

Operating Manual

AMAZONE

Cirrus 3001 Cirrus 4001 Cirrus 6001
Cirrus 8001 Cirrus 9001

PacTeC Share Sowing Combinations with Integrated Running Gear



MG 1455
BAH0006 03.06
Printed in Germany



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



Reading the instruction

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

Leipzig-Plagwitz 1872. Rud. Sark.

Identification data

Enter the machine identification data here. You will find the identification data on the type plate.

Machine identification number:
(ten-digit)

Type:

Cirrus

Year of manufacture:

Basic weight (kg):

Approved total weight (kg):

Maximum load (kg):

Manufacturer's address

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Online spare parts' catalogue: www.amazone.de

When ordering spare parts, always specify the (ten-digit) machine identification number.

Formalities of the operating manual

Document number: MG 1455

Compilation date: 03.06

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Foreword

Foreword

Dear Customer,

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

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

Before first 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 machine.

Please ensure that all the machine operators have read this operating manual before commissioning the machine.

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 machine.

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 supplies information on handling the operating manual.

1.1 Purpose of the document

This operating manual

- Describes the operation and maintenance of the machine.
- Provides important information on safe and efficient handling of the machine.
- Is a component part of the machine and should always be kept with the machine or the traction vehicle.
- Keep it 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 from the direction of travel.

1.3 Diagrams used

Handling instructions and reactions

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

1. Handling instruction 1
- Reaction of the machine to handling instruction 1
2. Handling instruction 2

Lists

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

- Point 1
- Point 2

Number items 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 in the figure.

Example: (Fig. 3/6):

- Figure 3
- Item 6

2 General Safety Instructions

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

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 machine operation.

Obligations of the operator

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

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

The operator is obliged

- To keep all the warning pictograms on the machine in a legible state.
- To replace damaged warning pictograms.

If you still have queries, please contact the manufacturer.

Duties of the operator

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

- To comply with the basic workplace safety instructions and accident prevention regulations.
- To read and understand the section "General safety information" of this operating manual.
- To read the section "Warning pictograms and other signs on the machine", on page 17 of this operating manual and to follow the safety instructions of the warning symbols when operating the machine.
- To get to know the machine.
- 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 machine

The machine has been constructed to the state-of-the art and the recognised rules of safety. However, there may be risks and restrictions which occur when operating the machine

- For the health and safety of the user or third persons,
- For the machine,
- For other goods.

Only use the machine

- 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 business" 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 goods will be excluded if they can be traced back to one or more of the following causes:

- Improper use of the machine.
- Improper installation, commissioning, operation and maintenance of the machine.
- Operation of the machine with defective safety equipment or improperly attached or non-functioning safety equipment.
- Non-compliance with the instructions in the operating manual regarding commissioning, operation and maintenance.
- Independently-executed construction changes to the machine.
- Insufficient monitoring of machine parts, which are subject to wear.
- Improperly executed repairs.
- Disasters through the impact of foreign bodies and acts of God.

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 gravity of the risk and has the following significance:

**DANGER**

Indicates an immediate high risk, which will result in death or serious physical injury (loss of body parts or long term damage) if not avoided.

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

**WARNING**

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

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

**CAUTION**

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

**IMPORTANT**

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

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

**NOTE**

Indicates handling tips and particularly useful information.

These instructions will help you to use all the functions of your machine to the optimum.

2.3 Organisational measures

The operator must provide the necessary personal protective equipment, such as:

- Protective glasses
- Protective shoes
- Protective suit
- Skin protection agents etc.



The operation manual

- **Must always be kept at the place at which the machine is operated.**
- **Must always be easily accessible for the user and maintenance personnel.**

Check all the available safety equipment regularly.

2.4 Safety and protection equipment

Before each commissioning of the machine, all the safety and protection equipment must be properly attached and fully functional. Check all the 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, then 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 machine. The operator must clearly specify the responsibilities of the people charged with operation, maintenance and repair work.

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

Activity \ People	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) A person shall be considered as having been instructed, if they have been instructed in the tasks they have to carry out and in the possible risks in the case of improper behaviour and also 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 through long term activity in the appropriate field of work.



Only a specialist workshop may carry out maintenance and repair work on the machine, 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 machine in a way which is both appropriate and safe.

2.7 Safety measures in normal operation

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

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

2.8 Dangers from residual energy

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

Use appropriate measures to inform the operating personnel. You can find detailed information in the appropriate 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 subassemblies to lifting gear when carry out replacement work.

Check all the screw connections for a firm seat. On completing maintenance work, check the function of safety and protection equipment.

2.10 Constructive changes

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

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

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



WARNING

Risk of contusions, cuts, dragging, catching or knocks from support parts.

It is forbidden to:

- Drill holes in the frame or on the running gear.
- Increasing the size of existing holes on the frame or the running gear.
- Welding support parts.



2.10.1 Spare and wear parts and aids

Immediately replace any machine 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. The use of wear and spare parts from third parties does not guarantee that they have been constructed in a way as to meet the requirements placed on them.

AMAZONEN-WERKE accepts no liability for damage arising from the use of non-released spare parts, wear parts or auxiliary materials.

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

2.13 Warning pictograms and other signs on the machine



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

Warning pictograms - structure

Warning pictograms indicate dangers on the machine and warn against residual dangers. At these points, there are permanent or unexpected dangers.

A warning pictogram consists of two fields:



Field 1

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

Field 2

is a pictogram showing how to avoid the danger.

Warning pictograms - explanation

The column **Order number and explanation** provides an explanation of the neighbouring warning pictogram. The description of the warning pictograms is always the same and specifies, in the following order:

1. A description of the danger.

For example: danger of cutting!

2. The consequence of nonobservance of the danger protection instructions.

For example: causes serious injuries to fingers or hands.

3. Instructions for avoiding the danger.

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

Order number and explanation

Warning pictograms

MD 076

Danger of your hand or arm being drawn in or caught by a power driven, unprotected chain or belt drive!

This hazard can cause extremely serious injuries with the loss of parts of the hand or arm.

Never open or remove the guard devices on chains or belt drives

- as long as the tractor engine is running with the hydraulic drive engaged
- or the ground wheel drive is moving.

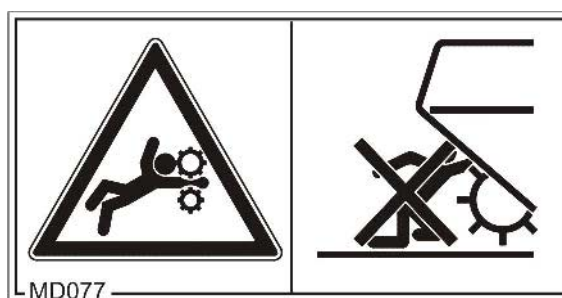


MD 077

Danger of catching and pulling arms through motorised feed rollers!

This danger would cause extremely serious injuries with the loss of body parts on arms.

Never reach into the feed rollers when the tractor engine is running with the hydraulic system connected.

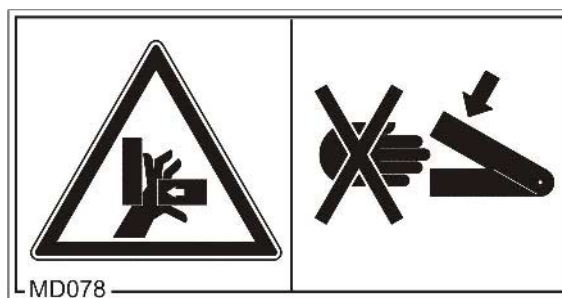


MD 078

Risk of contusions for fingers or hands through accessible moving machine parts!

This danger would cause extremely serious injuries with the loss of body parts such as fingers or hands.

Never reach into the danger area when the tractor engine is running with hydraulic system connected.

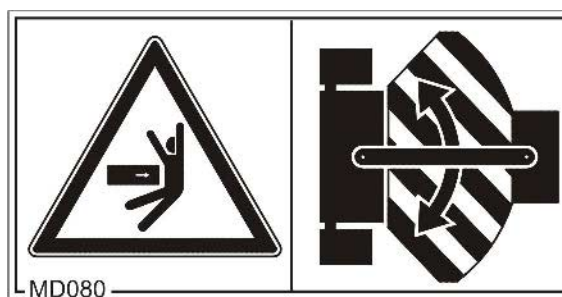


MD 080

Risk of contusions to torso in the bend area of the drawbar due to sudden steering movements!

This danger will cause serious injuries to the torso or death.

It is forbidden to stand in the danger area between the tractor and the machine for as long as the tractor engine is running and the tractor is unprotected against unintentional rolling.



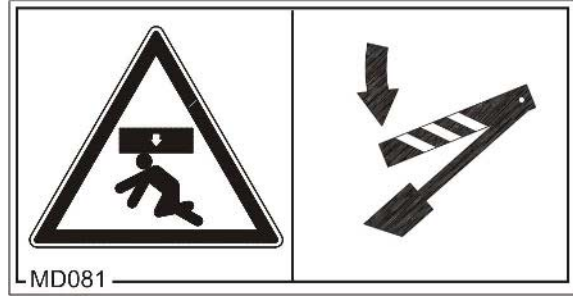
MD 081

Danger of getting crushed for the whole body by machine parts that are raised by lifting cylinders and unintentionally lowered!

This danger will cause serious injuries anywhere on the body or death.

Secure the machine parts raised by the lifting cylinder against unintentional lowering before you enter the danger zone under raised machine parts.

To do so, use the mechanical lifting cylinder support or the hydraulic blocking device.



MD 082

Danger of falling from treads and platforms when riding on the machine!

This danger will cause serious injuries anywhere on the body or death.

It is forbidden to ride on the machine and/or climb the running machine. This ban also applies to machines with treads or platforms.

Ensure that no-one rides with the machine.

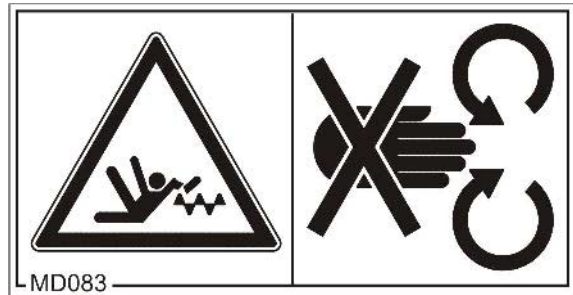


MD 083

Danger of your arm or upper torso being drawn in or caught by power driven, unprotected machine elements!

This danger can cause extremely serious injuries to the arm or upper torso.

Never open or remove guard devices from driven machine elements when the tractor engine is running with the hydraulic drive engaged.



MD 084

Risk of contusions over the whole body from machine parts moving down from above!

This danger will cause serious injuries anywhere on the body or death.

It is forbidden to stand in the swivel area of moving machine parts.

Instruct people to leave the swivel area of moving machine parts before the machine parts move down.



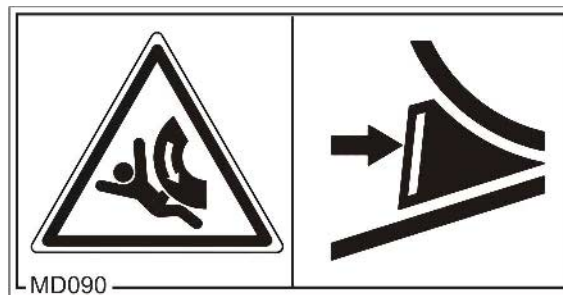
General Safety Instructions

MD 090

Risk of contusions from unintentional rolling of the uncoupled, unsecured machine!

This danger will cause serious injuries anywhere on the body or death.

Secure the machine against unintentional rolling, before uncoupling the machine from the tractor. For this, use the parking brake and/or the wheel chock(s).

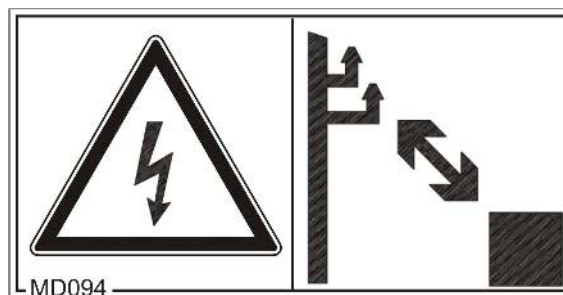


MD 094

Danger of electric shock due to unintentionally touching electrical overhead transmission cables!

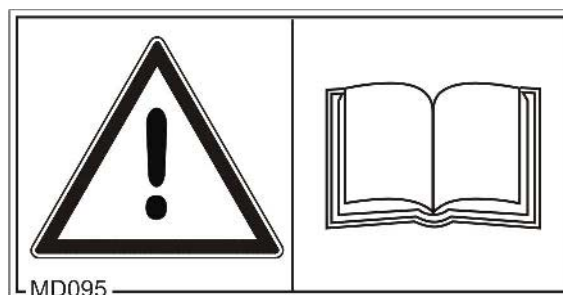
This danger will cause serious injuries anywhere on the body or death.

