

Operating Manual

AMAZONE

Large area seed drill

Condor 12001-C

Condor 15001-C



MG3641
BAH0030-4 07.15

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:

Condor 12001-C/15001-C

Permissible system pressure (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

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E-mail: et@amazone.de
Online spare parts catalogue: www.amazone.de

When ordering spare parts, always specify the implement number for your implement.

Formalities of the operating manual

Document number: MG3641

Compilation date: 07.15

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Foreword

Foreword

Dear Customer,

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

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

Before 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.

User evaluation

Dear Reader

We update our operating manuals regularly. Your suggestions for improvement help us to create ever more user-friendly manuals. Send us your suggestions by fax.

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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 section "Warning symbols and other labels on the implement", Seite 18 of this operating manual and to follow the safety instructions of the warning symbols when operating the implement.
- to get to know the implement.
- to read the sections of this operating manual, important for carrying out your work.

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

Risks in handling the implement

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

- the health and safety of the user or third 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 the completion of the contract. Guarantee and liability claims for damage to people or property will be excluded if they can be traced back to one or more of the following causes:

- Improper use of the implement
- Improper installation, commissioning, operation and maintenance of the implement
- Operation of the implement with defective safety equipment or improperly attached or non-functioning safety 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.

Activity \ Person	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 "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

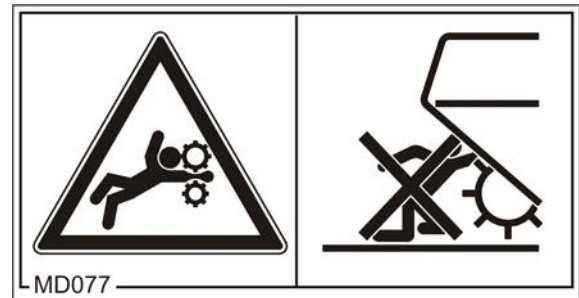
MD 077

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

Causes serious, potentially fatal injuries anywhere on the body.

Never reach into the danger area,

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



MD 078

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

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

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



MD 082

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

Causes serious, potentially fatal injuries anywhere on the body.

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

Make sure that nobody is riding on the implement.



MD 084

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

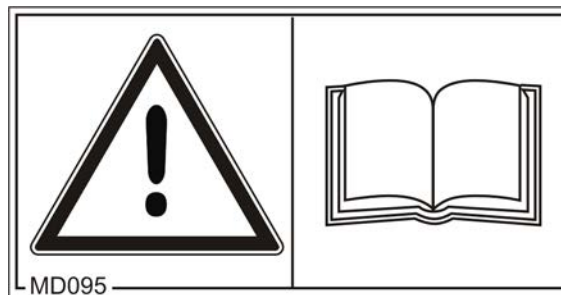
Causes serious, potentially fatal injuries anywhere on the body.

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



MD 095

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

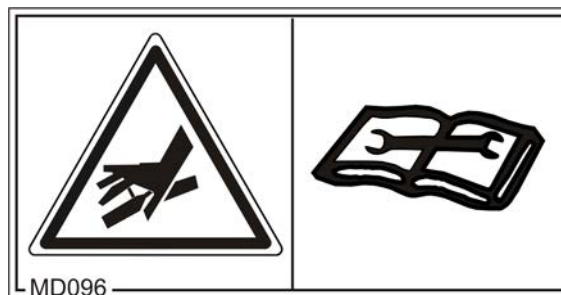


MD096

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

This danger may cause very 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.

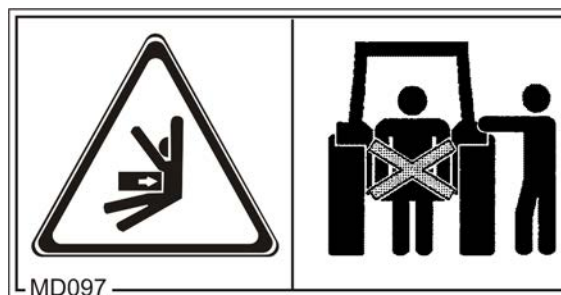


MD 097

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!

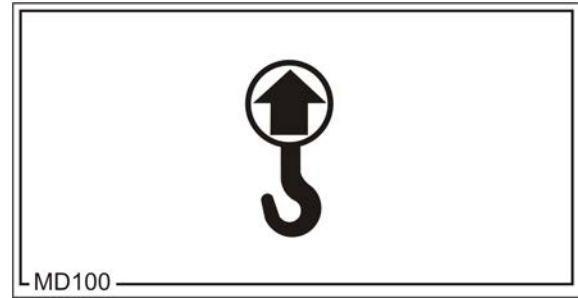
Causes serious, potentially fatal injuries anywhere on the body.

- 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.



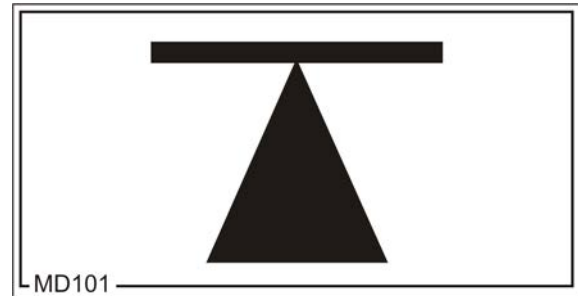
MD 100

Hook accessory for attaching load-lifting devices.



MD 101

This symbol indicates application points for using 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.



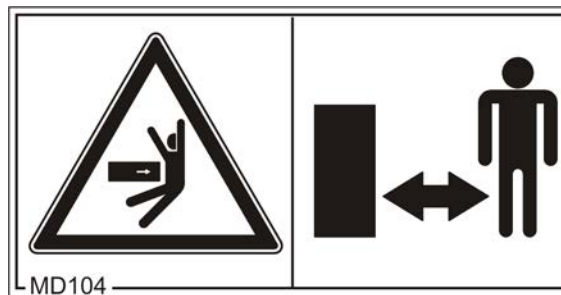
General Safety Instructions

MD 104

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

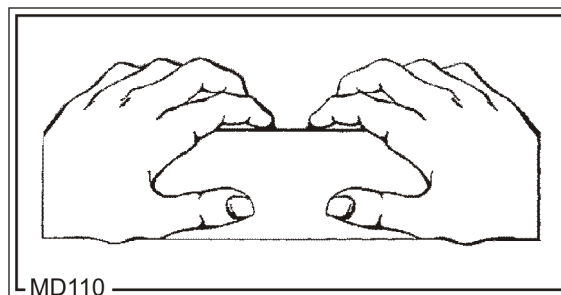
These dangers can cause extremely serious and potentially fatal injuries.

- 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.



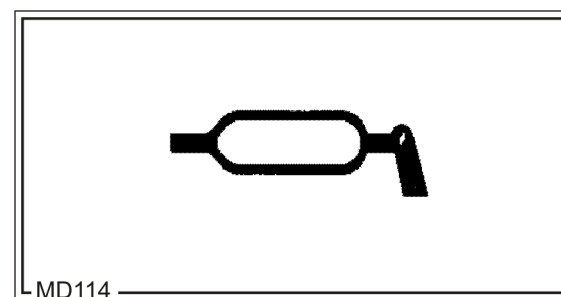
MD 110

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



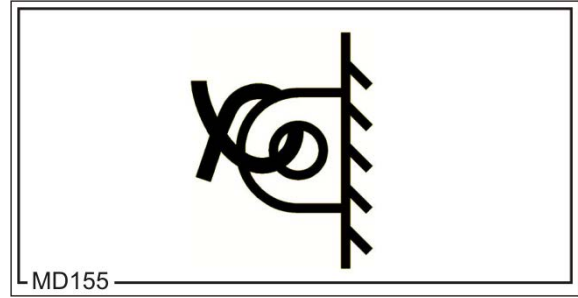
MD 114

This symbol indicates a lubrication point



MD 155

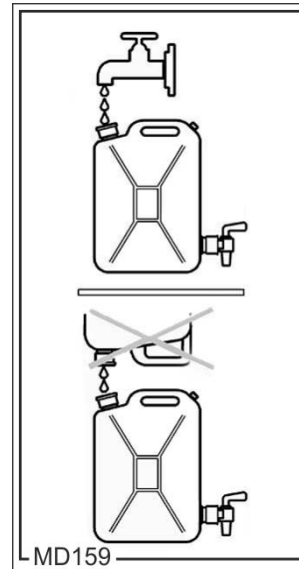
This icon designates the restraint points for tying the implement to a transport vehicle allowing the implement to be transported in a safe manner.



MD 159

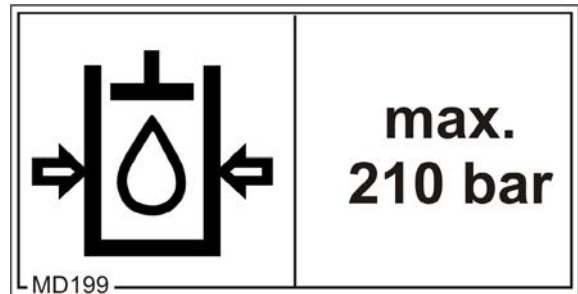
This pictogram identifies danger of poisoning from using unclean water in the fresh water tank!

Never use the water from the hand wash tank as drinking water. The materials used to construct the fresh water tank are not food-safe.



MD 199

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

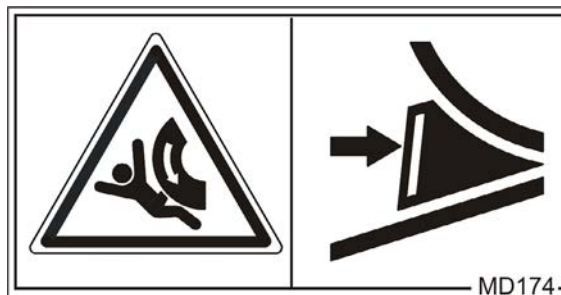


MD 174

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).



MD 181

Check that the wheel nuts are secure.

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

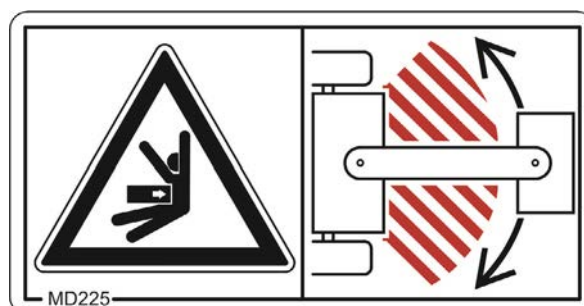


MD 225

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.



2.13.1 Positions of warning symbols and other labels

Warning symbols

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

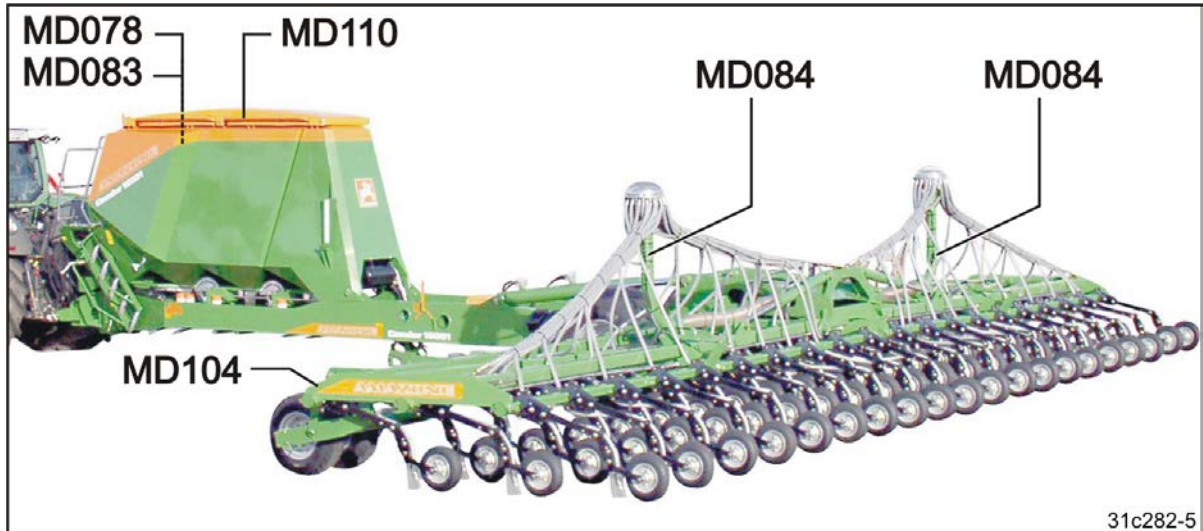


Fig. 1

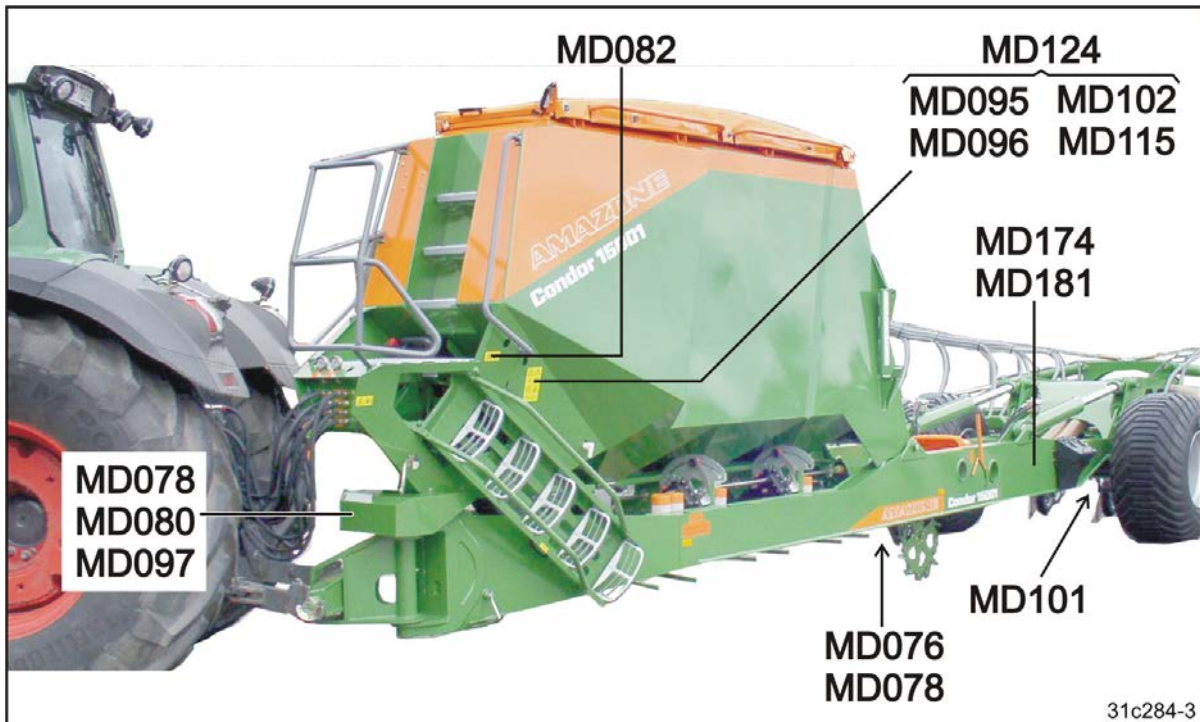


Fig. 2

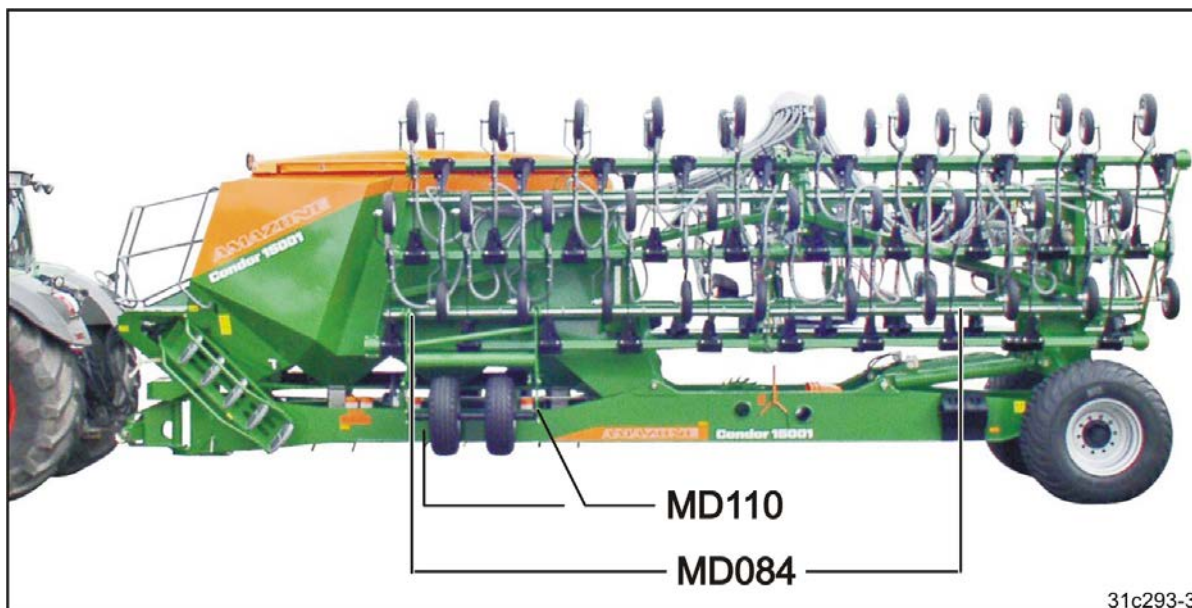


Fig. 3

2.14 Dangers 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:

- Danger to people through non-secured working areas.
- Failure of important implement functions.
- Failure of prescribed methods of maintenance and repair.
- Danger to people through mechanical and chemical impacts.
- Risk to the environment through leakage of hydraulic fluid.

2.15 Safety-conscious working

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

Comply with the accident prevention instructions on the warning symbols.

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

2.16 Safety information for users



WARNING

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

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

2.16.1 General safety instructions and accident prevention instructions

- In addition to these instructions, also comply with the generally valid national and safety and accident prevention regulations!
- The warning and information signs attached on the implement provide important instructions for safe operation of the implement. Compliance with these instructions is essential for your safety!
- Before moving off and starting up the implement, check the immediate area of the implement (children). Ensure that you can see clearly.
- It is forbidden to ride on the 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 moving towards 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.



General Safety Instructions

- 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:
 - o must easily give way to all movements in bends without tensioning, kinking or rubbing.
 - o 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 hopper.
- 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.
- 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).

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 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.
- 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 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.
- Drain the air reservoir every day!
- 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 filling quantity of the hopper!
- 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 Cleaning, maintenance and repair

- Only carry out cleaning, maintenance and repair work on the implement when:
 - the drive is switched off.
 - the tractor engine is at a standstill.
 - the ignition key has been removed.
 - The implement's connector has been disconnected from the on-board computer!
- 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 Loading and unloading



DANGER

Depending on the equipment, the approved transport width of 3.0 m and the transport height of 4.0 m is exceeded when the implement is loaded on a transport vehicle.

See section 9, Transportation (Seite 131).



DANGER

Never stand underneath implements lifted by a crane.



DANGER

Only attach the lifting gear at the marked positions. Do not stand under suspended loads.

The pictogram (Fig. 4) marks the location at which the lifting gear is to be attached to the implement.

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

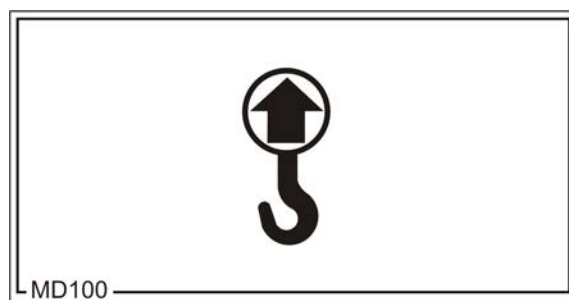


Fig. 4

The (Fig. 5) symbol marks the lashing points on the implement.

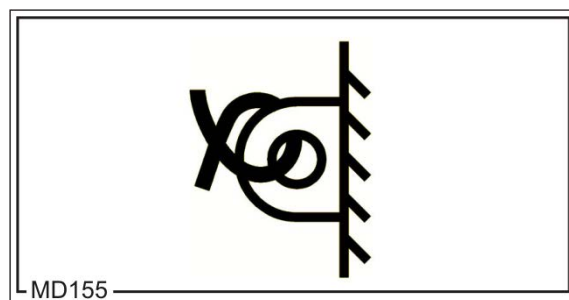


Fig. 5

Fig. 6/...

- (1) Front lashing points

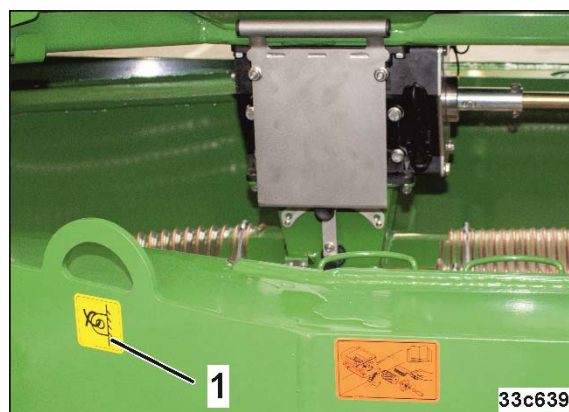


Fig. 6

Fig. 7/...

(1) Middle lashing points

(2/3) Rear lashing points

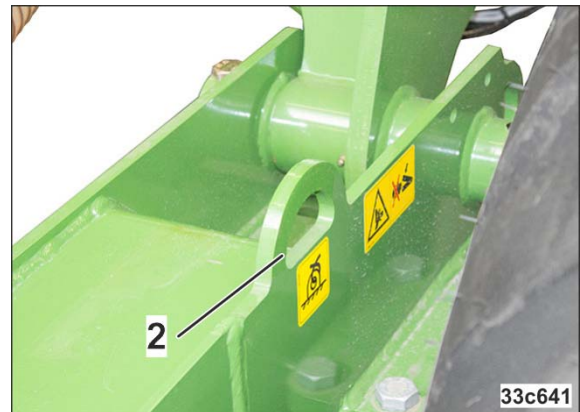
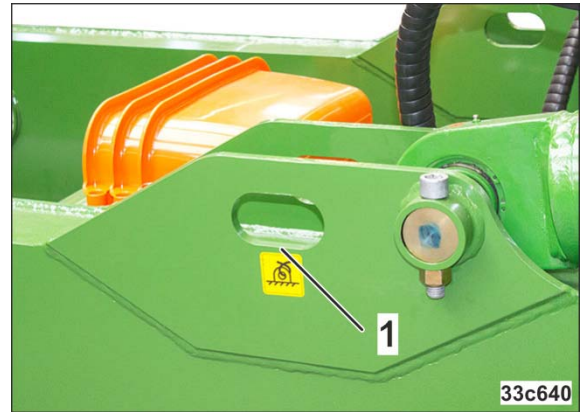


Fig. 7

4 Product description

This section:

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

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

Main assemblies of the implement

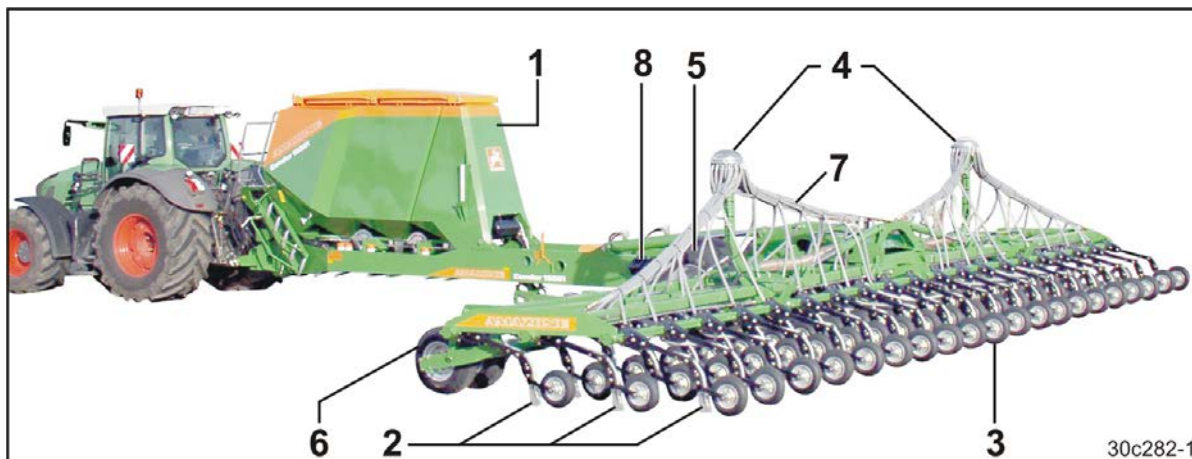


Fig. 8

- | | |
|--|-------------------|
| (1) Seed hopper, three partitions | (5) Running gear |
| (2) ConTeC coulter | (6) Support wheel |
| (3) Press roller (for maintaining the coulter penetration depth and for closing the seed furrow) | (7) Seed hose |
| (4) Seed distributor head | (8) Wheel chock |

4.1 Overview of assembly groups

Fig. 9/...

Control terminal AMALOG⁺

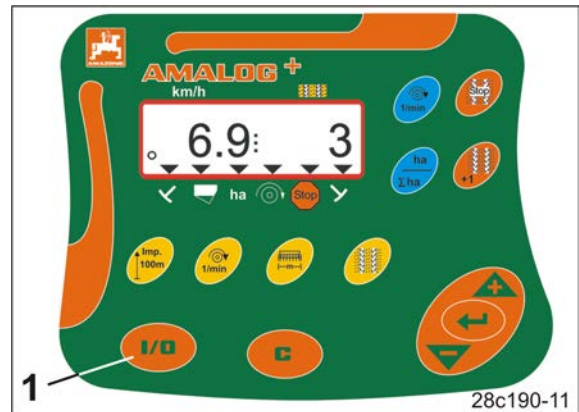


Fig. 9

Fig. 10/...

- (1) Draw rail
- (2) Loading board with ladder (pivoting)

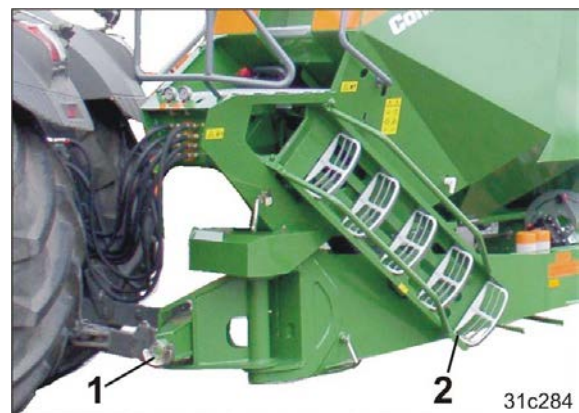


Fig. 10

Fig. 11/...

- (1) Mounting for supply lines



Fig. 11

Product description

Fig. 12/...

- (1) Vario gearbox
- (2) Metering unit with metering roller
- (3) Calibration trough
(in bracket for calibration test)
- (4) Case for stowing
 - o of the operating manual
 - o of a metering roller
 - o of the digital scale

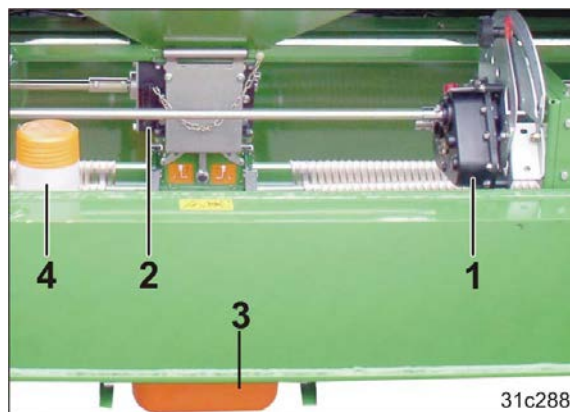


Fig. 12

Fig. 13/...

- (1) Star wheel (lifted)
- (2) Calibration crank

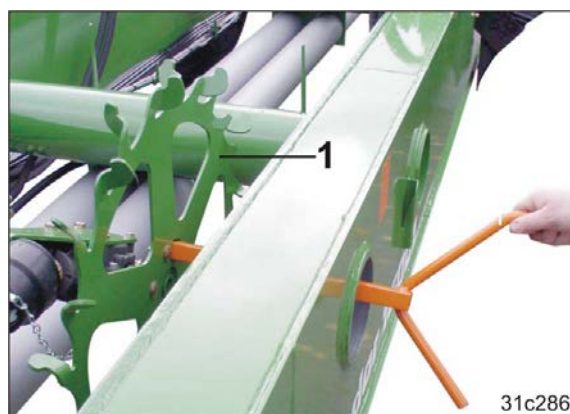


Fig. 13

Fig. 14/...

ConTeC coulter

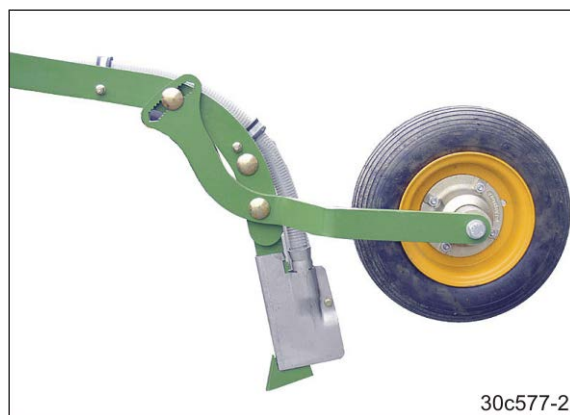


Fig. 14

Fig. 15/...

- (1) Tarpaulin cover
- (2) Locking lever



Fig. 15

Fig. 16/...

- (1) Level sensor



Fig. 16

Fig. 17/...

- (1) Seed tube monitoring (optional)

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

Each seed tube hose can be equipped with a sensor (Fig. 17/1) that detects the seed flow.

