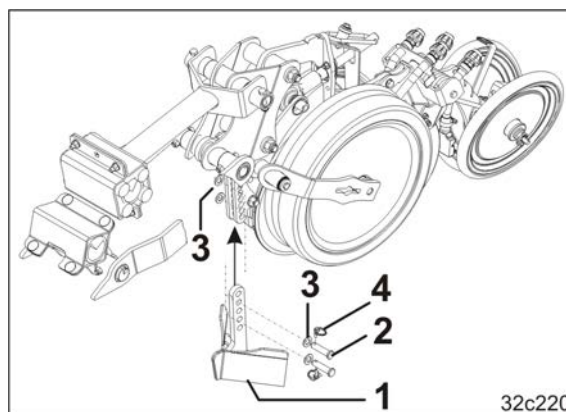


Fig. 190

8.1.10 Checking the placement depth and grain spacing

1. Spread seed for approx. 100 m at working speed.
2. Expose the grains at several points using the multi-placement tester (optional). Use the read-off edge to remove the earth in layers.
3. Place the multi-placement tester (Fig. 191) horizontally on the ground
4. Place the indicator (Fig. 191/1) on the seed grain and read off the placement depth from the scale (Fig. 191/2).
5. Measure the grain spacing with the ruler.



Fig. 191



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

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

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

8.2 Fertiliser dosing and application



CAUTION

Switch off the on board computer

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

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

8.2.1 Setting the fertilising rate using a calibration test

1. Set the desired fertiliser spread rate in the AMATRON.

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



Fig. 192

2. Insert the required metering roller into the metering unit.
3. Check the fill level sensor for proper seating.
4. Fill the hopper with at least 200 kg of fertiliser (see section "Filling the seed and fertiliser hopper", page 172).
5. Fold out the implement into the working position (see section "Fertiliser dosing unit and injector sluice", page 84).
6. Insert the calibration trough (Fig. 193/1) into the holder beneath the dosing unit.

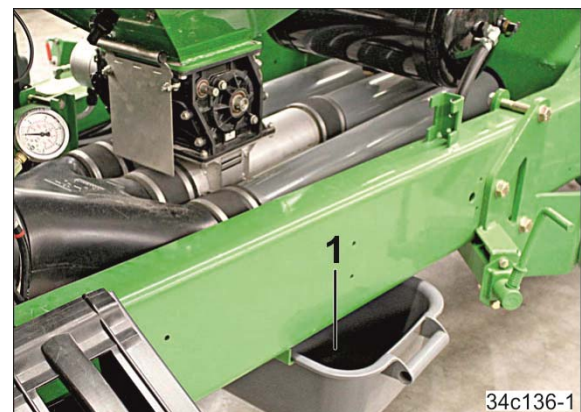


Fig. 193

Settings

7. Open the opening below the injector sluice.
 - 7.1 Move the lever (Fig. 194/1) to the right in the driving direction (see arrow).

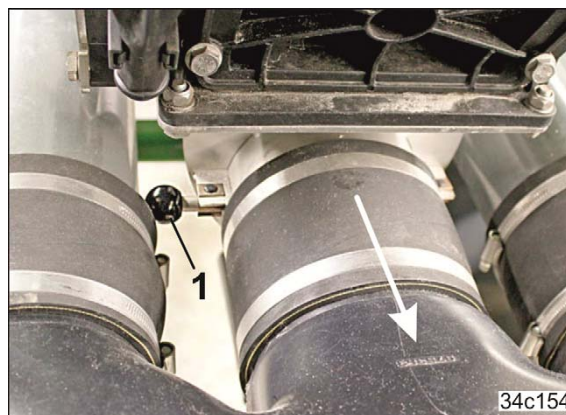


Fig. 194

8. Set the desired spread rate in the AMATRON.
 - 8.1 Set the spread rate with calibration test in accordance with the AMATRON operating manual (see section "Calibrating implements with electric full metering").



The number of engine revolutions for the calibration test until the signal tone sounds is governed by the seeding rate:

- 0 to 14.9 kg → Engine revolutions to 1/10 ha
- 15 to 29.9 kg → Engine revolutions to 1/20 ha
- 30 kg or more → Engine revolutions to 1/40 ha.

9. Repeat the calibration test until the desired spread rate is achieved.
10. Attach the calibration trough to the transport bracket and secure with a linch pin [see figure (Fig. 105), page 87].
11. Close the injector sluice flap [see Figure (Fig. 100), page 85].

8.2.2 Repositioning the fill level sensor

1. Release the nut (Fig. 195/1).
2. Detach the fill level sensor (Fig. 195/2), insert it in the intended connection and secure it in place.
3. Fit the dummy (Fig. 195/3), which has no function, into the vacated opening and secure.

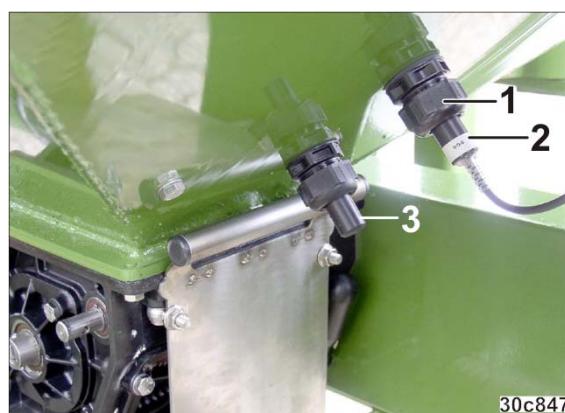


Fig. 195

8.2.3 Installing/removing the metering roller



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

1. Close the opening between the hopper and the metering unit (only necessary when the hopper is full).

- 1.1 Remove the key (Fig. 196/1) from the holder.

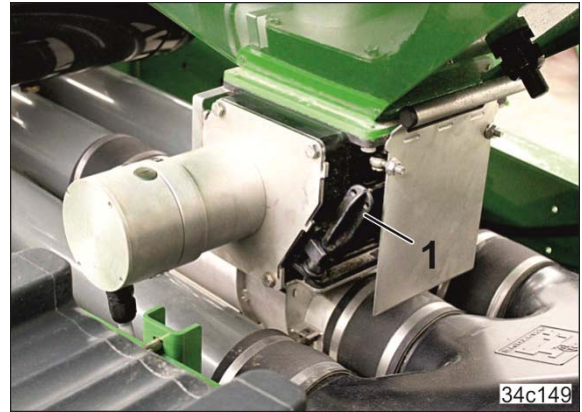


Fig. 196

- 1.2 Release two nuts (Fig. 197/1) but do not remove.

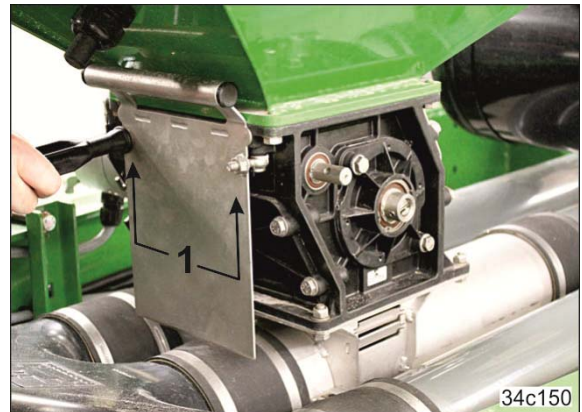


Fig. 197

- 1.2 Turn the screws (Fig. 198/1).
- 1.3 Push the slider (Fig. 198/2) into the metering unit up to the stop.



Fig. 198

Settings

2. Loosen both screws (Fig. 199/1).

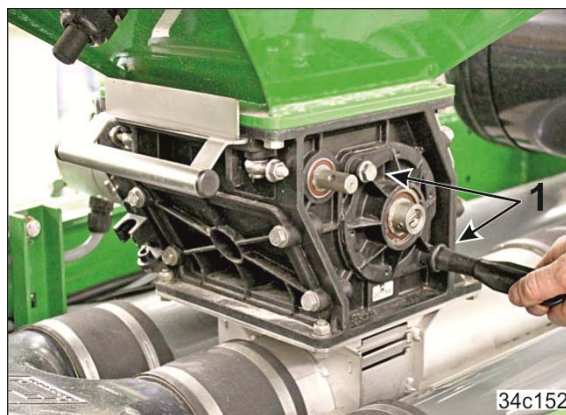


Fig. 199

3. Turn the bearing cover and pull it off.



Fig. 200



The bearing cover is equipped with an O-ring (Fig. 201/1). Check the O-ring and replace it if damaged.

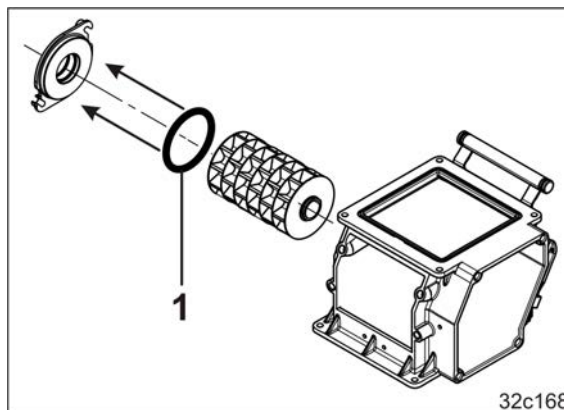


Fig. 201

4. Remove the metering roller.



Install the metering roller in the reverse sequence.

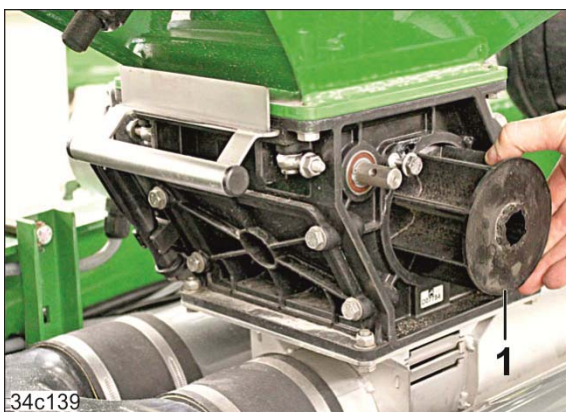


Fig. 202



Secure the slider in the parking position.

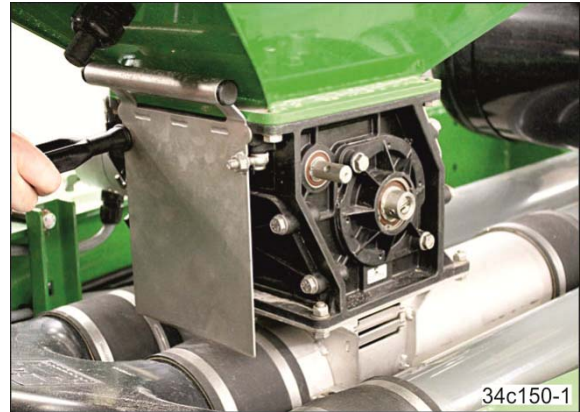


Fig. 203

8.2.4 Adjusting the fertiliser placement depth

1. Unscrew the lock nut (Fig. 204/1).
 2. Turn the valve screw (Fig. 204/2) to adjust the fertiliser coulter pressure.
- Read off the fertiliser coulter pressure at the pressure gauge (Fig. 204/3).
3. Tighten the lock nut.
 4. Drive the implement across the field for a distance of roughly 100 m at the intended working speed and check the placement depth, adjust if necessary.

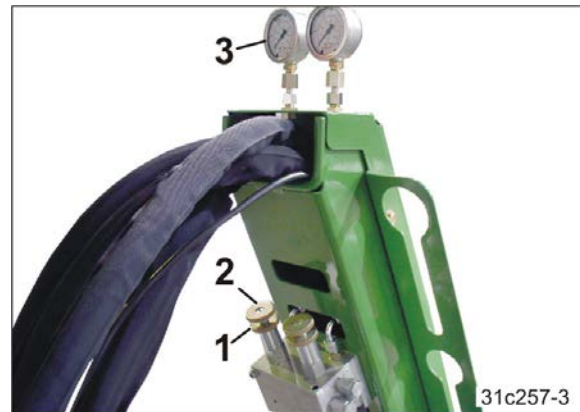


Fig. 204



The pressure displayed on the pressure gauge (Fig. 204/3) changes until the blower fan (singling) runs at a constant speed.



The fertiliser placement depth depends on the following factors

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

Always check the placement depth of the fertiliser:

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

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

8.3 Weighing system (optional)

The button (Fig. 205/1) on the right side of the weighing terminal is used for

- Scrolling in the menu
- Executing and confirming.

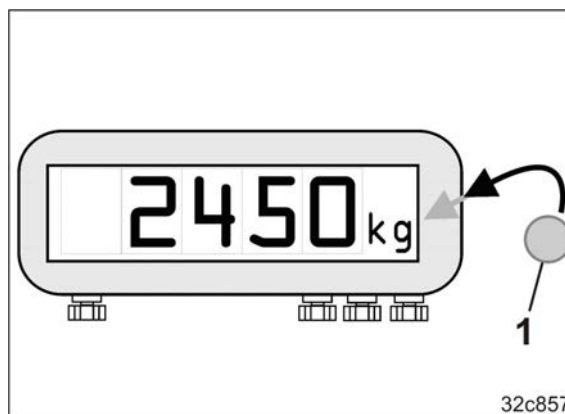




Fig. 205

Scrolling in the menu



Briefly press the  key

Executing and confirming

Press the  key until the units lighting flashes (2-3 seconds).