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



MD 095

Read and understand the operating manual safety information before starting up the machine!



MD 096

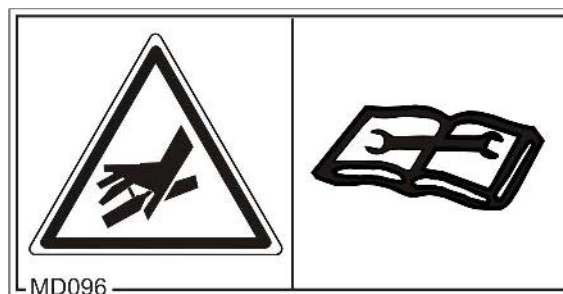
Danger of infection to the whole body from liquids escaping at a high pressure (hydraulic fluid)!

This danger will cause serious injuries over the whole body, if hydraulic fluid escaping at high pressure passes through the skin and into the body.

Never try to bung untight hydraulic lines with your hand or with your fingers.

Read and understand the information in the operating manual before carrying out maintenance and repair work.

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



MD 097

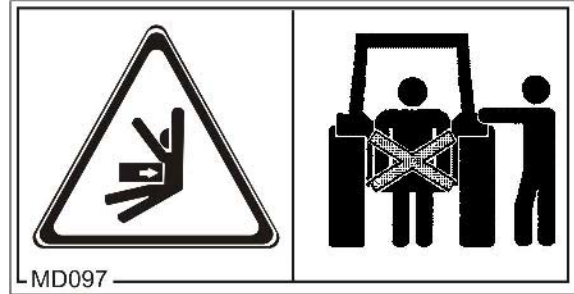
Danger of crushing your torso in the stroke range of the three-point suspension due to the narrowing spaces when the three-point hydraulic system is actuated!

This danger causes extremely serious injuries and even death.

Personnel are prohibited from entering the stroke area of the three-point suspension when the three-point hydraulics are actuated.

Only actuate the operator controls for the tractor's three-point hydraulic system

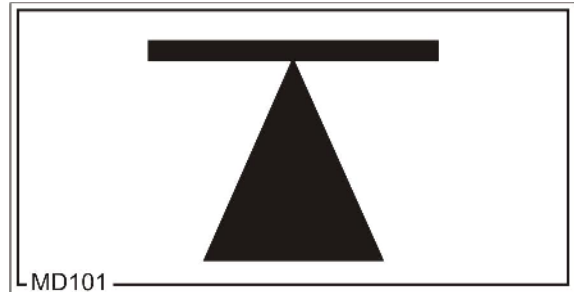
- From the intended workstation.
- If you are outside the danger area between the tractor and the machine.



MD097

MD 101

This pictogram shows application points for lifting gear (jack).



MD101

MD 102

Danger from unintentional machine starting and rolling during intervention in the machine, e.g. installation, adjusting, troubleshooting, cleaning, maintaining and repairing.

This danger will cause serious injuries anywhere on the body or death.

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



MD102

General Safety Instructions

MD 104

Danger of your torso getting crushed by laterally swivelling machine parts!

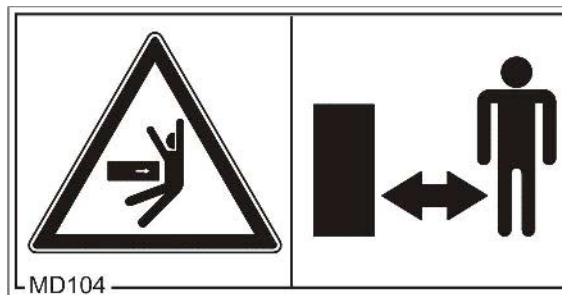
This danger will cause serious injuries to the torso or death.

Maintain a sufficient safety distance between you and any moving machinery parts.

It is forbidden to stand in the swivel area of moving machine parts.

Ensure that all personnel maintain a sufficient safety distance from moving machine parts.

Instruct personnel to leave the swivelling area of any moving machine parts before you swivel the machine parts.



MD104

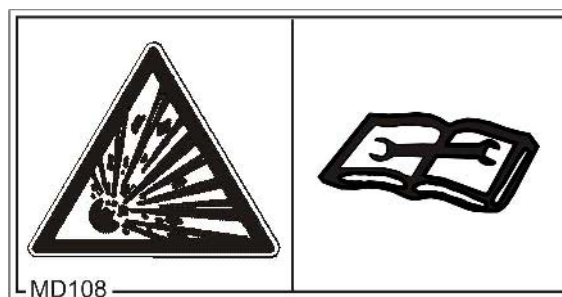
MD 108

Danger from accumulators under gas or oil pressure!

This danger will cause serious injuries over the whole body, if hydraulic fluid escaping at high pressure passes through the skin and into the body.

Prior to all work on the hydraulic system read and take heed of the directions in the operating manual.

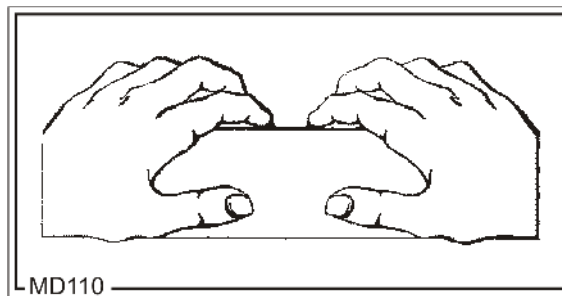
If you are injured by hydraulic fluid, contact a doctor immediately.



MD108

MD 110

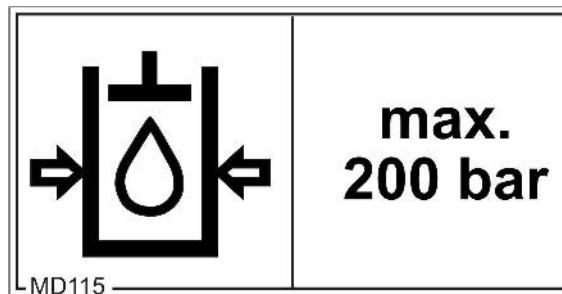
This pictogram shows the machine parts that serve as a holding point.



MD110

MD 115

The maximum operating pressure of the hydraulic system is 200 bar.



MD115

2.13.1 Positioning of warning pictograms and other labels

Warning pictograms

The following diagrams show the arrangement of the warning pictograms on the machine.

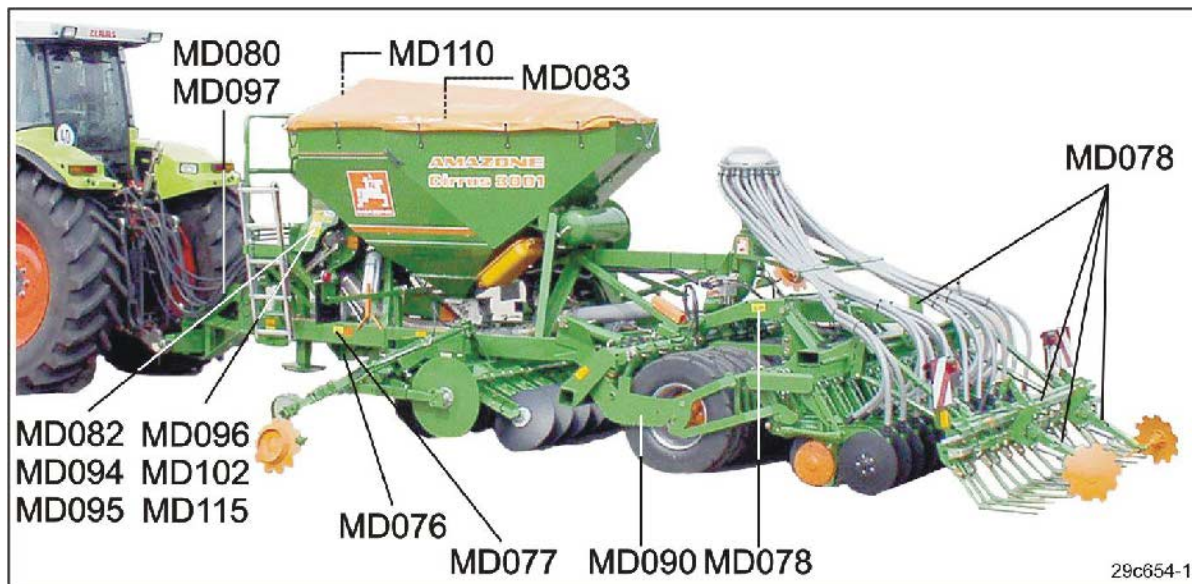


Fig. 1



Fig. 2



Fig. 3

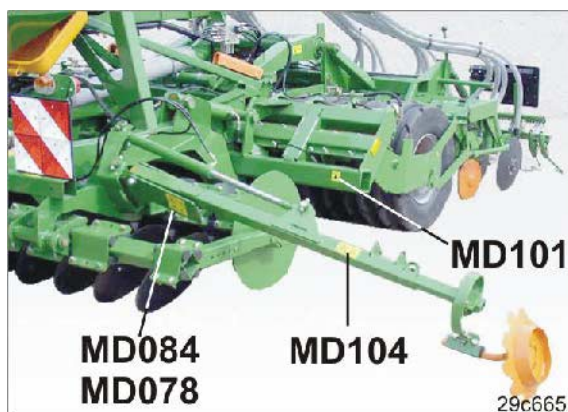


Fig. 4



Fig. 5



Fig. 6

The following illustrations show warning symbols that are located only on folding machines.



Fig. 7

2.14 Dangers if the safety information is not observed

Nonobservance of the safety information

- Can pose both a danger to people and also to the environment and machine.
- Can lead to the loss of all warranty claims.

Seen individually, non-compliance with the safety information could pose the following risks:

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

2.15 Safety-conscious working

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

Comply with the accident prevention instructions on the warning pictograms.

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

2.16 Safety information for users



WARNING

Risk of contusions, cuts, dragging, catching or knocks from insufficient traffic and operational safety.

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

2.16.1 General safety and accident prevention information

- Beside these instructions, comply with the general valid national safety and accident prevention regulations.
- The warning pictograms and labels attached to the machine provide important information on safe machine operation. Compliance with this information guarantees your safety!
- Before moving off and starting up the machine, check the immediate area of the machine (children)! Ensure that you can see clearly!
- It is forbidden to ride on the machine or use it as a means of transport!
- Drive in such a way that you always have full control over the tractor with the attached machine.
In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected machine.

Connecting and disconnecting the machine

- Only connect and transport the machine with tractors suitable for the task.
- When connecting machines to the tractor three-point hydraulic system, the attachment categories of the tractor and the machine must always be the same!
- Connect the machine to the prescribed equipment in accordance with the specifications.
- When coupling machines to the front or the rear of the tractor, the following may not exceeded:
 - The approved total tractor weight
 - The approved tractor axle loads
 - The approved load capacities of the tractor tyres
- Secure the tractor and the machine against unintentional rolling, before coupling or uncoupling the machine.
- It is forbidden for people to stand between the machine to be coupled and the tractor, whilst the tractor is moving towards the machine!
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.
- Secure the operating lever of the tractor hydraulic system so that unintentional raising or lowering is impossible, before connecting the machine to or disconnecting the machine from the tractor's

three-point hydraulic system.

- When coupling and uncoupling machines, 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 machine to the tractor or uncoupling it from the tractor! There are contusion and cutting points in the area of the coupling point between the tractor and the machine.
- It is forbidden to stand between the tractor and the machine when actuating the three-point hydraulic system.
- Coupled supply lines:
 - Must give without tension, bending or rubbing on all movements when travelling round corners.
 - May not scour other parts.
- The release ropes for quick action couplings must hang loosely and may not release themselves when lowered.
- Also ensure that uncoupled machines are stable!



Use of the machine

- Before starting work, ensure that you understand all the equipment and actuation elements of the machine and their function. There is no time for this when the machine is already in operation!
- Do not wear loose-fitting clothing! Loose clothing increases the risk over being caught by drive shafts!
- Only start-up the machine, when all the safety equipment has been attached and is in the safety position!
- Comply with the maximum load of the connected machine 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 machine.
- It is forbidden to stand in the turning and rotation area of the machine.
- There are contusion and cutting points at externally-actuated (e.g. hydraulic) machine points.
- Only actuate externally-actuated machine parts when you are sure that there is no-one within a sufficient distance from the machine!
- Secure the tractor against unintentional start-up and rolling, before you leave the tractor.
For this:
 - Lower the machine onto the ground
 - Apply the parking brake
 - Switch off the tractor engine
 - Remove the ignition key.