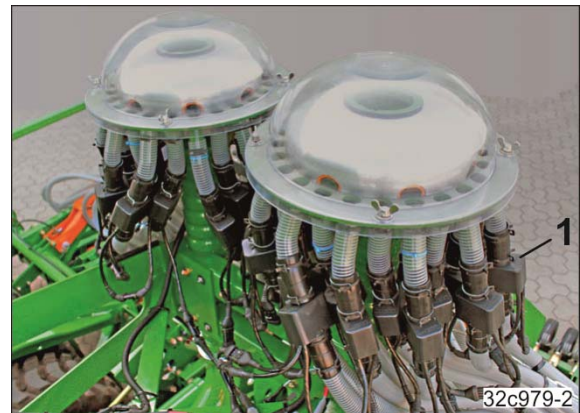


Fig. 17

4.2 Safety and protective equipment

Fig. 18/...

- (1) Charging sieve
(acts as guard screen in seed hopper)



Fig. 18

Fig. 19/...

- (1) Catch hooks
(for locking the implement boom during transportation)



Fig. 19

Fig. 20/...

- (1) Wheel chocks
(parking position under the seed hopper)

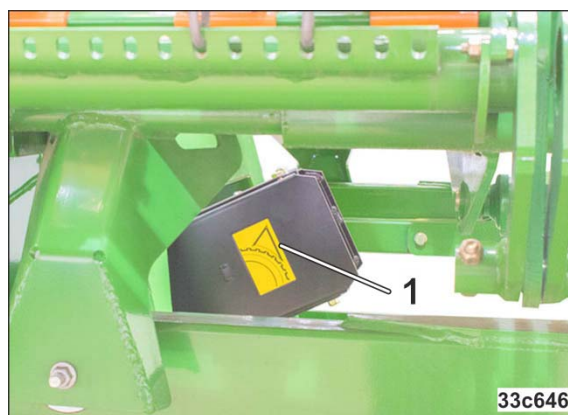


Fig. 20

4.3 Transportation equipment

Fig. 21/...

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

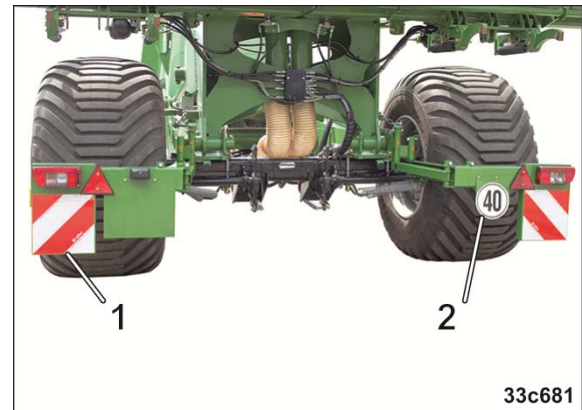


Fig. 21

Fig. 22/...

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

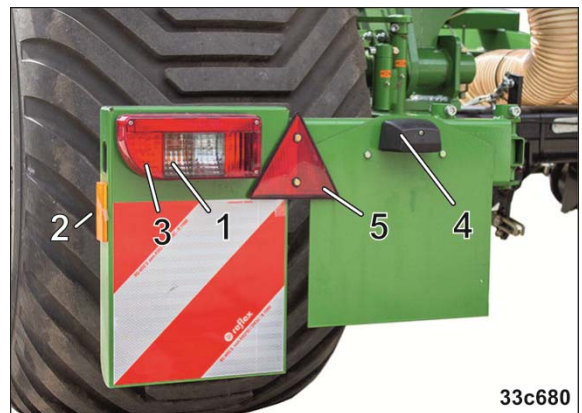


Fig. 22

Fig. 23/...

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

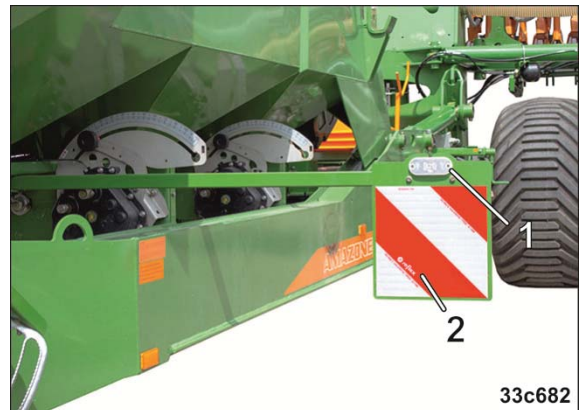


Fig. 23

Fig. 24/...

- (1) 2 x 4 reflectors, yellow, (laterally with a max. spacing of 3 m)

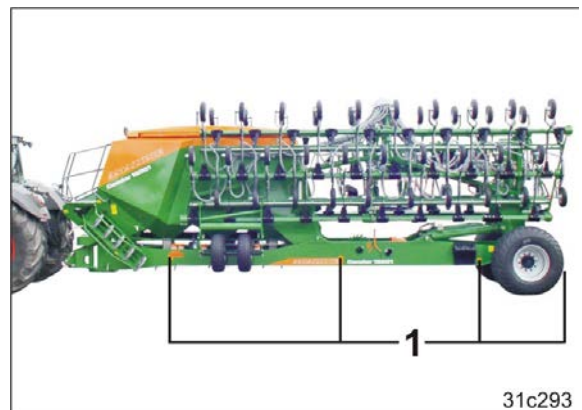


Fig. 24

4.4 Overview – Supply lines between the tractor and the implement

Fig. 25/...

- (1) Hydraulic connections
- (2) Lighting connection (optional)

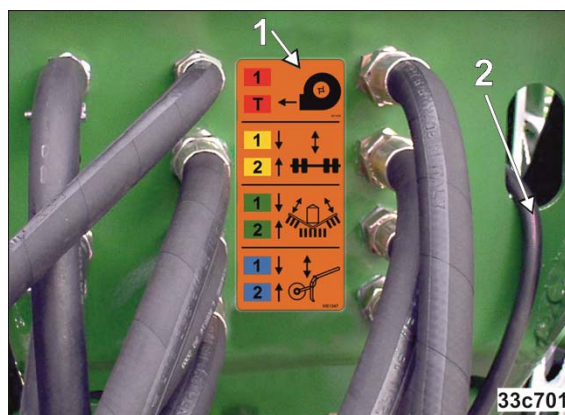


Fig. 25

4.5 Intended use

The implement

- is designed for metering and placing customary seeds and fertilisers.
- is coupled to the tractor using the tractor's lower links and operated by an additional person.

Slopes can be travelled

- Along the contours

Direction of travel to left	10 %
Direction of travel to right	10 %
- Along the gradient

Up the slope	10 %
Down the slope	10 %

"Intended use" also covers:

- Compliance with all the instructions in this operating manual.
- Adherence of inspection and maintenance work.
- Exclusive use of original 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

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

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

Danger points exist:

- between the tractor and the implement, particularly when coupling and uncoupling and when filling the hopper.
- in the area of moving parts.
- in the area of the swivelling implement booms.
- underneath raised, unsecured implements or parts of implements.

4.7 Rating plate and CE mark

The following illustrations show the arrangement of the rating plate (Fig. 26/1) and of the CE mark (Fig. 26/2).

The diagram shows the position of the rating plate (Fig. 26/1) and the CE mark (Fig. 26/2) on the implement.

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



Fig. 26

The following information is specified on the rating plate and the CE mark (Fig. 27):

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

AMAZONEN-WERKE			
D-49205 Hosbergen / BBG D-04249 Leipzig			
Fahrz.-/Masch.-Ident-Nr.	1		
Typ	2		
Grundgewicht kg	3	zul. Gesamtgewicht kg	4
zul. Achslast vorne/Stützlast kg	5	Werk	8
zul. Achslast hinten kg	6	Modelljahr	9
zul. Systemdruck bar	7		
		Baujahr Année de fabrication year of construction Дата изготовления	10 

Fig. 27

4.8 Technical data

Condor		12001-C	15001-C
Working width	[m]	12.0	15.0
Row spacing of the coulter	[cm]	25 / 33.3	25 / 31.3
Number of sowing units		48 / 36	60 / 48
Hopper content	[l]	8000 / - / - 2660 / 2320 / 3060	8000 / - / - 2660 / 2320 / 3060
Payload (on the field)	[kg]	8000	8000
Working speed	[km/h]	8 - 10	8 – 10
Power requirement (from)	[kW/bhp]	150 / 204	180 / 245
Category of the coupling points		Cat. 3 Cat. 4N (optional) Cat. 5 (optional)	Cat. 3 Cat. 4N (optional) Cat. 5 (optional)
Tyres		700/55-26.5	700/55-26.5
Overall length (in working position)	[mm]	10000	11500
Total height (in working position)	[mm]	3300	3300
Maximum drawbar load with full hopper (on the field)	[kg]	7000	7000
Service brake system (optional) ¹⁾ (connection on tractor)		Dual-circuit pneumatic braking system or hydraulic braking system ²⁾	

¹⁾ The implement may not be equipped with a brake system.

Operation without a brake system is not permitted in Germany and in some other countries.

²⁾ Operation with a hydraulic brake system is not permitted in Germany and in several other countries.



Road transport only with empty hopper!

Road transport data

Large area seed drill			Condor 12001-C	Condor 15001-C
Total width (in transport position)		[m]	3.0	3.0
Total length (in transport position)		[m]	9.0	10.5
Total height (in transport position)		[m]	4.0	4.0
Empty weight (basic weight)		[kg]	9500	10500
Permissible total weight		[kg]	10500	11000
Maximum load for road travel		[kg]	500	500
Permissible rear axle load		[kg]	7000	7500
Perm. drawbar load (F _H) when driving on the road (see rating plate)		[kg]	4000	4500
Permissible max. speed	without brake system ¹⁾	[km/h]	10	10
	with dual-circuit pneumatic braking system	[km/h]	40	40
	with hydraulic brake system	[km/h]	25	25

¹⁾ Operation without a brake system is not permitted in Germany and in several other countries.

4.9 Necessary tractor equipment

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

Tractor engine power	Condor 12001-C	from 150 kW (204 bhp) upwards
	Condor 15001-C	from 180 kW (245 bhp) upwards
Electrical system	Battery voltage	12 V (volts)
	Lighting socket	7-pin
Hydraulic system	Tractor control units	see section 4.4, Seite 44
	Maximum operating pressure	210 bars
	Tractor pump capacity	At least 80 l/min at 150 bar
	Hydraulic oil for supplying the implement	Transmission/hydraulic fluid HLP68 The implement hydraulic/transmission fluid is suitable for the combined hydraulic/transmission fluid circuits of all standard makes of tractor.
Service brake system	Dual-circuit service brake system	1 hose coupling (red) for the supply line 1 hose coupling (yellow) for the brake line
	Hydraulic operating brake system	1 hydraulic coupling in accordance with ISO 5676



The hydraulic braking system is not allowed in Germany and several other EU countries!

4.10 Noise production data

The workplace-related emission value (acoustic pressure level) is 74 dB(A), measured in operating condition at the ear of the tractor driver with the cab closed.

Measuring unit: OPTAC SLM 5.

The noise level is primarily dependent on the vehicle used.

5 Layout and function

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

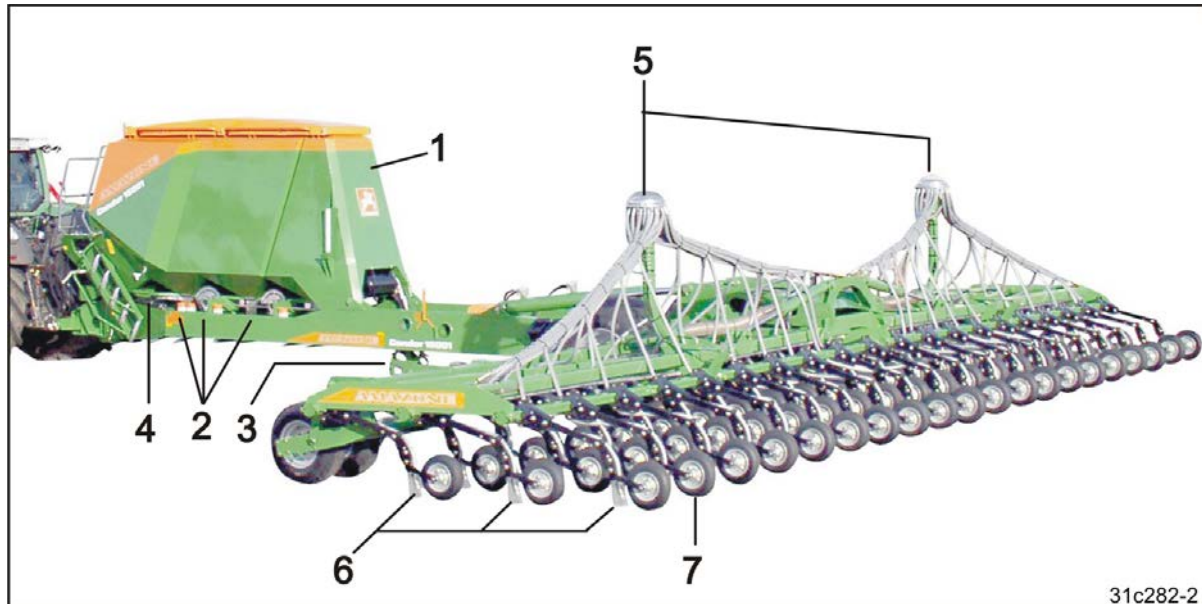


Fig. 28

The implement enables direct seeding with simultaneous fertiliser spreading.

The large hopper (Fig. 28/1) has three chambers for carrying seed and fertiliser.

From three metering units (Fig. 28/2), driven by a star wheel (Fig. 28/3), the metered seed/fertiliser quantity is carried into the air current generated by the blower fan (Fig. 28/4) and further to the distributor heads (Fig. 28/5), which evenly distribute the seed-fertiliser mix over all of the ConTeC coulter (Fig. 28/6).

For seed/fertiliser placement, the "on grip" ConTeC coulter penetrate into the soil. Supported by the trailing press rollers (Fig. 28/7), the ConTeC coulter maintain a constant seed placement depth. The seed placement depth is adjustable.

The Condor has a closed system for the overpressure built up by the blower fan, which includes the large hopper. The overpressure escapes at the coulter openings and allows the even distribution of the metered seed-fertiliser mix.

The ConTeC coulter optimises the seeding accuracy, area efficiency and service life.

The implement can be folded to a transport width of 3 m.

5.1 Hydraulic hose lines



WARNING

Danger of infection from escaping hydraulic fluid at high pressure!

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

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

5.1.1 Coupling the hydraulic hose lines



WARNING

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

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



- 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.
- 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).

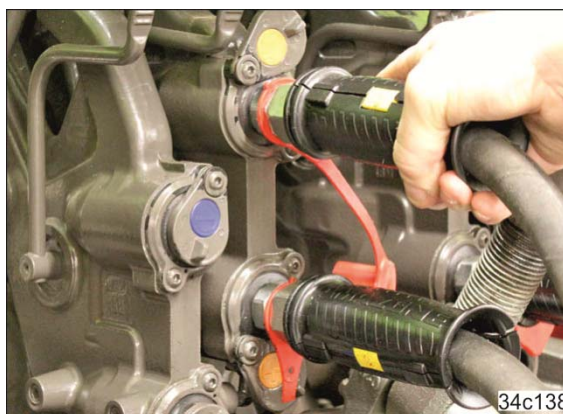


Fig. 29

5.1.2 Uncoupling the hydraulic hose lines

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



Fig. 30

4. Place the hydraulic hose lines in the hose cabinet.



Fig. 31

5.2 Service brake system

The implement can be equipped

- with dual-circuit pneumatic service braking system.
- with hydraulic service brake system
The hydraulic service brake system is not approved in Germany and a few other EU countries.
- without service brake system (see section 6.1.3).

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

The dual-circuit pneumatic 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 brake system.

5.2.1 Parking brake

Implements with a dual-circuit pneumatic service brake system and hydraulic service brake system are fitted with a parking brake.

The crank (Fig. 32/1) 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).



Fig. 32

5.2.2 Dual-circuit pneumatic braking system



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

The implement's service brake system responds when the tractor brake pedal or the tractor parking brake is actuated.

If the supply line (red) is disconnected from the tractor, the service brake system automatically acts as a parking brake on the implement.

When the supply line (red) is coupled to the tractor, the parking brake is released automatically as soon as the operating pressure has built up and the parking brake of the tractor is released.

The dual-circuit pneumatic brake system has

- A supply line (Fig. 33/1) with coupling head (red)
- A brake line (Fig. 33/2) with coupling head (yellow).

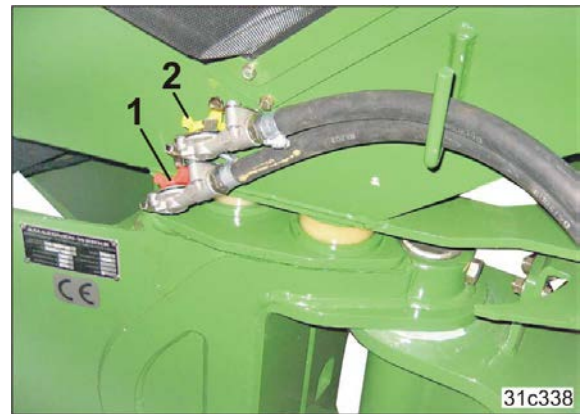


Fig. 33

- A trailer brake valve (Fig. 34/1)

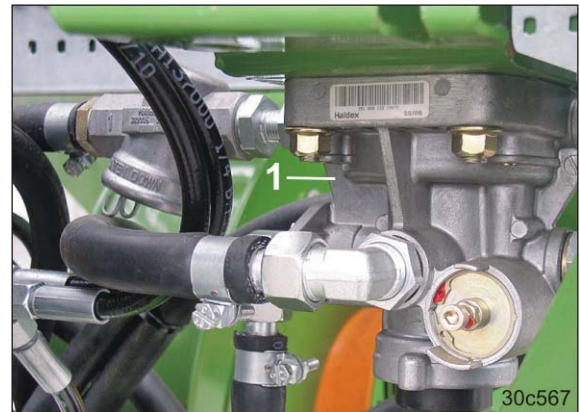


Fig. 34

5.2.2.1 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.
- Drain the air reservoir before the first journey every day.
- 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.

Always first connect the hose coupling of the brake line (yellow), 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. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
2. Open the covers (Fig. 35/1) of the hose couplings on the tractor.
3. Check the sealing rings on the hose coupling for damage and cleanliness.
4. Clean the dirty sealing rings and replace any damaged sealing rings.
5. Fasten the hose coupling of the brake line (yellow) in compliance with regulations in the coupling marked yellow (Fig. 35/2) on the tractor.

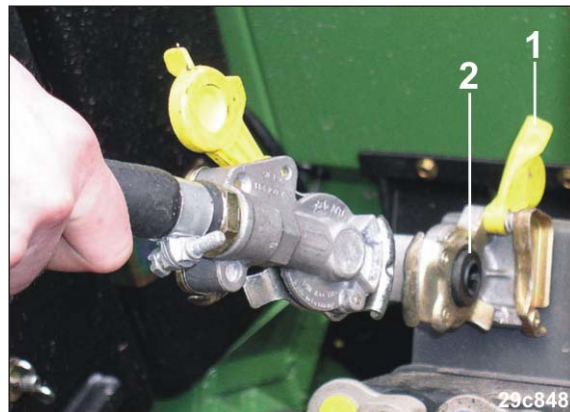


Fig. 35

6. Remove the hose coupling of the supply line (red) from the empty coupling.
 7. Check the sealing rings on the hose coupling for damage and cleanliness.
 8. Clean the dirty sealing rings and replace any damaged sealing rings.
 9. Fasten the hose coupling of the supply line (red) in the coupling marked red on the tractor in accordance with regulations.
- The black button is pushed out when the supply line (red) is coupled.
- If the tractor parking brake is:
- o Engaged, the service brake of the implement is also engaged.
 - o Released, the service brake of the implement is also released.



DANGER

In an emergency, pull the red button (Fig. 36/1) to brake the implement.

The implement does not have any braking effect if the tractor parking brake is released when the supply line (red) is connected.



Fig. 36

5.2.2.2 Uncoupling the supply and brake line



WARNING

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

Always first disconnect the hose coupling of the supply line (red), 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 into braking position.

Always keep to this order, as otherwise the operating brake system will trip and may set the unbraked implement moving.



DANGER

First secure the implement with the wheel chocks (Fig. 37) before you uncouple the implement from the tractor!

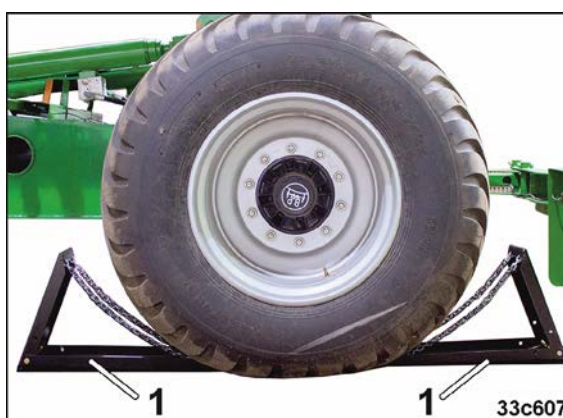


Fig. 37

Fig. 38/...

- (1) Wheel chocks
(parking position under the seed hopper)

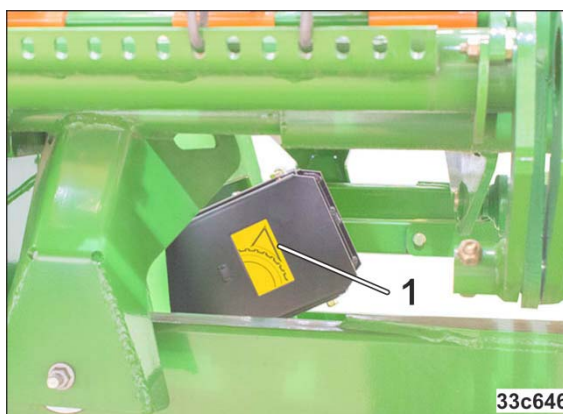


Fig. 38

1. Secure the implement against unintentionally rolling away. To do so, use the tractor parking brake and the wheel chocks.
2. Release the hose coupling (Fig. 39) of the supply line (red).
3. Release the hose coupling of the brake line (yellow).
4. Fasten the hose couplings in the empty coupling points.
5. Close the covers of the coupling heads on the tractor.

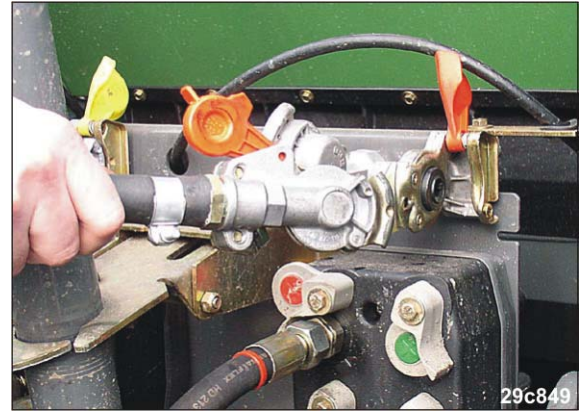


Fig. 39

5.2.2.3 Control elements of the dual-circuit pneumatic braking system



DANGER

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

After the supply line (red) is detached, the implement is braked automatically.

If it is necessary to manoeuvre the implement while it is uncoupled from the tractor (on a level surface only), e.g. while it is in the specialist workshop, you can actuate the dual-circuit pneumatic braking system using the control elements (Fig. 40).

For this purpose, the compressed air tank must be filled. If the compressed air tank is empty, the parking brake cannot be disengaged using the control elements.

Releasing the parking brake:

Push in the black button (Fig. 40/1), e.g. to manoeuvre the uncoupled implement on level ground.

Engaging the parking brake:

Pull out the black button (Fig. 40/1).



Do not press the red button (Fig. 40/2). It is always pulled out.



Fig. 40



When the supply line (red) is coupled to the tractor, the parking brake is released automatically, and as soon as the operating pressure has built up, the black button (Fig. 40/1) will be automatically pulled out of the assembly.

5.2.3 Hydraulic operating brake system

To control the hydraulic service brake system, the tractor requires a hydraulic braking device.

5.2.3.1 Coupling the hydraulic service brake system



Only couple clean hydraulic connectors.

1. Remove the protective cap (Fig. 42/1).
2. If necessary, clean the hydraulic connector (Fig. 41) and hydraulic socket.
3. Couple the implement's hydraulic socket with the tractor's hydraulic connector.



29c734

Fig. 41

5.2.3.2 Uncoupling the hydraulic service brake system

1. Release the hydraulic connectors from the hydraulic sockets.
2. Secure the hydraulic socket and hydraulic connector with protective caps (Fig. 42/1) against soiling.
3. Place the hydraulic hose line on the holder for the supply lines.



29c841

Fig. 42

5.3 Control terminal AMALOG⁺

The AMALOG⁺ consists of the control terminal (Fig. 43) and the basic equipment (cables and fastening material).

Fasten the control terminal in the tractor cab according to the AMALOG⁺ operating manual.

The AMALOG⁺ (Fig. 43)

- is intended for entering implement-specific data before beginning work.
- measures the covered part area [ha].
- stores the cultivated total area [ha].
- indicates the forward speed [km/h].
- initiates an alarm when the set minimum seed quantity is reached in the hopper.
- shows the current blower fan speed.
- initiates an alarm when the blower fan speed deviates from the nominal value.

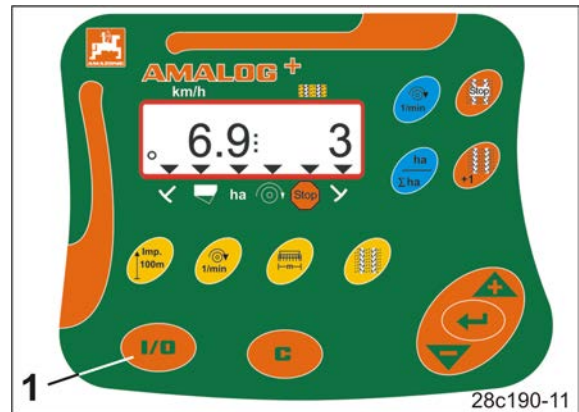


Fig. 43

5.4 Frame and implement booms

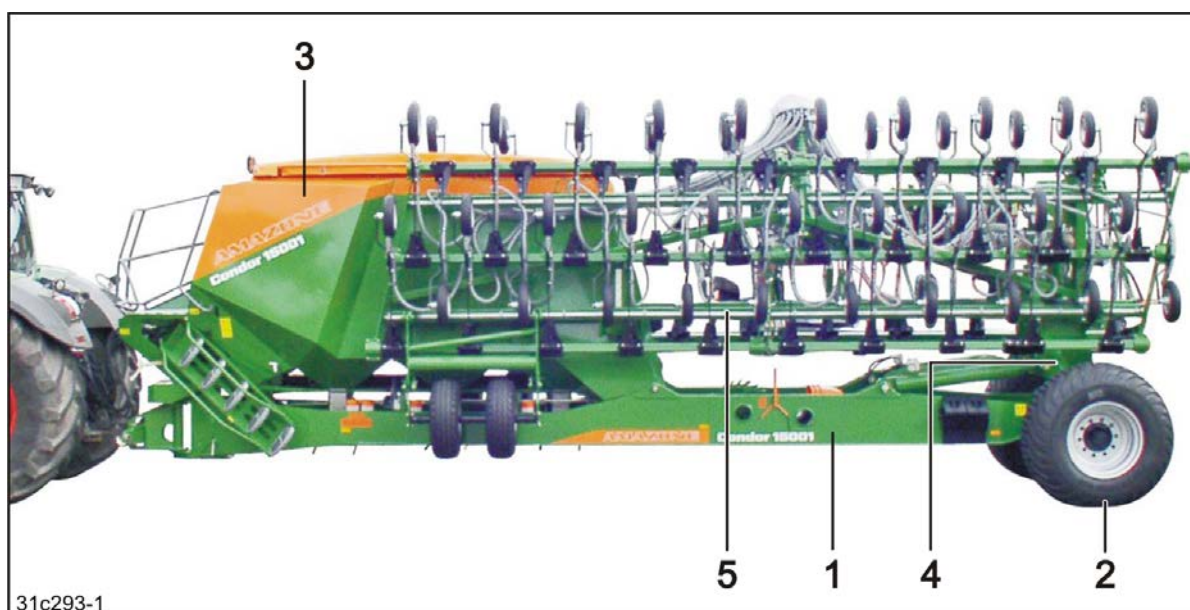


Fig. 44

The implement has

- a main frame (Fig. 44/1) with running gear (Fig. 44/2) and hopper (Fig. 44/3).
- a foldable rear frame (Fig. 44/4)
 - o that lifts the coulter before turning at the end of the field.
 - o that is nearly vertical before the implement booms are folded in.
- two implement booms which are retractable for transportation purposes (Fig. 44/5).

5.5 Threaded cartridge

The threaded cartridges (Fig. 45/1) include

- the accessories kit with the operating manual,
- the metering rollers in parking position,
- the scales for the calibration test.

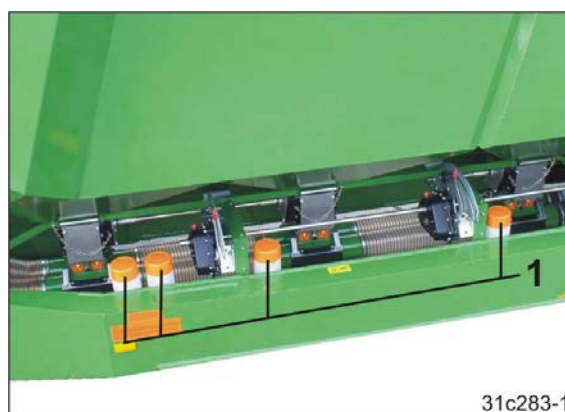


Fig. 45

5.6 Hopper

The large hopper (Fig. 46/1) has three chambers for carrying seed and fertiliser.

The hopper (Fig. 46/1) is easily accessible for filling, calibration, and residual emptying.

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



Fig. 46

When the blower fan is switched on, an even pressure is built up in the hopper and the delivery system.

When the blower fan is running, the hopper cover (Fig. 47/1) must be firmly closed (see section "Filling the hopper", Seite 144).



Fig. 47

A pressure gauge (Fig. 48/1) indicates the pressure in the sealed delivery system.



Fig. 48

Layout and function

The marks (Fig. 49/1, 2) show the fill levels of the individual hopper chambers.