8.3.1 Taring the weighing equipment

When taring the implement, the weight with an empty hopper is set to 0 [kg] in the weighing terminal.

1. Empty hopper
2. Press .
→ Display tArE
3. Press the  key until the weighing terminal shows 0 [kg].

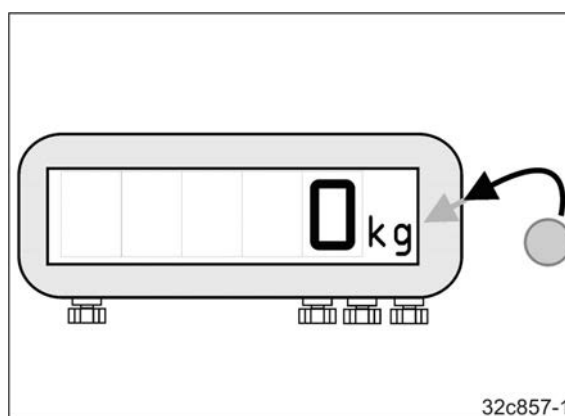


Fig. 206

8.3.2 Calibration of the weighing equipment (specialist workshop)












Calibration involves the comparison of changing hopper contents with the display on the weighing terminal.

The weighing equipment is calibrated upon implement delivery. Calibration should only be performed by Customer Service.

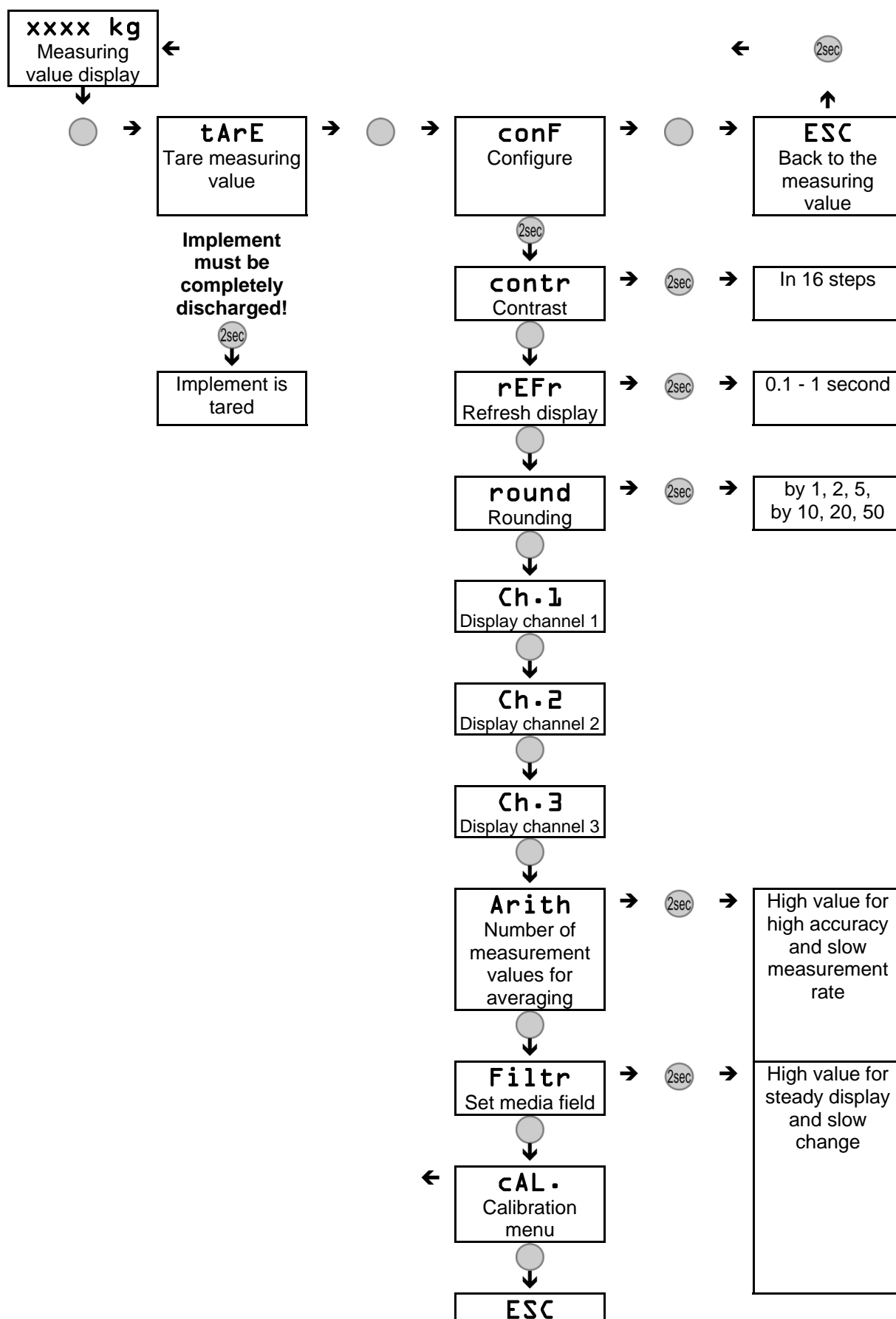


During calibration, two values are assigned to the weighing terminal.

- The value 0 [kg] is the weight of the implement with empty hopper
- The value x [kg] is the weight of the implement with filled hopper. The fill quantity must be greater than 2000 kg.

1. Call up calibration menu **cal**.
2. 
3. Enter password 1883
 - o  Enter value 0 - 9
 - o  Jump to the next number and quit with the last number.
- Display **SEt**
4. 
- Display **APPLY**
5. 
- Display **A11 0** ⇌ raw value
6. 
- Display **A11 g** ⇌ raw value
7. Fill the implement with at least 2000 kg.
- Display **A11 g** ⇌ new raw value
8. 
- Display **A11 d**
9. 
10. Enter the accurate value for the filled weight.
 - o  Enter value 0 - 9
 - o  Jump to the next number and quit with the last number.
- Display **ESC**
11. 
- Back to measurement value display. The calibration is complete.

8.3.3 Menu layout



8.4 Adjusting blower fan speed



This setting is also required if the blower fan is driven by the tractor PTO shaft.



The seed hopper cover (Fig. 207)

- must be closed before switching on the blower fan.
- must always be kept closed when the blower fan is running.

31c279-1



Fig. 207



DANGER

Do not exceed the maximum fan speed of 4000 rpm.



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

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

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



The maximum approved system pressure is 210 bar, which can be read on the pressure gauge (Fig. 208/1) beside the blower fan hydraulic motor.

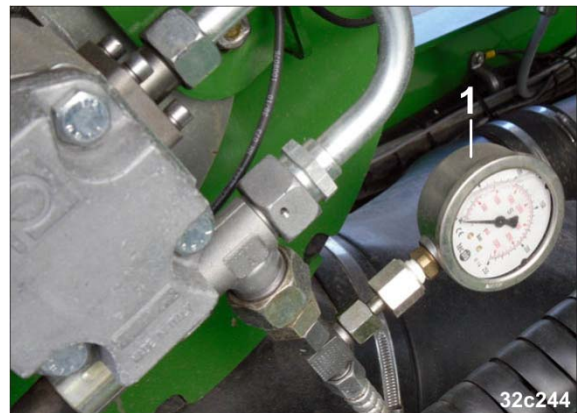


Fig. 208

Settings

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 8.4.1.1 or section 8.4.2.1.
The settings depend on the version of pressure relief valve (see below).
2. Set the blower fan speed according to the flow control valve of the tractor.

Setting the blower fan speed on tractors without flow control valve

Set the blower fan speed according to section 8.4.1.2 or section 8.4.2.2.
The settings depend on the version of pressure relief valve (see below).

Set the blower fan speed when connecting the hydraulic motor to the tractor PTO shaft

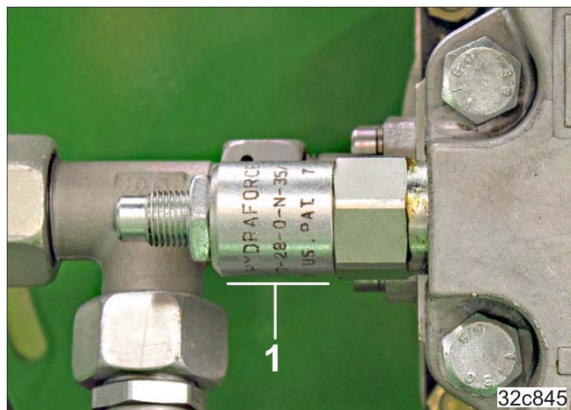
1. Perform the basic setting of the pressure relief valve according to section 8.4.1.1 or section 8.4.2.1.
The settings depend on the version of pressure relief valve (see below).
2. Run the tractor PTO shaft up to the correct speed during operation.
For an 8-row implement (maize setting), the blower fan speed is approx. 3900 rpm.



The maximum tractor PTO shaft speed is 1000 rpm.

Design version of the pressure relief valve

The blower fan is equipped with a pressure relief valve that is installed in two versions



Pressure relief valve
with round outer contour (1)



Pressure relief valve
with hexagonal outer contour (1)

8.4.1 Pressure relief valve with round outer contour



Fig. 209

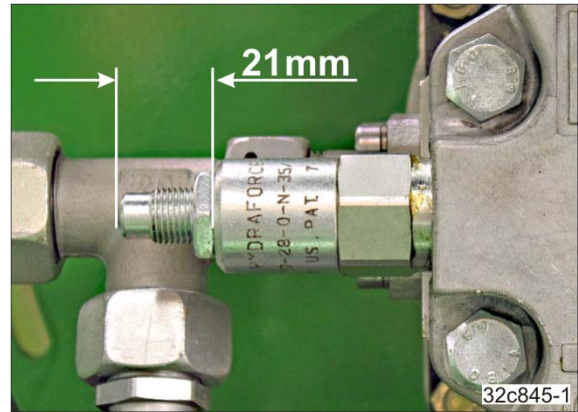


Fig. 210

8.4.1.1 Pressure relief valve basic setting

Basic setting

1. Loosen the lock nut (Fig. 209).
2. Adjust the pressure relief valve to the factory-set dimension "21 mm" (Fig. 210).
3. Turn the screw with the hexagon socket wrench (Fig. 209/1) accordingly.
4. Tighten the lock nut.

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

This setting should only be carried out when the blower fan hydraulic motor is connected to the tractor hydraulics and the tractor is equipped with a flow control valve.

1. Loosen the lock nut (Fig. 209).
2. Use the hexagon socket wrench (Fig. 209/1) to set the target blower fan speed on the pressure relief valve. Do not exceed the maximum fan speed of 4000 rpm.

Blower fan speed

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

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

3. Tighten the lock nut.

8.4.2 Pressure relief valve with hexagonal outer contour



Fig. 211



Fig. 212

8.4.2.1 Pressure relief valve basic setting

Basic setting

1. Loosen the lock nut (Fig. 211).
2. Using a hexagon socket wrench, screw the screw in completely (Fig. 211/1) (clockwise).
3. Using a hexagon socket wrench, unscrew the screw back by 3 turns.
4. Tighten the lock nut.

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

This setting should only be carried out when the blower fan hydraulic motor is connected to the tractor hydraulics and the tractor is equipped with a flow control valve.

1. Loosen the lock nut (Fig. 211).
2. Use the hexagon socket wrench (Fig. 211/1) to set the target blower fan speed on the pressure relief valve. Do not exceed the maximum fan speed of 4000 rpm.

Blower fan speed

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

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

3. Tighten the lock nut.

8.5 Adjusting the track marker length and working intensity



DANGER

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

1. Direct people out of the danger area.
2. Fold out both track markers simultaneously on the field (see AMATRON operating manual) and drive several metres.
3. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
4. The extension pipe (Fig. 213/1) can be adjusted by actuating the sprung pin (Fig. 213/2).

Ensure that the pin (Fig. 213/2) engages after each adjustment.



Fig. 213

5. Unscrew the screw (Fig. 214/1).
6. Set the track marker length to distance "A" (see table, Fig. 215).
7. Tighten the bolt (Fig. 214/1).
8. Release both screws (Fig. 214/2).
9. Turn the track marker disc to adjust the working intensity of the track marker so that it runs roughly parallel to the direction of travel on light soil and is more attuned to grip on heavier soil.
10. Tighten all bolts firmly.