Machine transportation

- When using public highways, comply with the national road traffic regulations!
- 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 parking brake is released completely
 - The function of the brake system.
- Ensure that the tractor has sufficient steering and braking power.
Any machines 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 machine 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 machine).
- Check the brake power before moving off.
- When turning corners with the machine connected, take the broad load and balance weight of the machine into account.
- Before moving off, ensure sufficient side locking of the tractor lower links, when the machine is fixed to the three-point hydraulic system or lower links of the tractor.
- Before moving off, move all the swivel machine parts to the transport position.
- Before moving off, secure all the swivel machine parts in the transport position against risky position changes. Use the transport locks intended for this.
- Before moving off, secure the operating lever of the three-point hydraulic system against unintentional raising or lowering of the connected machine.
- Check that the transport equipment, e.g. lighting, warning equipment and protective equipment, is correctly mounted on the machine.
- Before transportation, carry out a visual check that the upper and lower link bolts are firmly fixed with the lynch pin against unintentional release.
- Adjust your driving speed to the prevailing conditions.
- Before driving downhill, switch to a low gear.
- Before moving off, 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 machine 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 which:
 - 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 machine
 - Depressurize the hydraulic system
 - Switch off the tractor engine
 - Apply the parking brake
 - Take out the ignition key.
- Have the hydraulic hose line checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is 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 ageing, 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 connections made from thermoplastics, other guide values may be decisive.
- Never try to bung untight hydraulic lines with your hand or with your 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. Danger 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 – danger 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!
- Danger of explosion! Avoid the production of sparks and naked flames in the vicinity of the battery!
- The machine can be equipped with electronic components, the function of which may be 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 of electrical units and/or components on the machine, with a connection to the on-board power supply, the user must check 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 89/336/EEC in the appropriate version and carry the CE label.

2.16.4 Attached machines

- Comply with the approved combination options for the attachment equipment on the tractor and the machine drawbar.

Only couple approved combinations of vehicles (tractor and attached machine).
- In the case of single axle machines, observe the maximum permitted drawbar load of the tractor on the attachment equipment.
- Ensure that the tractor has sufficient steering and braking power.

Machines 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 machines 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 service may 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 braking system, park the machine safely and secure the machine against unintentional lowering and rolling away (wheel chocks)!
- Be particularly careful when carrying out any welding, burning or drilling work in the area of the brake lines.
- After carrying out any adjusting and repair work on the brake system, always carry out a brake test.

Compressed air brake system

- Before coupling the machine, clean any dirt on the sealing rings on the hose couplings of the supply and brake lines.
- Only move off with the machine connected when the pressure gauge on the tractor shows 5.0 bar.
- Drain the air tank every day.
- Before driving without the machine, lock the hose couplings on the tractor.
- Hang the hose couplings of the machine supply and brake lines in the appropriate empty 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 tank if:
 - The air tank can be moved in the tensioning belts
 - The air tank is damaged
 - The nameplate on the air tank is rusty, loose or missing.

Hydraulic braking system for export machines

- 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.
- Comply with the prescribed air pressure! If the air pressure in the tyres is too high, then there is a risk of explosions!
- Park the machine in a safe place and lock the machine 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 sowing machine

- Comply with the permitted filling volumes of the seed hopper (seed hopper content).
- When filling the seed hopper, only use the ladder and the platform.
It is forbidden to ride on the machine during operation!
- During the calibration test, note the danger points from rotating and oscillating machine parts.
- Before transportation, remove the thrust collars of the track marking unit.
- Do not place any parts in the seed hopper.
- Before transportation, lock the marker (construction-dependent) in the transport position.

2.16.8 Cleaning, maintenance and repairs

- Only carry out cleaning, maintenance and repair work on the machine when:
 - The drive is switched off
 - The tractor engine is at a standstill
 - The ignition key has been removed
 - The machine'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 machine and/or raised machine parts against unintentional lowering before performing any cleaning, maintenance or repair work on the machine!
- 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 machines.
- 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

Loading and unloading with a tractor



WARNING

There is a risk of an accident when the tractor is unsuitable and the machine brake system is not connected to the tractor or is filled.



- Correctly couple the machine to the tractor, before loading the machine onto a transport vehicle or unloading it from a transport vehicle.
- You may only couple and transport the machine with a tractor for loading and unloading, as long as the tractor fulfils the power requirements.

Compressed air brake system:

- Only move off with the machine connected when the pressure gauge on the tractor shows 5.0 bar.

Connect the Cirrus to a suitable tractor for loading onto or unloading off a transport vehicle (see section "Commissioning", on page 79 and section "Coupling and uncoupling the machine", on page 88).

Make the following connections on the tractor

- all service brake connections
- all hydraulic connections
- the free return line of the hydraulic fan connection.

Connection of the control terminal **AMATRON⁺** is not required.



Fig. 8



WARNING

A marshalling person is required for the loading and unloading.

3.1 Loading the Cirrus

1. Put the Cirrus in its transport position (see section "Transportation", on page 120).
2. Raise the Cirrus via the integrated running gear up to a middle position (via control unit 1, see section 7.1.1.1, on page 92).
3. Push the Cirrus carefully backwards onto the transport vehicle.
A marshalling person is required for loading.



Fig. 9

4. Lower the Cirrus fully (control unit 1, see section 7.1.1.1, on page 92) as soon as the Cirrus has reached its transport position on the transport vehicle.
5. Secure the Cirrus in compliance with regulations. Bear in mind that the Cirrus has no parking brake.
6. Disconnect the tractor from the Cirrus.



Fig. 10

3.2 Unloading the Cirrus

1. Couple the Cirrus to the tractor (see section 3, on page 35).
2. Remove the transport securing device.
3. Raise the Cirrus via the integrated running gear up to a middle position and pull it carefully off the transport vehicle.
A marshalling person is required for unloading.
4. After unloading uncouple the machine from the tractor (see section 7.2, on page 95).



Fig. 11

3.3 Loading and unloading the Cirrus 8001/9001 on transport trailers with a central spar

When loading and unloading the Cirrus 8001/9001 the two middle wheel links (Fig. 14/1) must be raised so that they do not collide with the central spar (Fig. 14/2) of the transport trailers.

Loading

1. Put the Cirrus in transport position (see section "Transportation", on page 120).
2. Lower the machine fully.
3. Close the ball valve (Fig. 12/1) of the middle running gear cylinder. The closed ball valve is illustrated.
4. Fasten the two middle wheel links (Fig. 13/1) with tensioning belts (Fig. 13/2) tautly to the machine's extension arm (Fig. 13/3). This prevents the wheel links from dropping when the machine is raised.
5. Lift the Cirrus completely via the integrated running gear (via control unit 1, see section 7.1.1.1, on page 92).
6. Push the Cirrus carefully backwards onto the transport vehicle.
A marshalling person is required for loading.



Fig. 12



Fig. 13



Fig. 14

Loading and unloading

7. Lower the Cirrus fully (control unit 1, see section 7.1.1.1, on page 92) as soon as the Cirrus has reached its transport position on the transport vehicle.
8. Secure the Cirrus in compliance with regulations. Bear in mind that the Cirrus has no parking brake.
9. Disconnect the tractor from the Cirrus.



Fig. 15

Unloading

1. Couple the Cirrus to the tractor (see section 3, on page 35).
2. Remove the transport securing device.
3. Raise the complete Cirrus via the integrated running gear and pull it carefully off the transport vehicle. A marshalling person is required for unloading.



Fig. 16

4. Bring the Cirrus to a standstill and lower the machine fully.



Fig. 17

5. Remove the tensioning belt (Fig. 13/1).

**WARNING**

Lower the Cirrus fully before removing the tensioning belt (Fig. 13/1).

6. Open the ball valve (Fig. 18/1) of the middle running gear cylinder. The open ball valve is illustrated.
7. Unscrew the grip (Fig. 18/1) of the ball valve so that the ball valve is not mistakenly closed during later work.
8. Uncouple the tractor (see section 7.2, on page 95).



Fig. 18

4 Product description

This section:

- Provides a comprehensive overview of the machine structure.
- Provides the names of the individual modules and controls.

Read this section when actually at the machine. This helps you to understand the machine better.

Main assemblies of the machine

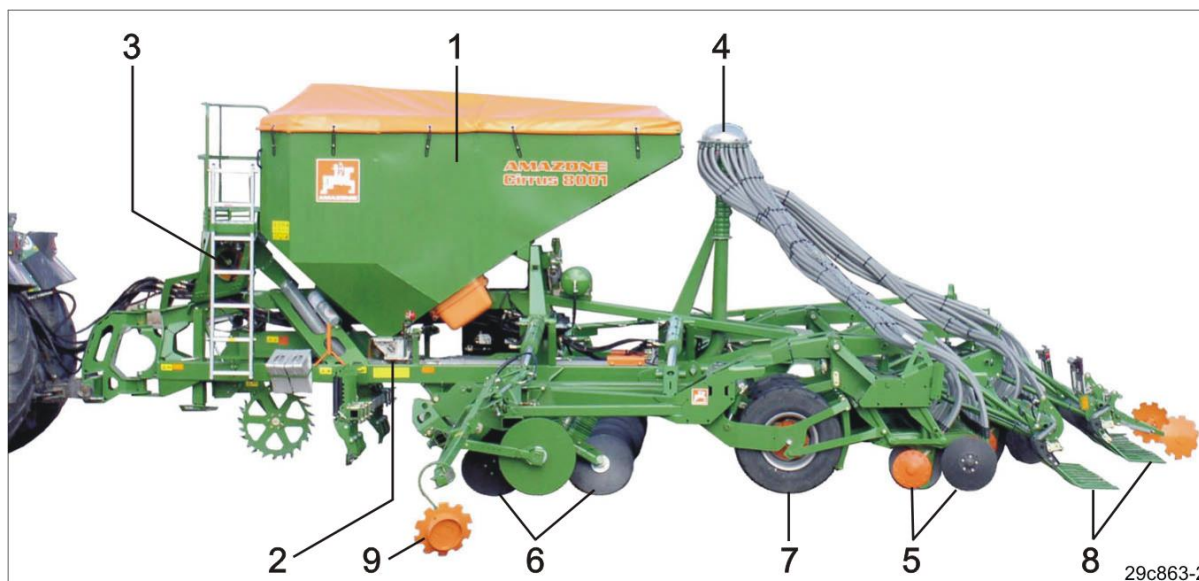


Fig. 19

Fig. 19/...

- | | |
|--------------------------|---|
| 1. Seed hopper | 6. Two-row disc array |
| 2. Central dosing unit | 7. Tapered tyres with integrated running gear |
| 3. Fan | 8. Harrowweeder |
| 4. Seed distributor head | 9. Marker |
| 5. PacTeC shares | |

4.1 Overview of subassemblies

Fig. 20/...

- (1) Draw rail
- (2) Sustainer, extendable



Fig. 20

Fig. 21/...

- (1) Mounting for supply lines



Fig. 21

Fig. 22/...

- (1) Wheel chocks
- (2) Platform with ladder
- (3) Holding point
- (4) Star wheel



Fig. 22

Fig. 23/...

- (1) Swivel cover
- (2) Cover hook



Fig. 23

Product description

Fig. 24/...

- (1) Vario gearbox



Fig. 24

Fig. 25/...

- (1) Calibration crank (in transport mounting)
- (2) Seed doser
- (3) Calibration trough (in mounting for calibration test)
- (4) Injector housing

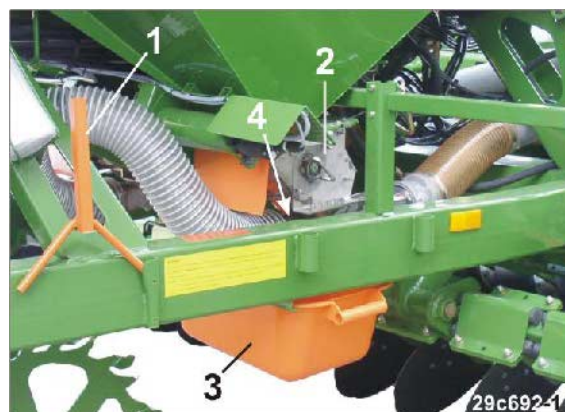


Fig. 25

Fig. 26/...

- (1) Sieve grate
- (2) Level sensor



Fig. 26

Fig. 27/...

Operator terminal **AMATRON⁺**



Fig. 27

Fig. 28/...