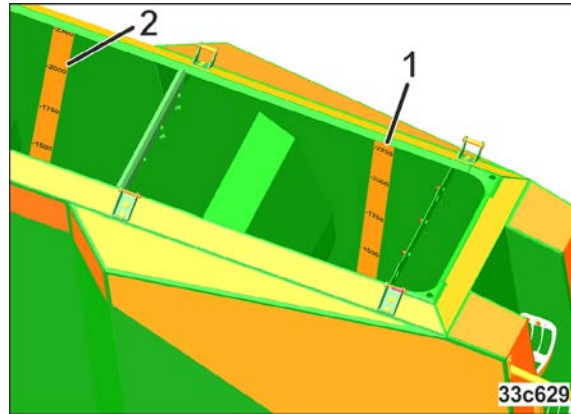


Fig. 49

Each hopper chamber is marked with a number (Fig. 50/1) on the metering unit.



Fig. 50

The pressure gauges (Fig. 51/1-3) show the pressures of the individual chambers (Fig. 46/1-3)

At a standstill, pressures between 25 and 35 bar are reached in the individual chambers.

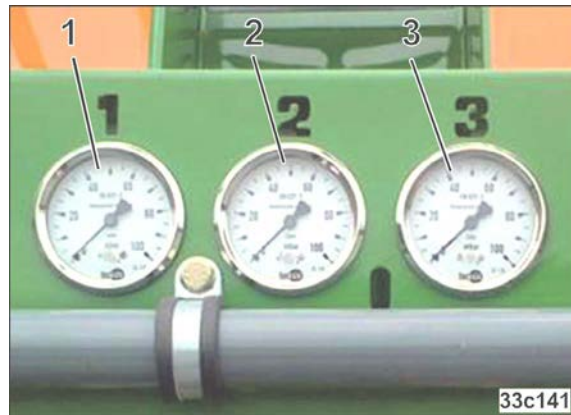


Fig. 51

5.6.1 Digital fill level monitoring

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

When the level reaches the fill level sensor

- The control symbol (Fig. 52/1) marks the fill level symbol on the AMALOG⁺
- An alarm signal is issued.
This alarm signal is intended to remind the tractor driver to refill the seed.

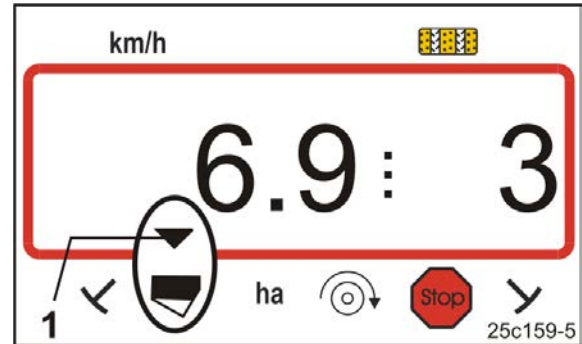


Fig. 52



Each hopper chamber has a fill level sensor.

Adjust the height of each fill level sensor (Fig. 53/1) individually. As soon as a level reaches a fill level sensor, the AMALOG⁺ issues an alarm.

The height of the fill level sensor (Fig. 53/1) can be adjusted from the outside by fastening in one of the brackets.

Attach the fill level sensor according to the type of seed.

Grains and legumes:

Fit the sensor to the higher bracket.

Fine seed types (e.g. rape):

Fit the sensor to the lower bracket.

Fertilisers:

Attach the sensor in the upper or lower bracket, depending on the spread rate.

This allows the residual seed volume to be set, at which the warning message and the alarm signal is to be issued.

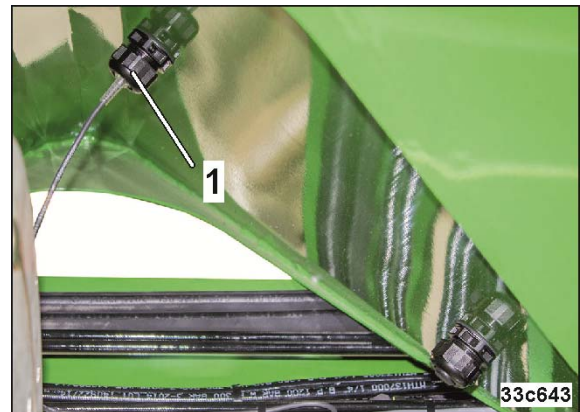


Fig. 53

5.7 Hand wash tank

Hand wash tank (20 l) for clear fresh water
For cleaning hands.

Fig. 54/...Hand wash tank

- (1) Filling connection



Fig. 54

Fig. 55/...

- (1) Stop tap.
(2) Discharge



WARNING

**Danger of poisoning from using
unclean water in the fresh water
tank.**

Never use the water from the hand
wash tank as drinking water! The
materials of the hand wash tank are
not food safe.



Fig. 55

5.8 Work lights (optional)

Fig. 56/...

- (1) Work floodlights



Separate power supply from the tractor
is required.



Fig. 56

5.9 Quick emptying (optional)



WARNING

The hopper chambers are under pressure when the blower fan is running. Before opening the quick emptying, switch off the blower fan.



Clean the sealing area of the quick emptying before putting back into operation.

The rotary connection cannot be sealed pressure tight if the filling seed level protrudes in the opening of the quick emptying. This is why the chamber must be emptied completely and the sealing area of the quick emptying has to be cleaned before being put back into operation.

1. Switch off the blower fan.
2. Hold the lever (Fig. 57/1) and undo the knurled screw (Fig. 57/2).
3. Slowly open the quick emptying with the lever.
4. Clean the sealing area of the quick emptying before putting back into operation.
5. Close the quick emptying.
6. Secure the lever (Fig. 57/1) using the knurled screw (Fig. 57/2).

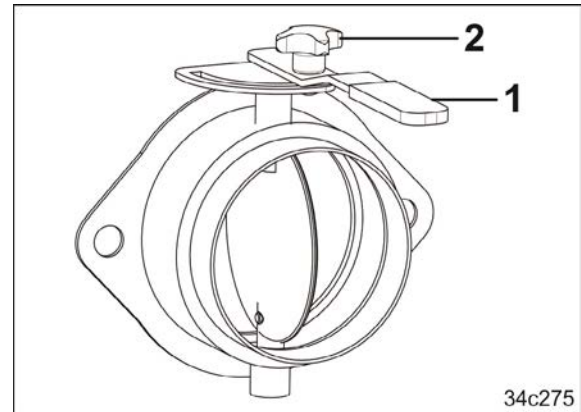
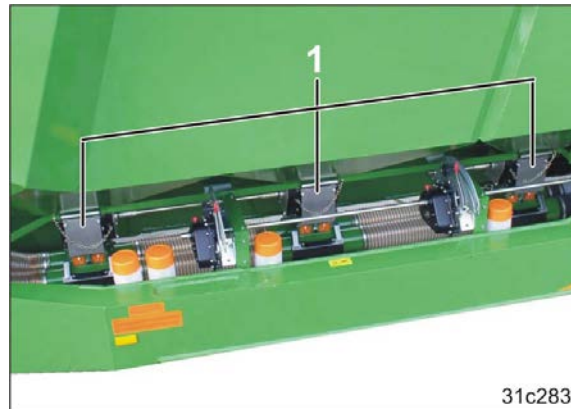


Fig. 57

5.10 Seed/fertiliser metering

The implement has 3 metering units (Fig. 58/1)

Each metering unit is equipped with a metering roller (see section "Metering Rollers Table", Seite 69).



31c283

Fig. 58

The metering rollers are driven by a star wheel (Fig. 59/1).

A Vario gearbox is located upstream from each metering roller (Fig. 65).

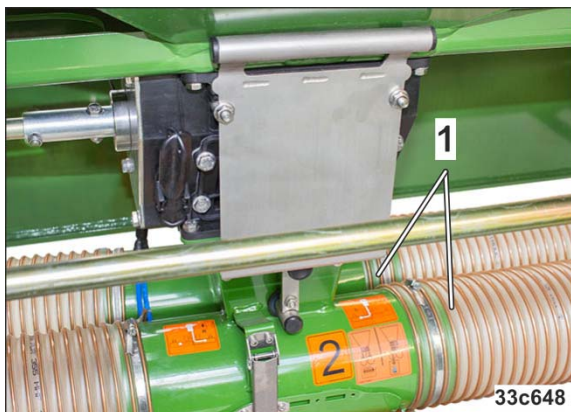


31c295

Fig. 59

The seed or fertiliser falls into the delivery tube (Fig. 60/1).

The air current generated by the blower fan conveys the seed/fertilizer mixture to the distributor head and then onto the coulters.



33c648

Fig. 60

For calibration and emptying, the seed/fertiliser is collected in a trough (Fig. 61/1) under the metering unit.

The delivery tube has an opening at the bottom.

Two tensioning hooks (Fig. 61/2) close the opening with a rubber mat (Fig. 61/3).

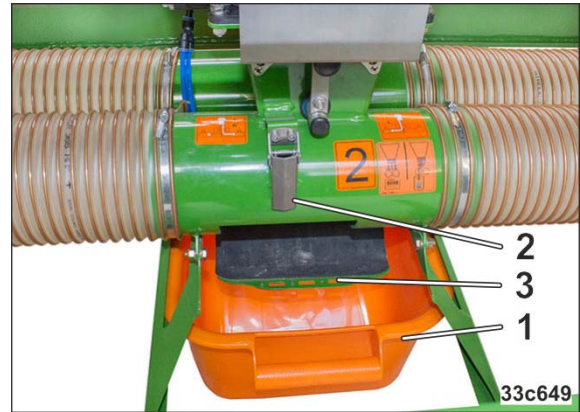


Fig. 61

5.10.1 Metering rollers

The seed metering unit is equipped with an exchangeable metering roller. The metering roller selection is dependent on

- the seed type
- the spread rate.



Fit all of the seed metering units with the same metering roller.

Fit the fertiliser metering unit with the fertiliser metering roller.



31c651

7.5 cm³



31c628

20 cm³

Layout and function



40 cm³



120 cm³



210 cm³



350 cm³



600 cm³



660 cm³



880 cm³

5.10.1.1 Metering Rollers Table



The Metering Rollers Table serves as a reference aid! For seed types that are not listed in the table, use a similar grain size that is listed in the table.

Seed	Metering rollers									
	7.5 cm ³	20 cm ³	40 cm ³	120 cm ³	210 cm ³	350 cm ³	600 cm ³	660 cm ³	880 cm ³	
Beans								X		
Buckwheat					X		X		X	
Spelt							X		X	
Fertiliser (granular)						X		X		
Peas								X		
Flax (dressed)		X	X	X	X					
Barley					X		X		X	
Grass seed					X					
Oats							X		X	
Millet				X	X					
Caraway		X	X							
Lupins				X	X					
Alfalfa		X	X	X	X					
Maize				X						
Poppy seed	X									
Oil linen (moist dressing)		X	X							
Fodder radish		X	X	X	X					
Phacelia		X	X	X						
Rapeseed	X	X	X							
Rice						X				
Rye					X		X		X	
Red clover		X	X	X						
Mustard		X	X	X	X					
Soya							X	X		
Sunflowers				X	X					
Turnips		X	X							
Triticale					X		X		X	
Wheat					X		X		X	
Vetches					X					

5.10.1.1 Converting the metering roller

The metering roller can be adjusted by repositioning the seed metering wheels, idler gears, and plates.

For seeding particularly large seeds, e.g. beans, the chambers (Fig. 62/1) of the metering roller can be enlarged by repositioning the metering wheels and the plates.

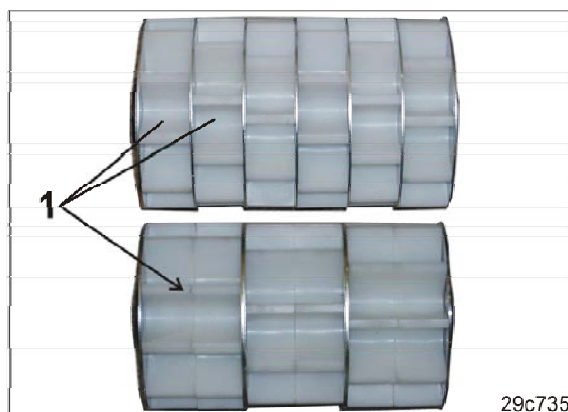


Fig. 62

Fig. 63/...

- (1) Remove the locking ring
Remove the metering wheels from the drive shaft
- (2) Re-arrange the metering wheels
- (3) Position the metering wheels on the drive shaft
Put on the locking ring

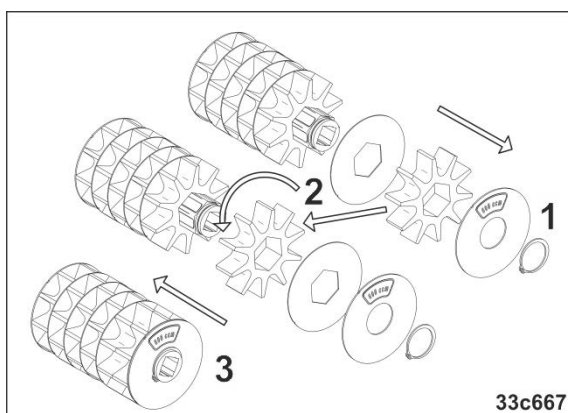


Fig. 63



To reduce the metering rate, replace the metering wheels by idler gears.

5.10.1.2 Fertiliser metering roller

The fertiliser metering unit is equipped with a fertiliser metering roller (Fig. 64/1) that is suitable for all fertiliser types (see Metering Rollers Table, Seite 69).

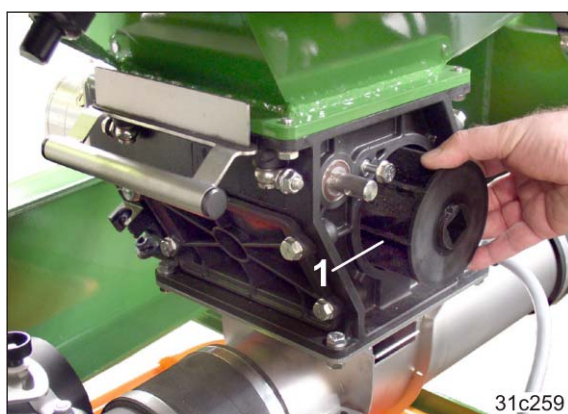


Fig. 64

5.10.2 Adjusting the spread rate (seed and fertiliser) on the Vario gearbox

A Vario gearbox is located upstream of each metering unit. Adjust the desired spread rate for each metering unit on the upstream Vario gearbox.

The desired spread rate is adjusted using the gearbox lever (Fig. 65/1) of the Vario gearbox.

The higher the number the gearbox lever points to on the scale (Fig. 65/2), the greater the spread rate.

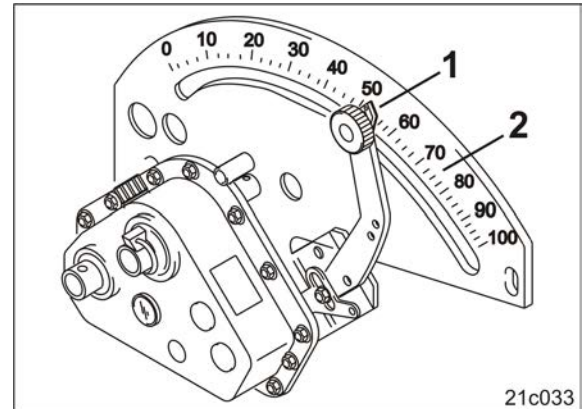


Fig. 65

Carry out a calibration test to determine whether all of the gearbox levers are correctly set and whether the spread rate is correct for subsequent seeding.

A number of calibration tests are often necessary to determine the correct gearbox setting.

The gearbox setting can be calculated from the values of the first calibration test using the calculating disc rule. Always check the value determined on the calculating disc rule with a further calibration test.

The calculating disc rule has three scales

- An outer white scale (Fig. 66/1) for all spread rates above 30 kg/ha
- An inner white scale (Fig. 66/2) for all spread rates below 30 kg/ha
- A coloured scale (Fig. 66/3) with all gearbox settings from 1 to 100.

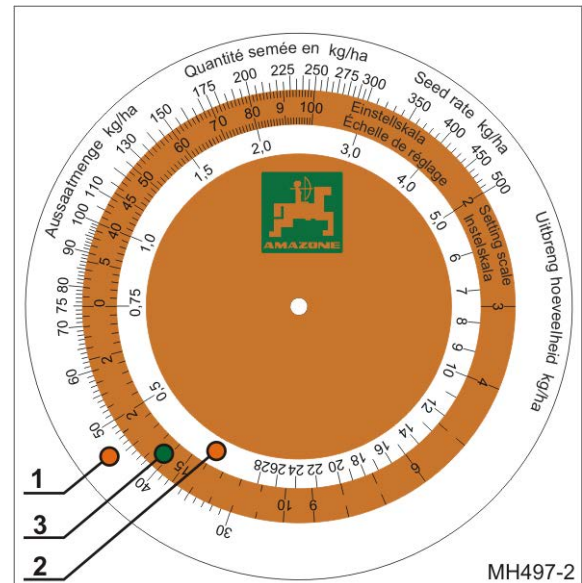


Fig. 66

5.10.3 Calibration test

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

Always carry out a calibration test

- when changing the type of seed/fertiliser.
- if the same type of seed/fertiliser is used, but with a different grain size, grain shape and specific weight.
- if there is a change in the seed dressing.
- after changing the metering rollers.
- if the actual spread rate does not correspond to the spread rate that was determined by the calibration test.

During calibration, the metered seed or metered fertiliser drops into the calibration trough (Fig. 67/1).

The number of calibration troughs corresponds to the number of metering units.

The calibration crank (Fig. 67/2) is in parking position in the transport bracket.



Fig. 67

When not in use, the calibration troughs (Fig. 68/1) are inserted inside one another and secured in the transport bracket using a lynch pin (Fig. 69/1).



Fig. 68



Fig. 69

5.11 Blower fan

The hydraulic motor (Fig. 70/2) drives the blower fan (Fig. 70/1) and generates the air current. The air current carries the seed to the coulters.

The blower fan speed determines the air volume of the air current.

The higher the blower fan speed, the greater the air volume and system pressure that is generated.

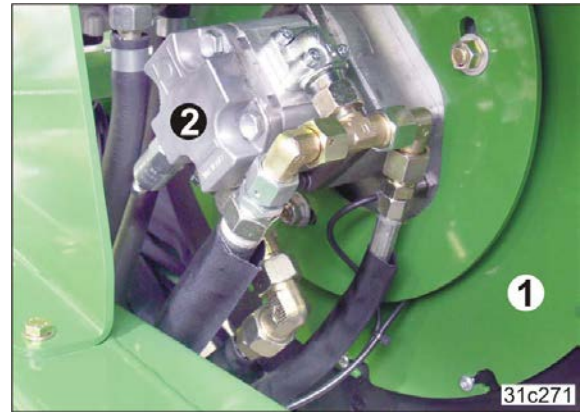


Fig. 70

A pressure gauge (Fig. 71/1) in the tractor cab shows the system pressure.

The fan speed is set correctly when the indicator for the pressure gauge is between 45 and 60 mbar.



At an idle, pressures between 25 and 35 bar are reached in the individual hopper chambers.



Fig. 71

5.12 Distributor head

In the distributor head (Fig. 72/1), the seed-fertiliser mix is distributed uniformly over all the seed coulters.

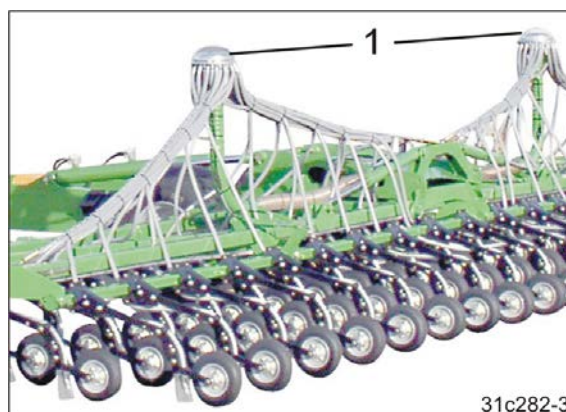


Fig. 72

5.12.1 Seed tube monitoring (optional)

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

Each seed tube hose can be equipped with a sensor (Fig. 73/1) that detects the seed flow.

If the seed flow is stopped in one of the seed tube hoses equipped with a sensor, a warning message is issued.



Fig. 73



If there is blockage at one of the coulters, the air escapes with the seed through the air separator. The seed line monitoring is not triggered. There is no warning message.

The warning message is only triggered if the seed line is blocked between the sensor and the air separator.

5.13 Star wheel

The star wheel (Fig. 74/1) drives the metering rollers. A Vario gearbox is located upstream of each metering roller (Fig. 65).

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

The star wheel controls the creation of tramlines. Approx. 5 seconds after each time the star wheel is swivelled up, e.g. before turning at the end of the field, the tramline counter is advanced



Fig. 74

5.14 ConTeC coulter

ConTeC coulters are used for mulch and direct seeding.

Even on fields with large quantities of straw and plant residues, direct seeding is possible with ConTeC coulters. For seed placement, the "on grip" ConTeC coulters (Fig. 75/1) penetrate into the soil. Supported on the trailing press rollers (Fig. 75/2), the ConTeC coulters constantly maintain the adjustable seed placement depth.

The steady coulter ride and the precise seed placement result from the high coulter pressure and the support of the coulter on the trailing press roller. The ConTeC coulter optimises the seeding accuracy, area efficiency and long service life.

The ConTeC coulter

- forms the seed furrow (Fig. 75/1).
- deposits the seed into the seed furrow.

The trailing press roller (Fig. 75/2)

- limits the set seed placement depth (Fig. 75/3).
- improves closure of the seed furrow with soil.

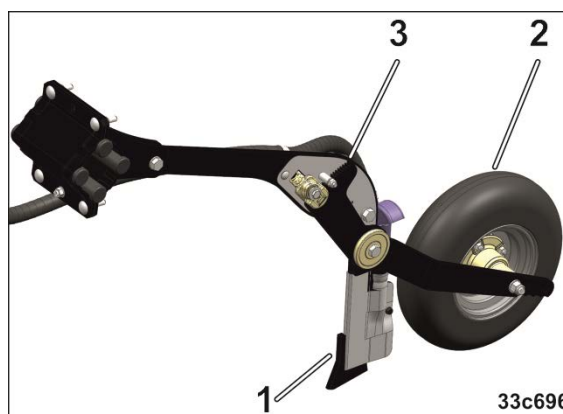


Fig. 75



The seed planting depth depends on the factors

- the position of the trailing press roller
- the condition of the soil
- the coulter pressure
- the working speed.

5.14.1 Seed placement depth

To adjust the seed placement depth, the trailing press roller can be positioned at the desired height.

The adjustment of the trailing press rollers (Fig. 76/2) by one gear tooth in the toothed segment (Fig. 76/3) corresponds to a change in the placement depth of approx. 10 mm.

The placement depth can be adjusted from 0 to 10 cm.

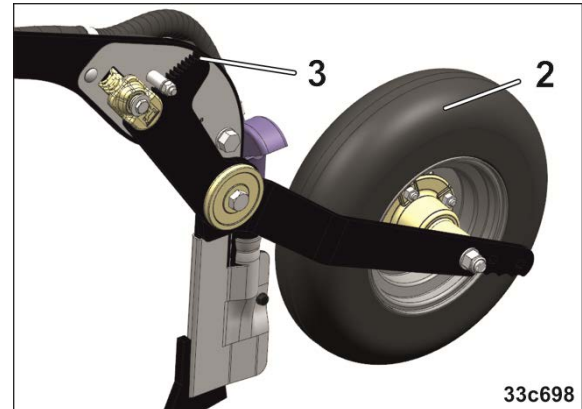


Fig. 76

5.14.2 Coulter pressure

Individual coulters, e.g. in the compacted wheel track, can work with a higher coulter pressure (optional).

Coulters with higher coulter pressure can be recognised in that there is a second bearing plate (Fig. 77/2) bolted onto the adjustment rail in addition to the coulter bearing (Fig. 77/1) and a plate (Fig. 77/3) connects the two bearing plates.

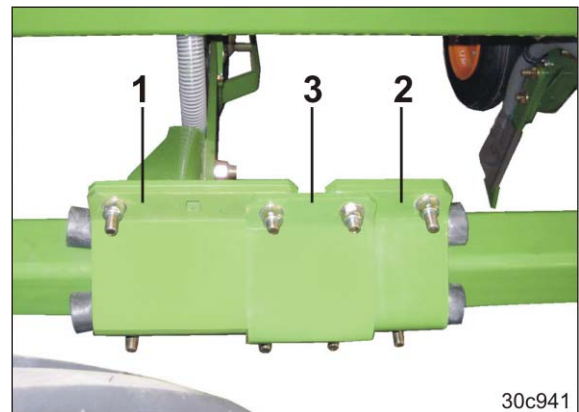


Fig. 77

The pressure gauge (Fig. 78/1) displays the status of the unit to the tractor driver.

If the pressure gauge is depressurised:

The coulters work with normal coulter pressure.

If the pressure gauge is pressurised:

The coulters work with increased coulter pressure.

Set the required coulter pressure with the *blue* tractor control unit.

Reduce the coulter pressure on light soils, so that the trailing press roller (Fig. 75/2) does not penetrate too deep into the soil.

Increase the coulter pressure on heavy soils, to press down the seed furrow with the trailing press roller.



Fig. 78

5.14.3 Press rollers

Fig. 79/...

(1) Air-filled wheel

The air-filled wheel is suitable for a wide range of operating conditions.

The wheel frees itself out of wet soil with its inherent movement. Under dry conditions, it provides reliable reconsolidation of the soil.

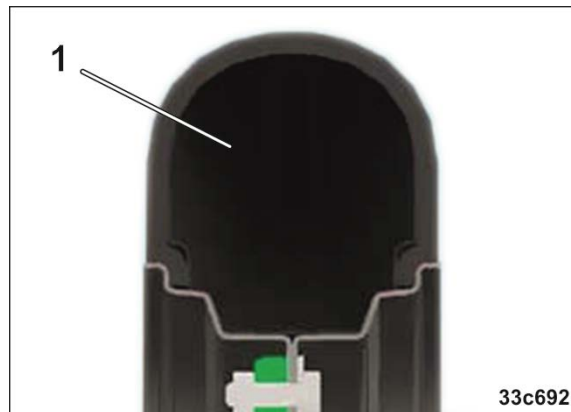


Fig. 79

Fig. 80/...

(1) Full foam wheels – round profile

This sturdy wheel is ideal for hard operating conditions with dry soils and tough stubble.

Burst wheels and cost-intensive downtimes no longer represent a risk. The hard wheel provides optimal reconsolidation of the soil in the seed furrow.

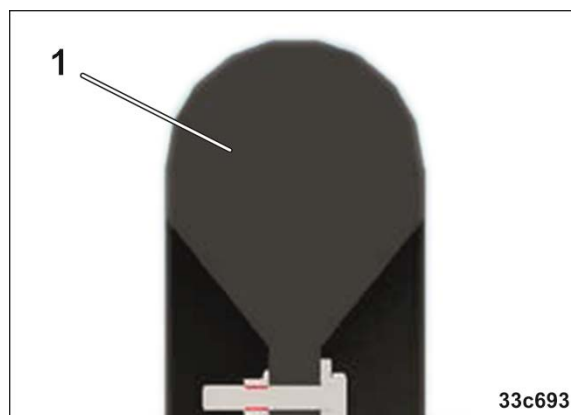


Fig. 80

Fig. 81/...

(1) Semi-pneumatic wheel

This wheel is a true all-rounder. The thick rubber walls make it extremely resistant towards stiff stubble. Under dry conditions, the semi-pneumatic wheel achieves very good reconsolidation. An air-filled chamber lends it very good flexibility and prevents wet soil from accumulating on the wheel.



Fig. 81

Fig. 82/...

(1) Full foam wheels – triangular profile

Due to its wedge shape, this wheel provides maximum contact pressure under particularly dry conditions and on light soils. Its robustness pays off especially when seeding in stiff stubble.

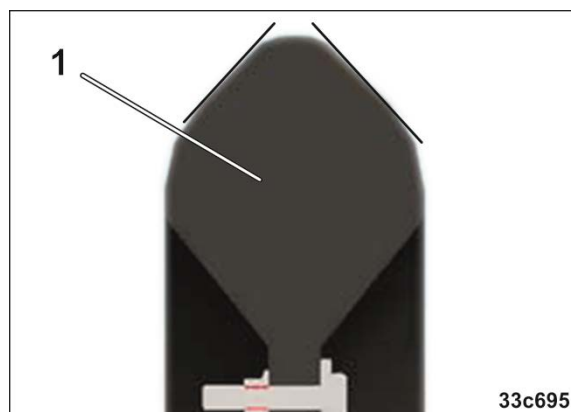
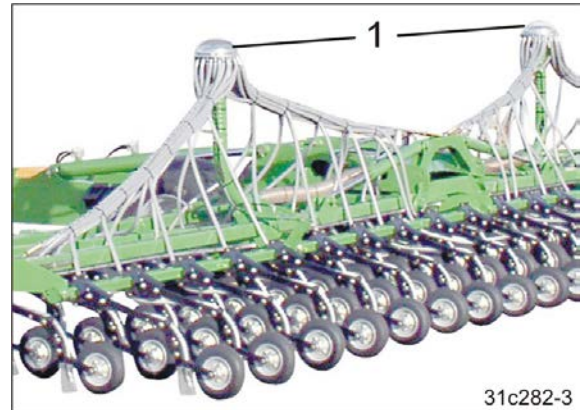


Fig. 82

5.15 Half-sided switching off (part width)

With certain tramline rhythms it is necessary to start the sowing operation at the start of the field initially only at half the working width (part width).

One half-width of the implement (part width section) can be switched off on the seed metering (see section "Half-sided switching off", Seite 130).



31c282-3

Fig. 83

5.16 Creation of tramlines

The tramline control allows tramlines to be created at preselected intervals on the field. To set the different tramline distances, appropriate tramline rhythms have to be entered into the on-board computer¹⁾.

When creating the tramlines

- The tramline circuit on the distributor head uses shutters (Fig. 84/1) to block the seed feeding lines to the seed lines (Fig. 84/2) of the tramline coulters
- the tramline coulters do not deposit any seeds on the ground.