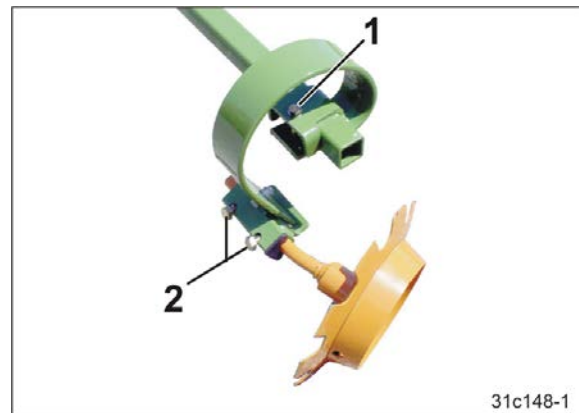


Fig. 214

Track marker length A = Row spacing R [cm] x number of seeding units

Example:

Row spacing R:.....75 cm

Number of seeding units:.....8

Track marker length A = 75 cm x 8

Track marker length A = 600 cm

The working width is the track marker length A, measured from the centre of the implement to the contact surface of the track marker disc on the ground.

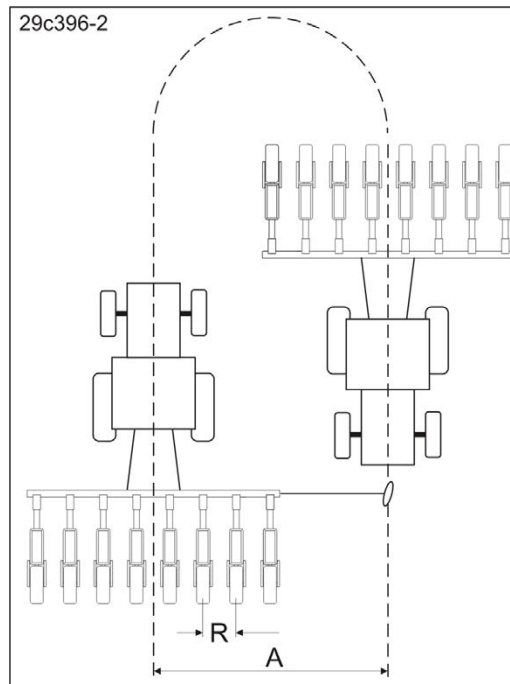


Fig. 215

8.6 Adjusting the tractor wheel mark eradicator

Adjusting the wheel mark eradicator horizontally:

1. Loosen the bolts (Fig. 216/1) and adjust the wheel mark eradicator horizontally.

Adjusting the wheel mark eradicator vertically:

1. Hold the wheel mark eradicator by the handle.
2. The clamping piece (Fig. 216/2) releases the wheel mark eradicator when it is pulled out.
3. Adjust the wheel mark eradicator vertically and fix with the clamping piece.



Fig. 216



Transport position:

Before leaving the field, fasten the tractor wheel mark eradicator at the very top to prevent contact with the road while driving or when parking the implement.

8.7 Adjusting the trailer wheel mark eradicator

Adjusting the wheel mark eradicator horizontally:

1. Loosen the screws (Fig. 217/1) and adjust the wheel mark eradicator horizontally.

Adjusting the wheel mark eradicator vertically:

1. Hold the wheel mark eradicator by the handle (Fig. 217/2).
2. Remove the bolt (Fig. 217/3).
3. Adjust the wheel mark eradicator as follows:
 - o Adjust in a vertical direction.
 - o Locate with the pin.
 - o Secure with the lynch pin supplied.

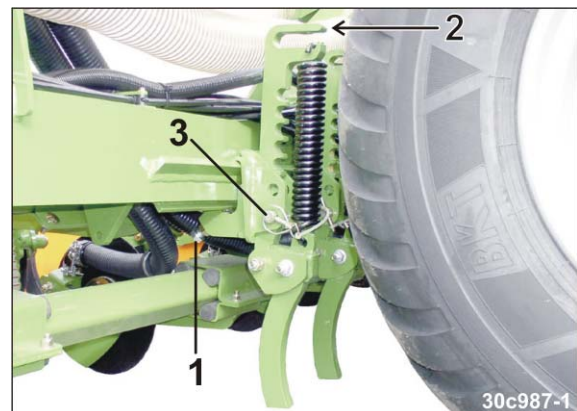


Fig. 217



Transport position:

Before leaving the field, fasten the tractor wheel mark eradicator at the very top to prevent contact with the road while driving or when parking the implement.

9 Transportation



34c102

Fig. 218



DANGER

The transportation of implements hitched to the tractor that are wider than 3.0 m on public roads and routes is not approved in Germany and many other countries.

9.1 Set the implement to road transport mode

1. Switch off the blower fan.
2. Move track marker to transport position..... page 169
3. Move the tractor wheel mark eradicators into transport position page 159
4. Move the trailer wheel mark eradicators into transport position page 159
5. Empty the trailer hopper.
The brake system is designed for driving with an empty hopper only page 183
6. Close the tarpaulin.
7. Empty the seed hopper
The brake system is designed for driving with an empty hopper only page 180
8. Close and lock the seed hopper cover..... page 69
9. Fold in the booms (foldable implements only) page 170
10. Switch off the on-board computer (see on-board computer operating manual).
11. Check the lighting system
including the warning signs for function and cleanliness. page 51
12. Disable the tractor control units (see tractor operating manual).
13. Read and observe the section "Legal requirements and safety" page 161

9.2 Legal requirements 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 maximum transport width of the implement combination mounted on the tractor is approved up to 3.0 m.

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

Max. permissible speed

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

- 25 km/h
 - for tractors with towed implements and hydraulic service brake system²⁾
 - for tractors with towed implements that do not have a service brake system³⁾.
Note: in Russia and many other countries, the permissible top speed is 10 km/h.
- 40 km/h
 - for tractors with towed implements with dual-circuit pneumatic service braking system.

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

-
- 1) The maximum permissible speed for hitched working implements varies depending on the road traffic regulations in each individual country. Ask your local importer/implement dealer about the maximum permitted speed for road travel.
 - 2) not permitted in Germany and some other EU countries
 - 3) not permitted in Germany, all EU countries and some other countries.



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

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



WARNING

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

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



WARNING

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

- Drive in such a way that you always have full control over the tractor with the attached 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 road transport, fasten the side locking of the tractor lower link, so that the connected or coupled implement cannot swing back and forth.



WARNING

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

These risks pose serious injuries or death.

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

**DANGER**

Empty the hoppers before road transport. The brake system is designed for driving with empty hoppers only.

**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.

**DANGER**

Switch off the on-board computer during transportation.

**DANGER**

Lock the tractor control units during road transport!



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

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

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

10 Use of the implement

When using the implement, observe

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

Observing these sections is important for your safety.



WARNING

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



WARNING

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

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



WARNING

Risk of cutting and impact injuries when swivelling the implement booms and the track marker up and down!

Instruct persons to maintain a minimum clearance of 20 m to the implement before you actuate the tractor control unit to swivel out the implement booms and the track marker.



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 to climb onto the running implement.

Instruct persons away from the walking and loading board before starting the implement.



When lowering the coulters, pull the implement forward slightly.

Never drive in reverse as soon as the coulters are in the soil. This can cause the coulters to become clogged.

Slightly raise the coulters before stopping on the field.

10.1 Work commencement



Fig. 219

1. Move the implement to the working position at the start of the field
2. Instruct any people in the area to stand at a minimum distance of 20 m from the implement.
3. Unfold the implement booms and the track markers.....page 84
4. Pull the implement forward slightly, immediately before lowering the tools into the ground.
5. Fill the hopperspage 172
6. Check all implement settingspage 136
7. Run the blower fan up to nominal speed.....page 153

Set the required air pressure by adjusting the blower fan speed and check during operation (AMATRON).

When the "Pre-calibration" function is activated (see AMATRON operating manual), the holes of the singling drum are sealed with seed grains. The required air pressure can be built up and measured.

In event of air pressure deviation, check that all holes are filled with seed grains. If not, correct the implement settings.

8. Actuate the control unit.....page 105
 - Unfold the active track marker
9. Lower/raise the tractor's lower link until the implement is approximately horizontal.
10. Start.
11. Spread seed on the field for approx. 100 m at working speed, stop and
 - o Align the implement horizontally (see page 140).
 - o Check the placement depth and grain spacing of the seed as well as the placement depth of the fertiliser on all of the coulters, and adjust if necessary (see section "Checking the placement depth and grain spacing", page 144).

10.2 Folding/unfolding the implement booms and track markers



DANGER

Before you fold or unfold the implement booms and track markers, instruct people to leave the swivel area

- of the implement booms.
- of the rear frame.
- of the track markers.



Align the tractor and implement straight on a flat surface before you fold the implement booms out or in.

Drive the tractor in front of the implement at a slight angle. This makes the transport brackets (Fig. 220/1) for the implement booms more visible.



Fig. 220



Before unfolding/folding the implement boom,

- connect all hydraulic supply lines to the tractor.
- connect the AMATRON and switch it on.

If the pressure-free return flow is not connected, the swivelling rear lighting can collide with the rear module.

The AMATRON monitors the folding and unfolding of the implement booms.

Always follow the instructions on the display (AMATRON) before you confirm the instructions in order to prevent any collisions of the implement components.



Before folding it in, switch off the tractor PTO shaft and do not switch it on again until the implement booms are extended completely.

10.2.1 Extend the implement booms (from transport to working position)

1. Apply the tractor parking brake.
2. Switch on the tractor engine.
3. Switch off the tractor PTO shaft.
4. Switch on the AMATRON.
4. On the AMATRON, select:
"Unfold implement".
5. Lift the implement booms (Fig. 221/1) out of the transport bracket (Fig. 221/2).
- 5.1 Actuate control unit 1 until both implement booms come free.

The lifting operation finishes automatically.

When a suitable position for the unfolding procedure is reached, AMATRON issues an acoustic signal. Once the signal has sounded, you can switch functions in AMATRON and start unfolding the implement booms.

When the booms are folded, the lighting (Fig. 222) is in road transport position.

When lifting the implement booms out of the transport locking mechanism, the lighting (Fig. 223) is folded down.

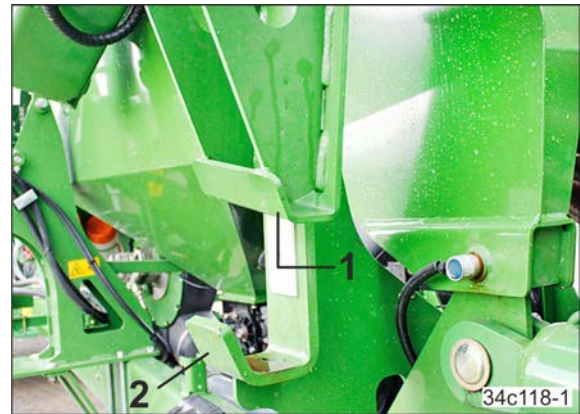


Fig. 221



Fig. 222



Fig. 223

Use of the implement

6. Unfold the implement booms.
 - 6.1 Actuate control unit 2 until the implement booms are completely unfolded.
7. Place tractor control unit 2 into the neutral position and leave it in the neutral position during operation.



Fig. 224

8. Lower the raised rear frame into the working position.
 - 8.1 As soon as the complete unfolding of the implement booms has been confirmed on the AMATRON⁺, control unit 1 is activated.
 - 8.2 Actuate control unit 1 until the rear frame is lowered into working position. Pull the implement slightly forward when lowering the coulters into the ground.
9. Place tractor control unit 1 into the neutral position and leave it in the neutral position during the work.



Fig. 225



Pull the implement forward when lowering the coulters into the ground.

Blockages may occur

- when driving backwards or
- when the coulters are lowered on the field and the implement is not pulled forward.

10.2.2 Moving the track marker into transport position – Working without track marker



DANGER

Direct people out of the danger area of the track markers.

1. Press the "Park" button (see AMATRON operating manual).
2. Actuate control unit 1 until both track markers rest against the implement booms.



31c273-6

Fig. 226

3. Before road transport, push the extension pipe (Fig. 227/1) as far as possible into the carrier pipe.

Ensure that the pin (Fig. 227/2) engages after each adjustment.



34c124-1

Fig. 227



DANGER

Push in the track markers before folding the implement booms.

Track markers which have not been pushed in can come into contact with overhead electrical cables or with parts of bridges when passing underneath.

10.2.3 Folding the implement booms



Close and lock the seed hopper cover before folding.

If the seed hopper cover is not locked, it may collide with other implement parts when the implement booms are being folded.

1. Apply the tractor parking brake.
2. Close and lock the seed hopper cover (Fig. 228).



Fig. 228

3. Move the track markers into transport position (see section "Moving the track marker into transport position – Working without track marker", page 169).
4. On the AMATRON, select: "Fold implement".
5. Actuate control unit 1 until the rear frame is raised.

As soon as the rear frame is about 10° from the vertical position

 - o The lifting operation ends automatically
 - o The AMATRON+ indicates that the 10° position has been reached.



Fig. 229

6. Fold the implement booms in.

- 6.1 Actuate control unit 2 until both implement booms (Fig. 230/1) rest against the rockers (Fig. 230/2) of the transport bracket.



Beware of possible collisions with the implement.

Correct the tilt of the rear frame (see Fig. 229) if necessary.

7. Latch the implement booms into place.

7.1 Actuate control unit 1 until

- o the implement booms have been lowered into the transport bracket (Fig. 230/3).
- o the rear carrier (Fig. 231) with light fittings and warning signs is swivelled into the road transport position.