- (1) Pre-emergence marker

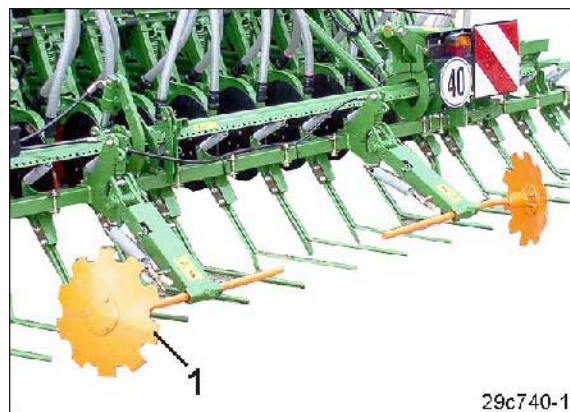


Fig. 28

Fig. 29/...

- (1) Brake valve with release valve (viewed from below)



Fig. 29

Fig. 30/...

- (1) Electrohydraulic control blocks
- (2) Hydraulic accumulator with nitrogen filling for pretensioning the outswung machine extension arms



Fig. 30

Fig. 31/...

- (1) Depth regulating bolt for setting the seed depositing depth



Fig. 31

4.2 Safety and protection equipment

Fig. 32/...

- (1) Guard panelling,
electrohydraulic control blocks



Fig. 32

Fig. 33/...

- (1) Hydraulic stop-cock anti-rotation lock
(equalising system)



Fig. 33

Fig. 34/...

- (1) Fan guard



Fig. 34

Fig. 35/...

- (1) Sieve grate lock
(for full dosing)



Fig. 35

Fig. 36/...

- (1) Dosing window lock.
Interruption of the roller drive when the dosing window is opened (Fig. 36/2) with full dosing.

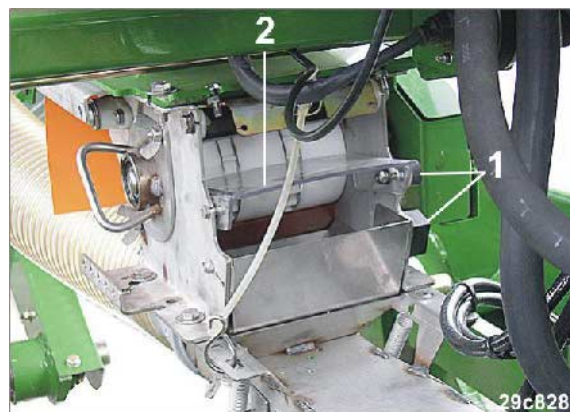


Fig. 36

Fig. 37/...

- (1) Spacer for safeguarding the axle rocker prior to servicing work.



Fig. 37

4.3 Overview – Supply lines between the tractor and the machine

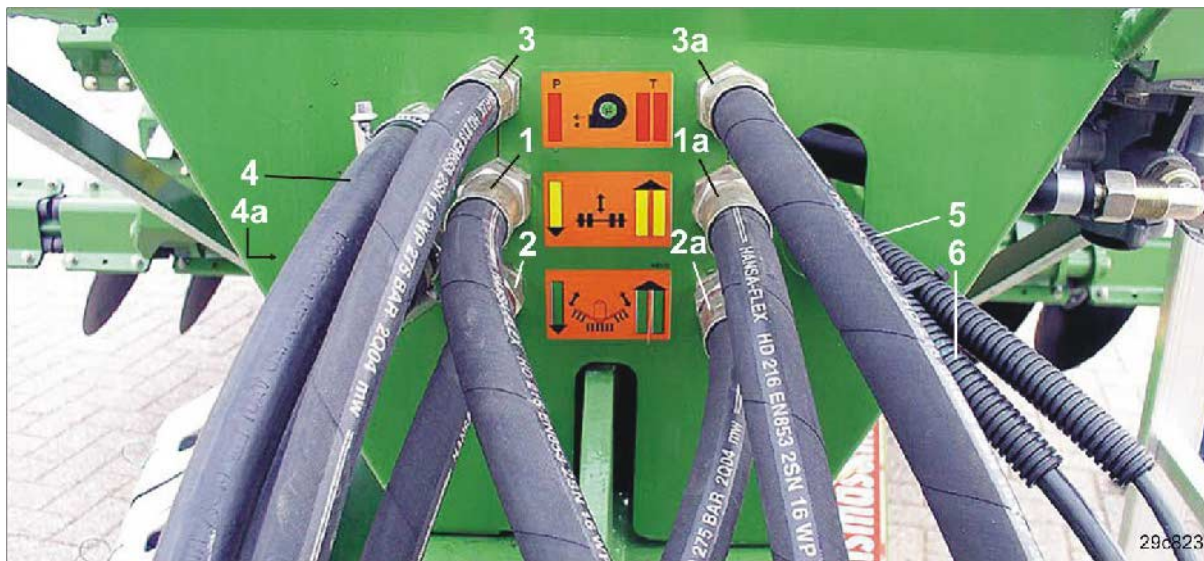


Fig. 38

Fig. 38/..	Designation		Marking
1	Hydraulic line 1	Feed line	1 cable tie, yellow
1a	Hydraulic line 1	Return line	2 cable ties, yellow
2	Hydraulic line 2	Feed line	1 cable tie, green
2a	Hydraulic line 2	Return line	2 cable ties, green
3	Hydraulic line 3	Pressure line with priority	1 cable tie, red
3a	Hydraulic line 3	Pressureless line	2 cable ties, red
4	Brake line (compressed air)		Yellow
4a	Supply line (compressed air)		Red
5	Plug (7-pin) for road traffic lighting system		
6	AMATRON⁺ machine plug		
No Fig.	Hydraulic brake line (see section 7.1.1.4, on page 94) ¹⁾		

¹⁾ not permitted in Germany and some other EU countries

4.4 Transportation equipment

Fig. 39/...

- (1) 2 rear lights
- (2) 2 brake lights
- (3) 2 direction indicators
- (4) 2 red reflectors (round, rectangular or triangular)
- (5) 1 licence plate holder with lighting
- (6) 2 warning boards pointing to the rear
- (7) 1 road safety bar
- (8) 1 speed sign.



Fig. 39

Fig. 40/...

- (1) 2 direction indicators
- (2) 2 side lights pointing forwards
- (3) 2 warning boards pointing forwards.



Fig. 40

Fig. 41/...

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

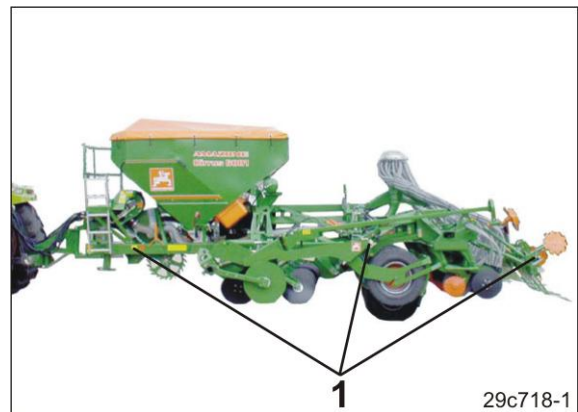


Fig. 41

4.5 Intended use

The machine

- is constructed for the seedbed preparation of agriculturally used arable land and for the dosing and output of commonly available seeds.
- This is coupled to the tractor using the lower tractor line and is operated by an additional person.

Slopes can be travelled

- Along the contours
Direction of travel to left 20 %
Direction of travel to right 20 %
- Along the gradient
Up the slope 20 %
Down the slope 20 %

The intended use also includes:

- Compliance with all the instructions in this operating manual.
- Execution 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** assumes no liability whatsoever.

4.6 Danger area and danger points

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

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

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

No-one may stand in the machine danger area:

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

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

Danger points exist:

- in the area of the swivelling machine extension arm
- in the area of the swivelling track marker
- in the area of the swivelling tapered ring tyres.

4.7 Nameplate and CE labelling

The following illustrations show the arrangement of the type plate (Fig. 42/1) and of the CE marking (Fig. 42/2).

The nameplate shows:

- Mach. ident. no.
- Type
- Permissible system pressure, bar
- Year of manufacture
- Factory
- Power output, kW
- Basic weight, kg
- Perm. laden weight, kg
- Rear axle load, kg
- Front axle load, noseweight, kg.



Fig. 42

The CE marking (Fig. 43) on the machine signals compliance with the stipulations of the valid EU directives.



Fig. 43

4.8 Technical data

		Cirrus 3001	Cirrus 4001	Cirrus 6001	Cirrus 8001	Cirrus 9001
Working width	[m]	3.0	4.0	6.0	8.0	9.0
Filling height	[m]	2350	2350	2500	2800	2800
Total length	[m]	7.42	7.92	7.92	8.90	8.90
Hopper volume	[l]	2200	2200	3000	5000	5000
Full load (on field)	[kg]	1800	1800	2400	4000	4000
Number of sowing units		24	32	48	64	72
Row spacing	[cm]	12.5				
Continuous acoustic pressure level	[dB(A)]	74				
Working speed	[km/h]	12 to 16				
Performance relative to area	[ha/h]	approx. 2.4	approx. 3.0	approx. 4.8	approx. 6.7	approx. 7.5
Power requirement (from)	[kW/bhp]	90/120	110/150	147/200	205/280	235/320
Oil flow rate (minimum).	[l/min]	80				
Max. hydraulic working pressure	[bar]	200				
Electrical system	[V]	12 (7-pin)				
Transmission/hydraulic fluid		Transmission/hydraulic fluid Utto SAE 80W API GL4				
Coupling point category	Category	III				
Transport running gear		Integrated with 4 running wheels			Integrated with 6 running wheels	
Number of tapered ring tyres		6	8	12	16	18
Maximum noseweight (F _H) with a full seed hopper	[kg]	2200	2500	2800	5300	5300
Service brake system (connection to tractor)		Dual-circuit pneumatic braking system or hydraulic braking system ¹⁾				
Effective brake in the integrated running gear		Hydraulically acting				
Road transport data (only with an empty seed hopper)						
Transport width	[m]	3.0				
Overall height in transport position (folded in from 4 m working width upwards)	[mm]	2700	2700	3500	4000	3700
Empty weight / Dead weight	[kg]	4550	6450	8400	11400	12200
Approved total weight	[kg]	4700	6800	8900	11900	12700
Perm. axle load	[kg]	4000	5900	7500	10000	10000
Perm. nose weight	[kg]	1200	1400	1500	3000	3000
Maximum payload for transport journeys	[kg]	220				
Perm. maximum speed on all non-public roads, public roads and public ways.	[km/h]	40				

¹⁾ Not allowed in Germany and in several other countries.



4.9 Conformity

Directives / standards

The machine fulfils the:

- Machines directive 98/37/EC
- EMC directive 89/336/EEC

4.10 Necessary tractor equipment

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

Tractor engine power

Cirrus 3001	from 90 kW (120 bhp) upwards
Cirrus 4001	from 110 kW (150 bhp) upwards
Cirrus 6001	from 147 kW (200 bhp) upwards
Cirrus 8001	from 205 kW (280 bhp) upwards
Cirrus 9001	from 235 kW (320 bhp) upwards

Electrical system

Battery voltage:	12 V (volts)
Lighting socket:	7-pin

Hydraulic system

Maximum operating pressure:	200 bar
Tractor pump power:	At least 80 l/min at 150 bar
Machine hydraulic fluid:	Transmission/hydraulic fluid Utto SAE 80W API GL4 The machine hydraulic/transmission fluid is suitable for the combined hydraulic/transmission fluid circuits of all standard makes of tractor.
Control unit 1:	Double-acting control unit
Control unit 2:	Double-acting control unit
Control unit 3:	<ul style="list-style-type: none">• 1 single-acting or double-acting control unit with priority control for the feed line• 1 unpressurised return line with a large push-fit coupling (ND 16) for the unpressurised oil return line. In the return line the banking-up pressure must be 10 bar at the maximum.

Operational brake system

- Dual-circuit service braking system:
 - 1 hose coupling (red) for the supply line
 - 1 hose coupling (yellow) for the brake line
- Hydraulic braking system: 1 hydraulic coupling in accordance with ISO 5676



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

4.11 Noise production data

The workplace-related emission value (acoustic pressure level) is 79 dB(A), measured in operating condition at the ear of the tractor driver with the cabin closed.

Measuring unit: OPTAC SLM 5.

The noise level is primarily dependent on the vehicle used.

5 Structure and function

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



Fig. 44

Cirrus PacTeC share sowing combinations make seeding possible with or without previous soil cultivation in one work process.

With the disc array (Fig. 44/1) mulch seeding and conventional plough seeding is possible.

The tapered ring tyres (Fig. 44/2) compact the cultivated soil in strips and guide the disc share at working depth.

The seed is carried in the seed hopper (Fig. 44/3).

The preset seed volume passes from the seed doser (Fig. 44/4), which is driven by a star wheel (Fig. 44/5) or an electric motor, into the air stream generated by the fan (Fig. 44/6).

The air stream conveys the seed to the distributor head (Fig. 44/7), which distributes the seed uniformly onto all the PacTeC shares (Fig. 44/8).