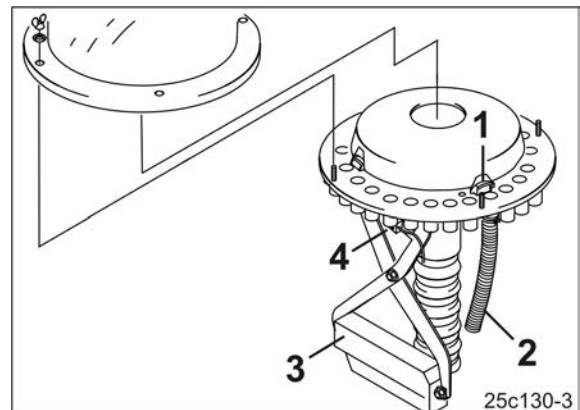
Seed supply to the tramline coulters is interrupted as soon as the electric motor (Fig. 84/3) closes the appropriate seed tubes (Fig. 84/2) in the distributor head.

Upon creating a tramline, the tramline counter indicates the number "0" on the on-board computer¹⁾.

A sensor (Fig. 84/4) checks whether the shutters (Fig. 84/1), which open the and close the seed line tubes (Fig. 84/2), are working properly.

If the setting is wrong, the on-board computer¹⁾ emits an alarm.

¹⁾ AMALOG⁺



25c130-3

Fig. 84

Tramlines are seed-free tracks (Fig. 85/A) for fertilising and plant care implements used later.

The tramline spacing (Fig. 85/b) corresponds to the working width of the cultivation implements (Fig. 85/B), e.g. fertiliser spread and/or sprayer, which are used on sown fields.

To set the different tramline spacings (Fig. 85/b), appropriate tramline rhythms must be entered on the on-board computer¹⁾.

The figure (Fig. 85) shows the tramline rhythm 3. During work, the field runs are numbered consecutively (tramline counter) and displayed on the on-board computer¹⁾.

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

Upon creating a tramline, the tramline counter indicates the number "0" on the on-board computer¹⁾.

The required tramline rhythm (see table Fig. 86) is derived from the required tramline spacing and the working width of the seed drill. Further tramline rhythms can be seen in the operating manual of the on-board computer¹⁾.

The track width (Fig. 85/a) of the tramline corresponds to that of the cultivating tractor and is adjustable [see section "Adjusting the tramline to the track width of the cultivating tractor", Seite 172].

The wheelmark width (Fig. 85/c) of the tramline increases with an increasing number of tramline coulters fitted next to each other.

¹⁾ AMALOG⁺

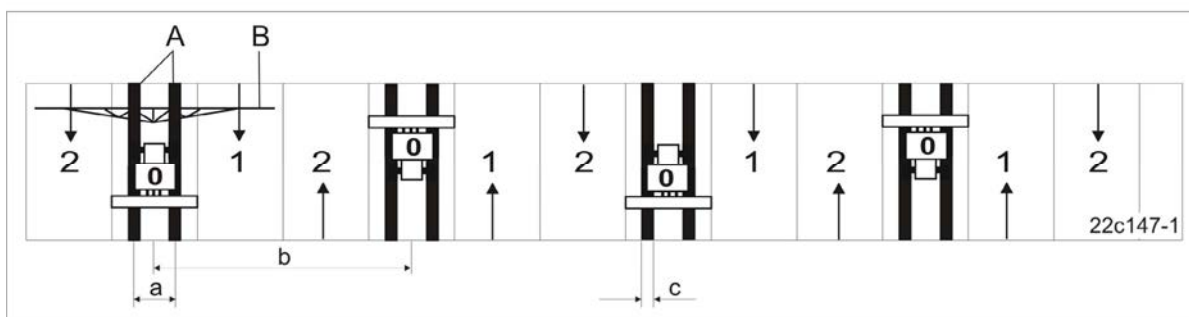


Fig. 85

Tramline rhythm	Seed drill working width	
	12.0 m	15.0 m
	Tramline spacing (working width of the fertiliser spreader and field sprayer)	
1	24 m	30 m
2	48 m	
3	36 m	45 m
24	30 m	
37	18 m	
43	42 m	

Fig. 86

Example for creating tramlines

The creation of tramlines is shown in Figure (Fig. 87) based on an example:

- A = Working width of the seed drill
- B = Tramline spacing
(= working width of fertiliser spreader/field sprayer)
- C = Tramline rhythm
(input on the on-board computer¹⁾)
- D = Tramline counter (during work, the field passes are numbered consecutively and displayed on the on-board computer¹⁾).

Perform any inputs and outputs with the aid of the operating manual of the on-board computer¹⁾.

¹⁾ AMALOG⁺

Example for tramline rhythm no. 3 (C)

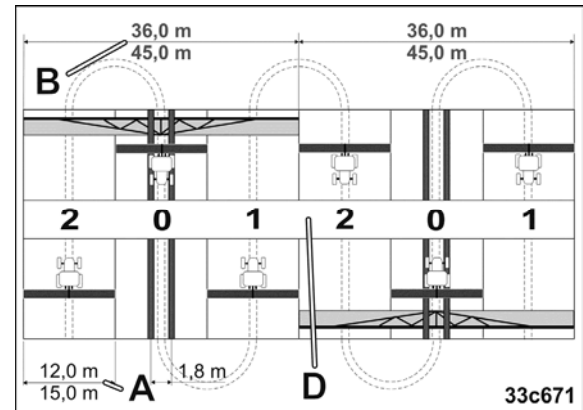


Fig. 87

5.16.1 Tramline rhythm no. 1

Tramline rhythm no. 1 requires the seed drill working with half the working width (part width section) during the first field pass (see section "Half-sided switching off", Seite 130).

Working width of the seed drill (A)	12 m
Working width of the fertiliser spreader/field sprayer (B)	24 m
Tramline distance	24 m
Tramline counter display (D)	1/0

Working width of the seed drill (A)	15 m
Working width of the fertiliser spreader/field sprayer (B)	30 m
Tramline distance	30 m
Tramline counter display (D)	1/0

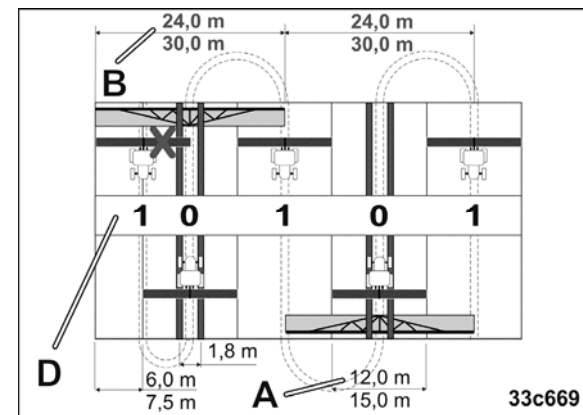


Fig. 88

5.16.2 Tramline rhythm no. 2

Working width of the seed drill (A)	12 m
Working width of the fertiliser spreader/field sprayer (B)	48 m
Tramline distance	48 m
Tramline counter display (D)	2/0/0/1

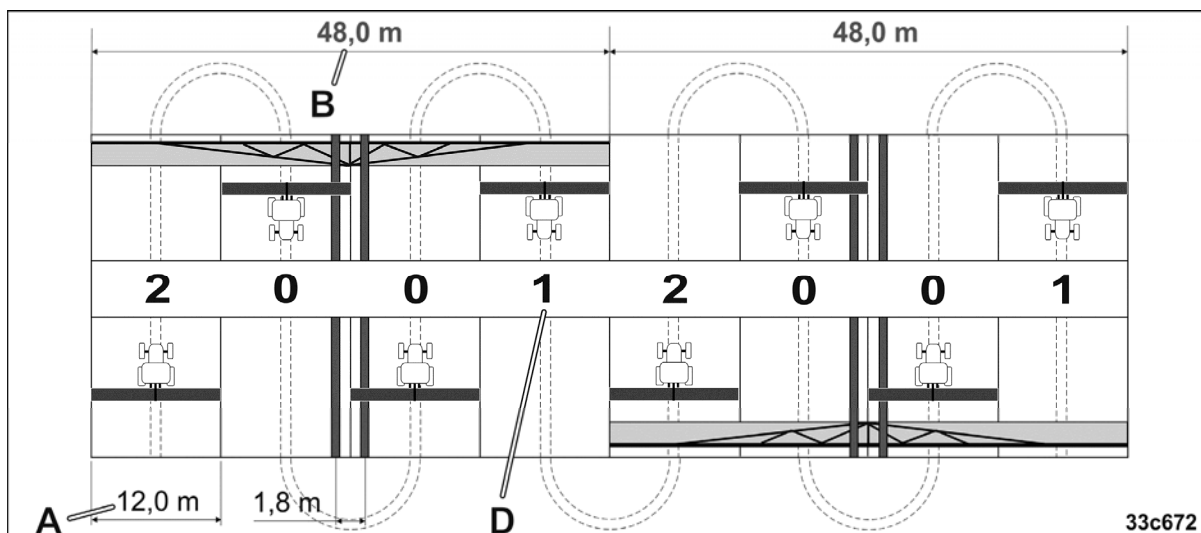


Fig. 89

5.16.3 Tramline rhythm no. 3

Working width of the seed drill (A)	12 m
Working width of the fertiliser spreader/field sprayer (B)	36 m
Tramline distance	36 m
Tramline counter display (D)	2/0/1

Working width of the seed drill (A)	15 m
Working width of the fertiliser spreader/field sprayer (B)	45 m
Tramline distance	45 m
Tramline counter display (D)	2/0/1

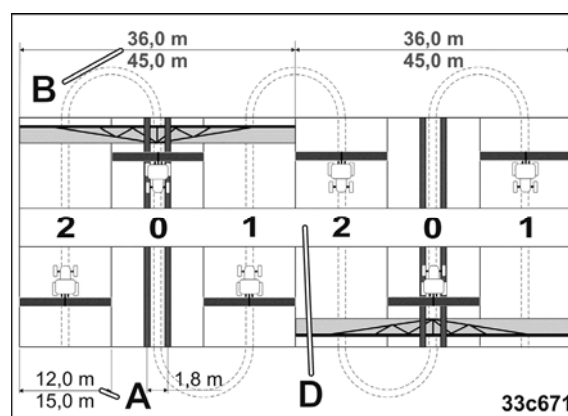


Fig. 90

5.16.4 Tramline rhythm no. 37

Working width of the seed drill (A)	12 m
Working width of the fertiliser spreader/field sprayer (B)	18 m
Tramline distance	18 m
Tramline counter display, left (D)	1/2/0/0/5/6
Tramline counter display, right (D)	0/2/3/4/5/0

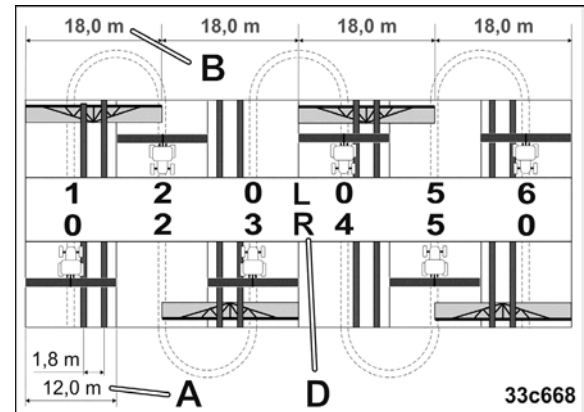


Fig. 91

5.16.5 Tramline rhythm no. 24

Working width of the seed drill (A)	12 m
Working width of the fertiliser spreader/field sprayer (B)	30 m
Tramline distance	30 m
Tramline counter display, left (D)	1/2/3/0/5/6/0/8/9/10
Tramline counter display, right (D)	1/0/3/4/5/6/7/8/0/10

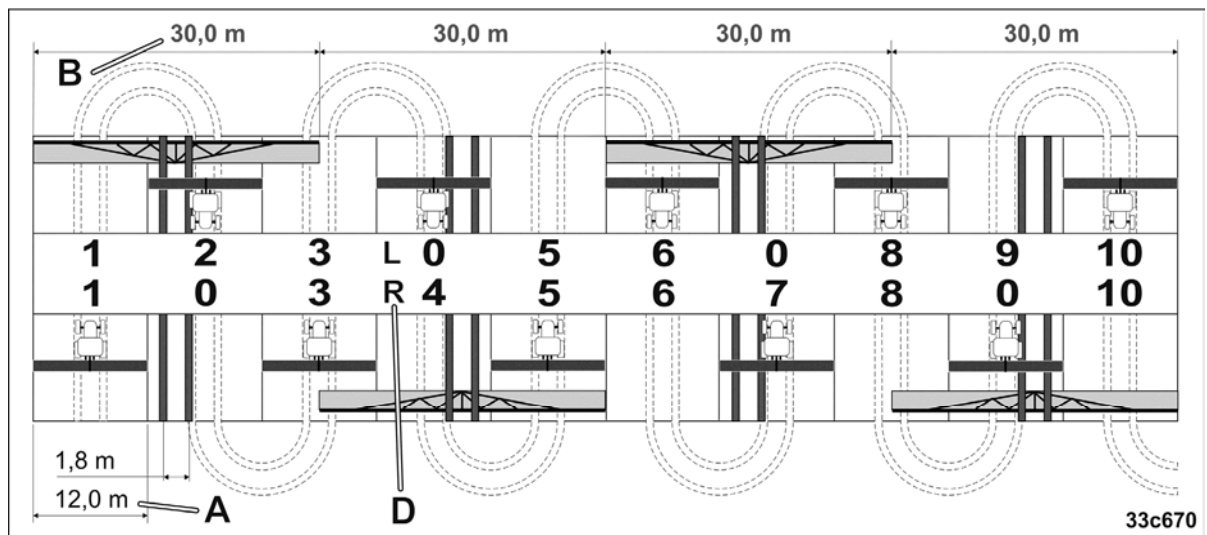


Fig. 92

5.16.6 Tramline rhythm no. 43

Working width of the seed drill (A)	12 m
Working width of the fertiliser spreader/field sprayer (B)	42 m
Tramline distance	42 m
Tramline counter display, left (D)	1/0/3/4/5/6/7/8/9/10/11/12/0/13
Tramline counter display, right (D)	1/2/3/4/5/0/7/8/0/10/11/12/13/14

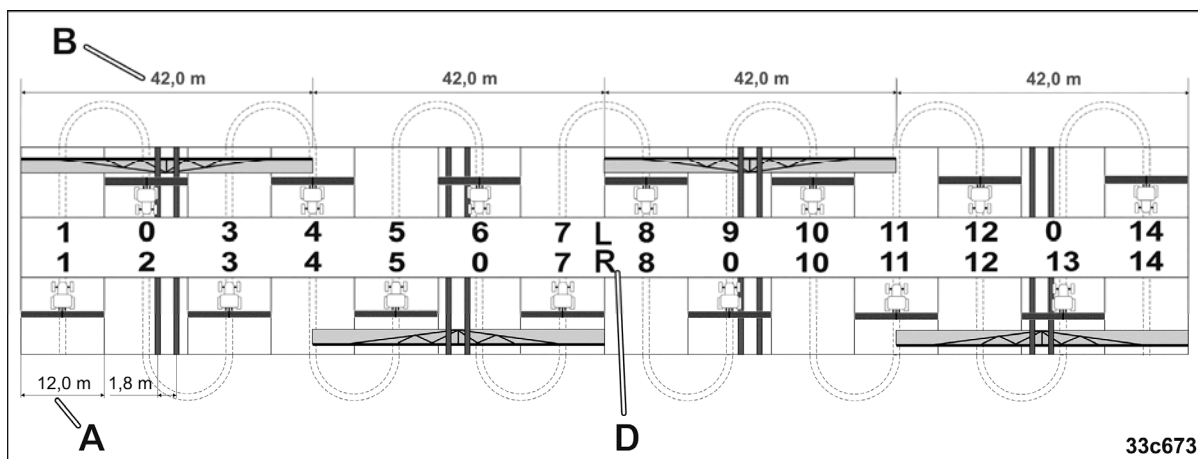


Fig. 93

6 Commissioning

This section contains information

- on initial operation of your implement.
- on checking how you may tow the implement to your tractor.



- Before operating the implement for the first time the operator must have read and understood the operating manual.
- Take heed of section "Safety information for users", from Seite 27 onwards on
 - 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.

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)

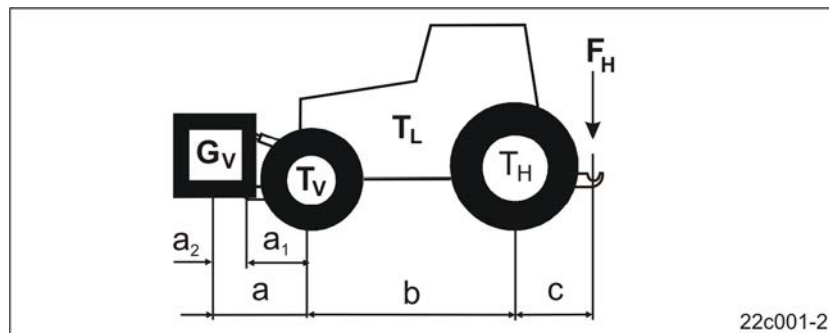


Fig. 94

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 front weight in technical data, or weigh
F_H	[kg]	Maximum drawbar load	See section "Road transport data", Seite 47
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	/ kg	--	--
Total weight	kg	kg	--
Front axle load	kg	kg	kg
Rear axle load	kg	kg	kg



- You can find the approved values for the total tractor weight, axle loads and load capacities in the tractor registration papers.
- The actually calculated values must be less than or equal to ($\leq$) 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 is not permitted in Germany and in several other countries without its own brake system.



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.
- The maximum forward speed is 25 km/h.

Note: In Russia and many other countries, the permissible top 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 hydraulic system is connected.
- if the ignition key is inserted in the tractor and the tractor engine could be started unintentionally while the hydraulic system is connected
- 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.

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

1. Park the tractor and the implement on solid, level ground only.
2. Lower raised, unsecured implement parts.
→ This is how to prevent unintentional lowering.
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 regulations for the hydraulic fan drive connection

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 line (Fig. 95/5) to a single-acting or double-acting tractor control unit with priority.
- Connect the large hydraulic coupling of the return line (Fig. 95/6) only to an unpressurized tractor connection with direct access to the hydraulic fluid tank (Fig. 95/4).
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.

The tractor hydraulic pump output must be at least 80 l/min. at 150 bar.

Fig. 95/...

- (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
with priority
- (4) Hydraulic fluid tank
- (5) Feed line:
pressure line with priority
(marking: 1 cable tie, red)
- (6) Return line:
unpressurised line with "large" push-fit
coupling
(marking: 2 cable ties, red)

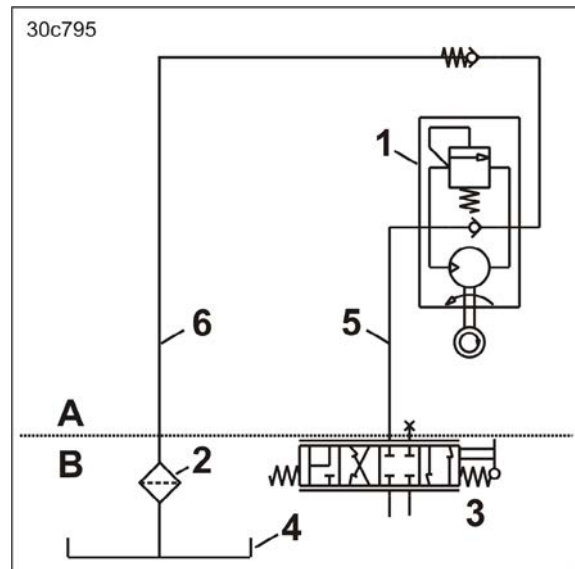


Fig. 95



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. 95/4) 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 implement



When coupling and uncoupling the implement take heed of the section "Safety information for users", Seite 27.



WARNING

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

Secure the tractor and implement to prevent unintentional starting and rolling before entering the danger area between the tractor and implement to couple or uncouple the implement. For more information, see section 6.2, Seite 92.



WARNING

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

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

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

7.1 Coupling the implement



WARNING

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

You may only connect the implement to tractors suitable for the purpose. On this subject see the section "Checking the suitability of the tractor", Seite 86.



WARNING

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

Instruct people to leave the danger area between the tractor and the implement before you approach the implement.

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

**WARNING**

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

- Use the intended equipment to 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.

**WARNING**

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

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

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

**DANGER**

If the tractor has been separated from the implement, always

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

**DANGER**

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

**CAUTION**

Only establish the implement connections once the tractor and implement have been coupled, the tractor engine is shut down, the tractor parking brake is applied and the ignition key is removed!

Do not connect the supply line (red) of the service brake to the tractor until the tractor engine is shut down, the tractor parking brake is applied and the ignition key is removed!

Coupling and uncoupling the implement



The implements can be coupled or uncoupled when folded or unfolded.



WARNING

Do not remove the wheel chocks until the implement is connected to the tractor's lower links and the tractor parking brake is applied.



CAUTION

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

1. Verify that the implement is secured with wheel chocks (Fig. 96/1).

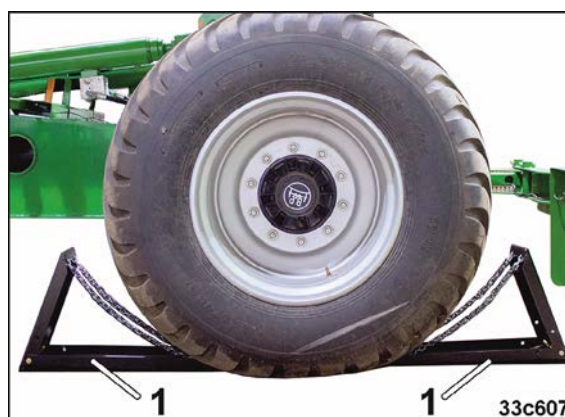


Fig. 96

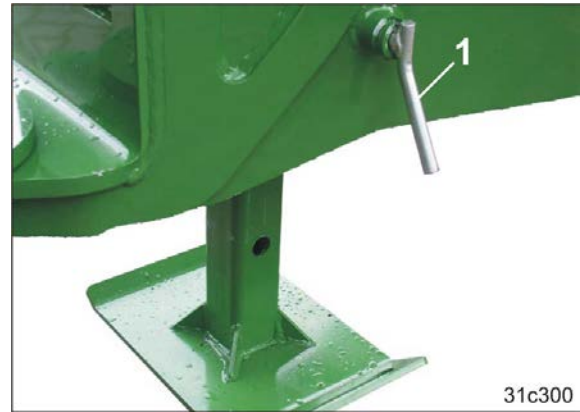
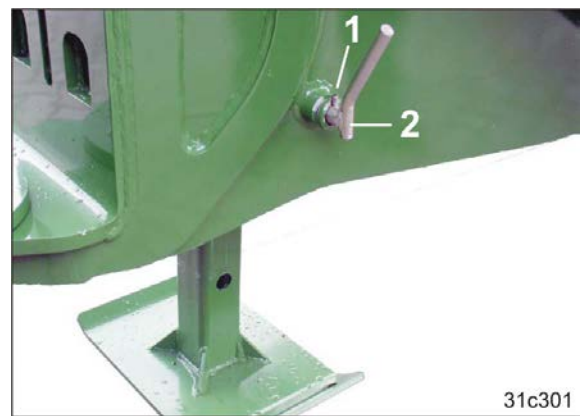
2. Attach one ball sleeve (Fig. 97/1) with a collecting tray over each of the lower links of the drawbar and lock with a linch pin.

The ball sleeves depend on the tractor type (see tractor operating manual).



Fig. 97

3. Open the tractor lower link securing device, i.e. it must be ready for coupling.
4. Align the lower link hooks so that they are flush with the linking points of the implement.
5. Direct people out of the danger area between the tractor and implement before you approach the implement with the tractor.
6. Drive the tractor in reverse up to the implement so that the lower link hooks of the tractor automatically pick up the ball of the implement.
→ The lower link hooks lock automatically.
7. Check whether the securing device of the tractor's lower link locking system is closed and secured (see tractor's operating manual).
8. Lift the tractor's lower link until the stand (Fig. 100/1) is free of the ground.
9. Secure the tractor against unintentional starting and unintentional rolling away.
10. Check whether the PTO shaft of the tractor is switched off.
11. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
12. Connect the supply lines to the tractor (see section 7.2 to 7.6, from Seite 99).

**Fig. 98****Fig. 99**

Coupling and uncoupling the implement

13. Unlock the pin.
 - 13.1 Turn the locked pin (Fig. 98/1) by 180° until the clamping sleeve (see Fig. 99/1) is released.
14. Hold onto the cable pull (Fig. 100) and pull out the pin (Fig. 99/2).
15. Pull up the jack using the cable pull and peg the position with the pin.
16. Lock the pin by turning (see Fig. 98).

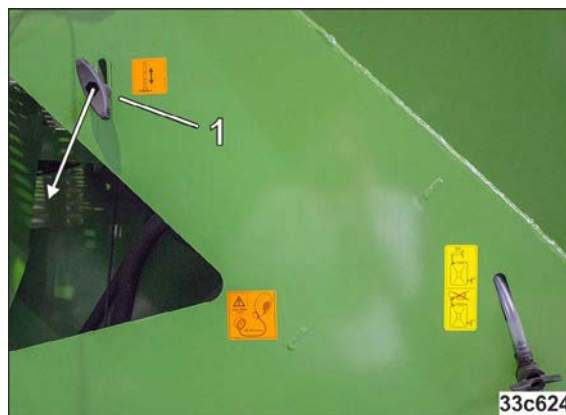


Fig. 100

17. Check the function of the braking and lighting system.
18. Stow the wheel chocks in the brackets and lock with a spring clamp (Fig. 101).
19. Before commencing a run, perform a braking test.



Fig. 101

7.2 Connecting the hydraulic connections



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.

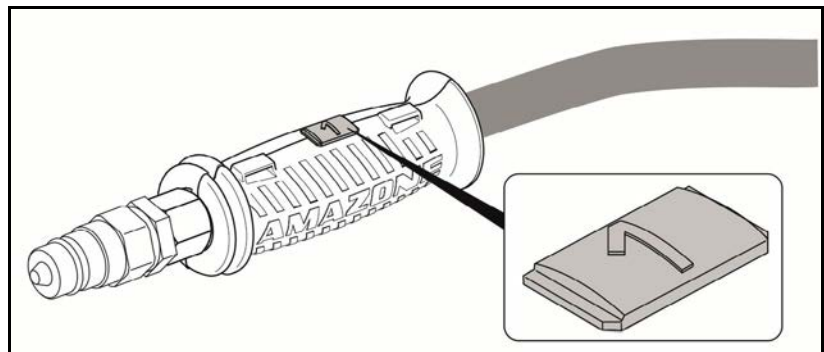


Clean the hydraulic couplings before connecting them to the tractor. Minor oil contamination with particles can cause a failure of the hydraulic system.

Identification of the hydraulic lines on the implement side

- All hydraulic hose lines are equipped with grips.

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



Films are stuck on the implement for the markings that illustrate the respective hydraulic function.

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

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

Coupling and uncoupling the implement

Marking		Function			Tractor control unit	
yellow			Rear frame Star wheel	Move into working position	Double acting	
				Move into transport position		
green			Boom	Move into working position	Double acting	
				Move into transport position		
blue			coulter pressure	Increase	Double acting	
				Reduce		
red			Blower fan hydraulic motor	Switch on	Single- or double-acting ¹⁾	
						
		Return flow: unpressurised line ²⁾				

¹⁾ Pressure line with priority

²⁾ Pressureless hose (see section "Installation regulations for the hydraulic fan drive connection", Seite 93).



Check the route of the supply lines.

The supply lines

- Must easily give way to all movements in bends without tensioning, kinking or rubbing.
- must not chafe against other parts.



- During work the *yellow* tractor control unit is actuated more frequently than any other control unit. Assign the connections of the *yellow* control unit to an easily accessible control unit in the tractor cab.
- Tractors with constant pressure hydraulic systems are designed only conditionally for the operation of hydraulic motors. Observe of the recommendations of the tractor manufacturer.

On-board hydraulics (optional)

When equipped with an on-board hydraulic system, the function from the *green* tractor control unit is transferred to an implement control unit.



Fig. 102

Marking	Function (see Fig. 102)			External control unit	
1		Blower fan hydraulic motor	Switch on	Single	
2		Boom	Move into transport position	Double acting	
3			Move into working position		

7.3 Making further connections

Interface	Assembly:	Function	Notes
Tractor	Plug (7-pin) (Fig. 25/8)	Road traffic lighting system (optional)	
Terminal	Implement plug (Fig. 25/7)	On-board computer data cable AMALOG ⁺ (optional)	Plug the connector into the terminal as described in the AMALOG ⁺ operating manual.

7.4 Connecting the pressure gauge

Connect the pressure gauge (Fig. 103/1) to the hose (Fig. 103/2).



Fig. 103

7.5 Connecting the dual-circuit pneumatic braking system

Couple the brake and supply line to the tractor (see section "Coupling the brake and supply lines", Seite 54).



On the tractor, couple

- the yellow coupling head first (brake line).
- and then the red coupling head (supply line).

Interface	Implement-side identification of the brake lines	Tractor connection	Function
Tractor	yellow (Fig. 25/6)	Brake line	Dual-circuit pneumatic braking system
	red (Fig. 25/6a)	Supply line	

7.6 Connecting the hydraulic brake system

On the tractor side, a hydraulic brake system is required that controls the hydraulic brake system of the implement (not allowed in Germany and a few other EU countries).

Connect the hydraulic brake connection (Fig. 104) to the hydraulic tractor brake connection.



Fig. 104



Check the hydraulic connection for cleanliness before coupling.



DANGER

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

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



31c300

31c301

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7. Lower the jack using the cable pull and peg the position with the pin.
8. Lock the pin by turning (see Fig. 106).