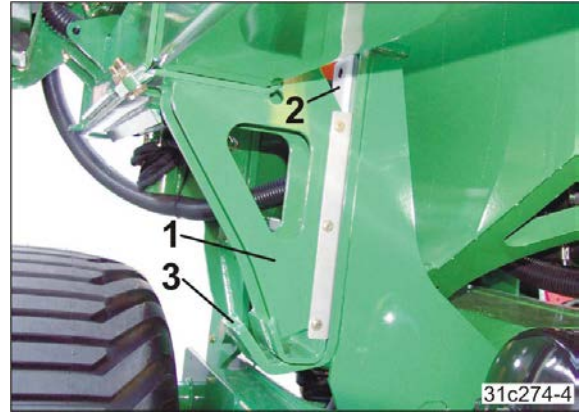


Fig. 230



Fig. 231



DANGER

The transport bracket (Fig. 230/3) represents the mechanical transport locking mechanism of the implement booms.

Check the implement booms for proper seating in the transport bracket.

Use of the implement

8. Move the implement into a horizontal position by actuating the tractor lower links.



The implement requires sufficient ground clearance in all driving situations.



Fig. 232

10.3 Filling the seed and fertiliser hopper



DANGER

- Couple the implement to the tractor before filling the hopper.
- Switch off the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine, and remove the ignition key.
- The seed hopper is pressurised when the blower fan is running.
- Observe the approved filling levels and total weights.
- Transportation of the implement on roads and lanes with filled hoppers is prohibited. The brake system is designed only for an empty implement.

10.3.1 Fill the seed hopper

1. Lower the rear frame.
2. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
3. Fold down the step (Fig. 233).
 - 3.1 Remove the safety splint (Fig. 233/1).
 - 3.1 Lift the step and then fold it down.

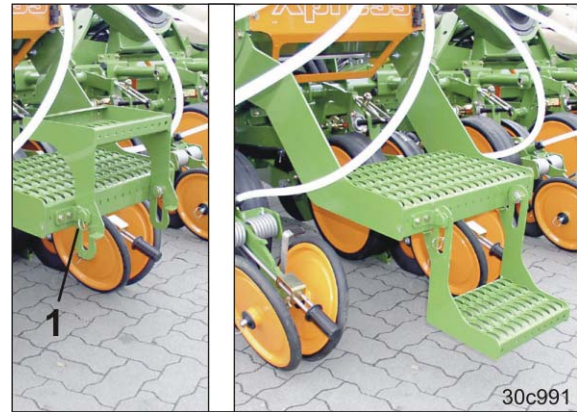


Fig. 233



CAUTION

Never open the seed hopper cover with the blower fan running.

Switch off the blower fan before opening the seed hopper cover and only switch back on when the cover is closed.

4. Open the cover (Fig. 234/1) of the hopper.
 - 4.1 Unlock the lever (Fig. 234/2).
 - 4.2 Open the lid (Fig. 234/1) by actuating the lever.
5. Fill the seed hopper.

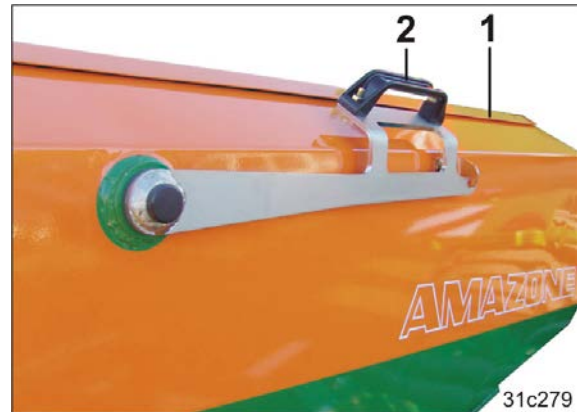


Fig. 234

6. Close and lock the cover.
7. Fold the step (Fig. 233/1) up again and secure with the safety splint (Fig. 233/2).

10.3.2 Filling the fertiliser hopper

1. Couple the implement to the tractor.
2. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
3. The steps allow you access to the filling opening of the hopper.
4. The tarpaulin is secured with two clamping elements.
5. Slowly pull the belt out of the belt holder.
- The roller cover opens as the belt is released.
6. If necessary, remove foreign bodies in the seed hopper.



Fig. 235

7. Load the hopper
 - o from a supply vehicle using the filling auger (optional);
 - o from bulk bags.
8. Close and secure the tarpaulin.

10.3.2.1 Using the filling auger to fill the hopper

1. Proceed as follows:
 - o Couple the implement to the tractor
 - o Fold the implement out
 - o Place the implement on the coulters.
2. Apply the tractor parking brake.



Fig. 236

3. Release the locking mechanism of the filling auger.

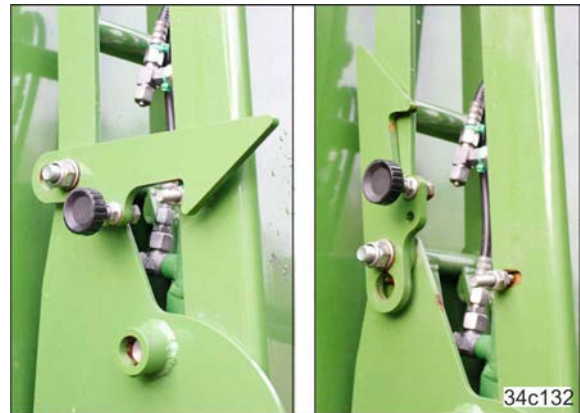


Fig. 237

4. Direct people out of the swivel area of the filling auger.
 5. Pressurise the tractor control unit.
 6. Press the lever (Fig. 238/2) down until the filling auger is completely unfolded.
- The filling auger is in the filling position.



Fig. 238

7. Open the cover tarpaulin (Fig. 239/1).
 8. Press the lever (Fig. 239/1) down.
- The filling auger conveys for as long as the lever is pressed down.



Fig. 239

Use of the implement

9. Fill the filling funnel of the filling auger, e.g. from a supply vehicle.



Fig. 240

10. Direct people out of the swivel area of the filling auger.
11. Press the lever (Fig. 241/2) up until the filling auger is completely folded.



Fig. 241

→ The filling auger is in the transport position.



Fig. 242



Danger!

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



Important!

Switch the tractor control valve off after use.

10.4 During the work



Fig. 243

10.4.1 Overview of checks

Checks	<ul style="list-style-type: none"> Check after the first 100 m travelled at working speed have been completed Check after changing from light soil to heavy soil and vice versa Check after adjusting the coulter pressure and/or the press rollers. Check after refilling the hopper. 	Check the seed placement depth and grain spacing	See section 8.1.10
		Check the working intensity of the seed press rollers	
		Checking the placement depth of the fertiliser	
	<ul style="list-style-type: none"> Check the distributor head for impurities. <p>Impurities may block the distributor head and must be removed immediately (see section "Cleaning the fertiliser distributor head").</p>	During work at regular intervals from the tractor cabin. The distributor head is equipped with a transparent distributor hood for this purpose.	
		Each time the hopper is refilled.	
		After work by performing an intensive visual inspection from outside.	

10.4.2 Turning at end of the field



Avoid strong deceleration and acceleration to prevent placement errors in the distribution along the row.

The speed of the singling drum is regulated depending on the tractor speed and can only adjust immediately for normal speed changes.



The raising of the seed hopper, e.g. when turning at the end of the field, causes the seed to move down.



DANGER

After turning, if control unit 1 is actuated the opposite track marker is moved to the working position.

1. Slow down your travel speed.
2. Do not reduce the tractor's rotational speed too far so that the hydraulic functions continue without interruption at the headland.
3. Actuate tractor control unit 1 until both of the following are lifted completely:
 - o the active track marker
 - o the coulter.
4. Turn the combination.



Fig. 244

5. At the beginning of the field, actuate tractor control unit 1 until both of the following are lowered completely:
 - o the coulters
 - o the active track marker
6. Actuate tractor control unit 1 for a further 15 seconds then put it in the neutral position.
During the work, operate tractor control unit 1 in neutral position.

10.5 When the work is completed

After working on the field, move the implement into road transport position (see section "Set the implement to road transport mode", page 160).



Empty and clean the metering unit after use!

In metering units that are neither emptied nor cleaned,

- a viscous to solid mass may form there is water enters under the metering roller. The metering roller is braked strongly and deviations may occur between the preset and actual seeding rates.
- the mass can harden. This causes the rotation of the dosing roller to become blocked, which may result in damage to the drive!

The sticker (Fig. 245) should remind the tractor driver to empty and clean the metering unit after finishing the seeding work.



The metering unit must be emptied and cleaned after completing the seeding work in all cases (see section 10.5.2, page 183).

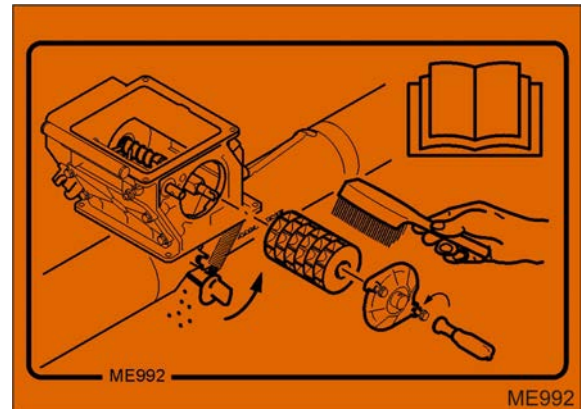


Fig. 245

10.5.1 Emptying the seed hopper and/or seed singling unit



WARNING

The seed hopper is pressurised when the blower fan is running (singling unit).



CAUTION

Switch off the on board computer

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

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

1. Switch off the blower fan (singling).
2. Completely unfold the implement.
3. Switch off the on board computer.
4. Close the seed shutter (Fig. 246/1) when the seed hopper is filled and should not be emptied.

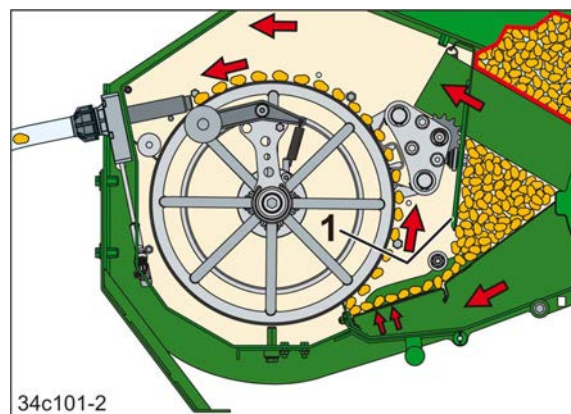


Fig. 246

- 4.1 Position the lever (Fig. 247/1) to the scale value "0". The seed shutter is closed.



Fig. 247

5. Open the bottom flap (Fig. 248/1).

The bottom flap is secured with quick-release clamps (Fig. 248/2).

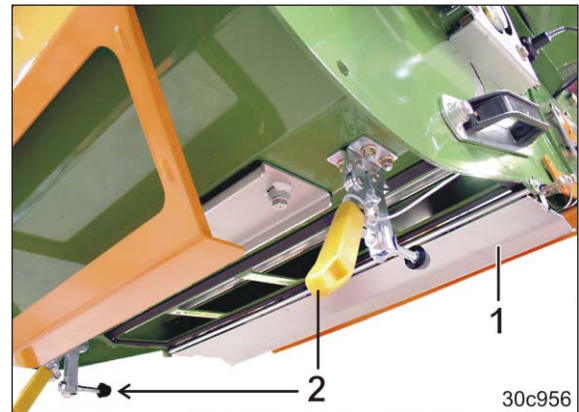


Fig. 248

6. Fold the mount down and secure [lynch pin (Fig. 249/1)].

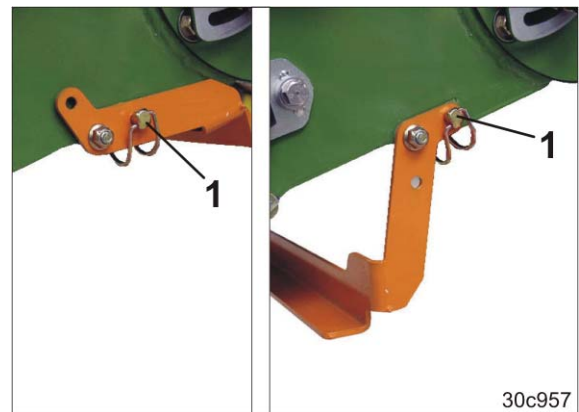


Fig. 249

7. Place the collecting trough in the mount.



Fig. 250

8. Release the sieve.



Fig. 251



Use the hexagon wrench provided.