The seed is embedded into the compacted strips in the soil and covered with loose soil by the harrowweeder (Fig. 44/9).

The field connection run is marked in the centre of the tractor by the track markers (Fig. 44/10).

Machines from a working width of 4 m upwards can be folded together 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 machine 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 contusions, cutting, catching, drawing in and knocks from faulty hydraulic functions when the hydraulic hose lines are connected incorrectly!

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



- Check the compatibility of the hydraulic fluids before connecting the machine to the hydraulic system of the tractor.
Do not mix any mineral oils with biological oils.
- Observe the maximum approved hydraulic fluid pressure of 200 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. 45

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. Unlock the hydraulic connectors from the hydraulic sockets.
3. Safeguard the hydraulic connectors and hydraulic connector sockets against soiling with the dust protection caps.
4. Place the hydraulic hose lines in the hose cabinet.



Fig. 46

5.2 Dual-circuit pneumatic service braking system



DANGER

The Cirrus does not have a parking brake!

Always secure the machine with the wheel chocks before you uncouple the machine from the tractor!



Compliance with the maintenance intervals is essential for the correct function of the two-line operating brake system.

Fig. 47/...

- (1) Supply line with hose coupling (red); fastened in compliance with regulations in the mounting.
- (2) Brake line with hose coupling (yellow); fastened in compliance with regulations in the mounting.



Fig. 47

Fig. 48/...

- (1) Line filter of the supply line
- (2) Line filter of the brake line
- (3) Trailer brake valve
- (4) Actuation knob for release valve
 - o push in up to the stop and the service brake is released (see danger notice, below)
 - o pull out up to the stop and the Cirrus is braked by the supply pressure in the compressed air reservoir (see danger notice below).



Fig. 48



DANGER

Press the actuation knob (Fig. 48/4) for the release valve only in the workshop to manoeuvre the machine with a suitable tractor without a connection facility for the pneumatic braking system.

Bear in mind that the Cirrus has no parking brake and when the actuation knob is pulled out the Cirrus shows no braking effect with an empty compressed air reservoir.

5.2.1 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 tank before the first journey each day.
- Only move off with the machine connected when the pressure gauge on the tractor shows 5.0 bar.



WARNING

Risk of contusions, cuts, dragging, catching or knocks from unintentionally rolling machine with the operating brake released!

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

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

1. Open the covers (Fig. 49/1) of the hose couplings on the tractor.
2. Check the sealing rings on the hose coupling for damage and cleanliness.
3. Clean the dirty sealing rings and replace any damaged sealing rings.
4. Fasten the hose coupling of the brake line (yellow) in compliance with regulations in the coupling marked yellow (Fig. 49/2) on the tractor.



Fig. 49

5. Remove the hose coupling of the supply line (red) from the empty coupling.
6. Check the sealing rings on the hose coupling for damage and cleanliness.
7. Clean the dirty sealing rings and replace any damaged sealing rings.
8. Fasten the hose coupling of the supply line (red) in the coupling marked red on the tractor in accordance with regulations.
- On coupling the supply line (red), the supply pressure coming from the tractor automatically pushes out the button for the release valve on the trailer brake valve.
9. Remove the wheel chocks.

5.2.2 Uncoupling the brake and supply lines



WARNING

Risk of contusions, cuts, dragging, catching or knocks from unintentionally rolling machine with the operating brake released!

Always uncouple the hose coupling of the supply line (red) first followed by the hose coupling of the brake line (yellow).

The operating brake of the machine only moves into the brake position when the red hose coupling has been uncoupled.

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

1. Secure the machine against unintentionally rolling away. To do so use the wheel chocks.
2. Release the hose coupling (Fig. 50) 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. 50



DANGER

Use the wheel chocks!

Bear in mind that the Cirrus has no parking brake and shows no braking effect if the compressed air reservoir is empty.

5.3 Hydraulic operating brake system

To control the hydraulic operating brake system, the tractor requires hydraulic braking equipment.

5.3.1 Coupling the hydraulic operating brake system



Only couple clean hydraulic couplings.

1. Remove the protective cap (Fig. 52/1).
2. If necessary, clean the hydraulic connectors (Fig. 51) and hydraulic connector socket.
3. Connect the hydraulic connector socket on the machine face with the hydraulic connector on the tractor face.



29c734

Fig. 51

5.3.2 Uncoupling the hydraulic operating brake system

1. Unlock the hydraulic connector from the hydraulic sockets.
2. Secure the hydraulic connectors and hydraulic connector socket with protective caps (Fig. 52/1) against soiling.
3. Place the hydraulic hose line in the hose cabinet.



29c841

Fig. 52

5.4 Seed hopper and seed dosing

The dosing roller of the seed doser (Fig. 53/2) doses the seed coming from the seed hopper (Fig. 53/1) into the air stream of the venturi cone (Fig. 53/3).

The air stream conveys the seed through the seed feed tube to the distributor head (Fig. 53/4) and up to the seed coulters (Fig. 53/5).

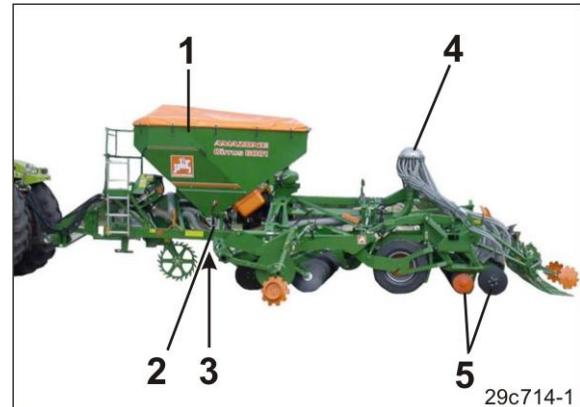


Fig. 53

5.5 Dosing rollers

The seed dosers are equipped with exchangeable dosing rollers. The dosing roller selection is dependent on

- The size of the individual seeds and
- The volume of seeds.

The dosing rollers are used on the basis of the table (section 8.1.1, on page 99):

- Coarse dosing roller (Fig. 54/1) for coarse seeds and high application rates
- Medium dosing roller (option, Fig. 55/1) for medium-sized seeds with the medium output levels
- Fine dosing roller (Fig. 56/1) for fine seeds.

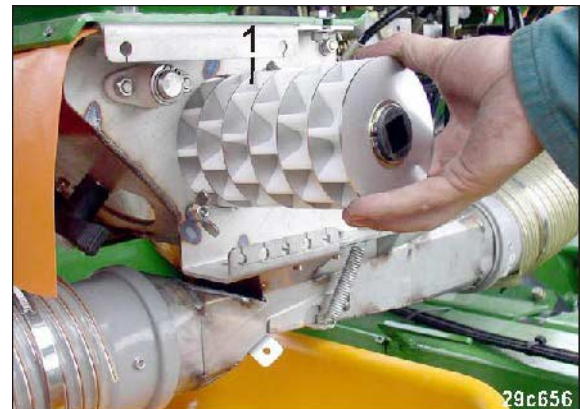


Fig. 54

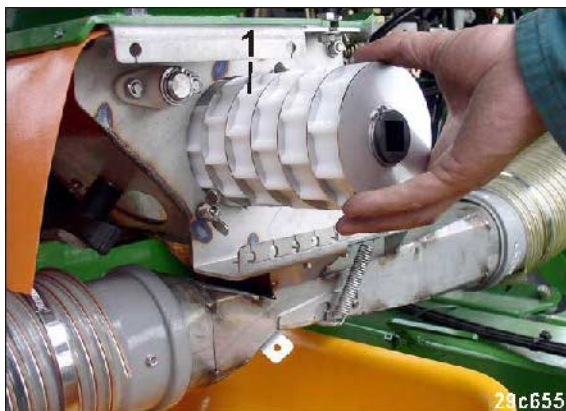


Fig. 55



Fig. 56

The dosing rollers are driven optionally

- by a star wheel via the Vario gearbox
- by an electric motor (full dosing).

Structure and function

For sowing particularly large seeds, e.g. beans, the chambers (Fig. 57/1) of the coarse dosing roller can be enlarged by repositioning the wheels and the plates.

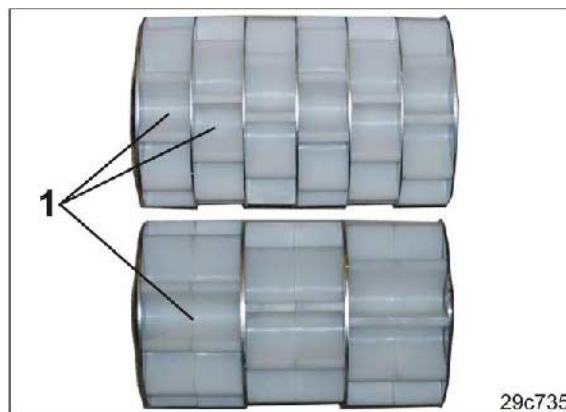


Fig. 57

5.6 Level sensor

The level sensor monitors the seed level in the seed hopper. When the seed level reaches the level sensor a warning signal appears (Fig. 58) on the **AMATRON⁺** display and an alarm signal sounds simultaneously. This alarm signal is intended to remind the tractor driver to fill up the seeds again.

machine type:	Cirrus	Order
order No.:	6	drill calibr.
tranline rhythm No.:	15	machine
working width:	6.0m	Setup
level too low		29c214_GB

Fig. 58

The height of the level sensor can be adjusted (Fig. 59/1) in the seed hopper. The residual seed volume can be set, at which the warning message and the alarm signal is to be emitted.



Fig. 59

5.7 Star wheel

Via the Vario gearbox the star wheel drives the dosing rollers in the seed doser.

With full dosing the star wheel is the roller feeler for distance.

The rotational drive speed of the dosing rollers

- determines the sowing rate
- is adjustable infinitely variably by way of the Vario gearbox via the **AMATRON⁺**. To do so the **AMATRON⁺** adjusts the transmission adjusting lever (optional). The higher the setting on the scale on the Vario gearbox, the greater the sowing rate.

The distance covered is measured via the star wheel. **AMATRON⁺** requires this data to calculate the drive speed and area cultivated (area meter).

The star wheel controls

- creation of the tramlines.
The tramline counter indexes approx. 5 seconds (time settable via the **AMATRON⁺**) after each upswing of the star wheel, e.g. before turning at the end of the field.
- the track marker change (depending on the setting on the **AMATRON⁺**).

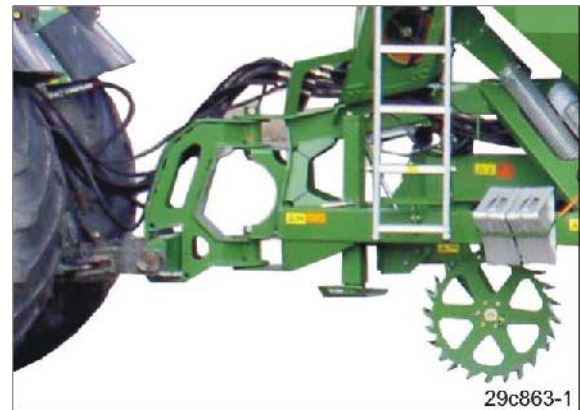


Fig. 60

5.8 Vario gearbox

The sowing rate is adjustable infinitely variably by means of the transmission adjusting lever (Fig. 61/1) of the Vario gearbox.

The higher the scale value setting, the greater the sowing rate.

The transmission adjusting lever can also be actuated by means of a servo-motor (Fig. 61/2).

The **AMATRON⁺** controls the position of the servo-motor on the basis of the calibration test.

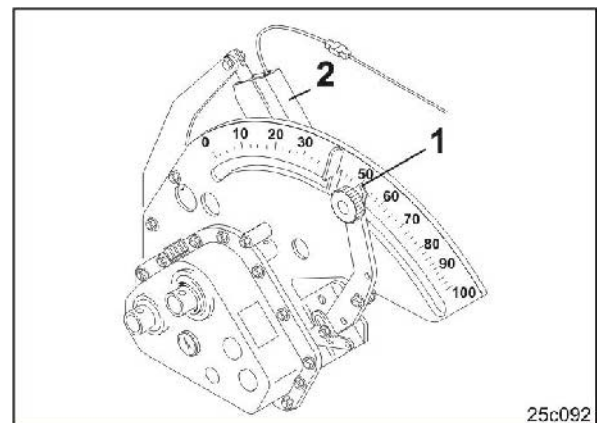


Fig. 61

5.9 Full dosing (optional)

With full dosing one electric motor (Fig. 62/1) each drives a dosing roller.

The rotational drive speed of the dosing roller is determined by the working speed and the preset sowing rate. A star wheel determines the working speed and the distance covered.

The sowing rate is set on the **AMATRON⁺**.