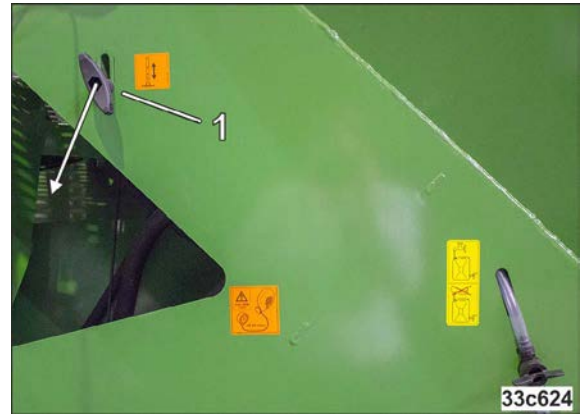


Fig. 108

9. Remove the wheel chocks from the transport bracket(s).



Fig. 109

10. Secure the implement wheels with two wheel chocks (Fig. 110/1).
11. Uncouple the supply line and the brake line from the tractor (see section "Uncoupling the supply and brake line", Seite 56).

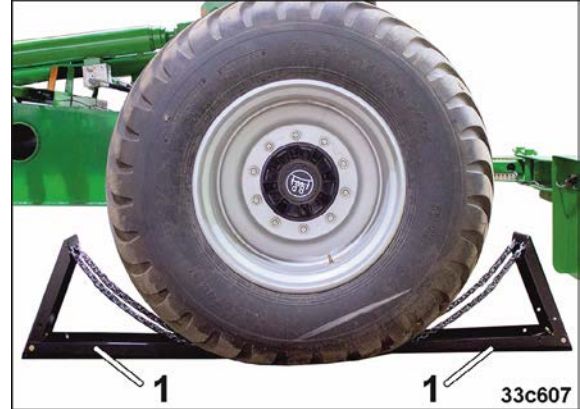


Fig. 110



When uncoupling the pneumatic brake lines first of all disconnect the red hose coupling (supply line) and then the yellow hose coupling (brake line) from the tractor!

Coupling and uncoupling the implement

12. Uncouple all supply lines from the tractor.
13. Close the hydraulic connectors with protective caps.
14. Place the supply lines in the hose cabinet (Fig. 111).



Fig. 111

15. Set the implement down on the stand.
16. Apply the parking brake



WARNING

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

Ensure that the jack does not sink into the ground. If the jack sinks into the ground, it will be impossible to couple the implement again!



Fig. 112

17. Open the securing device (Fig. 113) of the tractor's lower link (see tractor operating manual).
18. Uncouple the tractor's lower link.
19. Pull the tractor forwards.



DANGER

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



Fig. 113



CAUTION

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

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 you make any adjustments to the implement. On this subject see section 6.2, Seite 92.



DANGER

Before adjustment tasks (unless otherwise specified):

- Unfold the implement booms (see section 10.1, Seite 138).
- Switch off the tractor's PTO shaft.
- Wait until the tractor's PTO shaft stops moving.
- Apply the tractor's parking brake.
- Switch off the tractor's engine.
- Remove the ignition key.

8.1 Repositioning the fill level sensor



Reposition the fill level sensor only when the hopper is empty. When the hopper is full, the seed or fertiliser runs out through the sensor holder as soon as the sensor is removed!

1. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
2. Release the nut (Fig. 114/1).
3. Detach the fill level sensor (Fig. 114/2) and insert it in the intended holder.

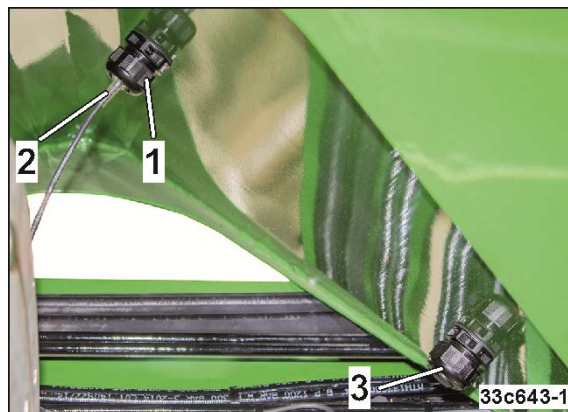


Fig. 114

4. Insert the fill level sensor into the holder until the cable output fits flush in the holder (Fig. 115/1).



Fig. 115

→ This ensures that the sensor head (Fig. 116/2) protrudes into the seed or fertiliser.

5. Tighten up the nut (Fig. 114/1).



The close the opening, insert the dummy (Fig. 114/3) into the holder and clamp it firmly.

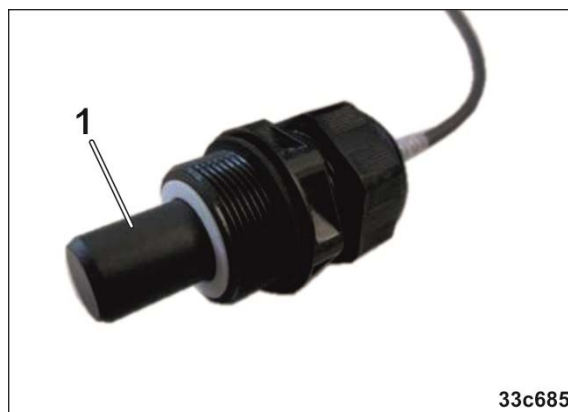


Fig. 116

8.2 Pre-selection of the metering roller

Based on the calculation formula, a metering roller can be pre-selected according to section 8.2.1 for the first calibration.

$$D_{V...} = \frac{AB_D}{i_{...}} \cdot \frac{A_M}{G_L} \cdot \left[\frac{\frac{m \cdot \frac{kg}{ha} \cdot 10000 cm^3}{\frac{1}{m} \cdot \frac{kg}{ha} \cdot 10000 m^2 \cdot \lambda}}{\frac{1}{m} \cdot \frac{kg}{ha} \cdot 10000 m^2 \cdot \lambda}} \right] = \frac{AB_D}{i_{...}} \cdot \frac{A_M}{G_L} \cdot 0,1 cm^3$$

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- D_V Metering volume
- AB_D Working width per metering unit
- A_M Required spread rate
- $i_{...}$ Gearbox position
- G_L Litre weight



Conversion
Grains per m² to
kg/ha

$$\text{Seeding density} \left(\frac{kg}{ha} \right) = \frac{\frac{Grains}{m^2} \cdot \text{Thousand grain weight (g)}}{\text{Germination capacity (\%)}}$$

8.2.1 Example for the calculation of metering volumes for wheat

175 kg/ha of wheat with a litre weight of 0.85 kg/l are to be metered.

Specification:

Litre weight	$[G_L] = 0.85 \text{ kg/l}$
Working width per metering unit	$[AB_D] = 6 \text{ m}$
Required spread rate	$[A_M] = 175 \text{ kg/ha}$

Conversion factors:

Gearbox position 20	$[i_{20}] = 0.088 \text{ 1/m}$
Gearbox position 80	$[i_{80}] = 0.351 \text{ 1/m}$



The implement-specific conversion factors i_{80} and i_{20} serve to convert a distance into a rotation.

Which metering volume $[D_V]$ is required?

1. Determination of the smallest metering volume:
 - 1.1 Gearbox position 80 : $[i_{80}] = 0.351 \text{ 1/m}$
 - 1.2 $D_{V80} = 352 \text{ cm}^3$
2. Determination of the largest metering volume:
 - 2.1 Gearbox position 20 : $[i_{20}] = 0.088 \text{ 1/m}$
 - 2.2 $D_{V20} = 1404 \text{ cm}^3$
3. The metering volume $[D_V]$ must be between 352 cm^3 and 1404 cm^3 .
4. The metering roller is selected based on the Metering Rollers Table (see Seite 69).

$$D_{V80} = \frac{AB_D}{0,351} \cdot \frac{A_M}{G_L} \cdot 0,1 \text{ cm}^3$$

$$D_{V80} = \frac{6}{0,351} \cdot \frac{175}{0,85} \cdot 0,1 \text{ cm}^3 = \underline{\underline{352 \text{ cm}^3}}$$

$$D_{V20} = \frac{AB_D}{0,088} \cdot \frac{A_M}{G_L} \cdot 0,1 \text{ cm}^3$$

$$D_{V20} = \frac{6}{0,088} \cdot \frac{175}{0,85} \cdot 0,1 \text{ cm}^3 = \underline{\underline{1404 \text{ cm}^3}}$$

8.3 Installing/removing the metering roller



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

1. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
2. Close the opening to the hopper (only necessary when the hopper is full).
 - 2.1 Remove the key (Fig. 117/1) from the holder.
 - 2.2 Release two nuts (Fig. 118/1) but do not remove.

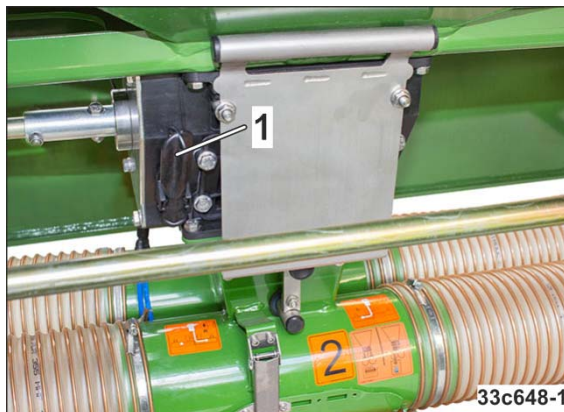


Fig. 117



Fig. 118

3. Loosen both screws (Fig. 120/1).
4. Twist and remove the bearing cover (Fig. 121).

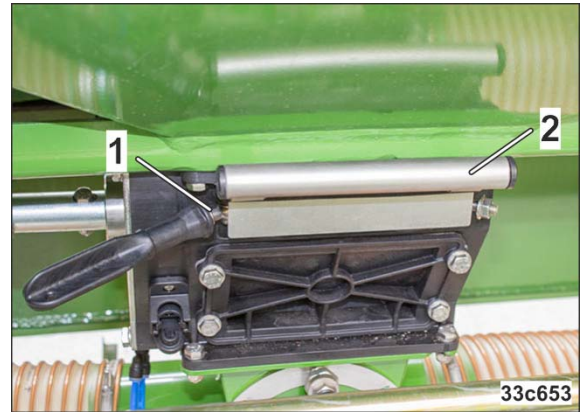


Fig. 119

5. Loosen the two bolts
 - 5.1 Remove the key (Fig. 117/1) from the holder.
 - 5.2 Loosen the nuts (Fig. 120/1) but do not remove.



Fig. 120

6. Remove the bearing cover (Fig. 121/1)
 - 6.1 Turn the bearing cover (Fig. 121/2)
 - 6.2 Pull off the bearing cover (Fig. 121/2).



Fig. 121

7. Pull the metering roller out of the metering unit.



Install the metering roller in the reverse sequence.



Fig. 122



Set the shutter to the parking position and secure with two screws (see Fig. 118).

8.4 Adjusting seed and fertiliser quantity using a calibration test



Select the main setting and working range between 20 and 80.

8.4.1 Gearbox setting values for the first calibration test

Setting values for spreading seed	
Metering roller	Gearbox position
7.5 cm ³	15
20 cm ³	
40 cm ³	
120 cm ³	50
210 cm ³	
350 cm ³	
600 cm ³	50
660 cm ³	
880 cm ³	

Fig. 123

1. Fold out the implement into the working position (see section "Unfolding/folding the implement boom", Seite 138).
2. Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.
3. Fill the seed and fertiliser hopper (see section "Filling the hopper", Seite 144)
The minimum filling quantity for calibration is 1/4 hopper content (for fine seeds, accordingly less hopper content).
4. Put a calibration trough (Fig. 124/1) in the bracket under each metering unit.



Fig. 124

Settings

12. Push the calibration crank handle (Fig. 128/1) onto the star wheel (Fig. 128/2).
13. Turn the star wheel with the calibration crank handle counterclockwise until all chambers of the metering rollers are filled with seed and a uniform seed stream flows into the calibration troughs.
14. Empty the calibration trough and push it back under the metering unit.
15. Turn the star wheel anticlockwise the number of crank turns specified in the table (Fig. 129).

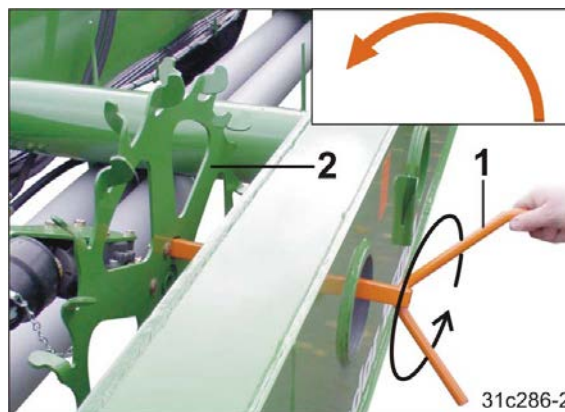


Fig. 128

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

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

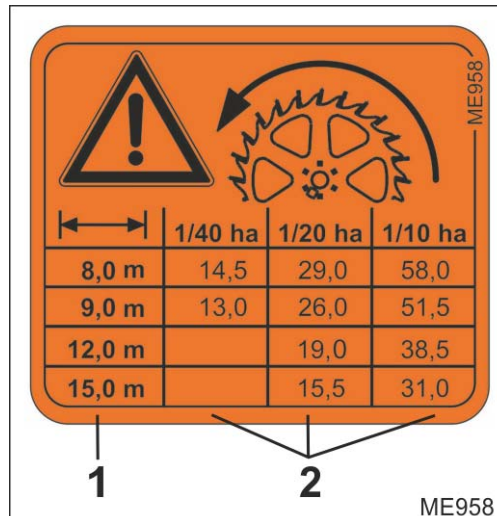
- 1/20 ha (500 m²) or
- 1/10 ha (1000 m²).

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

Example

Working width: 12.0 m

Number of crank turns
on 1/20 ha: 19.0



	1/40 ha	1/20 ha	1/10 ha
8,0 m	14,5	29,0	58,0
9,0 m	13,0	26,0	51,5
12,0 m		19,0	38,5
15,0 m		15,5	31,0

Fig. 129

16. Weight the seed or fertiliser collected in the calibration trough (take account of the container weight) and multiply
 - o by a factor of 20 (for 1/20 ha) or
 - o by a factor of 10 (for 1/10 ha).



Check the scales to ensure the display is accurate.

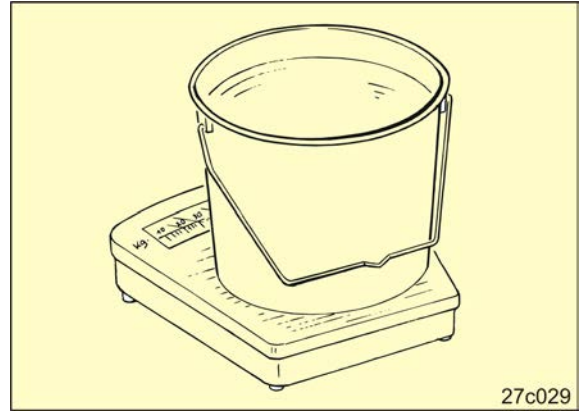


Fig. 130



Set the scale to the desired units (kg or lb).

Calibrating on 1/20 ha:

$$\text{Spread rate [kg/ha]} = \text{calibrated quantity [kg/ha]} \times 20$$

Calibrating on 1/10 ha:

$$\text{Spread rate [kg/ha]} = \text{calibrated quantity [kg/ha]} \times 10$$

Example:

calibrated quantity: 6.4 kg on 1/20 ha

$$\text{Spread rate [kg/ha]} = 6.4 \text{ [kg/ha]} \times 20 = 128 \text{ [kg/ha]}$$



The desired application rate is not generally achieved with the first calibration test. The correct gearbox setting can be determined using the calculating disc rule with the values from the first calibration test and the calculated application rate (see section "Determining the gearbox setting using the calculating disc rule", Seite 116).

17. Repeat the calibration test until the desired application rate is achieved.
18. Secure the calibration trough on the transport bracket.
19. Close the openings under each metering unit.
20. Clip the calibration crank into its transport bracket.

8.4.2 Determining the gearbox setting using the calculating disc rule

Example:

Values from the calibration test

calculated application rate: 175 kg/ha

gearbox setting: 70

desired seeding rate: 125 kg/ha.

1. The values from the calibration test
 - o Calculated application rate 175 kg/ha (Fig. 131/A)
 - o Gearbox setting 70 (Fig. 131/B)
 opposite one another on the calculating disc rule.
 2. Read the gearbox setting for the desired spread rate of 125 kg/ha (Fig. 131/C) from the calculator disc.
- Gearbox setting 50 (Fig. 131/D).
3. Set the gearbox lever to the value read from the disc.
 4. Check the gearbox setting by carrying out another calibration test (see "8.4", Seite 112).

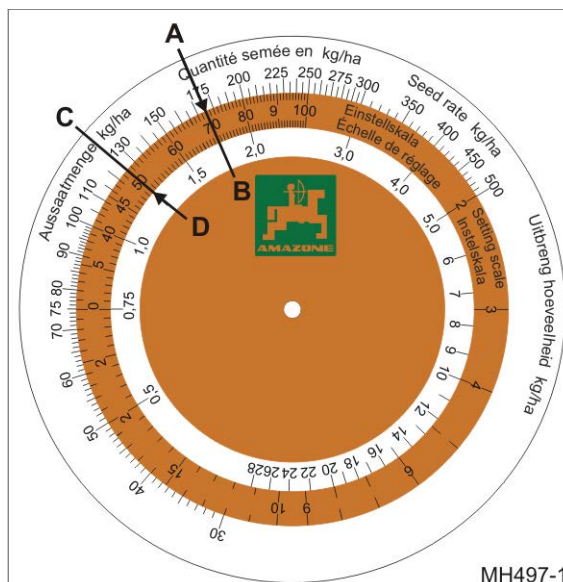


Fig. 131

8.5 Adjusting blower fan speed



The maximum speed of 4000 rpm must never be exceeded.



Check and readjust the system pressure during operation.

The system pressure varies, depending on the quantity of seed/fertiliser and on the working speed.



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.

A pressure gauge (Fig. 132/1) in the tractor cab shows the system pressure.



Fig. 132

Required system pressure: 45 - 60 mbar

The fan speed is set correctly when the indicator of the pressure gauge (Fig. 133/1) is between 45 and 60 mbar.



At an idle, pressures between 25 and 35 bar are reached in the individual hopper chambers.



Fig. 133

8.5.1 Blower fan speed in multiple chamber systems

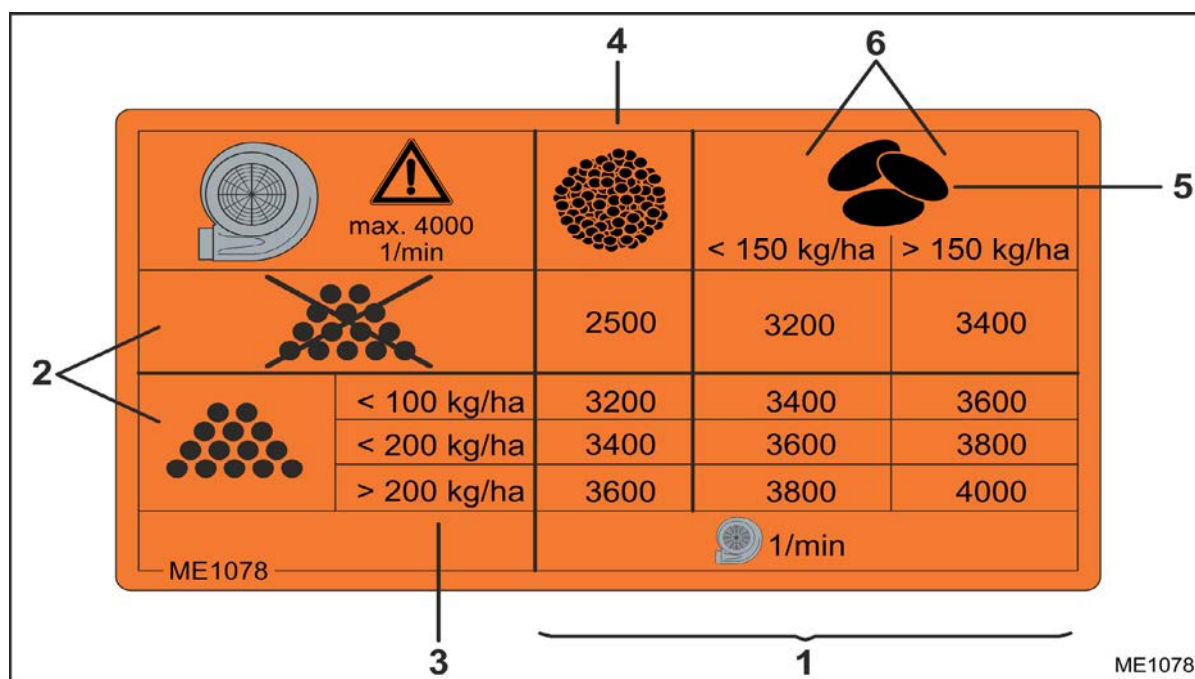


Fig. 134

The blower fan speed (Fig. 134/1) required depends on:

- the fertiliser
 - with or without fertiliser (Fig. 134/2)
 - from the fertiliser application rate (Fig. 134/3)
- the seed
 - fine seed types (Fig. 134/4), e.g. rapeseed or grass seed
 - grains or legumes (Fig. 134/5) and the application rate (Fig. 134/6).

Example:

- Fertiliser application rate: 150 kg/ha (Fig. 134/3)
- Grain application rate: 130 kg/ha (Fig. 134/6)

Required blower fan speed: 3600 rpm.

Set the target blower fan speed

- via the tractor's flow control valve
or (if not present)
- via the pressure relief valve of the blower fan hydraulic motor
if the tractor does not have a flow control valve

1. Initially, set the blower fan speed
 - o at 3200 rpm for fine seeds
e.g., rapeseed
 - o at 3600 rpm for cereals.

→ The AMALOG⁺ (Fig. 135) shows the blower fan speed (see AMALOG⁺ operating manual).

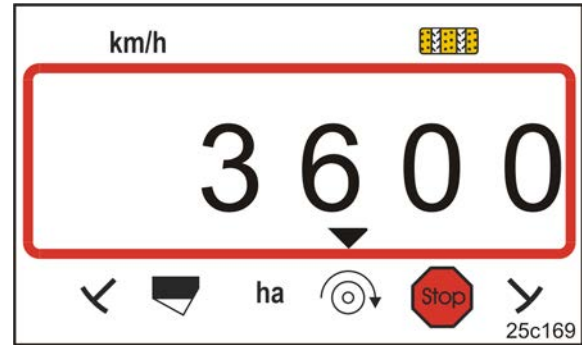


Fig. 135

2. Set the required system pressure.
3. Set the displayed blower fan speed that generates the system pressure as the nominal speed on the AMALOG⁺ (see AMALOG⁺ operating manual).

→ The AMALOG⁺ issues an alarm as soon as the speed goes outside of the set tolerance speed range (see AMALOG⁺ operating manual).



Fig. 136

4. The pressure gauges (Fig. 137/1-3) indicate the pressures in the individual hopper chambers.

The pressure difference between the individual hopper chambers may not exceed a maximum of 5 mbar!

5. If the system pressure is not reached, check the system for leaks.

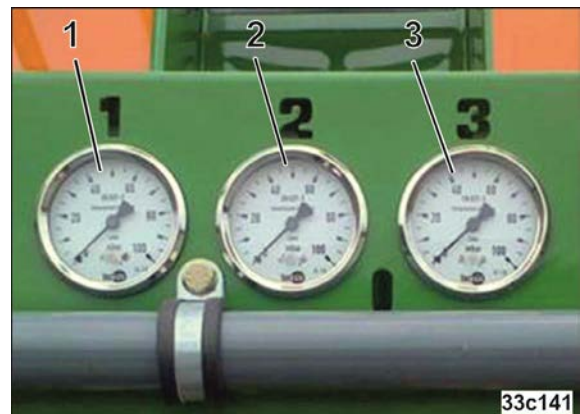


Fig. 137

8.5.2 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 8.5.4.1 or section 8.5.5.1 (depending on the version of the pressure relief valve).
2. Read the required blower fan speed from section 8.5 (see page 117).
3. Set the blower fan speed via the flow control valve of the tractor.

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

1. Read the required blower fan speed from the speed table (see section 8.5.1).
2. Set the blower fan speed according to section 8.5.4.2 or section 8.5.5.2 (depending on the version of the pressure relief valve).

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 (Fig. 138/1)

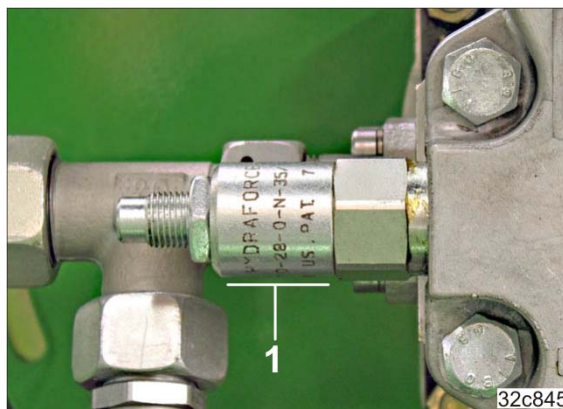


Fig. 138

- Pressure relief valve with hexagonal outer contour (Fig. 139/1)



Fig. 139

8.5.4 Pressure relief valve with round outer contour

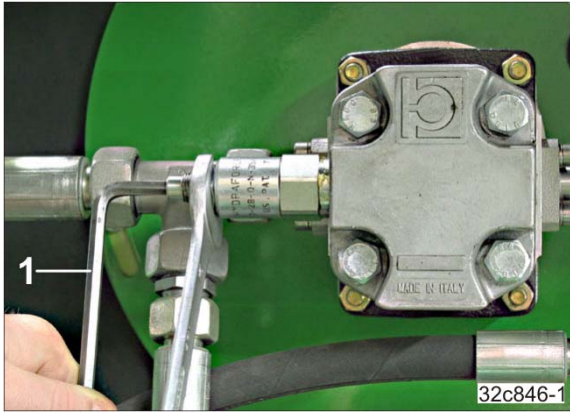


Fig. 140

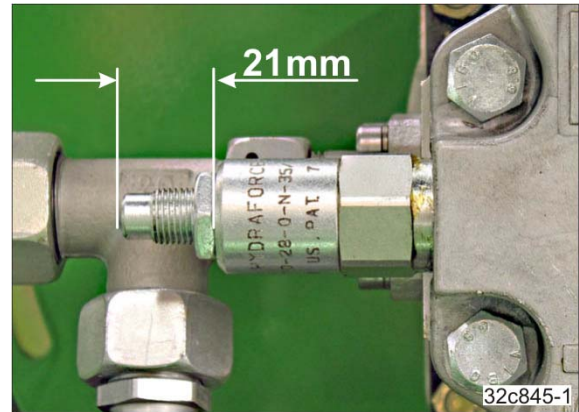


Fig. 141

8.5.4.1 Pressure relief valve basic setting

Basic setting

1. Loosen the lock nut (Fig. 140).
2. Adjust the pressure relief valve to the factory-set dimension "21 mm" (Fig. 141).
 - 2.1 Turn the screw with the hexagon socket wrench (Fig. 140/1) accordingly.
3. Tighten the lock nut.

8.5.4.2 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. 140).
2. Use the hexagon socket wrench (Fig. 140/1) to set the target blower fan speed. Do not exceed the maximum blower 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.

8.5.5 Pressure relief valve with hexagonal outer contour



Fig. 142



Fig. 143

8.5.5.1 Pressure relief valve basic setting

Basic setting

1. Loosen the lock nut (Fig. 142).
2. Using a hexagon socket wrench, screw the screw in completely (Fig. 142/1) (clockwise).
3. Using a hexagon socket wrench, unscrew the screw back by 3 turns.
4. Tighten the lock nut.

8.5.5.2 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. 142).
2. Use the hexagon socket wrench (Fig. 142/1) to set the target blower fan speed. 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.

8.6 Adjust the horizontal position of the implement booms

The implement booms must be positioned horizontally during operation. The horizontal position can be adjusted hydraulically via the pressure relief valve.



Fig. 144

Fig. 145/...

- (1) Pressure relief valve under the operation platform
- (2) Adjustment screw for the boom pressure

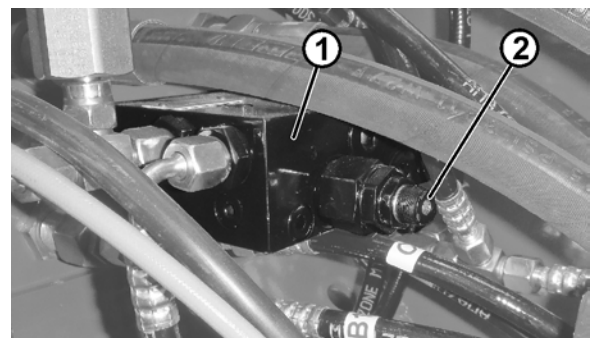


Fig. 145

Fig. 146/...

- (1) Pressure gauge, shows the set boom pressure.

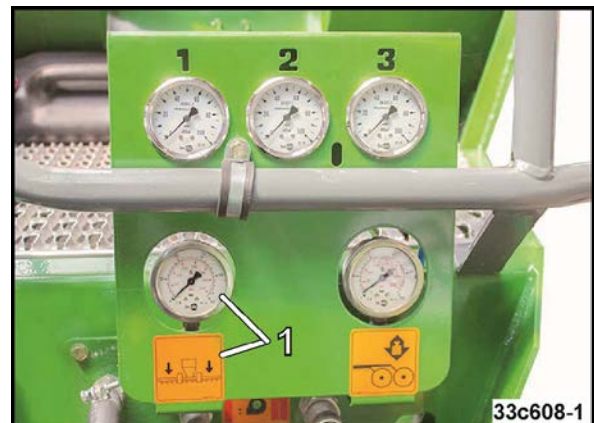


Fig. 146

Setting the boom pressure



The boom pressure setting depends on the

- Soil texture
- Coulter pressure
- Forward speed

1. Start the blower and allow to rotate with 3500 rpm.
 2. Undo the lock nut of the pressure relief valve (Fig. 145/1) and unscrew the adjustment screw.
- The pressure gauge for loading the boom (Fig. 146/1) is now at 0 bar.
3. Screw in the adjustment screw of the pressure relief valve (Fig. 145/2) until the pressure gauge displays 40 bar.