Fig. 252

9. Pull the sieve (Fig. 253/1) slowly out of the housing.
→ The seed will drop into the collecting trough (Fig. 253/2).

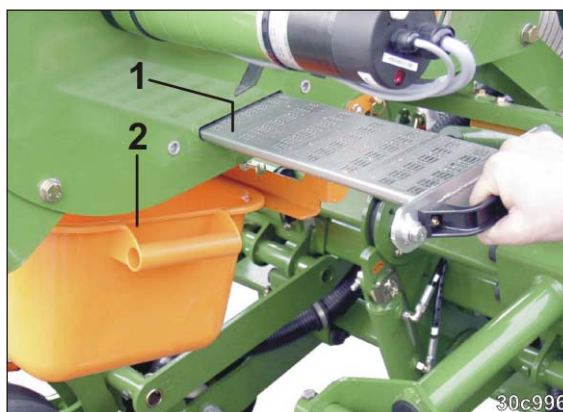


Fig. 253

10. Empty the collection trough.
 - 10.1 Open the lock (Fig. 254/1) with the hexagon wrench provided (Fig. 254/2).
 - 10.2 Pour the collected seed into the seed hopper for re-use.
11. Close the singling unit housing or clean while it is opened (see section "Daily fast cleaning of the singling unit and the spur gears", page 193).

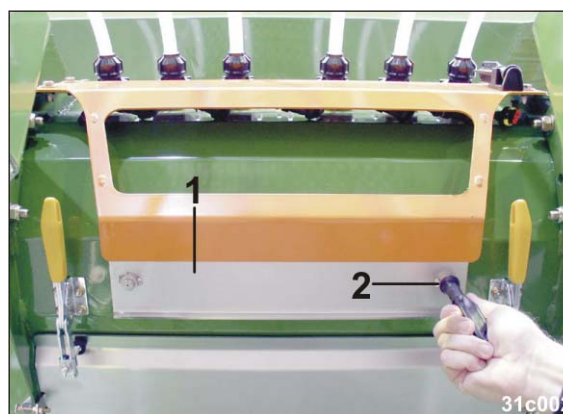


Fig. 254

10.5.2 Emptying the fertiliser hopper and/or the metering unit



CAUTION

Switch off the on board computer

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

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

10.5.3 Emptying the metering unit

1. Switch off the blower fan.
2. Completely unfold the implement.
3. Switch off the on board computer.
4. Insert the calibration trough (Fig. 255/1) into the holder beneath the dosing unit.

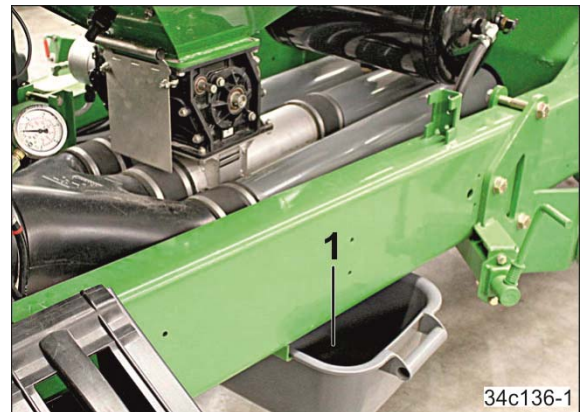


Fig. 255

5. Close the opening of the hopper above the metering unit with the shutter (Fig. 256/1) (see section "Installing/removing the metering roller", page 147).

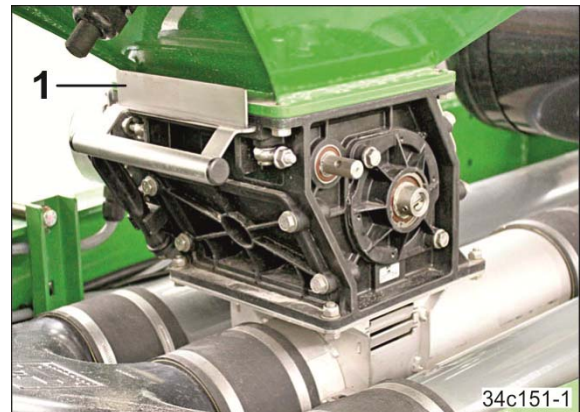


Fig. 256

Use of the implement

6. Open the rotary shutter (Fig. 257/1) of the injector sluice.
→ The metered seed in the metering unit drops into the calibration trough.
7. Remove the metering roller (see section "Installing/removing the metering roller", page 147).

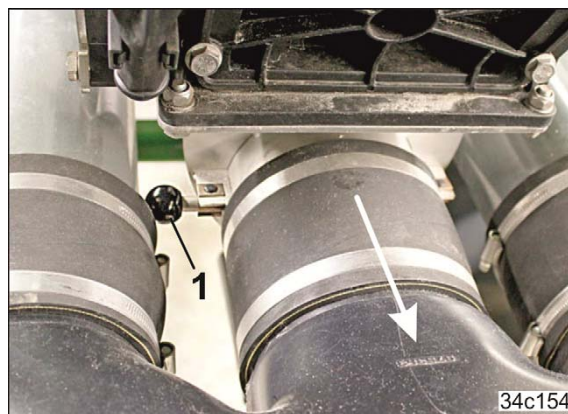


Fig. 257

8. Close the housing cover (Fig. 258/1).
9. Pull the shutter (Fig. 258/2) slowly out of the dosing unit.
→ The contents of the hopper drop into the calibration trough.
10. Reassembly occurs in the reverse sequence.

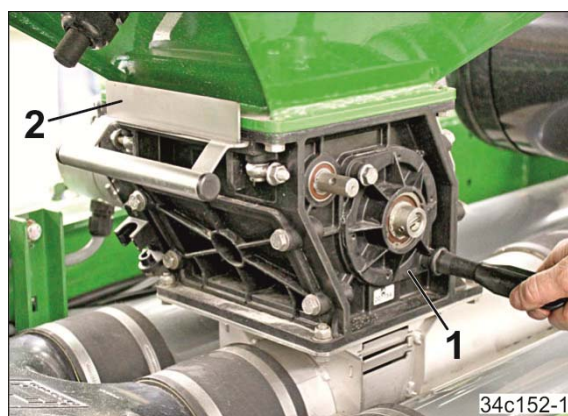


Fig. 258

10.5.4 Residual emptying of the filling auger

1. Fold the filling auger into the filling position.
2. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
3. Unscrew the seal (Fig. 259/1) to empty the filling funnel.

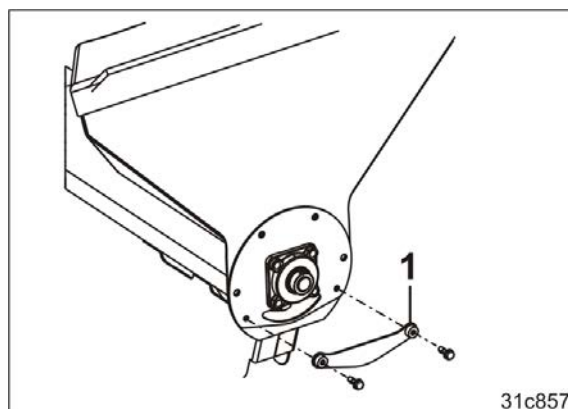


Fig. 259

11 Faults



WARNING

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

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

Secure the tractor and the implement against unintentional start-up and rolling, before you eliminate any faults on the implement. On this subject see section 6.2, page 101.

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



CAUTION

Switch off the on board computer

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

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



During operation, the opto-sensor detects errors on the singling drum. Gaps are indicated by the AMATRON.

Correct the implement settings if there are gaps.

11.1 Display of amount remaining

If the residual quantity in the hopper is undercut (and if the fill level sensor is properly set), a message appears on the on-board computer display, accompanied by an acoustic signal (see on-board computer operating manual).

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

11.2 Cleaning the seed tube



DANGER

Never switch the blower fan (singling) on under the following circumstances

- if a seed line has detached from the housing.
- if the press rollers are raised.

Seed grains may emerge uncontrollably at high speeds and cause injuries to unprotected parts of the body, particularly the eyes.

The AMATRON issues an alarm when one or more coulters are blocked and the seed is no longer being placed in the soil.

The air flow in the seed tube then ceases and the supply of seed in the seed tube is interrupted.

The grains do not enter the delivery hose, but accumulate at the sealing lip below the seed tube.

Immediately after the opto-sensor (Fig. 260/1) detects the seed interruption in the seed tube, the on-board computer alarms the tractor driver.



Fig. 260

If there is blockage in the seed placement area (Fig. 261/1), perform the following steps:

- Clean the seed tube (see page 187).
- Remove the seed accumulation on the sealing lip (see page 188).

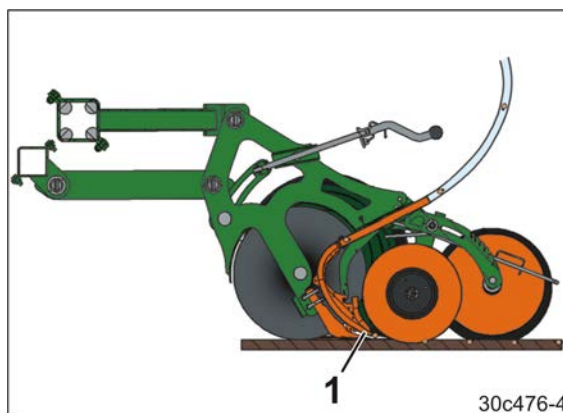


Fig. 261

Cleaning the seed tube

1. Switch off the blower fan.
2. Raise the coulter to the point where they have just come clear of the ground.
3. Release, but do not remove, the two screws (Fig. 262/1).
4. Fold up the press rollers and hook onto the clamp (Fig. 263/1).
5. Clear the blockage in the shoot pipe (Fig. 263/2), remove the shoot pipe to clean it if necessary.
6. Put the coulter in the working position.



Fig. 262

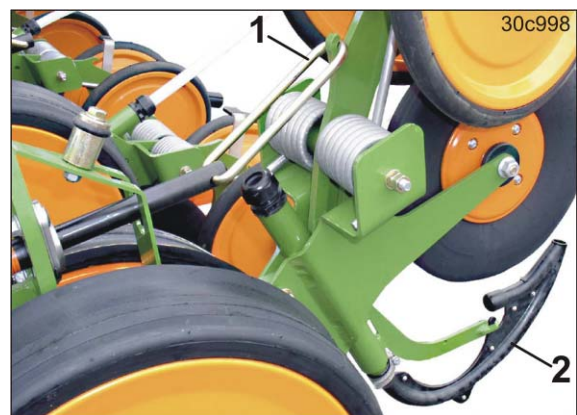


Fig. 263

Eliminating seed accumulations at the sealing lip

1. Move the lever (Fig. 264) several times clockwise to the end stop.

→ This causes the seed to fall from the sealing lip into the collection trough.

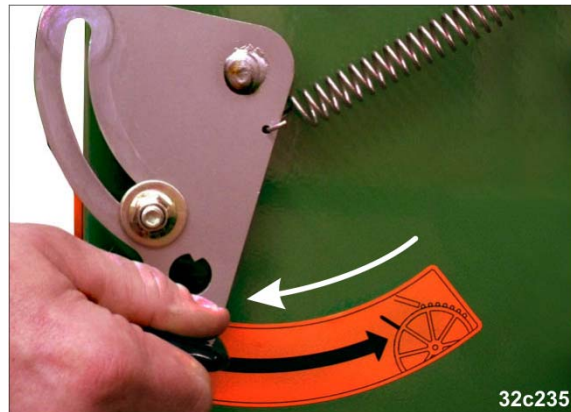


Fig. 264

2. Then move the sprung lever (Fig. 265/1) back to the end stop to its initial position.



Fig. 265

As a rule, the collection trough (Fig. 266/1) should be emptied after completion of work on the field (see section "Emptying the seed hopper and/or seed singling unit", page 180).

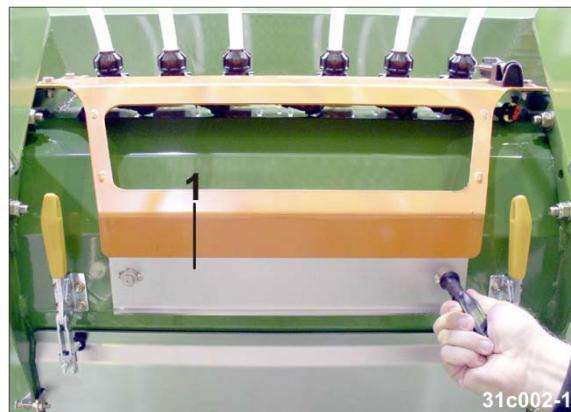


Fig. 266

11.3 Fault table

Fault	Possible cause	Remedy
Track marker not changing	Working position sensor is not correctly set	Adjust the sensor
	Working position sensor defective	Replace the working position sensor
	Hydraulic valve defective	Replace the hydraulic valve
Track marker switches too early	Working position sensor is not correctly set	Adjust the sensor
False alarm from blower fan sensor, indicated on the AMATRON display	Alarm limit is not correctly set	Alter the alarm limit
	Oil volume too low or too high	Set the oil volume
	Fan sensor defective	Replace the fan sensor
Grains are not placed with the target spacing	The incorrect calibration value (pul./100) is being used for seeding	Calibrate the AMATRON.
Warning message: "Pressure of singling"	Compressed air for singling seed grains is escaping.	Check the seed hopper for leaks. Check the air-ducting hoses.
Gaps in entire rows	The accumulation of grains is preventing singling	Cleaning the seed tube (see page 186).
	Foreign objects in front of the hole rows or scraper	Remove foreign objects
The outer rows are not occupied.	The sieve is clogged.	Remove deposits from the sieve.
The electric motor of a singling drum does not start.	"Working position" sensor is maladjusted/defective	Adjust/replace the sensor
Incorrect message from the optosensor	Seed dressing deposits impair the optics of the optosensor	Clean the optosensor with a damp cloth. Important! Do not use any sharp-edged cleaning equipment. Remove heavy soiling with technical alcohol.