The rotational drive speed of the dosing roller

- determines the sowing rate. The higher the rotational drive speed of the electric motor, the greater the sowing rate.
- adapts automatically with changing working speed.

The seed predosing is connectable, e.g. at the headland. The run time of the seed predosing is adjustable.



Fig. 62

5.10 Calibrating troughs

The seed incurred in the calibration test drops into the calibrating troughs.

The number of calibrating troughs is equal to the number of seed dosers.

The calibrating troughs are nested for transport, secured with a linch pin (Fig. 63/1) and fastened to the rear wall of the hopper.



Fig. 63

5.11 Blower

The hydraulic motor (Fig. 64/2) drives the blower (Fig. 64/1) and generates an air current. The air current conveys the seeds from the venturi cone to the shares.

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

The higher the fan speed, the greater is the air volume generated.

Please refer to the table (Fig. 116) for the requisite fan speed.



Fig. 64

The blower speed can be regulated:

- via the tractor's flow control valve or (if not present)
- via the pressure relief valve (Fig. 64/3) of the hydraulic motor.

The **AMATRON⁺** monitors compliance with the fan speed.

5.12 Two-row disc array

The discs, which are set obliquely to the direction of travel (Fig. 65/1), prepare the seedbed.

The following are adjustable

- the working intensity of the discs over the working depth of the disc array
- the length of the outer discs for adaptation to varying soil conditions
- the two outside hollow discs (Fig. 65/2) in vertical direction.

Correctly set outer discs and outside hollow discs prevent the cultivated soil from egressing laterally from the working area of the machine.

The elastic rubber sprung suspension of the individual discs enables

- adaptation to soil unevenness
- evasion by the discs when hard obstacles are encountered, e.g. stones. This protects the individual discs against damage.

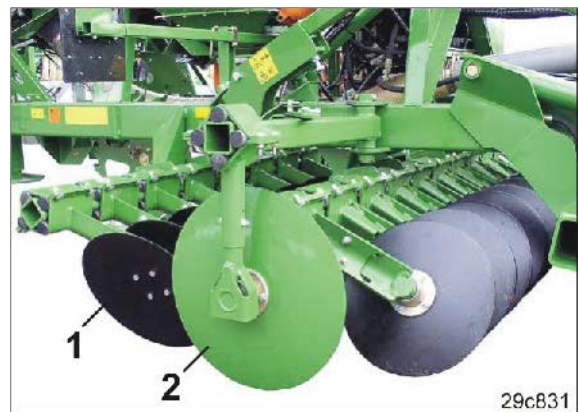


Fig. 65

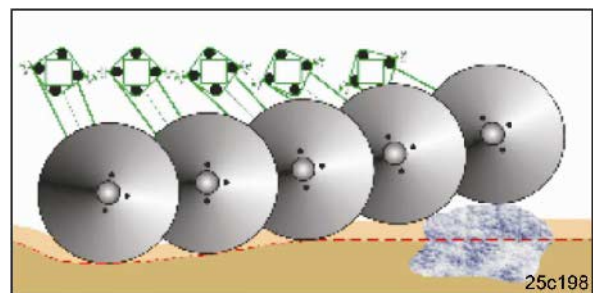


Fig. 66

5.13 Tapered ring tyres

The tapered ring tyres (Fig. 67/1)

- are arranged individually next to one another
- compact the cultivated soil in strips
- assume depth guidance of the PacTeC shares (Fig. 67/2) for uniform seed depositing
- form the integrated running gear for transport journeys.

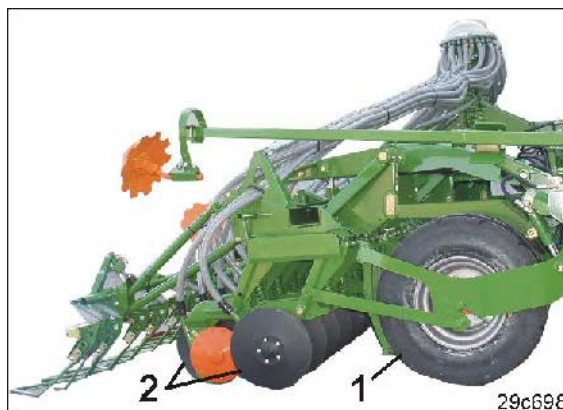


Fig. 67

Each tapered ring tyre is linked individually on the supporting frame and

- is supported by way of two hydraulic cylinders (Fig. 68/1) on the supporting frame
- can adapt individually to soil unevenness
- assumes depth guidance for 4 PacTeC shares.



Fig. 68

All hydraulic cylinders (Fig. 68/1) of the tapered ring tyres of one half of the machine are on a parallel closed hydraulic circuit.

A hydraulic equalising system is created by the two hydraulic circuits. With soil unevenness the hydraulic equalising system ensures that the soil pressure of all the tapered ring tyres is always equal.

After repair work, do not fail to flush and calibrate the equalising system so that it works in compliance with regulations.

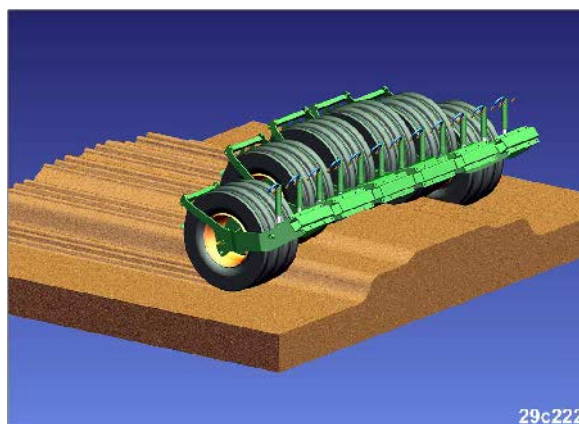


Fig. 69

5.14 PacTeC share

Each PacTeC share (Fig. 70/1)

- forms a sowing furrow in the compacted strips of the tapered ring tyres
- deposits the seed into the sowing furrow.

The seed depositing depth is set by the support on the tapered ring tyres.

The desired seed depositing depth of the PacTeC share is adjustable on each machine segment by repositioning a depth regulation bolt (Fig. 71/1) in the square holes (Fig. 71/2) of the adjusting segment.

The different settings act on a bracket (Fig. 71/3), which brings about the seed depositing depth.

The depth regulation bolts (Fig. 71/1) have a square section with different spacings. The edges are marked with the numbers 1 to 4. The different spacings make possible a finer graduation of the seed depositing depth than between the individual square holes (Fig. 71/2) on the adjusting segment.

The maintenance-free PacTeC share stone protection system protects each individual PacTeC share against damage when it encounters hard obstacles.

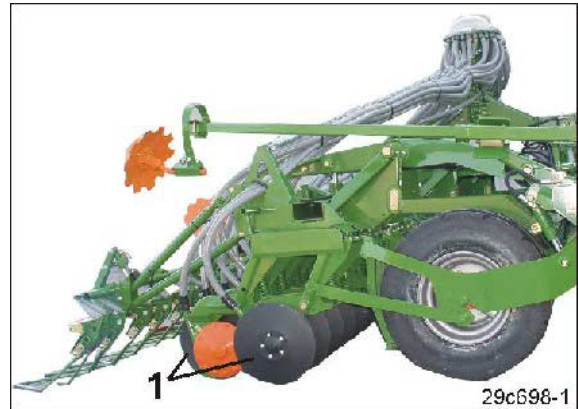


Fig. 70

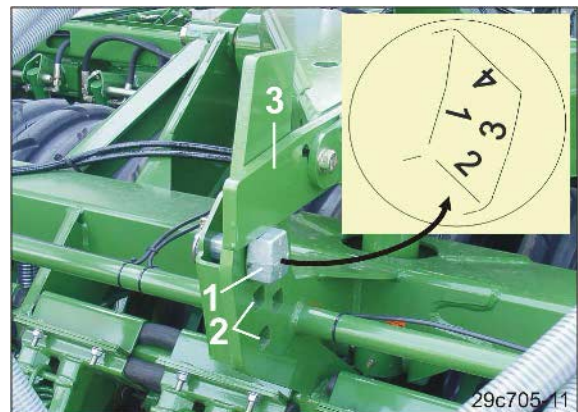


Fig. 71

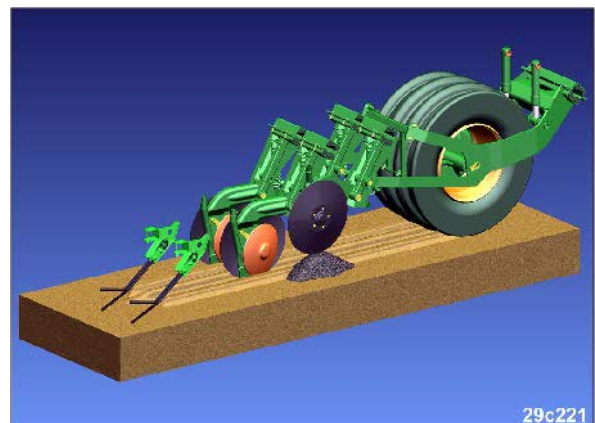


Fig. 72

5.15 Exact harrowweeder

The exact harrowweeder (Fig. 73/1) covers the seeds deposited in the sowing furrows with loose earth and smoothes the ground.

The following are adjustable

- The exact harrowweeder position can be adjusted for adjustment to the set seed depth
- The harrowweeder pressure.
The harrowweeder pressure determines the working intensity of the harrowweeder and is independent of the soil type.

Set the harrowweeder pressure so that no earth bank remains on the field after seed covering.

The draw springs that create the harrowweeder pressure are pretensioned by a lever (Fig. 74/1).

The lever (Fig. 74/1) is applied in the adjusting segment by way of a bolt (Fig. 74/2).

The higher the bolt is inserted in the group of holes, the greater is the harrowweeder pressure.

For hydraulic harrowweeder adjustment the second bolt (Fig. 74/3) is inserted as a stop above the lever (Fig. 74/1) in the adjusting segment.

If the hydraulic cylinder is pressurised on heavy soil, the lever is applied to the upper bolt and increases the harrowweeder pressure.

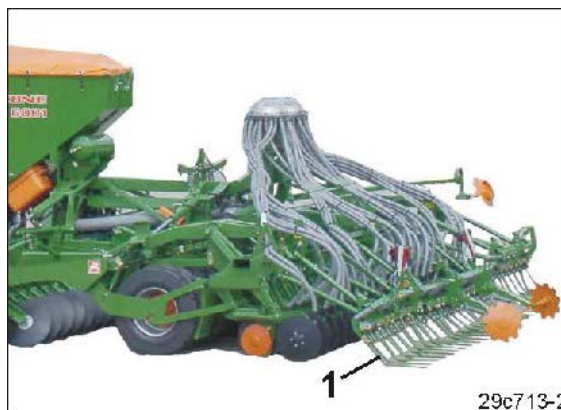


Fig. 73



Fig. 74

5.16 Track loosener (optional)

If the function of the disc array is not sufficient to eliminate the tracks of the tractor, the track looseners (Fig. 75) are used.

The track looseners are adjustable horizontally and vertically.

Raise or swivel the track looseners after working on the field to avoid damaging the track looseners.

Cirrus 8001 and 9001 have hydraulically swivelling track looseners.



Fig. 75

5.17 Markers

The hydraulically-actuated markers dig into the ground alternately on the left and the right of the machine. In so doing, the active marker creates a mark. This mark serves as an orientation aid for the next run after turning. After turning, the tractor driver drives over the centre of the mark.

The track markers are linked with the hydraulics for

- the integrated running gear
- the share frame
- the star wheel
- the pre-emergence marker.



Fig. 76

Lifting of the star wheel automatically triggers the switchover procedure for the track markers.

To pass obstacles the active track marker can be folded in and out on the field. If the track marker still encounters hard obstacles, the overload protection system of the hydraulic system responds and the hydraulic cylinder gives way to the obstacle and thus protects the track marker against damage.

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

It is possible to set:

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



Fig. 77

5.18 Operator control terminal **AMATRON⁺**

The **AMATRON⁺** consists of the operator control terminal (Fig. 78), the basic equipment (cable and fastening material) and the job computer on the machine.

The following are performed via the operator control terminal

- input of the machine-specific data
- input of the job-related data
- triggering of the machine to change the sowing rate during sowing operation
- switching clear of the hydraulic functions before the hydraulic functions can be executed via the appropriate control unit
- monitoring of the sowing machine during sowing operation.



Fig. 78

The **AMATRON⁺** determines

- the momentary drive speed [kph]
- the momentary sowing rate [kg/ha]
- the distance [m] remaining until the seed hopper is emptied of seed
- the actual seed hopper content [kg].