- 3.1 The side booms move up on the outside:
Increase the pressure on the side boom by 5 bar.
- 3.2 Support wheels of the boom are exposed to high loads:
Reduce the pressure on the side boom by 5 bar.

4. Tighten the lock nut.

8.7 Adjusting the seed placement depth

Supported on the trailing press rollers, the ConTeC coulter constantly maintain the adjustable seed placement depth.

Fig. 147/...

- (1) With the seed placement depth, the coverage height of the seed is adjusted.

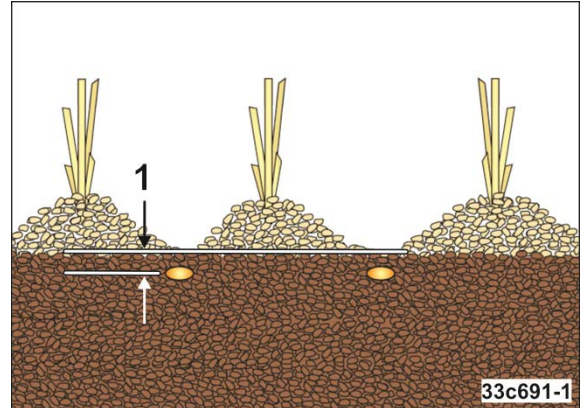


Fig. 147

1. Use the supplied tool.
- When not in use, the tool is attached to the transport bracket and secured with a linch pin (Fig. 148/1).



Fig. 148

2. Insert the tool (Fig. 149/1) into the setting device (Fig. 149/2).

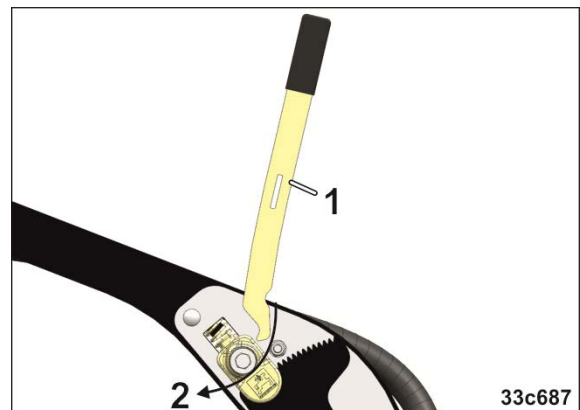


Fig. 149

Settings

3. Unlock the setting device using the tool (Fig. 150/2)
4. Move the press roller to the desired position using the handle (Fig. 151/1)
5. Check the placement depth of the first seeding unit and adjust if required (see section "**Checking the seed placement depth**", Seite 150).

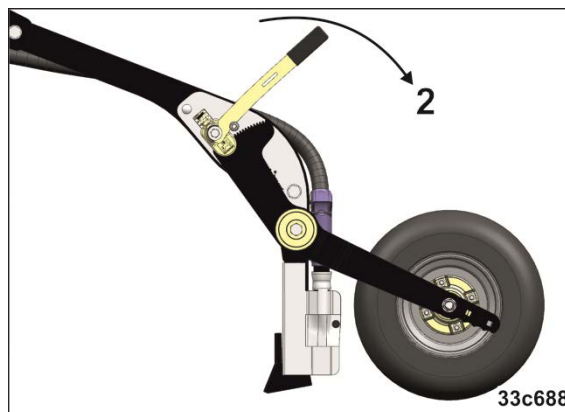


Fig. 150

6. Read the set coverage height on the scale (Fig. 151/2)
7. Set all of seeding units to the same value as the first seeding unit and check the placement depths.

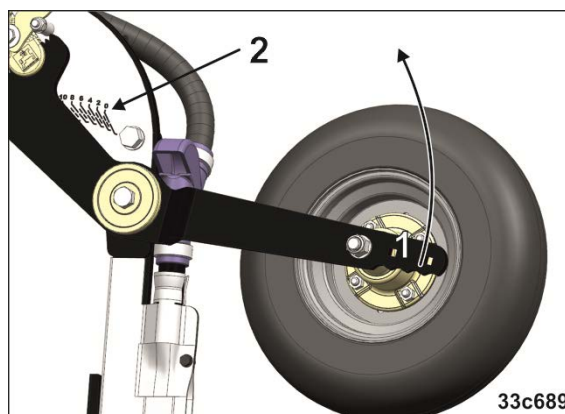


Fig. 151



Check the placement depth after each adjustment (see section "**Checking the seed placement depth**", Seite 150).



Check the seed placement depth when you have changed the tyre inflation pressure (see section "**Checking the seed placement depth**", Seite 150).



Check the coulter pressure and readjust if necessary.

8.8 Setting the coulter pressure



WARNING

Direct people out of the danger area.

Fig. 152/...

- (1) With the coulter pressure, the depth of the seed bed is adjusted.

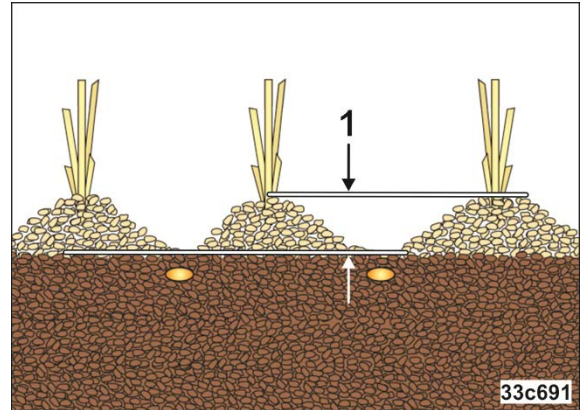


Fig. 152

1. Put the coulter pressure to the desired position

1.1 Put in float position

The pressure gauge (Fig. 153/1) is unpressurised:

→ The coulters work with normal coulter pressure.



Fig. 153

- 1.2 Apply pressure to the hydraulic cylinder by actuating the *blue* control unit

The pressure gauge (Fig. 153/1) is pressurised, the indicator (Fig. 153/3) changes its position:

→ The coulters work with increased coulter pressure.

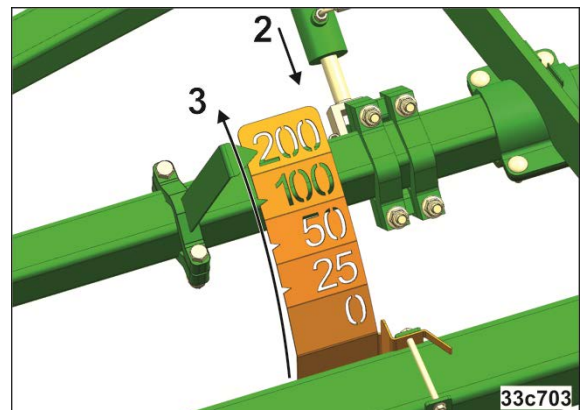


Fig. 154

Settings

2. The more the hydraulic cylinder Fig. 153/2) is extended, the greater the coulter pressure (Fig. 155/1).

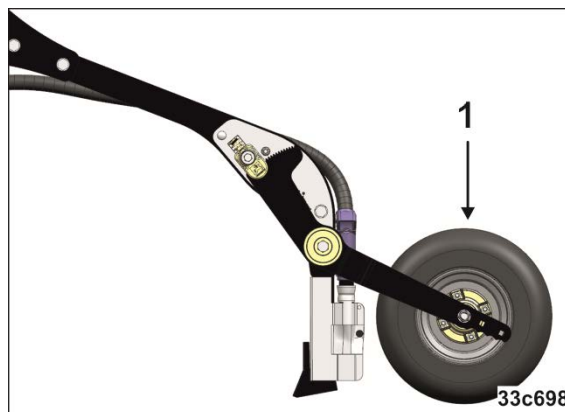


Fig. 155



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

8.9 Air-filled wheel press roller

Depending on the soil structure, select the most suitable tyre inflation pressure (Fig. 156/1) between 0.8 and 1.2 bar for the press roller.

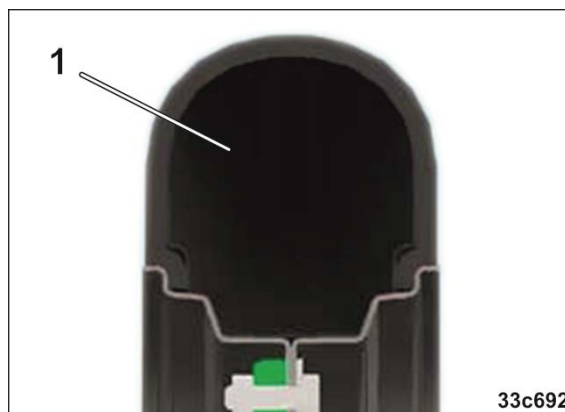


Fig. 156

8.10 Setting the tramline rhythm/counter

1. Read the required tramline rhythm from the table (Fig. 86, Seite 80) and enter in the on-board computer ¹⁾.
2. Refer to the illustration (Fig. 87, Seite 81) for the tramline counter for the first field pass and enter it on the on-board computer ¹⁾.

¹⁾ see AMALOG⁺ operating manual



The tramline counter is coupled with the operating position sensor on the start wheel. Each time the implement or the star wheel is lifted, the tramline counter advances by one digit.



Pressing the STOP button before lifting the star wheel prevents the tramline counter from advancing.

8.11 Half-sided switching off

1. Fold the implement booms out (see section "Unfolding/folding the implement boom", Seite 138).
2. Disengage the tractor PTO shaft, apply the tractor parking brake, switch off the tractor engine, and remove the ignition key.



DANGER

Disengage the tractor PTO shaft, engage the tractor parking brake, shut off the tractor engine and remove the ignition key.

3. Throw the lever to the right and lock it:
 - 3.1 Lever to the right (Fig. 157/1):
Right half-width of the implement ¹⁾ is switched off
 - 3.2 Lever to the left (Fig. 158/2):
Left half-width of the implement ¹⁾ is switched off

¹⁾ Looking in the direction of travel



Fig. 157



Fig. 158

4. Reduce the seeding rate to half.
 - 4.1 Adjust the gearbox setting lever (Fig. 159/1) accordingly.

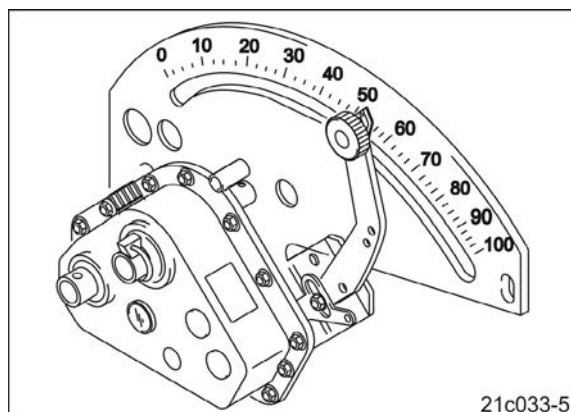


Fig. 159



Do not forget to switch the half-width of the implement back on again after turning at the end of the field.

9 Transportation

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.



- For transport journeys take heed of the section "Safety information for users", Seite 27.
- Before moving off, check:
 - that the supply lines are connected correctly.
 - the lighting system for damage, function and cleanliness.
 - the brake and hydraulic system for visible damage.
 - the functioning of the brake system.
 - that the tractor parking brake is released completely.



WARNING

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

- On folding implements, check that the transport locks are locked correctly.
- Secure the implement against unintentional movements before starting transportation.



WARNING

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

Before transportation, visually check that the lower links are properly secured against accidental loosening.



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.



DANGER

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

These risks pose serious injuries or death.

Observe the maximum load of the attached implement and the permissible axle and drawbar loads of the tractor.

Drive on roads only with an empty hopper. The brake system is designed for driving with an empty hopper only.



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

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



DANGER

Lock the tractor control units during road transport!



DANGER

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

9.1 Set the implement to road transport mode



WARNING

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

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

Secure the tractor with the attached machine against unintentional starting and rolling away before you make any adjustments to the machine. See section 6.2, Seite 92.

Move the combination hitched on the tractor to transport position:

1. Switch off the on board computer.
2. Empty the hopper (see section "Emptying the hopper and/or metering unit.", Seite 153).
3. Close the hopper cover (see section "Filling the hopper", Seite 144).
4. Pivot the ladder to the side (see section "Filling the hopper", Seite 144).
5. Fold the implement booms (see section "Unfolding/folding the implement boom"), Seite 138.
6. Lock the tractor control unit.
7. Check the lighting system for proper function (see section "Transportation equipment").
The warning signs and yellow reflectors must be clean and undamaged, Seite 43.
8. Switch the work lights off during transport to avoid blinding other motorists.



DANGER

Lock the tractor control units during road transport!

9.2 Legal regulations and safety

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

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

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:

- o 40 km/h (with dual-circuit pneumatic braking system).
- o 25 km/h with hydraulic brake system
- o 10 km/h (without brake system ²⁾)

Note: In Russia and in several other countries, the permissible maximum speed is 10 km/h.

Particularly on poorly maintained roads or paths, you must always drive at a substantially lower speed than that specified!

- Switch on the rotating beacon light (if present), which is subject to authorisation, prior to starting a journey and check for operability.

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

²⁾ The implement is not permitted in Germany and in several other countries without its own brake system (see section 6.1.3).

Revolving beacon

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



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.



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 control terminal during road transport.



DANGER

Lock the tractor control units during road transport!



WARNING

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

Transportation without a correctly fitted transport safety bar is forbidden.



WARNING

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

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

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



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 information in the following sections:

- "Warning symbols and other labels on the implement", as of Seite 18 and
- "Safety information for users", Seite 27.

Observing this information is important for your safety.



WARNING

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

Comply with the maximum load of the hitched implement and the approved axle and drawbar loads of the tractor. Drive only with an empty hopper.



WARNING

Risk of contusions, cutting, catching, drawing in and knocks through insufficient stability and tipping of the tractor and/or the connected implement.

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 influence of the attached implement.



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.



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

10.1 Unfolding/folding the implement boom



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.



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 catch hooks (Fig. 162/1) for the implement booms more visible.

10.1.1 Unfolding the implement booms

1. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
2. Take hold of the support wheels by the handle (Fig. 160/1) and peg in working position [see Table (Fig. 161)]
3. Lock the pins (Fig. 160/2) with linch pins.



Fig. 160

Working position: Insert pin in hole (1)

Transport position: Insert pin in hole (2)



Fig. 161

4. Lift the implement booms out of the transport locking mechanism (Fig. 162/1).
- 4.1 Actuate the *yellow* control unit until the implement booms are released from the transport locking mechanism (Fig. 162/1).



Fig. 162

5. Unfold the implement booms.
- 5.1 Keep actuating the *green* control unit until the implement booms, star wheel (Fig. 163/1) and distributor heads are unfolded.
- 5.2 Put the *green* tractor control unit into the neutral position and leave it in the neutral position during operation.

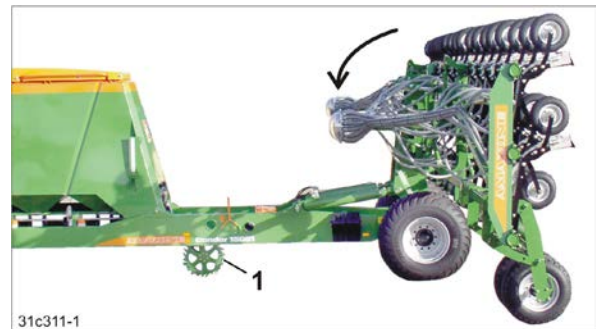


Fig. 163

6. Fold the rear frame (Fig. 164) to the working position.
- 6.1 Keep actuating the *yellow* control unit until the rear frame is completely unfolded, i.e. the rear frame is in working position.
- The star wheel (Fig. 163/1) is lowered when the rear frame is unfolded.



Fig. 164



Drive forward a little if the wheels in the 3rd row touch the ground and prevent folding out.

- 6.2 Put the *yellow* tractor control unit into the neutral position and leave it in the neutral position during operation.

10.1.2 Folding the implement booms

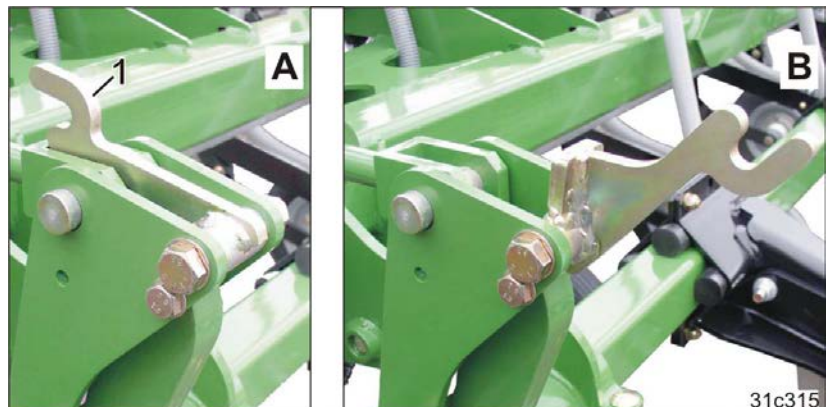


Fig. 165

1. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
2. Swivel the lever (Fig. 165/1) as shown in Figure (Fig. 165/B).
3. The implement has two levers.
Repeat the procedure as described.



After unfolding, the lever (Fig. 165/1) automatically returns to the position shown in Figure (Fig. 165/A).



DANGER

The maximum transport height on public roads in Germany and many other countries is of 4.0 m.

Actuating the lever (Fig. 165/1) before folding the implement booms causes the coulters the swivel to a transport height of 4.0 m.

Without lever actuation, the transport height of the folded implement is more than 4.0 m.

4. Raise the rear frame up to approx. 10° before it reaches the vertical position (see Fig. 166).
- 4.1 Actuate the *yellow* control unit until the rear frame is raised.
→ Actuation of the *yellow* control unit cause the star wheel to be lifted (Fig. 166/1).



Fig. 166 31c311



Fig. 167 31c310

5. Fold the implement booms in.
 - 5.1 Keep actuating the *green* control unit until
 - o the distributor heads are folded (see Fig. 167)
 - o the implement booms (Fig. 168/1) are resting on the skids (Fig. 168/2) of the lock hooks.



Beware of possible collisions of the implement booms with the implement.

Correct the tilt of the rear frame (see Fig. 166) if necessary.



Fig. 168

- 5.1 Actuate the *yellow* control unit until both implement booms are in the transport locking mechanism.

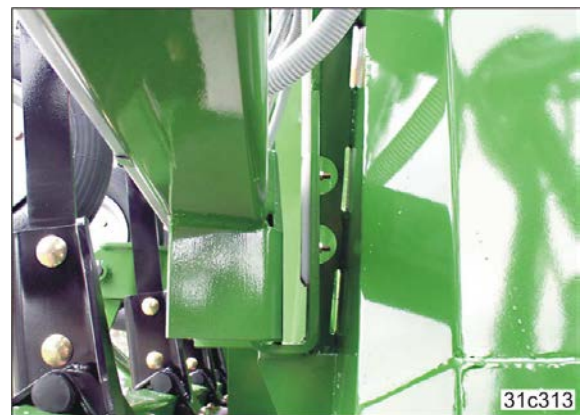


Fig. 169



The lock hooks (Fig. 169) act as the mechanical transport locking mechanism for the implement booms.



DANGER

Check that the lock hooks are fitted correctly (Fig. 169).

6. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
7. Peg the support wheels into transport position (see Fig. 170)
 - 7.1 Peg each pair of support wheels with two pins and secure them (linch pin).

Working position: Insert pin in hole (1)

Transport position: Insert pin in hole (2)



Fig. 170



The transport width is

- 3.40 m pegged in hole (Fig. 170/1)
- 3.00 m pegged in hole (Fig. 170/2).



DANGER

Support wheels pegged in working position protrude to the side in the area of the traffic during transport and put other road users at risk. Be sure to secure the support wheels properly before transport on roads.

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



The implement requires sufficient ground clearance in all driving situations.

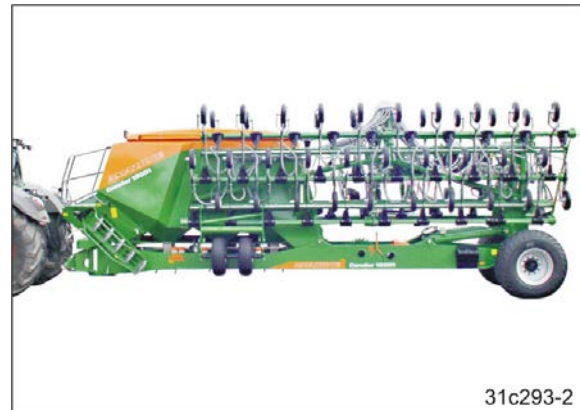


Fig. 171

10.2 Filling the hopper

**DANGER**

- Transportation on roads and paths with filled hoppers is prohibited. The brake system is designed only for an empty implement.
- Observe the approved filling levels and total weights.

**DANGER**

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

**CAUTION**

Before opening the hopper cover, switch off the blower fan.

When the blower fan is running and the cover is closed, the hopper is under pressure.

1. Couple the implement to the tractor (see section "Coupling and uncoupling the implement", Seite 94).
2. Before opening the hopper cover, switch off the blower fan.
When the blower fan is running and the cover is closed, the hopper is under pressure.
3. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
4. Determine the seed metering roller(s) based on the Table (Metering Rollers Table, Seite 69) and assemble (see section "Installing/removing the metering roller", Seite 110).
5. Adjust the fill level sensors of the hopper chambers (see section "Repositioning the fill level sensor", Seite 108).



When not in use, the ladder (Fig. 172) must be swivelled in a slanted position.

In operating position, the ladder can be damaged by the drawbar when turning the implement.



Fig. 172

6. Move the ladder into operating position.

6.1 Press the (Fig. 173/1) button.

6.2 Press the lever (Fig. 173/2) down.



Fig. 173

6.3 Take hold of the ladder by the handle (Fig. 174/2) and swivel into operating position. Make sure that the ladder engages.



Fig. 174

7. Climb on the loading plate via the ladder.



Fig. 175

Use of the implement

8. Open the hopper cover.
 - 8.1 Unlock the lever (Fig. 176/1).



Fig. 176

- 8.2 Swing the lever (Fig. 177/1) upwards. Make sure that the lever engages.
8. The two handles (Fig. 177/2) are used for opening the hopper cover.

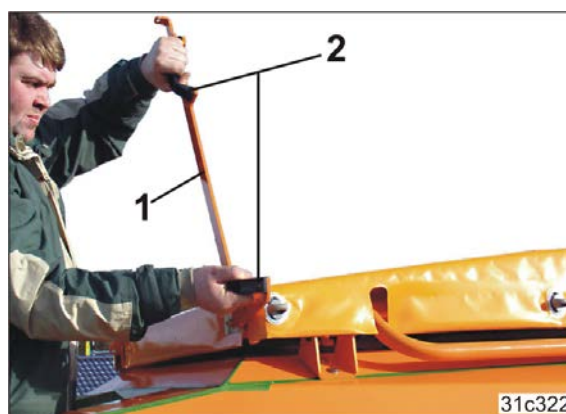


Fig. 177

- 9.3 Open the hopper cover (Fig. 178). Ensure that the hopper cover engages in the open position.
- 9.4 If necessary, remove foreign bodies from the sieves in the hopper.



Fig. 178



DANGER

- Hold on to the grips (Fig. 178/1) of the hopper cover when standing on the sieves.
- You must not step on the sieve when the hopper is full and the transported material covers the sieve.

10. Fill the chambers of the hopper (Fig. 179)
 - o with a filling auger from a supply vehicle
 - o from bulk bags.



DANGER

- **Never step between the supply vehicle and the implement!**
- **Never stand under suspended loads!**



Fig. 179

11. Close the hopper cover.
 - 11.1 Turn the lever (Fig. 180/1) to the left.
 - 11.2 Close the hopper cover. The handle (Fig. 180/2) is used to close the hopper cover.



Fig. 180

- 11.3 Remove the spring-loaded pin (Fig. 181/1) and swivel the lever (Fig. 181/2) downwards.



Fig. 181

- 11.4 Lock the lever (Fig. 182/1).



Fig. 182

Use of the implement

12. Swivel the ladder (Fig. 183) to the side.



When not in use, the ladder (Fig. 172) must be swivelled in a slanted position.

In operating position, the ladder can be damaged by the drawbar when turning the implement.



Fig. 183

12.1 Press the (Fig. 184/1) button.

12.2 Press the lever (Fig. 184/2) down.

→ The ladder automatically swivels into the slanted position.



Fig. 184

10.3 Work commencement



Fig. 185



DANGER

Direct persons out of the danger area of the implement, in particular from the swivel zone of the implement booms and the rear frame.

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

1. Unfold the implement and the star wheel into working position (see section "Unfolding/folding the implement boom", Seite 138).



When lowering the rear frame, pull the implement forward slightly.

2. Actuate the *red* tractor control unit.
→ Switch on the blower fan.
3. Check the fan speed and correct if necessary (see section "Adjusting blower fan speed", Seite 117).
4. Align the implement approximately horizontal.
 - 4.1 Lower/raise the tractor lower links.
5. Check the tramline rhythm/tramline counter and correct if necessary (see AMALOG⁺ operating manual).
6. Start.
7. Check the placement depth of the seed and correct if necessary (see section "Checking the seed placement depth", Seite 150)
 - o after 100 m
 - o after changing from light to heavy soil and vice-versa.

10.3.1 Checking the seed placement depth

1. Seed approx. 100 m at working speed.
2. Uncover the seed at several points and check the placement depth.

10.4 During operation



Make sure that you work with an adapted forward speed during work in order to obtain an equal placement depth in the rows.

(A) Correct forward speed
→ Uniform placement depth

(B) Forward speed too high
→ Uneven placement depth. The seed rows are filled with soil from the rear tine array.

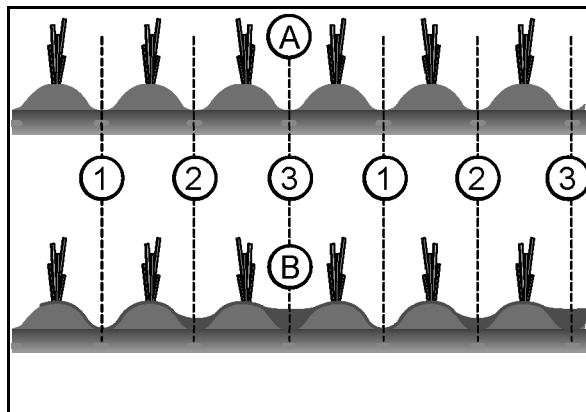


Fig. 186

The tyres can lose air during operation. Incorrect tyre inflation pressure impedes the spreading and placement.

Ensure that the proper tyre pressure is maintained during operation:

- Checking the inflation pressure of the running gear tyres (see section 12.4.4)
- Check the tyre inflation pressure on the support wheels (see section 12.4.5)
- Check the tyre inflation pressure on the press rollers (see section 12.4.6).

Switching off the tramline counter (STOP button)

If the tramline counter is prevented from advancing when there is a work interruption, press the STOP button (see AMALOG⁺ operating manual).

Visual inspection of the distributor heads



Contamination, e.g. with fertiliser and seed residues, can block the distributor heads and must be removed immediately (see section "Clean the distributor head", Seite 159).

Visual inspection of the delivery lines



The delivery lines may not sag! Accumulations of e.g. fertiliser and seed residues cause increased wear and must be removed immediately.

10.4.1 Turning at end of the field

Before turning at the end of the field

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. Keep actuating the *yellow* tractor control unit until the following are completely lifted:
 - o the coulters
 - o the star wheel.
4. Turn the combination.



Fig. 187

When turning at the end of the field



Do not switch off the hydraulic blower fan drive while turning! If necessary, reduce the blower fan speed (minimum 1000 rpm), however, do not reduce it so far as to cause blockage in the delivery section.

After turning at the end of the field

1. Keep actuating the *yellow* tractor control unit until the following are completely lowered:
 - o the coulters
 - o the star wheel.
2. Continue actuating the *yellow* tractor control unit for another 15 seconds and then put into neutral position

During the work, operate the *yellow* tractor control unit in neutral position.



The pressure gauge (Fig. 188/1) indicates the pressure that is applied to the hydraulic cylinders.



Fig. 188

10.5 End of work in the field



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

1. Switch off the blower fan.
2. Empty the hopper and the metering units (see section 10.6, Seite 153).



Seed residues left in the seed metering units can swell or germinate, if the seed metering unit is not completely emptied!

As a result, rotation of the metering rollers is blocked and damage can be caused to the drive!

3. Move the implement into transport position (see section 10.1, Seite 138).
4. Switch off the AMALOG⁺.

10.6 Emptying the hopper and/or metering unit.



DANGER

Switch off the blower fan, apply the tractor parking brake, switch the tractor engine off and remove the ignition key.



CAUTION

When the blower fan is running and the cover is closed, the hopper is under pressure.



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.
- seed residues and fertiliser may swell or germinate in the metering units. As a result, rotation of the metering rollers is blocked and damage can be caused to the drive!

10.6.1 Emptying the metering unit

The sticker (Fig. 189/1) should remind the tractor driver to empty and clean the metering unit after finishing the seeding work.

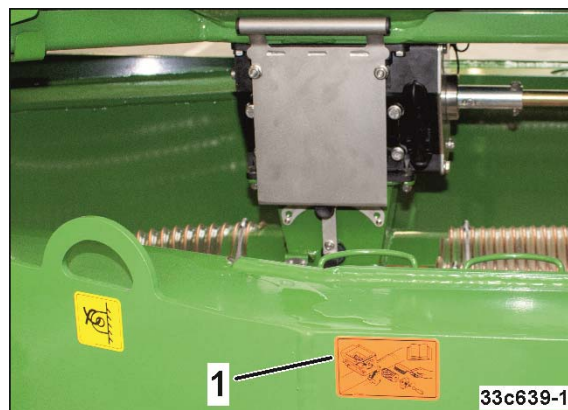


Fig. 189



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

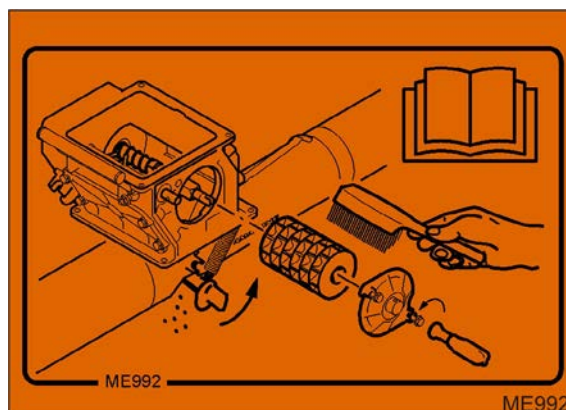


Fig. 190

Use of the implement

1. Push a calibration trough (Fig. 191) into the bracket under the metering unit.



Fig. 191

2. Close the opening of the hopper above the metering unit with the shutter (Fig. 192/1) (see section "Installing/removing the metering roller", Seite 110).