12 Cleaning, maintenance and repairs



WARNING

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

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

Secure the tractor and the implement against unintentional start-up and rolling, before you eliminate any faults on the implement. On this subject see section 6.2, page 101.

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



CAUTION

Switch off the on board computer

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

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



WARNING

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

- Mount protective equipment, which you removed when cleaning, maintaining and repairing the implement.
- Replace defective protective equipment with new equipment.



Danger

Carry out cleaning, maintenance or repair work (unless otherwise specified) only after you have done all of the following:

- Unfolded the implement booms.
- The coulter frame is fully lowered.
- Applied the tractor parking brake.
- The tractor PTO shaft is shut off.
- Shut off the tractor engine.
- Removed the ignition key.

12.1 Fuse

12.1.1 Securing the connected implement

Before working on the implement, place the implement connected to the tractor on the sustainer (Fig. 267/1) to prevent unintentional lowering of the tractor's lower link.



Fig. 267

12.1.2 Keep hopper with pellet filling closed

The pellet filling in the front hopper area serves to reach the required drawbar load. When opening the locking plate (Fig. 268/1), pellets may pour out uncontrollably.



Never open the sealing plate (Fig. 268/1).



Fig. 268

12.2 Cleaning the implement



DANGER

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

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



DANGER

Fully extend or retract the implement before cleaning it.

Never clean the implement if the rear frame and implement booms are not completely folded.



- Pay particular attention to the brake, air and hydraulic hose lines.
- Never treat brake, air and hydraulic hose lines with petrol, benzene, petroleum or mineral oils.
- After cleaning, grease the implement, in particular after cleaning with a high pressure cleaner/steam jet or liposoluble agents.
- Observe the statutory requirements for the handling and removal of cleaning agents.



What should be observed when cleaning with a high-pressure cleaner/steam cleaner:

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

12.2.1 Daily fast cleaning of the singling unit and the spur gears

1. Secure the tractor against unintentional start-up and rolling.
2. Open the bottom flap (Fig. 269/1).

The bottom flap is secured with quick-release clamps (Fig. 269/2).

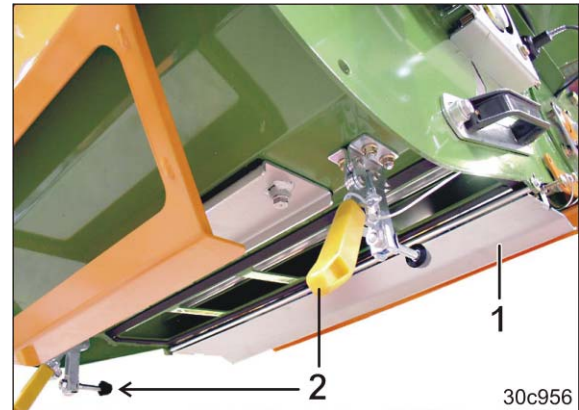


Fig. 269

3. Direct people out of the danger area.
4. Switch on the blower fan.
- Seed residues and dressing deposits will be blown out of the singling unit housing.
5. Move the air deflector lever (Fig. 270/1) from stop to stop several times with the blower fan running.
6. Switch off the blower fan.



Fig. 270

7. Remove dust and dirt from the spur gears (Fig. 271/1) behind the scale plate (Fig. 271/2) using compressed air.
- Dismounting of the scale plate, as shown, is not required.

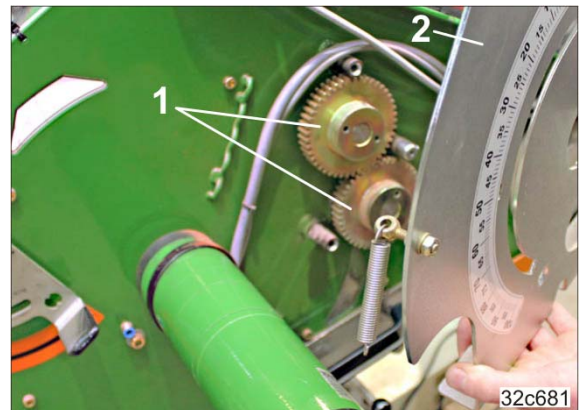


Fig. 271

8. Close the singling unit housing after cleaning.



Deep cleaning is performed after emptying the seed hopper and the singling unit (see section "Deep cleaning of the implement", page 194).

12.2.2 Deep cleaning of the implement

1. To clean, always place the implement connected to the tractor on the stand (Fig. 267/1).
2. Completely fold or unfold the implement (see section 5.11, page 84).
Never clean the implement if the rear frame and implement booms are not completely folded.
3. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
4. Empty the seed hopper (see section "Emptying the seed hopper and/or seed singling unit", page 180).
5. Empty the fertiliser hopper and metering unit (see section Emptying the fertiliser hopper and/or the metering unit, page 183).
6. Clean the fertiliser distributor head (see section Cleaning the fertiliser distributor head, page 195).
7. Clean the implement with water or with a high-pressure cleaner.
Important: Only clean the singling unit with compressed air.
8. Clean the opto-sensors with ISOPRORANOL (alcohol).
Seed dressing deposits may adversely affect the correct operation of the opto-sensor. Do not use any aggressive cleaning agents.



Clean the dirty 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 distribution along the row.



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

12.2.2.1 Cleaning the fertiliser distributor head

**WARNING**

There is the risk of slipping on the path to the distributor head and in the area of the distributor head.

1. Loosen the winged nuts (Fig. 272/1) and remove the hood (Fig. 272/2) from the distributor head.
2. Remove any impurities with a broom. Then wipe out the distributor head with a dry cloth.
3. Fasten the hood with the winged nuts.



Fig. 272

12.3 Assembly work (specialist workshop)

12.3.1 Drawbar pipe length adjustment

1. Park the implement on the parking supports and secure against rolling with wheel chocks.
2. Do not extend the draw bar pipe (Fig. 273/1) further than required.

The drawbar pipe can be secured in three positions.

Tightening torques of the fastening screws:

Screw (Fig. 273/2): 450 Nm

Screw (Fig. 273/3) 700 Nm

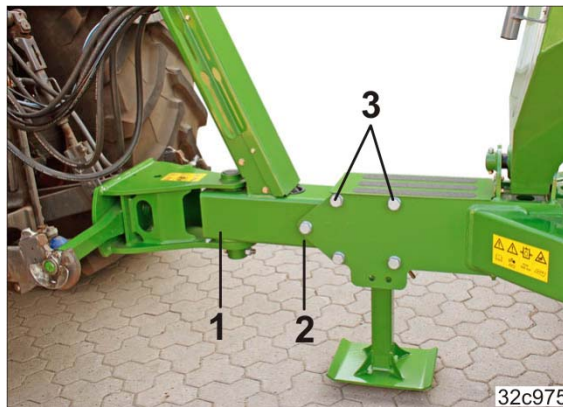


Fig. 273

12.3.2 Removing/installing the singling drum

1. Close the seed shutter (Fig. 274/1) when seed hopper is full (see section 10.5.1, page 180).

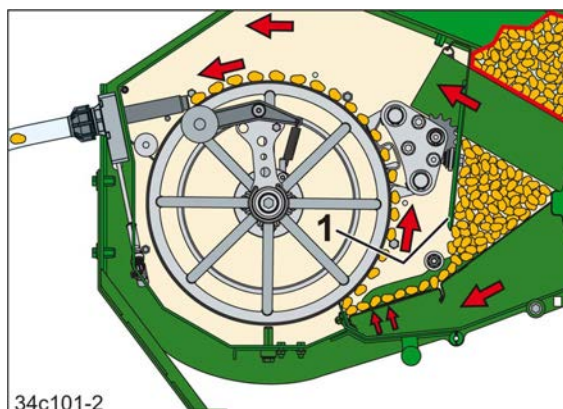


Fig. 274

2. Disconnect the exhaust air hose (Fig. 275/1) from the housing cover (Fig. 275/2).



Fig. 275

3. Loosen the bolts (Fig. 276/2) with the hexagon wrench provided.
4. Remove the bolt (Fig. 276/3).
5. Remove the housing cover (Fig. 276/1).

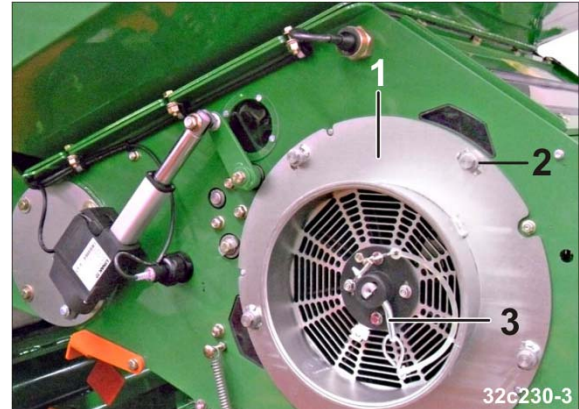


Fig. 276

6. Pull the singling drum out of the housing. To do so, turn slowly clockwise.
7. Installation is in the reverse sequence.



Fig. 277



When mounting and dismounting the drum

To prevent damage to the sealing lips, turn the drum slowly in a clockwise direction.

When mounting the drum

Carefully press the drum spoke into the receptacle of the electric motor by slightly raising the drum. If excessive force is used, the spoke may be damaged.



When installing the housing cover, pay attention to the recesses (Fig. 278/1).

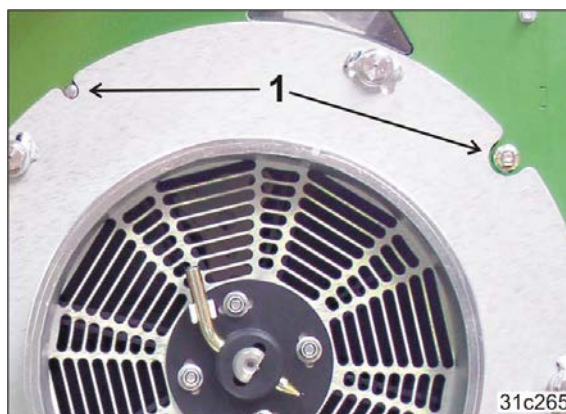


Fig. 278



Secure the bearing seat with the bolt (Fig. 278/1).



Fig. 279

8. Open and/or adjust the seed shutter (Fig. 246/1) (see section 8.1.2, page 137).

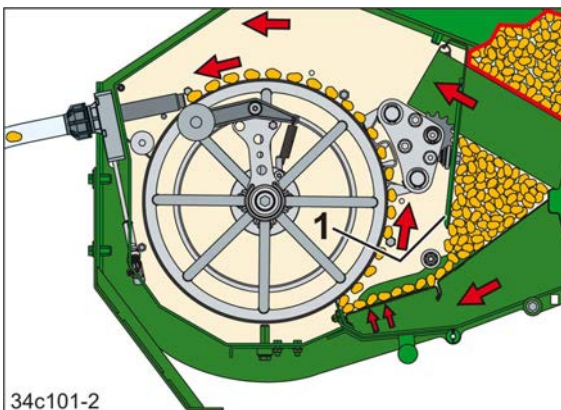


Fig. 280

12.3.3 Fastening the seed tube hoses

The seed tube hoses are fastened to the opto-sensor with union nuts.

The opto-sensor wrench (Fig. 281) serves to loosen and fasten the union nuts, especially for narrow-row seed drills.



Fig. 281

When fastening the seed tube hoses:

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



Fig. 282



Fig. 283

12.3.4 Adjusting the carrier roller scraper

Carbide-coated scrapers (Fig. 284/1) clean the carrier rollers.

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

The bolts (Fig. 284/2) are used to adjust the carrier roller scraper.



Fig. 284

12.3.5 Check and adjusting the gap between the furrow former and the coulter disc

The gap (arrow) between the furrow former (Fig. 285/1) and coulter disc (Fig. 285/2) is adjustable.

The furrow former (Fig. 285/1) should be close (1-2 mm) to the coulter disc (Fig. 285/2), but not touch it.

IF the gap between the furrow former and the coulter disc is too large, the coulter disc can come to a standstill.

The gap (arrow) can be adjusted, like a toggle, by variously tightening the two screws (Fig. 285/3). Do not tighten the screws too hard. It should be possible to move the furrow former with average force.

Lock the screws after each adjustment.