For a commenced order the **AMATRON⁺** stores

- the day and total seed volume output [kg]
- the day and total area cultivated [ha]
- the day and total sowing time [h]
- the average work performance [ha/h].

For communication purposes the **AMATRON⁺** includes

- the menu "Work"
- the main menu with 4 submenus
 - the menu "Job"
 - the menu "Seed drill calibration"
 - the menu "Machine data"
 - the menu "Setup".

the menu "Work"

- indicates the requisite data for sowing operation
- is for the purpose of operating the sowing machine during the work.

In the menu "Job"

- the sowing rate is entered
- jobs are created and the data determined from up to 20 processed jobs is stored
- the desired job is started.

In the menu "Seed drill calibration"

- the sowing rate entered is checked by way of a calibration test and the transmission setting is corrected as necessary.

In the menu "Machine data"

- the machine-specific settings are entered, selected or determined via a calibration process.

In the menu "Setup"

- the input and output of diagnostic data and the selection and input of basic machine data is performed. These jobs are reserved exclusively for customer service personnel.

5.19 Distributor head and tramline circuit

In the distributor head (Fig. 79/1) the seed is distributed uniformly over all the seed coulters. The number of distributor heads depends on the machine working width. A seed doser always supplies one distributor head.

On sowing machines with two distributor heads

- one distributor head supplies seed to the sowing shares of one half of the machine.
- the seed dosing of one half of the machine (part width) can be switched off. To do so
 - with star wheel drive remove the linch pin
 - with full dosing switch off the motor.

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

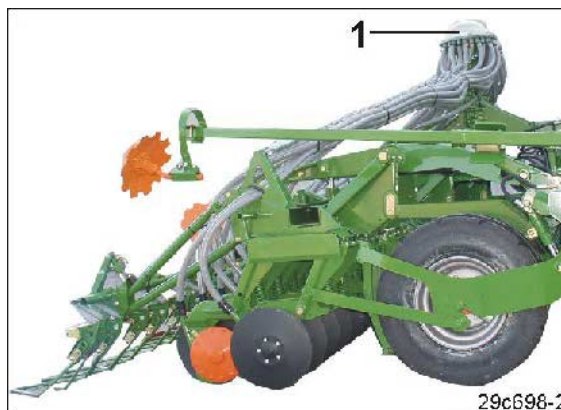


Fig. 79

The tramline circuit in the distributor head allows the creation of tramlines at presettable distances on the field. To set the different tramline distances appropriate tramline rhythms have to be entered into the **AMATRON⁺**.

When creating the tramlines:

- The tramline circuit on the distributor head uses sliders (Fig. 80/1) to block the seed feeding lines to the seed lines (Fig. 80/2) of the tramline shares
- The tramline shares do not deposit any seeds on the ground.

Seed supply to the tramline shares is interrupted as soon as the electric motor (Fig. 80/3) closes the appropriate seed tubes (Fig. 80/2) in the distributor head.

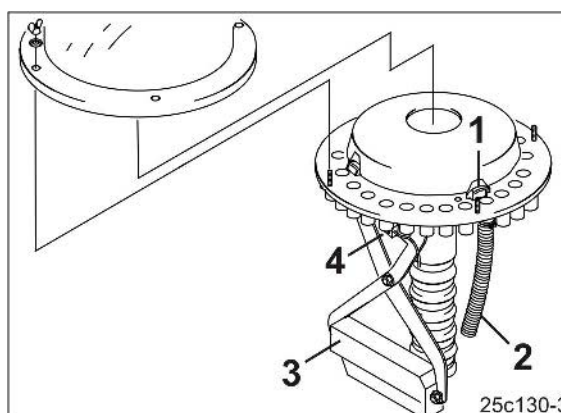


Fig. 80

Upon creating a tramline the tramline counter indicates the number "0" on the **AMATRON⁺**. The seed volume, which is reduced when creating a tramline, can be set. It is necessary to equip the machine with electrical seed volume adjustment or full dosing.

A sensor (Fig. 80/4) checks whether the sliders (Fig. 80/1), which open the and close the seed line tubes (Fig. 80/2), are working properly.

If the setting is wrong, the **AMATRON⁺** emits an alarm.

5.19.1 Tramline rhythm

Tramlines can be created on the field. Tramlines are seed-free tracks (Fig. 81/A) for fertilising and plant care machines used later.

The tramline spacing (Fig. 81/b) corresponds to the working width of the care machines (Fig. 81/B), e.g. fertiliser spreader and/or sprayer, which are used on sown fields.

To set the different tramline spacings (Fig. 81/b), appropriate tramline rhythms must be entered on the **AMATRON⁺**.

The required tramline rhythm (see table Fig. 82) is derived from the required tramline spacing and the working width of the sowing machine.

The table (Fig. 82) does not contain all the settable tramline rhythms. A list of all the settable tramline rhythms is available in the instruction manual **AMATRON⁺**.

The track width (Fig. 81/a) of the tramline corresponds to that of the care tractor and is adjustable.

The track width of the tramline increases if the number of tramline shares arranged next to each other increases.

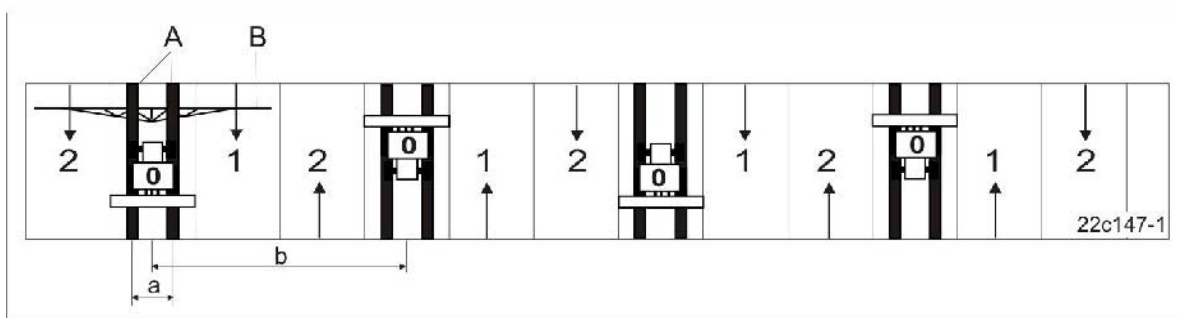


Fig. 81

Tramline rhythm	Sowing machine working width				
	3.0m	4.0m	6.0m	8.0m	9.0m
Tramline spacing (working width of the fertiliser spreader and field sprayer)					
1			12m		18m
3	9m	12m	18m	24m	27m
4	12m	16m	24m	32m	36m
5	15m	20m	30m	40m	
6	18m	24m	36m	48m	
7	21m	28m	42m		
8	24m	32m			
9		36m			
2	12m	16m	24m		
6 plus	18m	24m	36m		

Fig. 82

5.19.1.1 Examples for creating tramlines

The creation of tramlines is shown in Figure (Fig. 83) using various examples:

- A = Working width of the sowing machine
- B = Tramline spacing (= working width of fertiliser spreader / field sprayer)
- C = Tramline rhythm (input on the **AMATRON⁺**)
- D = Tramline counter (during work the field runs are number consecutively and displayed on the **AMATRON⁺**).

Perform any inputs and outputs with the aid of the **AMATRON⁺** operating manual.

Example:

Working width, sowing machine: 6m

Working width, fertiliser spreader/field spray: 18m = 18m tramline spacing

1. In the adjacent table (Fig. 83) look for the following:
in column A the sowing machine's working width (6 m) and
in column B the tramline spacing (18 m).
2. On the same line in column "C" take the reading for the tramline rhythm (tramline rhythm 3) and set this on the **AMATRON⁺**.
3. On the same line in column "D" under the inscription "START" take the reading of the tramline counter for the first field run (tramline counter 2) and enter this figure on the **AMATRON⁺**.
Input this value directly before commencing the first field trip.

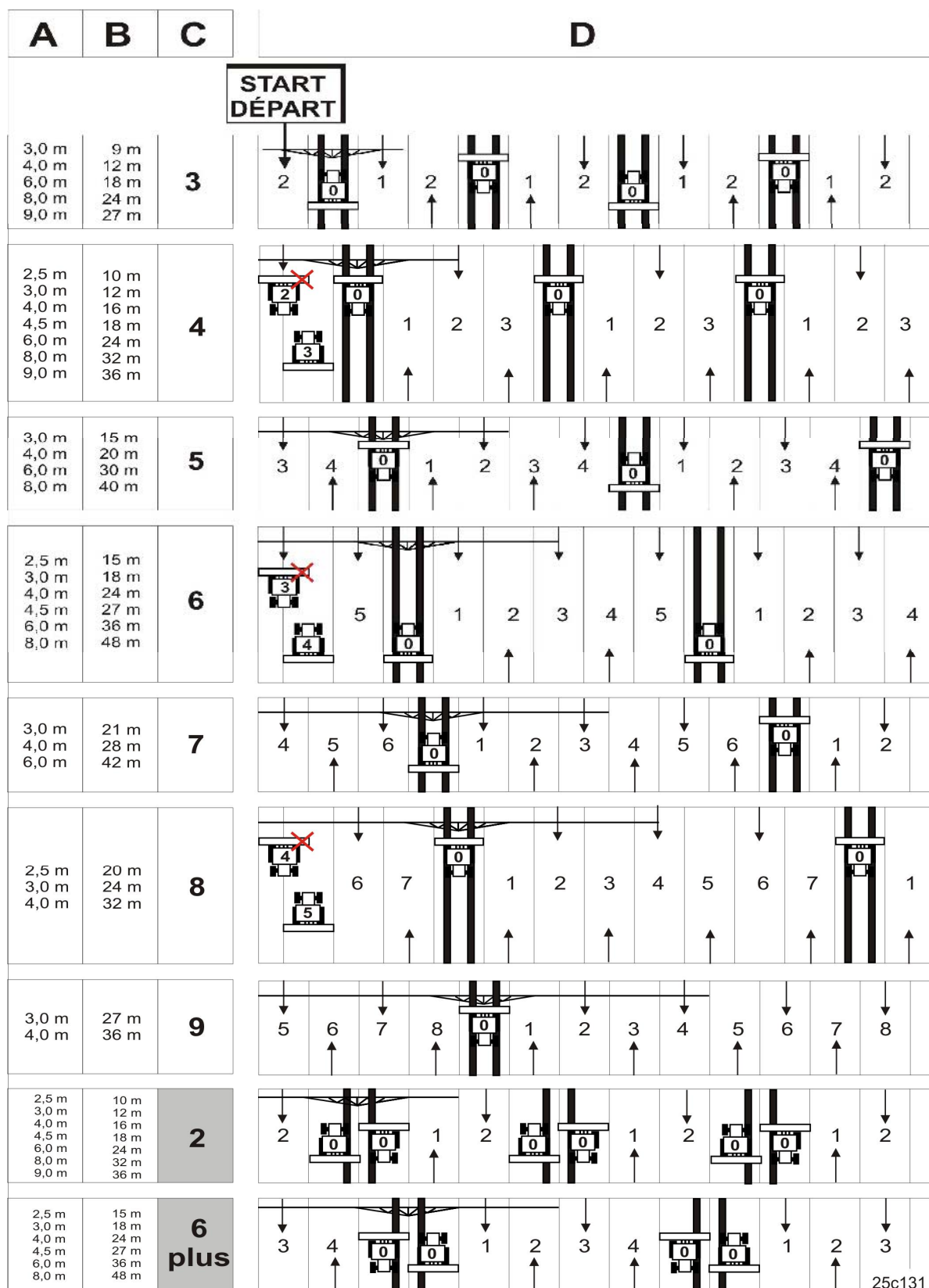


Fig. 83

5.19.1.2 Tramline rhythm 4, 6 and 8

Figure (Fig. 83) shows examples for creating tramlines with the tramline rhythm 4, 6 and 8.

It shows work with the sowing machine at half width (partial width) during the first field trip.

During work with partial width switched off, the drive of the appropriate dosing roller is interrupted. Please refer to the instruction manual for an exact description **AMATRON⁺**.

On the Cirrus 3001/4001 it is not possible to switch a part of the width.

Another option for creating tramlines with the tramline rhythm 4, 6 and 8 is to begin with the full working width and the creation of a tramline (see Fig. 84).

In this case, the care machine works at half working width during the first field trip.

After the first field trip, reset the full machine working width!