Fig. 192

3. Open the die tensioning hooks (Fig. 193/1) of the rubber mat that closes the opening in the delivery tube.

→ The seed drops into the calibration trough (Fig. 193/2).

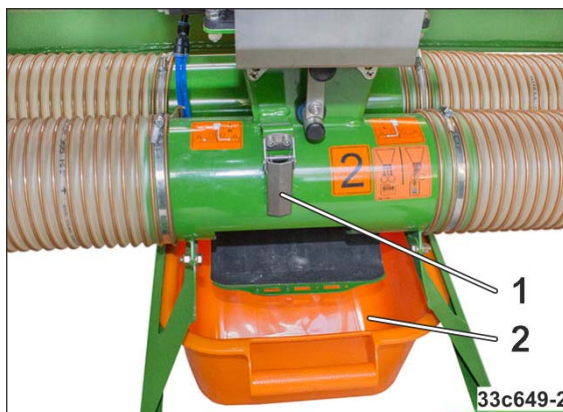


Fig. 193

4. Remove the metering roller (see section "Installing/removing the metering roller", Seite 110).
 5. Close the housing cover (Fig. 194/1).
 6. Pull the shutter (Fig. 194/2) slowly out of the metering unit.
- The seed drops into the calibration trough.
7. Reassembly occurs in the reverse sequence.
 8. Secure the calibration trough(s) (Fig. 67) on the transport bracket.

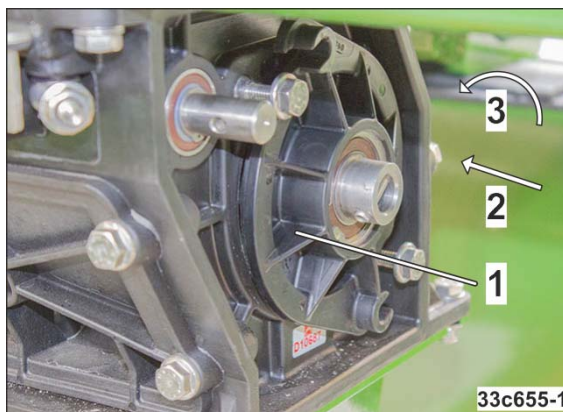


Fig. 194

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, Seite 92.

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

11.1 Display of amount remaining

When the seed level reaches the fill level sensor

- The control symbol (Fig. 195/1) marks the fill level symbol on the AMALOG⁺
- An alarm signal is issued.

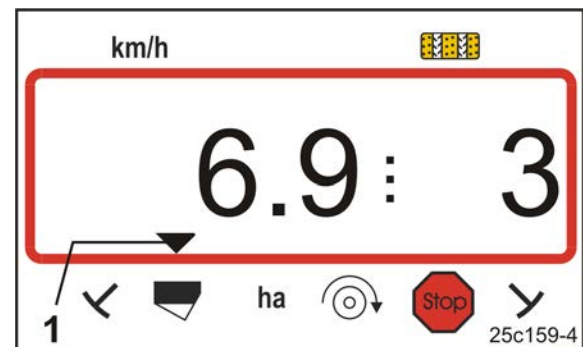


Fig. 195

11.2 Fault table

Fan sensor alarmed	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
Distance sensor (star wheel/Vario gearbox) not functioning	Distance sensor defective	Replace the distance sensor

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 implement against unintentional starting and unintentional rolling before you perform any cleaning, servicing or maintenance work on the implement, see Seite 92.



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 the following conditions are fulfilled:

- The implement boom is unfolded (see section 10.1, Seite 138).
- The rear frame is fully lowered.
- The tractor parking brake is applied.
- The tractor PTO shaft is shut off.
- The tractor engine is switched off.
- The ignition key is removed.

12.1 Securing the connected implement

Before working on the implement, place the implement coupled to the tractor on the jack (Fig. 196) to prevent unintentional lowering of the tractor's lower link.



Fig. 196

12.2 Cleaning the implement



DANGER

Wear a face mask. Do not inhale toxic dressing dust when removing dressing dust by means of compressed air.



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 points, bearings, rating plates, warning signs, and stickers.
- Always maintain a minimum nozzle distance of 300 mm between the high pressure cleaner/steam jet cleaner nozzle and the implement.
- The set pressure of the high-pressure cleaner/steam jet must not exceed 120 bar.
- Comply with safety regulations when working with high pressure cleaners.

1. Fully extend or retract the implement before cleaning it (see section 10.1, Seite 138).
Never clean the implement if the rear frame and implement booms are not completely folded.
2. To clean, always place the implement coupled to the tractor on the jack (Fig. 196).
3. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
4. Empty the hopper and the metering units (see section "Emptying the hopper and/or metering unit.", Seite 153).
5. Clean the distributor head [see section "Clean the distributor head", Seite 159].
6. Clean the implement with water or with a high pressure cleaner.

12.2.1 Clean the distributor head



WARNING

- Switch off the blower fan.
- Direct persons out of the danger area
 - before unfolding the implement booms.
 - before folding down the distributor heads.
- Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.

1. Unfold the implement booms (see section 10.1, Seite 138).
2. Before working on the distributor heads (Fig. 197/1), fold them to the rear over the frame of the implement boom.
3. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.



Fig. 197

4. Slacken the winged nuts (Fig. 198/1) and remove the clean plastic flap (Fig. 198/2) from the distributor head.
5. Remove any impurities with a brush, and wipe out the distributor head and plastic cap with a dry cloth.
6. Clean impurities between the base plate (Fig. 198/A) with compressed air.
7. Install the plastic cap (Fig. 198/2).
8. Fix the plastic cap with winged nuts (Fig. 198/1).

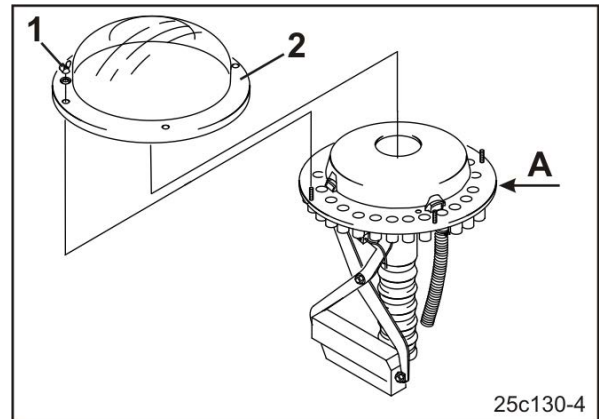


Fig. 198



Intensive cleaning requires the shutters to be removed according to the instructions in section "Adjusting the tramline to the track width of the cultivating tractor", Seite 172.

12.3 Lubrication specifications



WARNING

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

The lubrication points on the implement are marked with a foil sticker (Fig. 199).

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.

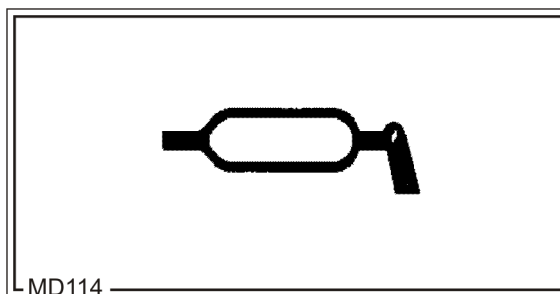


Fig. 199



During the first hours of operation, the excess grease will be pressed out and a light oil film forms on the bearing.

After the first heating up, no more grease/oil should escape.

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	Retinax A

12.3.1 Overview of lubrication points

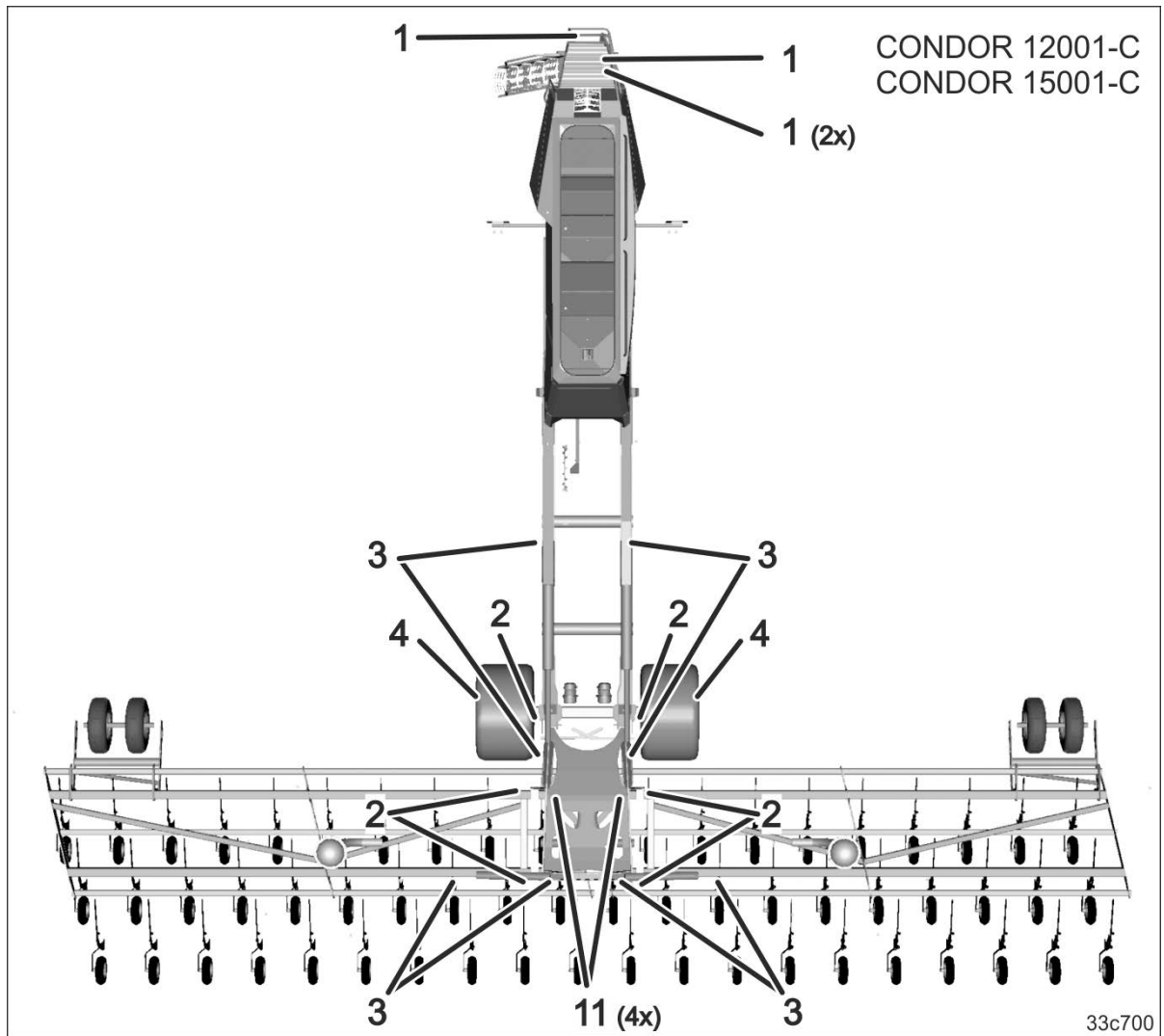


Fig. 200

Fig. 200/...	Assembly:	Number	see Figure	Lubrication interval [h]
1	Draw rail	2	Fig. 201	25
2	Pivot point of the implement boom	6	Fig. 202 to Fig. 203	25
3	Hydraulic cylinder rotation point	8	Fig. 204 to Fig. 207	25
4	Axle		See section 12.5.5	Seite 179
11	Lighting (optional)	4	Fig. 208	25

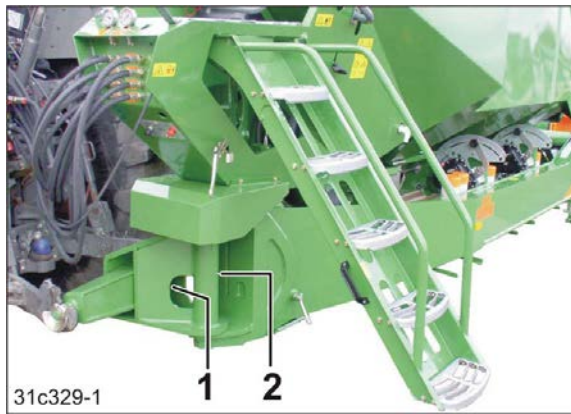


Fig. 201



Fig. 202



Fig. 203



Fig. 204



Fig. 205



Fig. 206

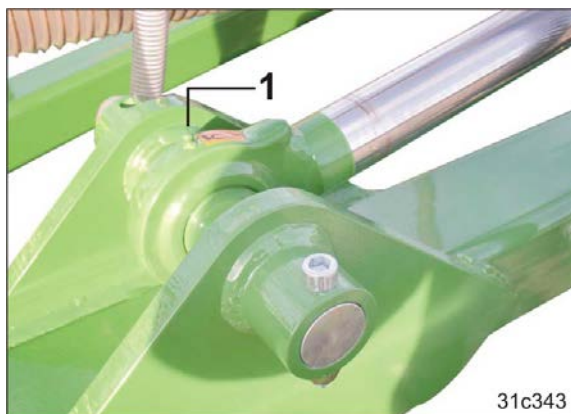


Fig. 207

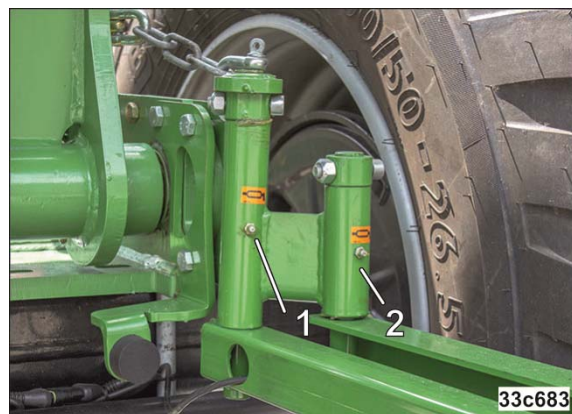


Fig. 208

12.4 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.

Before commissioning	Specialist workshop	Check and service the hydraulic hose lines. The inspection has to be recorded by the owner/operator.	Section 12.5.3
		Checking the oil level in the Vario gearbox	Section 12.4.1
		Checking the inflation pressure of the running gear tyres	Section 12.4.4
		Check the tyre inflation pressure on the support wheels	Section 12.4.5
		Check the tyre inflation pressure on the press rollers	Section 12.4.6
After the first 10 operating hours	Specialist workshop	Checking the tightening torques of wheel nuts	Section 12.5.1
	Specialist workshop	Check and service the hydraulic hose lines. The inspection has to be recorded by the owner/operator.	Section 12.5.3
After the first 20 operating hours	Specialist workshop	Check all screw connections for a secure fit.	Section 12.6
10 operating hours after a wheel change	Specialist workshop	Checking the tightening torques of wheel nuts	Section 12.5.1

Cleaning, maintenance and repairs

Every day before starting work		Visual inspection of the dual-circuit pneumatic braking system	Section 12.5.8.1
		Draining the compressed air tank	Section 12.5.8.3
		Visual inspection of the lower link pins	Section 12.4.2
Before refilling the hopper or once every hour		Checking the seed placement depth	Section 10.3.1
		Check the seed tubes for debris and clean if necessary	
During operation		Check fertiliser distributor head(s) for impurities and clean if necessary (see section "Clean the distributor head")	Section 12.2.1
		Check metering unit for impurities and clean if necessary (see section "Emptying the hopper and/or metering unit.")	Section 10.6
Daily at the end of work		Cleaning the implement (as required)	Section 12.2
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 12.5.3
Before the season, then every two weeks		Checking the inflation pressure of the running gear tyres	Section 12.4.4
		Check the tyre inflation pressure on the support wheels	Section 12.4.5
		Check the tyre inflation pressure on the press rollers	Section 12.4.6
		Checking the oil level in the Vario gearbox	Section 12.4.1
Every 200 operational hours	Specialist workshop	Lubricating the axles	Section 12.5.5

Every 3 months, at the latest every 500 operating hours	Specialist workshop	Brake inspection (specialist workshop)	Section 12.5.8.2
		Exterior inspection of the compressed air tank (dual-circuit pneumatic braking system)	Section 12.5.8.4
	Specialist workshop	Checking the pressure in the compressed air tank of the dual-circuit pneumatic braking system (specialist workshop)	Section 12.5.8.5
	Specialist workshop	Leak test of the dual-circuit pneumatic braking system (specialist workshop)	Section 12.5.8.6
	Specialist workshop	Cleaning the line filters of the dual-circuit pneumatic braking system (specialist workshop)	Section 12.5.8.7
Every 6 months after the planting season		Servicing roller chains and chain wheels	Section 12.4.3
Every 6 months at the latest every 1000 operating hours	Specialist workshop	Adjusting the wheel brake on the slack adjuster (specialist workshop)	Section 12.5.6
	Specialist workshop	Checking/adjusting the bearing clearance of the wheel hubs (specialist workshop)	Section 12.5.7
	Specialist workshop	Checking the brake drum for dirt (specialist workshop)	Section 12.5.4
	Specialist workshop	Brake lining inspection (specialist workshop)	Section 12.5.4.1

12.4.1 Checking the oil level in the Vario gearbox

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



The oil level must be visible in the oil sight glass (Fig. 209/1).

There is no need to change the oil.

3. Top up the oil if necessary.



The oil filler neck (Fig. 209/2) is used to top up the Vario gearbox.

Refer to the table (Fig. 210) for the grade of transmission oil required.

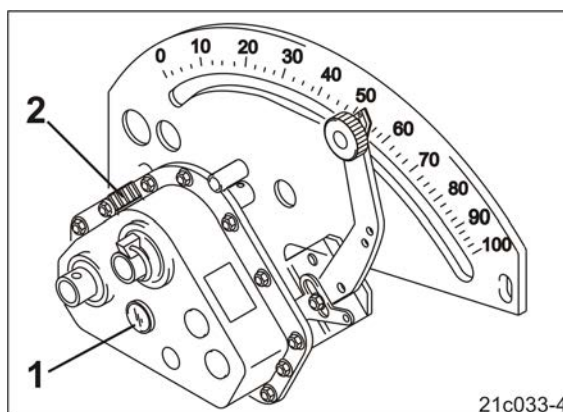


Fig. 209

Hydraulic fluid grades and fill level of the Vario gearbox	
Total filling quantity:	0.9 litres
Gear oil (selectable):	Wintershall Wintal UG22 WTL-HM (ex-works)
	Fuchs Renolin MR5 VG22

Fig. 210

12.4.2 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 draw bar, if there are any clear signs of wear to the lower link pin.

12.4.3 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)
- Check
- Lubricate with low-viscosity mineral oil (SAE30 or SAE40).

12.4.4 Checking the inflation pressure of the running gear tyres

Check compliance with specified tyre pressure
(see table Fig. 211).



Adhere to the inspection intervals
(see section on Maintenance schedule – overview, Seite 163).

Tyres	Nominal tyre inflation pressure
700/55-26.5	1.8 bar



31c262-1

Fig. 211

12.4.5 Check the tyre inflation pressure on the support wheels

Check compliance with specified tyre pressure
(see table Fig. 212).



Adhere to the inspection intervals
(see section on Maintenance schedule – overview, Seite 163).

Tyres	Nominal tyre inflation pressure
400/50-15.5	1.8 bar



31c336

Fig. 212

12.4.6 Check the tyre inflation pressure on the press rollers

Check compliance with specified tyre pressure
(see table Fig. 213).

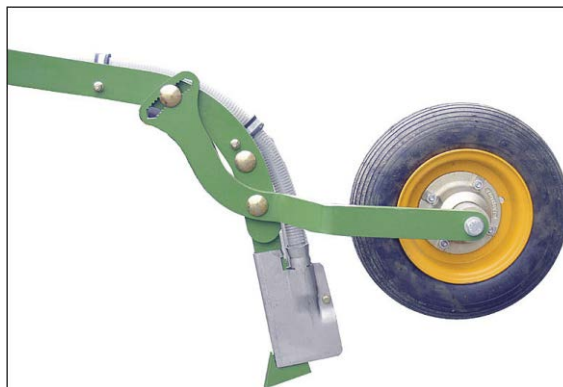


Adhere to the inspection intervals
(see section on Maintenance schedule – overview, Seite 163).

Tyres	Nominal tyre inflation pressure
4.00–8 4PR	0.8 to 1.2 bar



see also instructions in section
"Adjusting the seed placement depth", Seite 125).



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Fig. 213

12.5 Workshop setting and repair work (specialist workshop)

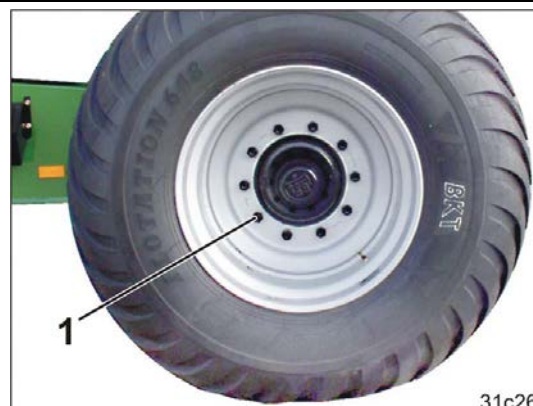
12.5.1 Checking the tightening torques of wheel nuts (specialist workshop)

Check compliance with tightening torques
(see table Fig. 214).



Adhere to the inspection intervals
(see section on Maintenance schedule – overview, Seite 163).

	Wheel nut	Tightening torque
(1)	M22x1.5...10.9	400 Nm



31c262-2

Fig. 214

12.5.2 Adjusting the tramline to the track width/wheelmark spacing (specialist workshop)



WARNING

- Switch off the blower fan.
- Direct persons out of the danger area
 - before unfolding the implement booms
 - before folding down the distributor heads.
- Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.

1. Fold out the implement booms (see section 10.1, Seite 138).
2. Before working on the distributor heads (Fig. 215/1), fold them to the rear over the frame of the implement boom.
3. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.



Fig. 215

12.5.2.1 Adjusting the tramline to the track width of the cultivating tractor (specialist workshop)

When the implement is delivered or when buying a new tractor, check that the tramline is set to the track width (Fig. 216/a) of the tractor.

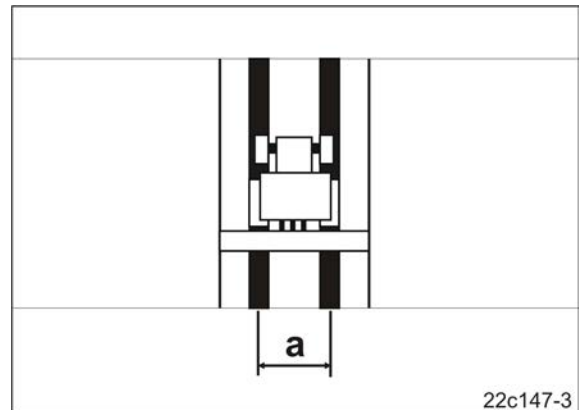


Fig. 216

The seed line tubes (Fig. 217/1) of the tramline coulters must be attached to the distributor head openings, which can be closed by the shutters (Fig. 217/2). If necessary, interchange the seed line tubes.

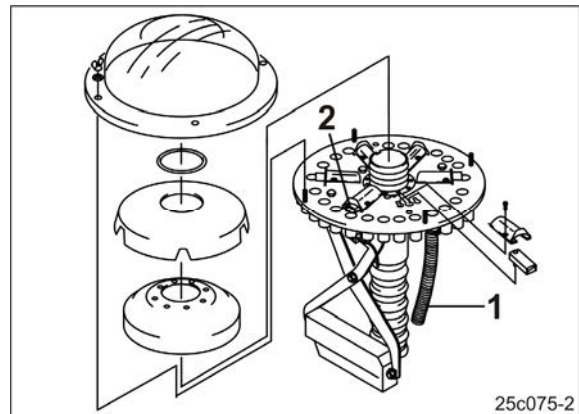


Fig. 217

12.5.2.2 Adjusting the tramline to the track width of the cultivating tractor (specialist workshop)

When the implement is delivered or when buying a new cultivating tractor, check that the tramline is set to the track width (Fig. 218/a) of the tractor.

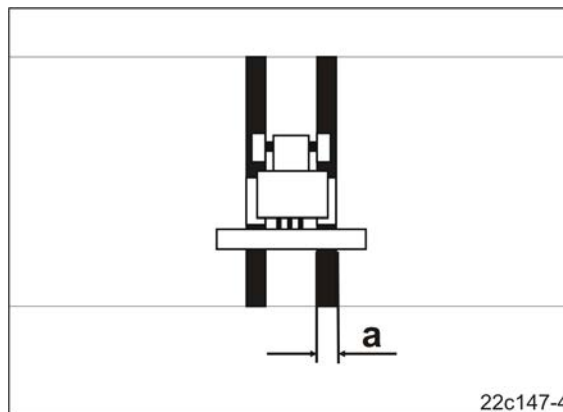


Fig. 218

The track changes with the number of coulters not outputting seed when the tramlines are created.

Deactivate any non-required shutters (Fig. 217/2) (see Seite 173). Deactivated shutters do not close the feed lines to the tramline coulters.

Always activate or deactivate pairs of shutters positioned opposite each other on the base plate.

Activating or deactivating shutters

1. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
2. Set the tramline counter in the AMALOG⁺ to "0" as for creating tramlines.
3. Switch off the AMALOG⁺.
4. Remove the outer distributor cover (Fig. 219/1).
5. Remove the ring (Fig. 219/2).
6. Remove the inner distributor cover (Fig. 219/3).
7. Remove the foam insert (Fig. 219/4).
8. Loosen the bolts (Fig. 220/1).
9. Remove the shutter tunnel (Fig. 220/2).

Activating the shutters:

10. The shutter (Fig. 220/3) is in the guide, as shown in the diagram.

Deactivating the shutters:

11. Turn the shutters around (Fig. 220/3) and push them into the drill hole (Fig. 220/4).
12. Screw the shutter tunnel (Fig. 220/2) onto the base plate.

13. Install the foam insert (Fig. 221/1).
14. Install the inner distributor cover (Fig. 221/2).
15. Install the ring (Fig. 221/3).
16. Install the outer distributor cover (Fig. 221/4).
17. Check the function of the tramline circuit.

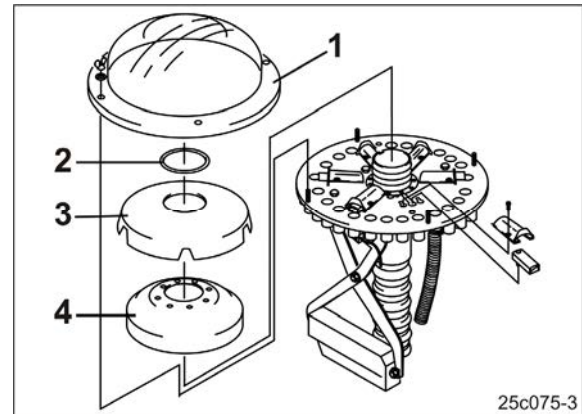


Fig. 219

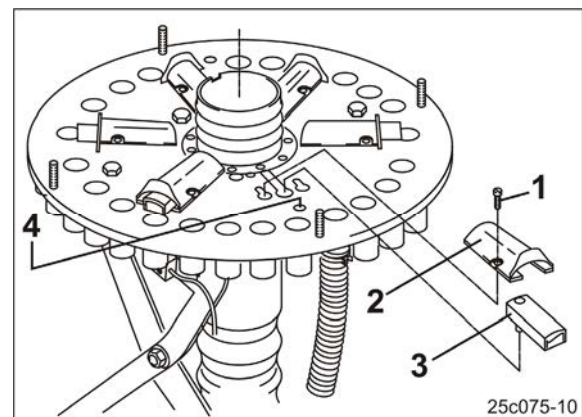


Fig. 220

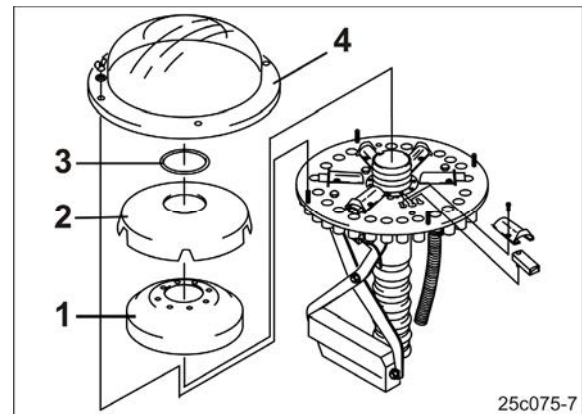


Fig. 221

12.5.3 Hydraulic system (specialist workshop)



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.

12.5.3.1 Repairs to the pressure tank (workshop)

In the event of a repair observe the following:

The hydraulic system and the pressure tank (Fig. 222/1) 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).



Fig. 222



DANGER

The hydraulic system and the pressure tank connected to it are under a constant high pressure (approx. 100 bar).

12.5.3.2 Labelling of hydraulic hose lines

The valve chest identification provides the following information:

Fig. 223/...

- (1) Manufacturer's marking on the hydraulic hose line (A1HF)
- (2) Date of manufacture of the hydraulic hose line (10/02 = year/month = February 2010)
- (3) Maximum approved operating pressure (210 BAR).