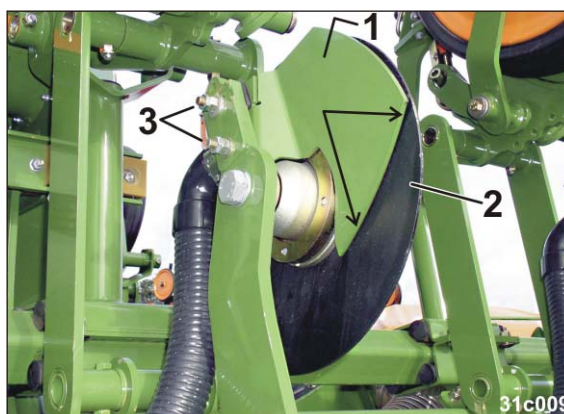


Fig. 285

12.4 Lubrication specifications

The lubrication points on the implement are marked with a foil sticker (Fig. 286).

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

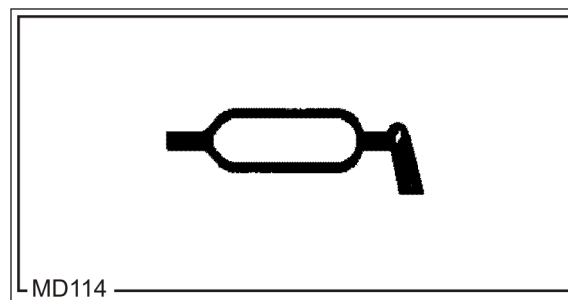


Fig. 286

Lubricants

For lubrication work use a lithium saponified multipurpose grease with EP additives:

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

12.4.1 Overview of lubrication points – VarioTrail 3000

VarioTrail 3000	Number of lubrication nipples	Lubrication interval	Notes
Fig. 288/1	1	50 h	
Fig. 288/2	1	50 h	
Fig. 289/1	2	50 h	

Fig. 287



Fig. 288



Fig. 289

12.4.2 Overview of lubrication points – EDX-VT 6000-C rear module

EDX-VT 6000-C rear module	Number of lubrication nipples	Lubrication interval	Notes
Fig. 291/1	2	50 h	
Fig. 291/2	2	50 h	
Fig. 292/1	2	50 h	
Fig. 292/2	2	50 h	
Fig. 292/3	2	50 h	
Fig. 292/4	2	50 h	
Fig. 292/5	2	50 h	
Fig. 293/1	2	50 h	

Fig. 290



Fig. 291

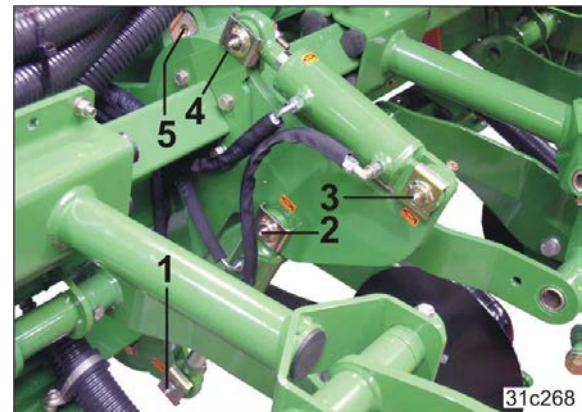


Fig. 292



Fig. 293

12.5 Maintenance schedule – overview



Carry out maintenance work when the first interval is reached.

The times, continuous services or maintenance intervals specified in any third party documentation shall have priority.

Initial operation	Before initial commissioning	Specialist workshop	Check and service the hydraulic hose lines. This inspection has to be recorded by the operator.	Section 12.6.6
			Checking the inflation pressure of the running gear tyres	Section 12.5.1
	After the first 10 operating hours	Specialist workshop	Check and service the hydraulic hose lines. This inspection has to be recorded by the operator.	Section 12.6.6
			Check all the components of the hydraulic system for tightness. Tighten the bolted connections if necessary.	
		Specialist workshop	Check all screw connections for a secure fit.	Section 12.7
		Specialist workshop	Check tightening torques of wheel nuts (specialist workshop)	Section 12.6.1

Before each start-up (before starting work)		Visual inspection of the lower link pins	Section 12.6.2
		Inspection criteria for hydraulic hose lines before each start-up	Section 12.6.5
		Check all the components of the hydraulic system for tightness. Tighten the bolted connections if necessary.	
		Dual-circuit pneumatic service braking system: Leak test	Section 12.6.8.3

Hourly, (e.g. when refilling the hopper each time)		Checking the placement depth and grain spacing	Section 8.1.10
		Check and eliminate dirt: <ul style="list-style-type: none"> • Fertiliser dosing unit • Delivery sections and fertiliser hoses • Fertiliser distributor head • Blower fan intake guard screen 	
		Remove surplus grains from sealing lips	Section 11.2
During the work		Check fertiliser distributor head for impurities and clean if necessary (see section "Cleaning the fertiliser distributor head")	Section 12.2.2.1
After completion of work		Daily fast cleaning of the singling unit and the spur gears	Section 12.2.1
		Deep cleaning of the implement (as required)	Section 12.2.2
		Clean the spaces between the fins of the oil cooler (optional) with compressed air (danger of overheating). Under extremely dusty conditions, clean the spaces between the multi-discs several times daily.	
Every week, (at least every 50 operating hours)	Specialist workshop	Check and service the hydraulic hose lines. The inspection has to be recorded by the owner/operator.	Section 12.6.6
		Checking the inflation pressure of the running gear tyres	Section 12.5.1

Cleaning, maintenance and repairs

Every 3 months		Check and adjusting the gap between the furrow former and the coulter disc	Section 12.3.5
	Specialist workshop	General visual inspection of the service brake system	Section 12.6.7.1
	Specialist workshop	Dual-circuit pneumatic service braking system: Exterior inspection of the compressed air tank	Section 12.6.8.1
	Specialist workshop	Dual-circuit pneumatic service braking system: Checking the pressure in the compressed air tank	Section 12.6.8.2
	Specialist workshop	Dual-circuit pneumatic service braking system: Leak test	Section 12.6.8.3
	Specialist workshop	Dual-circuit pneumatic service braking system: Cleaning the line filters	Section 12.6.8.4
		On-board hydraulics oil filter change	Section 12.6.3
		Servicing roller chains and chain wheels	Section 12.6.4
Every 12 months	Specialist workshop	Checking the service brake system for safe operating condition (specialist workshop) This inspection has to be recorded by the operator.	Section 12.6.7.2

12.5.1 Checking the inflation pressure of the running gear tyres

Check compliance with specified tyre pressure
(see table Fig. 294).



Adhere to the inspection intervals
(see section on Maintenance schedule – overview, page 204).

Tyres	Nominal tyre inflation pressure
700/40-22.5	1.8 bar
710/40-22.5	1.8 bar



Fig. 294

12.6 Specialist workshop – Setting and repair work

12.6.1 Check tightening torques of wheel nuts (specialist workshop)

Check compliance with tightening torques
(see table Fig. 295).



Inspection intervals

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

(see also section Maintenance schedule – overview, page 204).

	Wheel nut	Tightening torque
(1)	M22x1.5	610 Nm



Fig. 295

12.6.2 Visual inspection of the lower link pins



WARNING

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

Check the lower link pin for conspicuous defects whenever the implement is coupled. Replace the lower link pins in the event of clearly visible wear.

12.6.3 On-board hydraulics oil filter change

The on-board hydraulic system has an oil tank with an oil filter change indicator (Fig. 296/1). During operation, the indicator is in the green area.

The indicator changing to the red area indicates that the oil filter must be replaced.

Check the filling level in the oil tank when the implement is parked horizontally. The oil level must be visible in the window (Fig. 296/2).

Top up as needed with the oil brand UTTO SAE 80W API GL4 in the oil filling spout (Fig. 296/3).



Fig. 296

12.6.4 Servicing roller chains and chain wheels

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

- Clean (including the chain wheels and chain tensioner)
- Checked
- Lubricate with low-viscosity mineral oil (SAE30 or SAE40).

12.6.5 Inspection criteria for hydraulic hose lines before each start-up

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

12.6.6 Inspection criteria for hydraulic hose lines based on the maintenance schedule

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

- Damage to the outer layer up to the ply (e.g. scouring points, cuts, cracks).
- Brittleness of the outer layer (crack formation of the hose material).
- Deformations which do not match the natural shape of the hose. Both in a depressurized and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
- Leak points. 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 assembly.
- Corrosion of assembly, reducing the function and tightness.
- Installation requirements not complied with.
- Life span of 6 years has been exceeded.

The date of manufacture of the hydraulic hose line on the assembly plus six years is decisive. If the date of manufacture on the assembly is "2014", then the hose should not be used after February 2020. For more information, see "Labelling of hydraulic hose lines".



WARNING

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

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

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

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



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

12.6.6.1 Labelling of hydraulic hose lines

The valve chest identification provides the following information:

Fig. 297/...

- (1) Manufacturer's marking on the hydraulic hose line (A1HF)
- (2) Date of manufacture of the hydraulic hose line (14/02 = year/month = February 2014)
- (3) Maximum approved operating pressure (210 BAR).

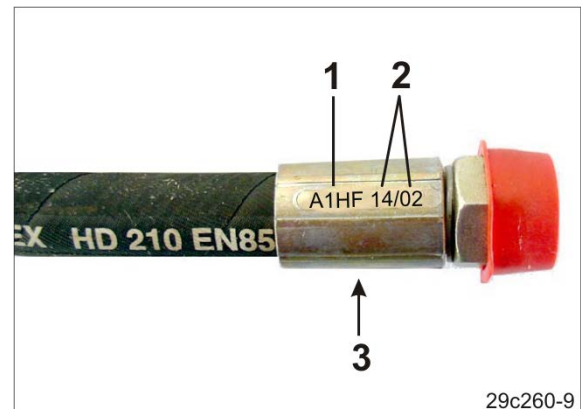


Fig. 297

12.6.6.2 Installation and removal of hydraulic hose lines



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

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

12.6.7 Service brake system (all variants)

valid for

- Dual-circuit pneumatic service brake system
- Hydraulic service brake system

12.6.7.1 General visual inspection of the service brake system

Perform the general visual inspection at regular intervals (see the section Maintenance schedule – overview, page 204)

Test points:

- Piping, hose lines and hose couplings must not be externally damaged or rusted.
- Hinges, e.g. on fork heads, must be properly secured, easy to move, and not worn out.
- Ropes and cables
 - must be properly run.
 - must have no visible cracks.
 - may not be knotted.
- Check the brake cylinder piston stroke.



If the visual inspection, function or action testing of the service brake system shows any signs of deficiencies, have a thorough inspection of all components performed immediately at a specialist workshop.



DANGER

Only specialist workshops or recognised brake service companies may perform adjustment and repair work on the brake system.

12.6.7.2 Checking the service brake system for safe operating condition (specialist workshop)

Have the service brake system checked for safe operating condition by a specialist workshop at regular intervals (see the section Maintenance schedule – overview, page 204).



In Germany Section 57 of the regulation BGV D 29 of the industrial injuries mutual insurance organisation requires as follows: the keeper has to have vehicles tested as required, however at least once annually, by an expert as to their safe operating condition.

Observe the legal regulations for all service work. Only genuine spare parts may be used.

12.6.8 Service brake system (Dual-circuit pneumatic service brake system)

12.6.8.1 Dual-circuit pneumatic service braking system: Exterior inspection of the compressed air tank

If the compressed air tank moves in the tensioning bands (Fig. 298/1)

→ tension or replace the compressed air tank.

If the compressed air tank has any external corrosion damage or is damaged

→ replace the compressed air tank.

If the rating plate (Fig. 298/2) is rusty, loose or the rating plate is missing from the compressed air tank:

→ replace the compressed air tank.



Fig. 298



The compressed air tank may be replaced in a specialist workshop only.

12.6.8.2 Dual-circuit pneumatic service braking system: Checking the pressure in the compressed air tank (specialist workshop)

1. Connect a pressure gauge to the test connection on the compressed air tank.
2. Run the tractor engine (approx. 3 mins.) until the compressed air tank has filled.
3. Check whether the pressure gauge is displaying the setpoint range 6.0 to 8.1 bar.
4. If the setpoint range is exceeded, go to a specialist workshop.

12.6.8.3 Dual-circuit pneumatic service braking system: Leak test (specialist workshop)

Checklist and steps for action:

- Test all connections, pipe, hose and screw unions for seal-tightness
- Eliminate any abrasion points on pipes and hoses
- Replace any porous or damaged hoses via a specialist workshop
- The dual-circuit pneumatic service brake system is considered free of leaks if the pressure drop within 10 minutes with the engine switched off is no greater than 0.10 bar, i.e. about 0.6 bar per hour.

If the values are exceeded, go to a specialist workshop.

12.6.8.4 Dual-circuit pneumatic service braking system: Cleaning the line filters (specialist workshop)

The dual-circuit air brake system is equipped with one filter for each circuit (Fig. 299/1) for

- the brake line
- the supply line.