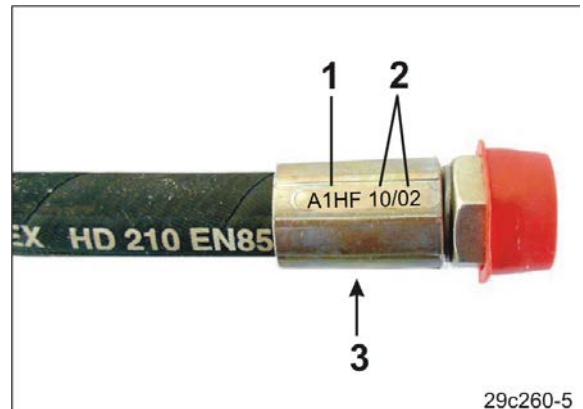


Fig. 223

12.5.3.3 Maintenance intervals

After the first 10 operating hours, and then every 50 operating hours

1. Check all the components of the hydraulic system for tightness.
2. If necessary, tighten screw unions.

Before each start-up:

1. Check hydraulic hose lines for visible damage.
2. Eliminate any scouring points on hydraulic hose lines and pipes.
3. Replace any worn or damaged hydraulic hose lines immediately.

12.5.3.4 Inspection criteria for hydraulic hose lines



For your own safety, comply with the following inspection criteria!

Replace hydraulic hose lines, on determining any of the following during the inspection:

- Damage to the outer layer up to the ply (e.g. scouring points, cuts, cracks).
- Brittleness of the outer layer (crack formation of the hose material).
- Deformations which do not match the natural shape of the hose. Both in a depressurized and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
- Leak points.
- Damage or deformation of the hose assembly (sealing function restricted); minor surface damage is not a reason for replacement.
- Movement of the hose out of the 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 "2010", then the hose should not be used after February 2016. For more information, see "Labelling of hydraulic hose lines".

12.5.3.5 Installation and removal of hydraulic hose lines



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

- 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 compression for 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 hose.**
- **It is forbidden to paint over hydraulic hose lines!**

12.5.4 Checking the brake drum for dirt (specialist workshop)

1. Unscrew the two cover plates (Fig. 224/1) on the inside of the brake drum.
2. Remove any dirt and plant residue.
3. Refit the cover plates.

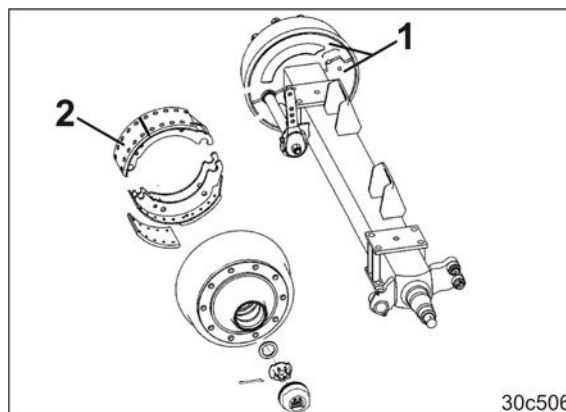


Fig. 224



CAUTION

Penetrating dirt may clog the brake linings (Fig. 224/2), which considerably reduces the braking power.

Risk of accident!

If there is dirt in the brake drum, the brake linings must be checked by a specialist workshop.

For this purpose, the wheel and brake drum must be detached.

12.5.4.1 Brake lining inspection (specialist workshop)

Replace the brake lining when the remaining lining thickness is

- 5 mm for riveted linings.
- 2 mm for bonded linings.

Remove the rubber plug (Fig. 225/1) in the inspection hole.

Then reinsert the rubber plug.

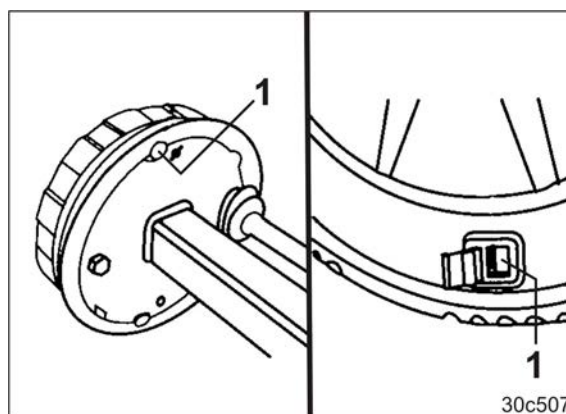


Fig. 225

12.5.5 Lubricating the axles

Fig. 226/...	Designation	Number	Lubrication interval
1	Brake shaft bearings	4	200
2	Automatic boom positioner	2	1000
3	Renew the wheel hub bearing grease (Check for wear on the taper roller bearings)	2	1000

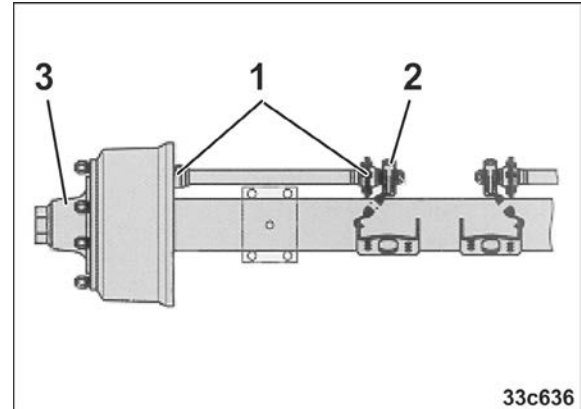


Fig. 226



Use only lithium-soap-based grease with a drop point above 190° C.



DANGER

Grease and oil must not get into the brake.

The cam bearing for the brake is, depending on the series, not sealed.

12.5.6 Adjusting the wheel brake on the slack adjuster (specialist workshop)

Measuring the stroke of the long-stroke diaphragm cylinder push rod:

1. Manually actuate the slack adjuster (Fig. 227) in the push direction.
2. Measure the stroke (Fig. 227/a) of the long-stroke diaphragm cylinder push rod.

The stroke (Fig. 227/a) can be a maximum of 35 mm.

Readjust the wheel brake if the stroke is longer than 35 mm.

Adjusting the wheel brake on the slack adjuster:

Adjust the wheel brake via the slack adjuster's hexagon nut (Fig. 228/1).

Adjust the stroke (Fig. 227/a) to 10-12 % of the brake lever length (Fig. 227/B).

Example:

Lever length B	=	150 mm
Stroke a	=	15 – 18 mm.

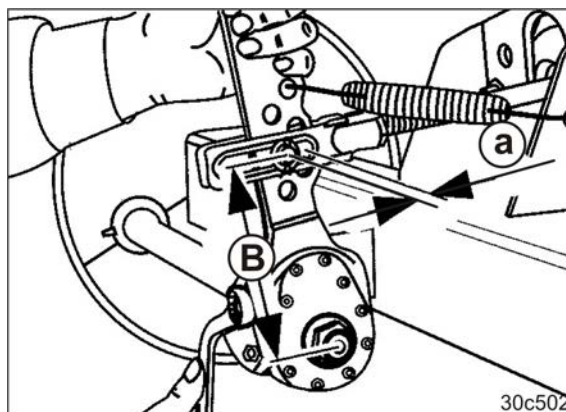


Fig. 227

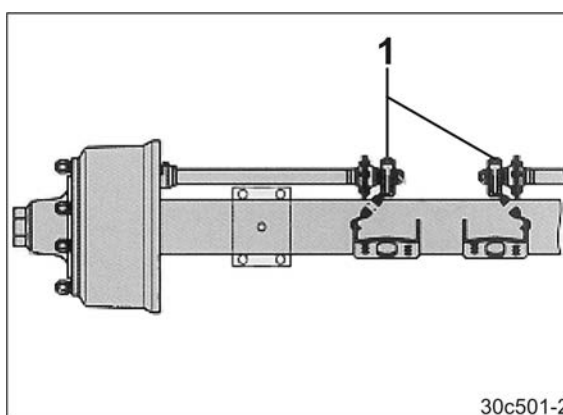


Fig. 228

12.5.7 Checking/adjusting the bearing clearance of the wheel hubs (specialist workshop)

Checking the bearing clearance of the wheel hubs:

1. Raise the axle until the tyres come free.
2. Release the brake.
3. Place two levers between the tyre and the floor and check the bearing clearance.
4. Adjust the bearing if there is a noticeable bearing clearance.

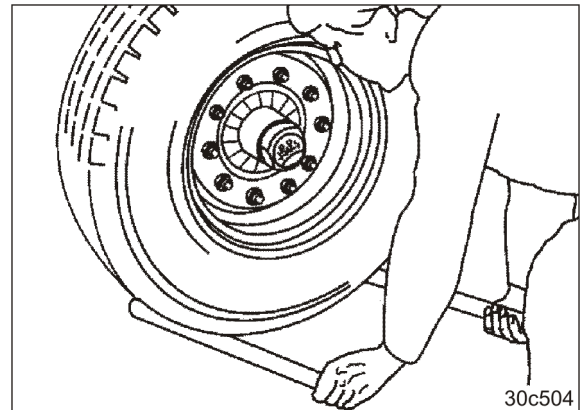


Fig. 229

Adjusting the bearing clearance of the wheel hubs:

1. Remove the dust or hub cap.
2. Remove the lynch pin from the axle nut.
3. Tighten the wheel nut by simultaneously turning the wheel until the run of the wheel hub is lightly braked.
4. Turn the axle nut back to the next possible lynch pin hole.
If there is congruence, to the next hole (max. 30°).
5. Replace the lynch pin with an identical one.
6. Insert the lynch pin and bend it up slightly.
7. Replenish the dust cap with some long-term grease and pound or screw it into in the wheel hub.

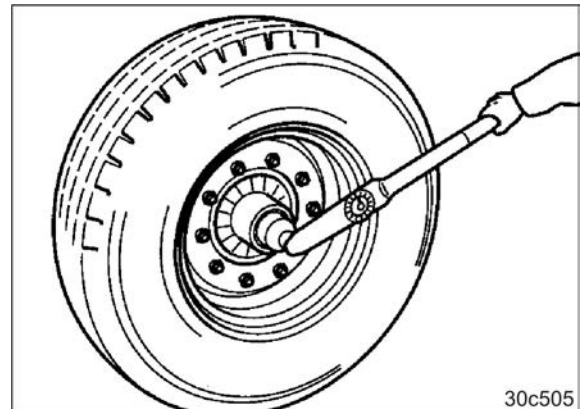


Fig. 230

12.5.8 Dual-circuit pneumatic braking system



For optimum brake performance with a minimum of wear, we recommend that the brakes on the tractor are balanced with those on the implement. After the service braking system has been run in for a suitable period, arrange for the brakes to be balanced by a specialist workshop.

To avoid problems with the brakes, adjust all vehicles in accordance with EC Guideline 71/320 EEC.



DANGER

- Only specialist workshops or recognised brake services may perform adjustment and repair work on the brake system.
- Have the brake system checked thoroughly on a regular basis (see section on "Maintenance schedule – overview", Seite 163).
- Be particularly careful with welding, burning and drilling work in the vicinity of brake lines!
- No welding or soldering may be performed on valve fittings or pipes. Any damaged parts must be replaced.
- Always perform a braking test after any adjusting or repair work on the braking system.
- For servicing and maintenance work on the braking system observe the section "Safety information for users", Seite 27.

12.5.8.1 Visual inspection of the dual-circuit pneumatic braking system

Before moving off, check the brake system to ensure that the following criteria are met:

- 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.
Only 2/3 of the stroke of the brake cylinder may be utilised.
Otherwise, readjust the brake (specialist workshop).
- Replace damaged dust covers.
- Carry out an exterior inspection of the compressed air tank (see section on "Exterior inspection of the compressed air tank", Seite 185).



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.

12.5.8.2 Brake inspection (specialist workshop)

Work that must be carried out every 3 months, at the latest every 500 operating hours¹⁾, in a specialist workshop:

- Check the service brake system for safe operating condition
- Check the wear of the brake linings.

Replace the brake shoes when the remaining lining thickness is less than 2.0 mm (bonded linings). Use only original brake shoes with type-tested brake linings. When doing so, the shoe return springs may also have to be replaced.

- Checking the pressure in the compressed air tank (see Seite 186).
- Leak test of the dual-circuit pneumatic braking system (see Seite 186).
- Cleaning the line filters of the dual-circuit pneumatic braking system (specialist workshop) (see Seite 187)

¹⁾ This servicing interval is a recommendation. Depending on the use, e.g. constant driving on hilly terrain, this may have to be shortened.



CAUTION

Observe the legal regulations for all service work.

Only genuine spare parts may be used.

The settings on the brake valves defined by the manufacturer may not be changed.



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.

12.5.8.3 Draining the compressed air tank (dual-circuit pneumatic braking system)

1. Run the tractor engine (approx. 3 mins.), until the compressed air tank (Fig. 231/1) has filled.
2. Switch off the tractor engine, apply the tractor parking brake and remove the ignition key.
3. Pull the drainage valve (Fig. 231/2) in a sideways direction by the ring until no more water escapes from the compressed air tank.
4. If the escaping water is dirty, let off air, unscrew the drainage valve from the compressed air tank and clean the compressed air tank.
5. Fit the drainage valve and check the compressed air tank for seal tightness (see section 12.5.8.6, Seite 186).

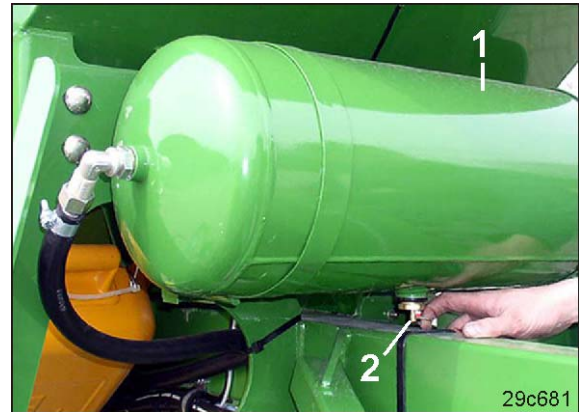


Fig. 231

12.5.8.4 Exterior inspection of the compressed air tank (dual-circuit pneumatic braking system)

Exterior inspection of the compressed air tank (Fig. 232/1).

If the compressed air tank moves in the tensioning bands (Fig. 232/2)

→ 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. 232/3) is rusty, loose or the rating plate is missing from the compressed air tank:

→ replace the compressed air tank.

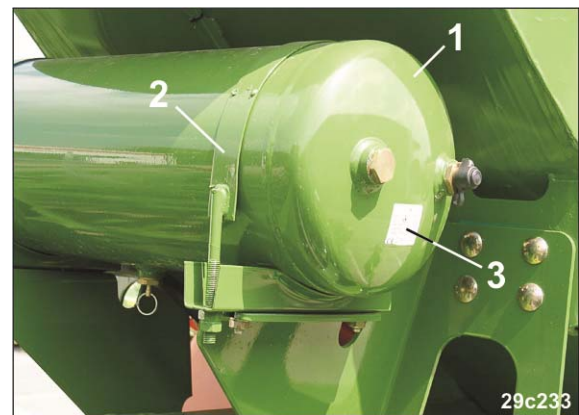


Fig. 232



The compressed air tank may be replaced in a specialist workshop only.

12.5.8.5 Checking the pressure in the compressed air tank of the dual-circuit pneumatic braking system (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 reading drops below or exceeds the setpoint range, have the defective parts of the braking system replaced in a specialist workshop.

12.5.8.6 Leak test of the dual-circuit pneumatic braking system (specialist workshop)

- Test all connections, pipe, hose and screw unions for seal-tightness
- Eliminate any abrasion points on pipes and hoses
- Replace any porous and damaged hoses (specialist workshop)
- The dual-circuit pneumatic braking system is considered free of leaks if the pressure drop within 10 minutes with the engine shut down is no greater than 0.10 bar, i.e. about 0.6 bar per hour.
- If the values are not maintained, have the leakage sealed or the defective components of the brake system replaced at a specialist workshop.

12.5.8.7 Cleaning the line filters of the dual-circuit pneumatic braking system (specialist workshop)

The dual-circuit pneumatic brake system has

- One brake line filter (Fig. 233/1)
- One supply line filter (Fig. 234/1)

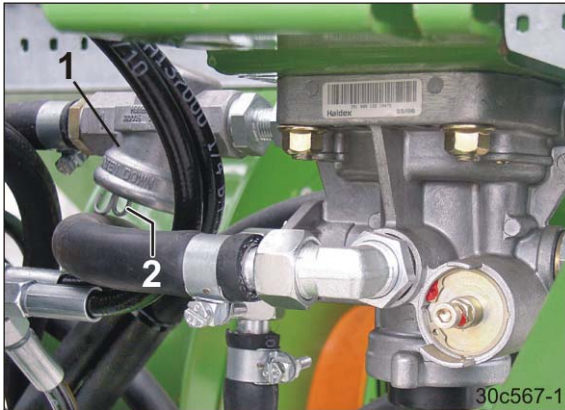


Fig. 233

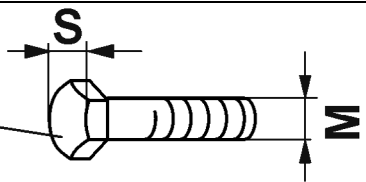


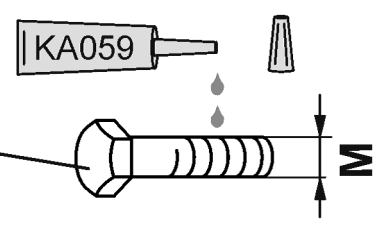
Fig. 234

Cleaning the line filters:

1. Press the two lugs (Fig. 233/2) together and take out the closure piece complete with O-ring, pressure spring and filter insert.
2. Clean the filter insert with petrol or thinner (wash it) and dry with compressed air.
3. To reassemble, reverse the procedure and make sure that the O-ring seal is not twisted in the guide slot.

12.6 Screw tightening torques

8.8 10.9 12.9 				
M	S	Nm 		
		8.8	10.9	12.9
M 8	13	25	35	41
M 8x1		27	38	41
M 10	16 (17)	49	69	83
M 10x1		52	73	88
M 12	18 (19)	86	120	145
M 12x1.5		90	125	150
M 14	22	135	190	230
M 14x1.5		150	210	250
M 16	24	210	300	355
M 16x1.5		225	315	380
M 18	27	290	405	485
M 18x1.5		325	460	550
M 20	30	410	580	690
M 20x1.5		460	640	770
M 22	32	550	780	930
M 22x1.5		610	860	1050
M 24	36	710	1000	1200
M 24x2		780	1100	1300
M 27	41	1050	1500	1800
M 27x2		1150	1600	1950
M 30	46	1450	2000	2400
M 30x2		1600	2250	2700

A2-70 A4-70 												
M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
Nm 	2.3	4.6	7.9	19.3	39	66	106	162	232	326	247	314



Tightening torques of the wheel and hub screws
[see Table (Fig. 214), Seite 169].

13 Hydraulic diagrams

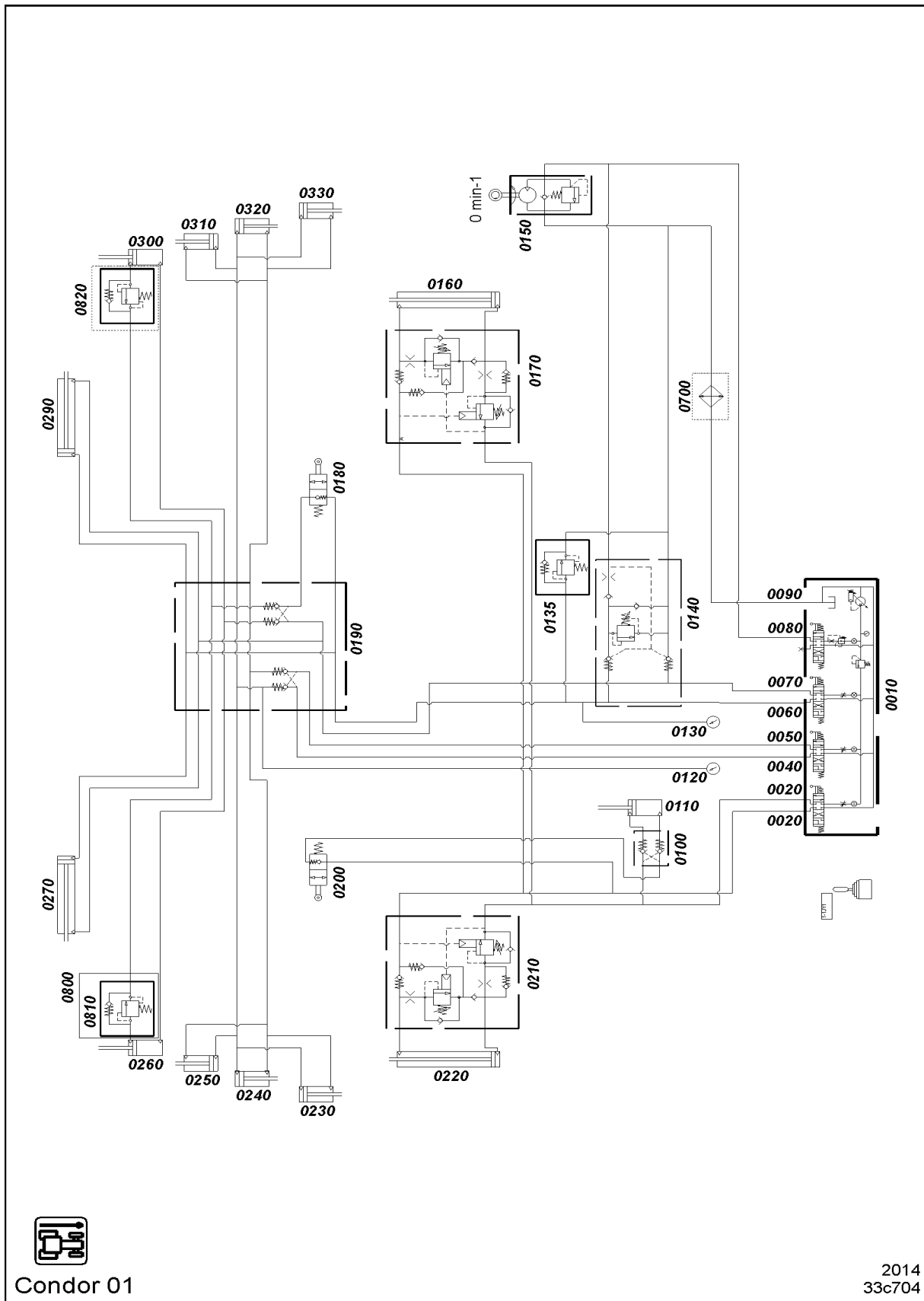


Fig. 235

Fig. 235/...	Designation	Note
0010	Tractor hydraulics	
0020	Handle number 2, yellow	
0030	Handle number 1, yellow	
0040	Handle number 1, green	
0050	Handle number 2, green	
0060	Handle number 1, blue	
0070	Handle number 2, blue	
0080	Handle number 1, red	
0090	Handle number 2, red	
0100	Star wheel locking block	
0110	Star wheel lift-out	
0120	Coulter pressure gauge	
0130	Boom pressure gauge	
0140	Frame load control block	
0150	Blower fan drive	
0160	Left hand coulter frame lift-out	
0170	Fast lowering control block	
0180	Distributor folding control valve	
0190	Distributor control block	
0200	Star wheel switch-off valve	
0210	Fast lowering control block	
0220	Right coulter frame lift out	
0230	Coulter pressure, row 1	
0240	Coulter pressure, row 2	
0250	Coulter pressure, row 3	
0260	Distributor head folding, right	
0270	Folding on the right	
0290	Folding on the left	
0300	Distributor head folding, left	
0310	Coulter pressure, left, row 3	
0320	Coulter pressure, left, row 2	
0330	Coulter pressure left, row 1	
0700	Radiator	(option)
0800	Distributor head locking mechanism	(retrofit)
0810	Hold valve – distributor head	
0820	Hold valve – distributor head	

All position specifications in direction of travel

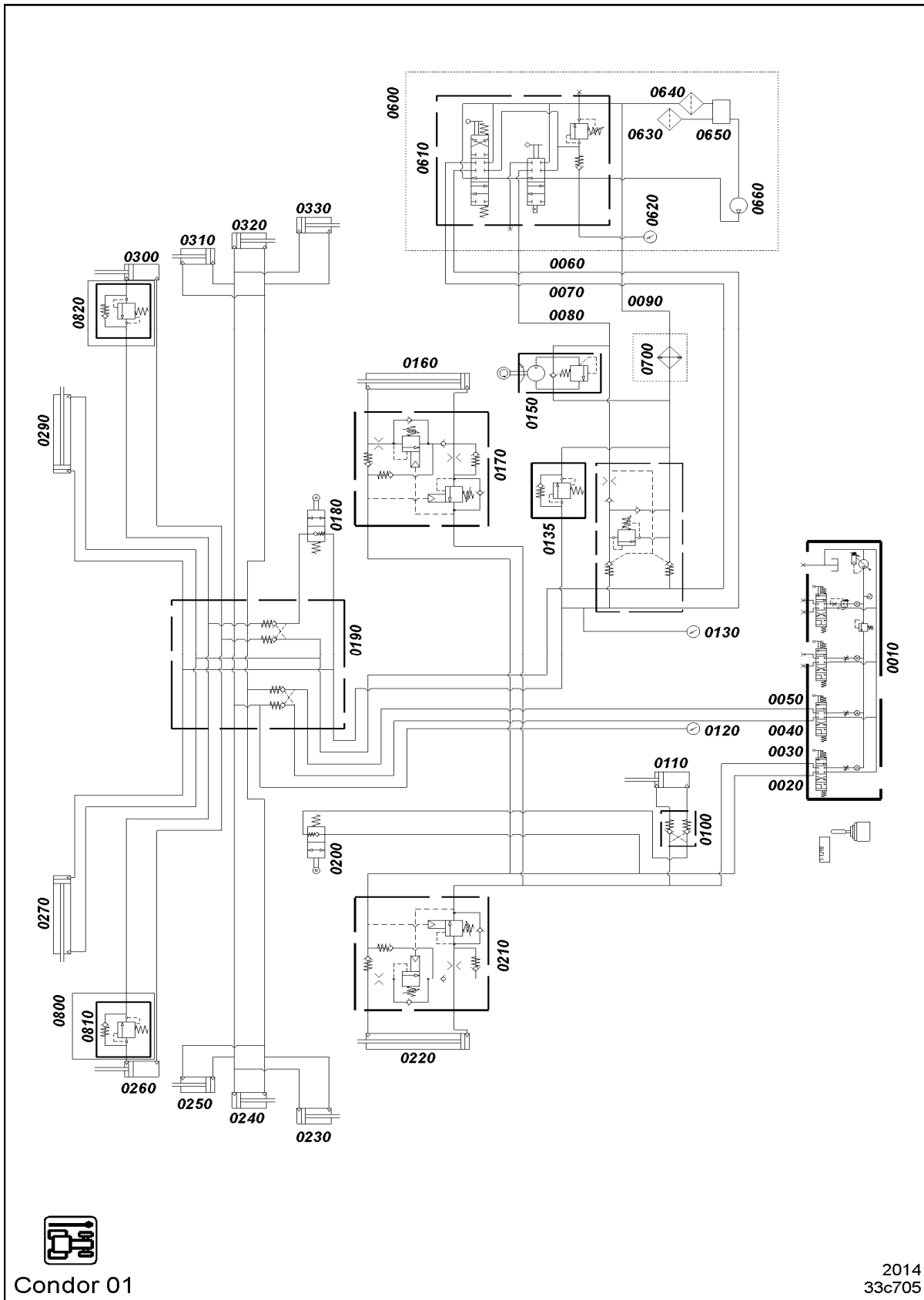


Fig. 236

Fig. 236/...	Designation	Note
0010	Tractor hydraulics	
0020	Handle number 2, yellow	
0030	Handle number 1, yellow	
0040	Handle number 1, green	
0050	Handle number 2, green	
0060	Handle number 1, blue	
0070	Handle number 2, blue	
0080	Handle number 1, red	
0090	Handle number 2, red	
0100	Star wheel locking block	
0110	Star wheel lift-out	
0120	Coulter pressure gauge	
0130	Boom pressure gauge	
0140	Frame load control block	
0150	Blower fan drive	
0160	Left hand coulter frame lift-out	
0170	Fast lowering control block	
0180	Distributor folding control valve	
0190	Distributor control block	
0200	Star wheel switch-off valve	
0210	Fast lowering control block	
0220	Right coulter frame lift out	
0230	Coulter pressure, row 1	
0240	Coulter pressure, row 2	
0250	Coulter pressure, row 3	
0260	Distributor head folding, right	
0270	Folding on the right	
0290	Folding on the left	
0300	Distributor head folding, left	
0310	Coulter pressure, left, row 3	
0320	Coulter pressure, left, row 2	
0330	Coulter pressure left, row 1	
0600	On-board unit for K700 only with 975360	(option)
0610	Manual directional valve	
0620	Blower fan pressure gauge	
0630	Ventilation filter	
0640	Return filter	
0650	Oil tank	
0660	Pump 35 ccm, right-hand rotation	
0700	Radiator	(option)
0800	Distributor head locking mechanism	(retrofit)
0810	Hold valve – distributor head	
0820	Hold valve – distributor head	

All position specifications in direction of travel



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Manufacturers of mineral fertiliser spreaders, field sprayers, sowing implements, soil cultivation implements, multipurpose warehouses and communal units

Checklist Condor 01-C



Pay attention to the safety instructions in the operating manual!

Tasks	See assembly instructions	See operating manual, page
• HGV transport	MM142	
• Seed drill assembly		
• Initial operation		94
• Couple the tractor		
o On-board hydraulic system K700	MM188	
o Mount the pressure gauge and AMALOG on the tractor		103
• Functional test		
o Fold out/Fold in		138
o 100m, AMALOG calibration		
o Bring the lateral support wheels in operational position		138
• Insert the matching metering roller		67 110
• Fill the seed hopper		144
• Clean the cover gasket and close the cover pressure tight: leaking covers lead to seeding errors.		
• Calibrate the seed		112
• Calibrate the fertiliser		112
• Adjust the blower speed depending on the crop		73 118
• Check the placement depth		125
• Implement is positioned horizontally: check lower link		
• Adjust the tramlining rhythm where required		129
• Switch off the blower fan		
• Coulter pressure adjustment, adjust the coulter pressure per hydraulic and move to "Float position".		76
• Lower the rear frame completely: the cylinder must be extended completely		
• Check/adjust the boom pressure		123
Start speed 6 km/h, the speed can be increased.		
• CAUTION: Uneven placement depth due to filling of the seed rows with soil from the rear tines.		