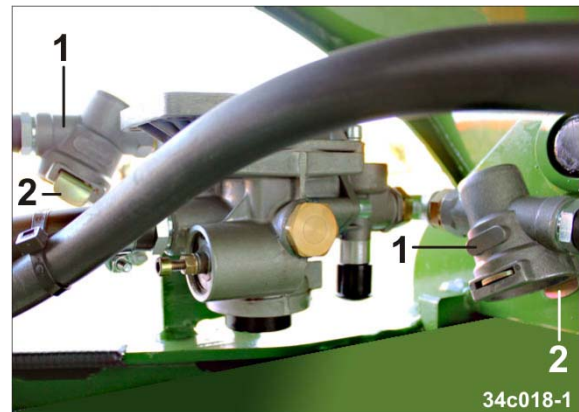


Fig. 299

Clean the line filters

1. Slowly pull the locking plate (Fig. 299/2) out of the housing, so that the individual parts and the compression springs do not fall randomly out of the housing.
2. Clean the filter insert with petrol or thinner (wash it) and dry with compressed air.
3. Reassembly occurs in the reverse sequence.

12.6.9 Repairs to the pressure tank (workshop)

The implement can have up to two pressure tanks:

- One standard factory-installed pressure tank (Fig. 300/1)
- One pressure tank fitted with the hydraulic service braking system.



Fig. 300

In the event of a repair observe the following:

The hydraulic system and the pressure tank connected to it are under a constant high pressure (approx. 100 bar).

Release of the hydraulic hose lines or the unscrewing or opening of the pressure tank in the event of a repair may be performed only in a specialist workshop with suitable auxiliary means.

For all work on the pressure tank and the hydraulic system connected to it observe the standard EN 982 (safety requirements for fluid systems).



DANGER

The hydraulic system and the pressure tank connected to it are under a constant high pressure (approx. 100 bar).

12.7 Screw tightening torques

Thread	Width across flats [mm]	Tightening torques [Nm] as a function of the bolt/nut grade		
		8.8	10.9	12.9
M 8	13	25	35	41
M 8x1		27	38	41
M 10	16 (17)	49	69	83
M 10x1		52	73	88
M 12	18 (19)	86	120	145
M 12x1.5		90	125	150
M 14	22	135	190	230
M 14x1.5		150	210	250
M 16	24	210	300	355
M 16x1.5		225	315	380
M 18	27	290	405	485
M 18x1.5		325	460	550
M 20	30	410	580	690
M 20x1.5		460	640	770
M 22	32	550	780	930
M 22x1.5		610	860	1050
M 24	36	710	1000	1200
M 24x2		780	1100	1300
M 27	41	1050	1500	1800
M 27x2		1150	1600	1950
M 30	46	1450	2000	2400
M 30x2		1600	2250	2700



Tightening torques of the wheel and hub screws [see Table (Fig. 295), page 208].

13 Hydraulic diagrams

13.1 Hydraulic diagram – VarioTrail 3000

Fig. 301/....	Designation	Fig. 301/....	Designation
0010	Tractor hydraulics		
0020	2 yellow	0500	EDX additional cylinder (optional) starting at 13 rows
0030	1 yellow	0510	Additional cylinder lift, left
0040	2 green	0540	Additional cylinder lift, right
0050	1 green	0650	T plug, 2x red
0060	1 red	0660	Fold in plug, 2x green
0070	T red	0670	Fold out plug, 1x green
0080	P red	1000	Tractor wheel mark eradicator (optional)
0090	LS red	1010	Wheel mark eradicator locking block
0100	Control block lift	1020	Tractor wheel mark eradicator cylinder
0110	Lift, left	1030	Tractor wheel mark eradicator control valve
0120	Rate-of-lower valve	1040	Throttle check valve lift
0130	Lift, right	1050	Throttle check valve lift
0140	Rate-of-lower valve	1500	Filling auger (optional)
0170	Switching valve – lighting folding	1510	Swivel auger in/out
0180	Lamp folding cylinder	1530	Manual directional valve
0210	Lower lift-out socket, 1x yellow	1540	Swivel throttle
0220	Raise lift-out socket, 2x yellow	1550	Handle 2 blue
0230	T3 plug, 2x red		
0240	T plug, 2x red		
0250	Fold in socket, 2x green		
0260	Fold out socket, 1x green		
0270	P socket, 1x red		
0280	LS socket, 2x red		
0290	LS P socket, 1x red		
0300	Blower fan drive from tractor hydraulic system (optional equipment)		
0310	Blower drive 8.5 ccm		
0400	Blower fan drive via on-board hydraulic system (optional equipment)		
0410	Blower drive 8.5 ccm		
0420	Oil cooler		
0430	Return filter		
0440	Ventilation filter		
0450	Oil tank		
0460	Pump 45 ccm		
0470	System pressure pressure gauge (max. 210 bar)		
All position specifications in direction of travel			

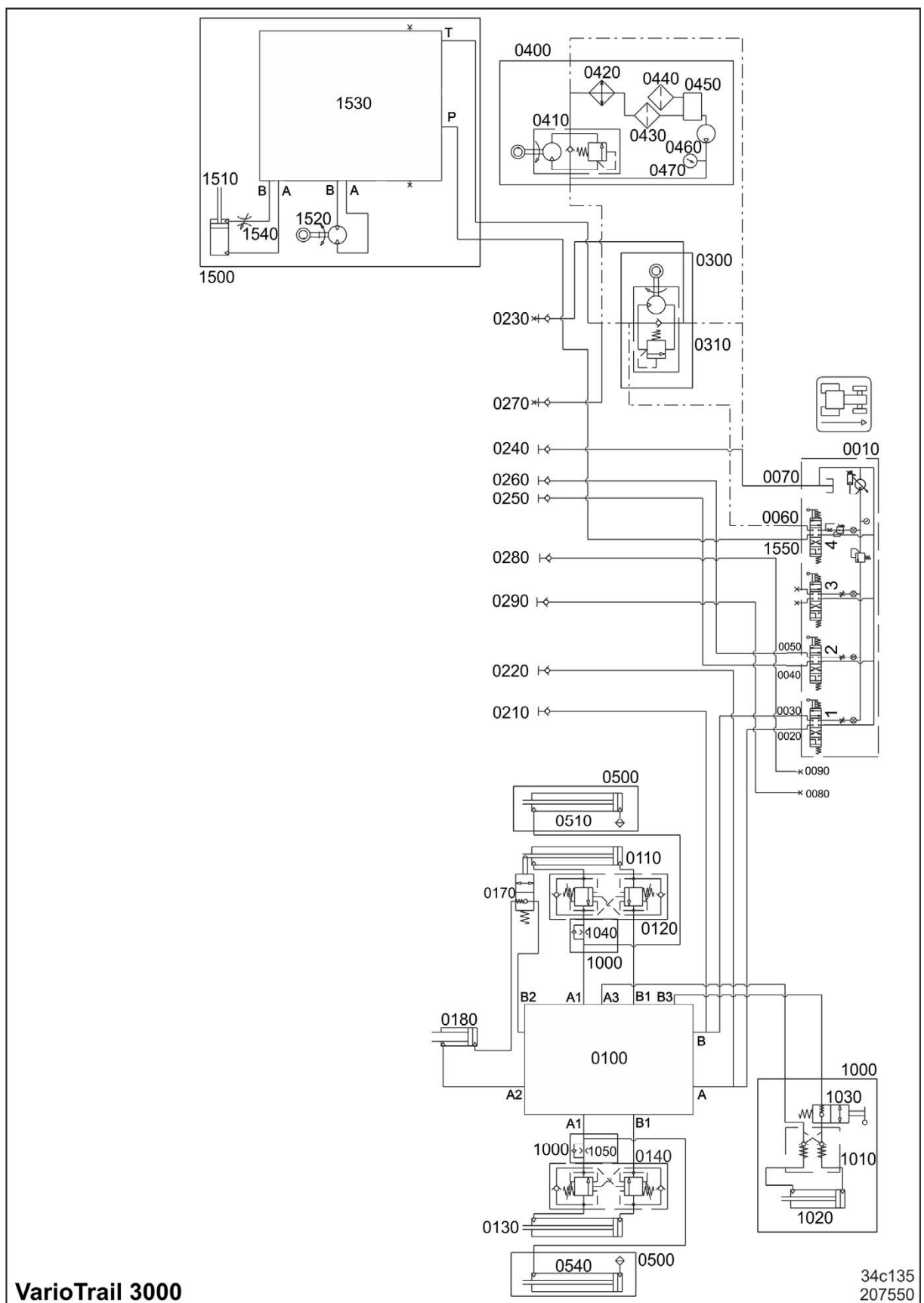


Fig. 301

13.2 Hydraulic diagram for EDX-VT 6000-C

Fig. 302/....	Designation
0620	yellow 2
0630	yellow 1
0640	red 2
0650	red T
0660	green 2
0670	green 1
0680	red 1
0700	Folding control block – coulter pressure EDX VT
0710	Folding pressure accumulator
0720	Coulter pressure switching valve
0740	Fertiliser coulter pressure sensor
0750	ED coulter pressure sensor
0770	Throttle check valve – folding
0780	Boom folding
0790	Throttle check valve – folding
0800	Fertiliser coulter pressure right
0810	Fertiliser coulter pressure left
0820	ED coulter pressure right
0830	ED coulter pressure left
0900	Track marker (optional)
0910	Track marker left
0920	Track marker, right
0930	Track marker control block
1600	PEM (optional)
1610	4/2 directional valve PEM
1620	Check valve PEM
1640	Lift, right PEM
1650	Lift, left PEM
All position specifications in direction of travel	

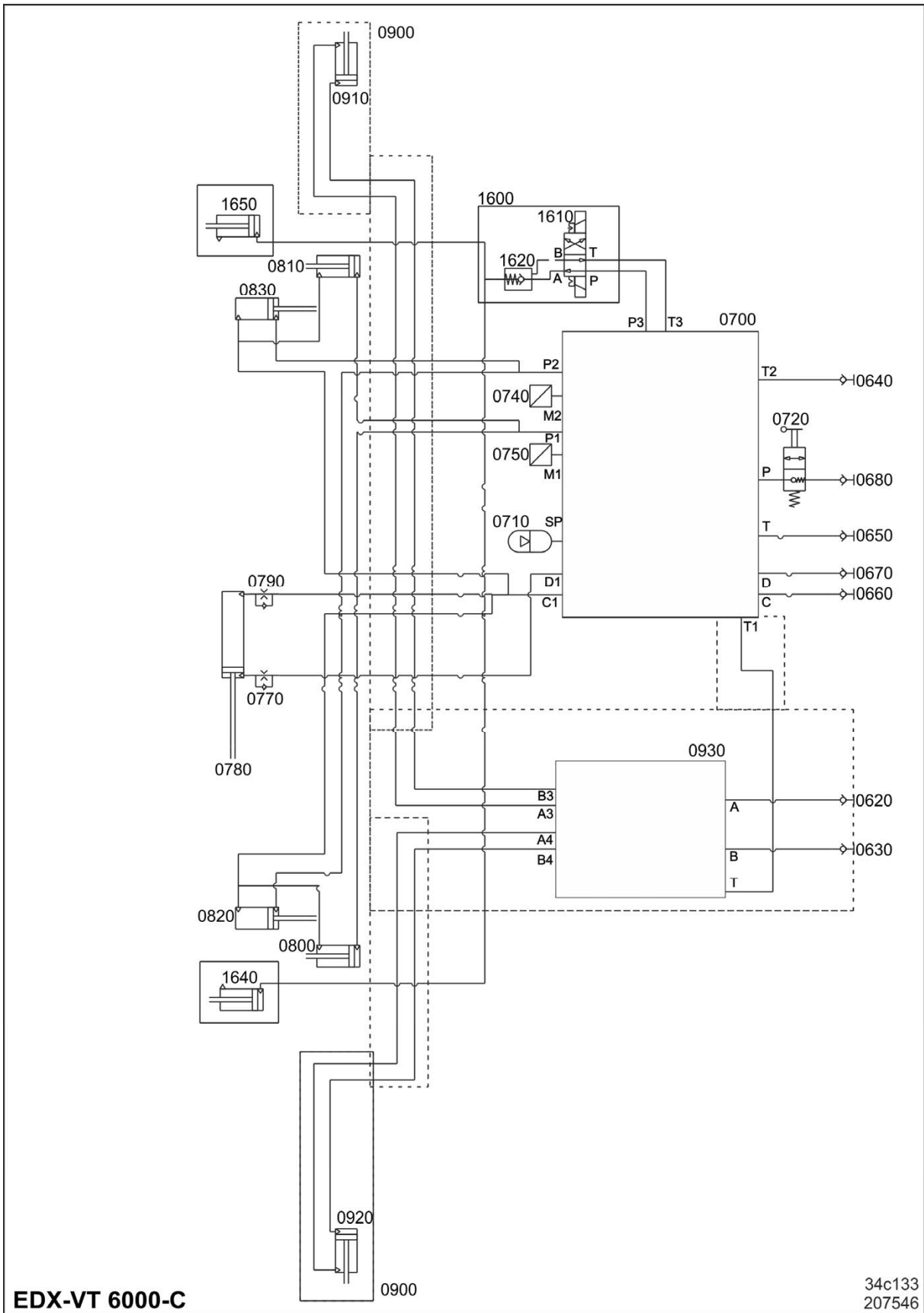


Fig. 302



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