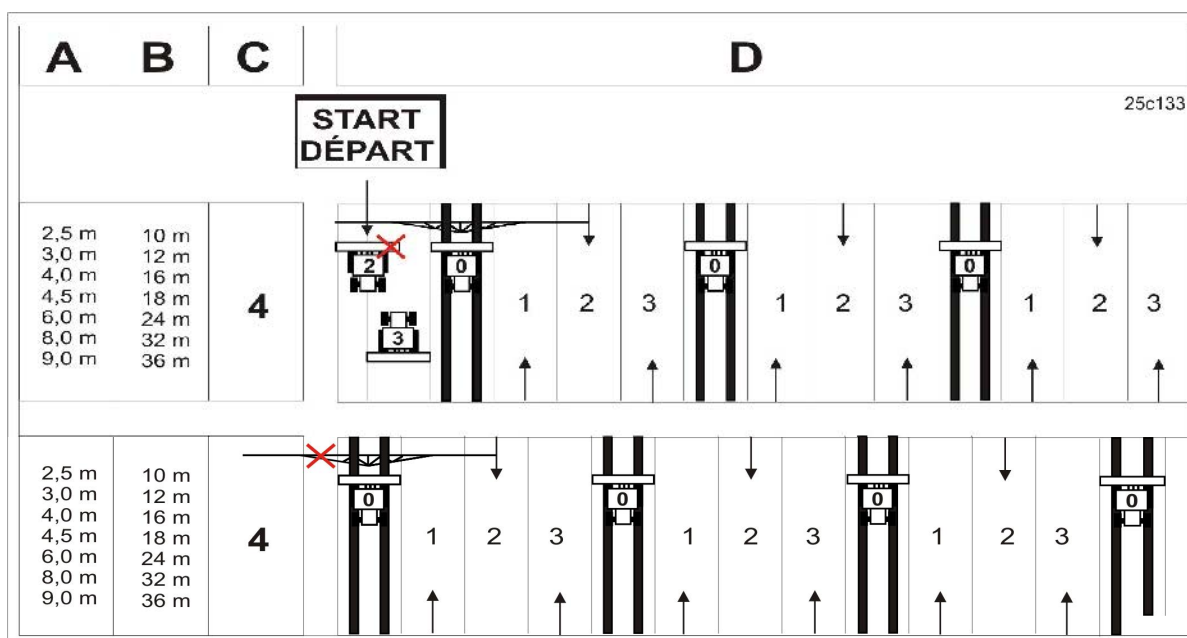


Fig. 84

5.19.1.3 Tramline rhythm 2 and 6plus

Figure (Fig. 83) shows examples of tramline creation with tramline rhythms 2 and 6plus.

When tramlines are created with the tramline rhythm 2 and 6plus (Fig. 85), tramlines are created during the trips forward and backward over the field.

On machines with

- tramline rhythm 2, the seed feed to the tramline shares may only be interrupted on the right side and
- tramline rhythm 6plus, the seed feed to the tramline shares may only be interrupted on the left side.

the seed feed to the tramline shares is interrupted.

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

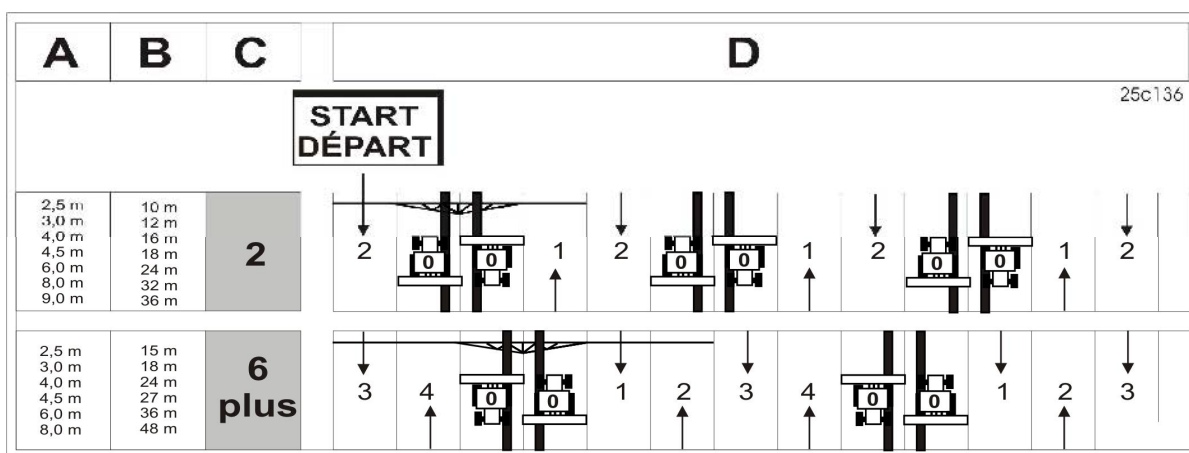


Fig. 85

5.20 Pre-emergence marker (optional)

Upon the creation of tramlines the pre-emergence marker (Fig. 86) drops automatically and the track discs mark the tramline that has just been created. Due to this the tramlines already become visible before the seed has been sown.

It is possible to set:

- Track width of the tramline
- Working intensity of the track discs.



Fig. 86

The track discs (Fig. 87) are raised, if no tramline is created.



Fig. 87

5.21 Electrohydraulic control blocks

The hydraulic functions of the machine are actuated via the electrohydraulic control blocks.

Initially the desired hydraulic function has to be selected on the **AMATRON⁺** before the hydraulic function can be executed via the appropriate control unit.

This switching clear of the hydraulic functions on the **AMATRON⁺** makes possible operator control of all the hydraulic functions with only 2 control units for the machine functions and 1 control unit for the fan.



Fig. 88

6 Commissioning

This section contains information

- on initial operation of your machine
- on checking how you may connect the machine to your tractor.



- Before operating the machine for the first time the operator must have read and understood the operating manual.
- Take heed of section "Safety information for users", from on page 26 onwards on
 - Connecting and disconnecting the machine
 - Transporting the machine
 - Using the machine
- Only couple and transport the machine to/with a tractor which is suitable for the task.
- The tractor and machine 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
- due to their function require a float position or pressure position.



DANGER

If the machine is not fully raised

- the shares can suddenly shoot to the rear and upwards at any time, causing extremely serious injuries
- never stand in the share swivelling area.

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 machine to the tractor.
You may only connect the machine to tractors suitable for the purpose.
- Carry out a brake test to check whether the tractor achieves the required braking delay with the machine connected.

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

- The 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 nameplate 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 dead-weight of the tractor.

The tractor must achieve the brake delay specified by the tractor manufacturer, even with the machine 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's unladen weight
- ballast weight and
- total weight of the attached machine or noseweight of the hitched machine.



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 approved 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 machine)

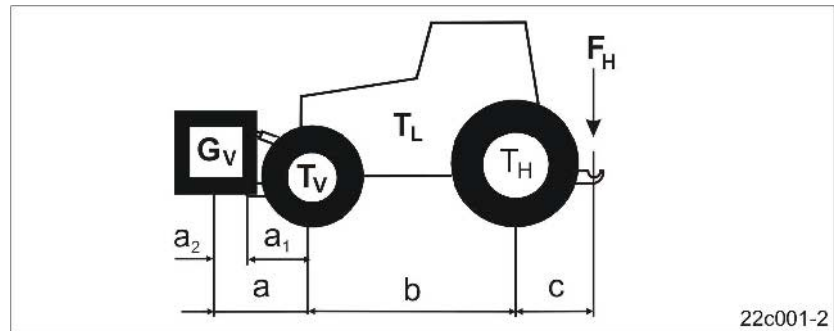


Fig. 89

T_L	[kg]	Empty tractor 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 technical data of machine
a	[m]	Distance between the centre of gravity of the front machine mounting or the front weight and the centre of the front axle (total $a_1 + a_2$)	See technical data of tractor and front machine 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 machine mount or front weight (centre of gravity distance)	See technical data of front machine 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 machine

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

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

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

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

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

6.1.1.6 Tyre load capacity

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

6.1.1.7 Table

	Actual value according to calculation	Approved value according to tractor instruction manual	Double approved load capacity (two tyres)
Minimum ballast front / rear	<div style="border: 1px solid black; padding: 5px; display: inline-block;">/ kg</div>	--	--
Total weight	<div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	≤ <div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	--
Front axle load	<div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	≤ <div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	≤ <div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>
Rear axle load	<div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	≤ <div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>	≤ <div style="border: 1px solid black; padding: 5px; display: inline-block;">kg</div>



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


WARNING

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

It is forbidden to couple the machine 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 machines



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 Machines without their own brake system

The Cirrus is not permitted in Germany or in several other countries without its own braking 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 machine connected.

If the machine 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 machines.
- The maximum movement speed is 25 km/h.

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



WARNING

Risk of contusions, cutting, catching, drawing in and knocks when making interventions in the machine through

- **unintentional lowering of the unsecured machine when it is raised via the three-point hydraulic system of the tractor**
- **unintentional lowering of raised, unsecured parts of the machine**
- **unintentional start-up and rolling of the tractor-machine combination.**
- Secure the tractor and the machine against unintentional start-up and rolling before any intervention in the machine.
- It is forbidden to make any intervention in the machine, such as installation, adjustment, troubleshooting, cleaning, maintenance and repairs
 - while the machine is being driven
 - as long as the tractor engine is running with a connected hydraulic system.
 - if the ignition key is inserted in the tractor and the tractor engine can be started unintentionally with the hydraulic system connected
 - if the tractor and machine are not secured with wheel chocks against unintentional rolling away
 - 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 with the machine on firm flat ground only.
 2. Lower the raised, unsecured machine / raised, unsecured parts of the machine.
- This is how to prevent unintentional falling:
3. Shut down the tractor engine.
 4. Remove the ignition key.
 5. Apply the tractor's parking brake.
 6. Secure the machine with wheel chocks against unintentionally rolling away.

6.3 Installation regulations for the hydraulic fan drive connection

The banking-up 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. 90/5) to a single-acting or double-acting tractor control unit with priority.
- Connect the large hydraulic coupling of the return line (Fig. 90/6) only to an unpressurised tractor connection with direct access to the hydraulic fluid tank (Fig. 90/4).
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 output of the tractor's hydraulic pump must be at least 80 l/min. at 150 bar.

Fig. 90/...

(A) On the machine 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
(marking: 1 cable tie, red)
- (6) Return line:
unpressurised line with "large" push-fit
coupling
(marking: 2 cable ties, red)

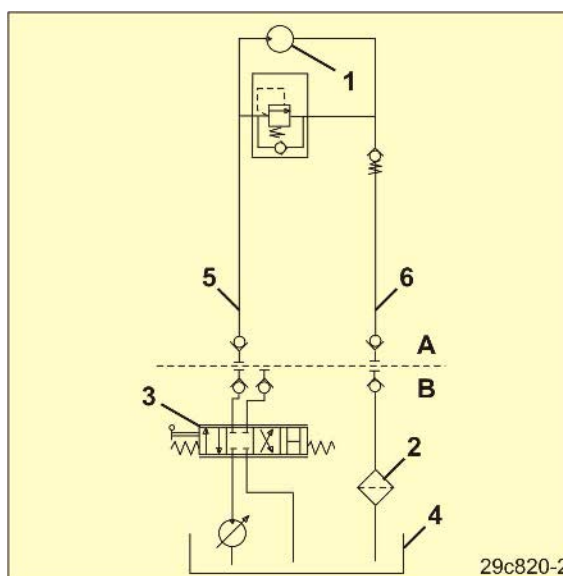


Fig. 90



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. 90/4) 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.

If a second hydraulic motor is driven besides the hydraulic fan motor, both motors have to be wired in parallel. If both motors are wired in series, the permissible oil pressure of 10 bar is always exceeded behind the first motor.

6.4 Initial installation of the **AMATRON⁺**

Install the terminal (Fig. 91) of the **AMATRON⁺** in the tractor cab with the aid of the operating manual **AMATRON⁺**.



Fig. 91

7 Coupling and uncoupling the machine



When coupling and uncoupling the machine take heed of the section "Safety information for users", on page 26.



WARNING

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

Secure the tractor and machine against unintentional start-up and rolling away before entering the danger area between the tractor and machine to couple or uncouple the machine. On this subject see section 6.2, on page 85.



WARNING

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

Only actuate the operator 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 machine.

7.1 Coupling the machine



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 machine to tractors suitable for the purpose. On this subject see the section "Checking the suitability of the tractor", on page 80.



WARNING

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

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

Any helpers may only act as guides standing next to the tractor and the machine, 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 machine unexpectedly releases from the tractor!

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

**WARNING**

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

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

- must give slightly without tension, bending or rubbing on all movements of the connected machine.
- may not scour other parts.

**DANGER**

When separated from the tractor the Cirrus must always be secured by means of 4 wheel chocks (see section "Uncoupling the machine", on page 95) because the Cirrus has no parking brake!

**DANGER**

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

**CAUTION**

Do not make any machine connections until the tractor and machine are coupled, the tractor motor is shut down, the parking brake applied and the ignition key removed!

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



The Cirrus can be coupled or uncoupled whether it is folded in or out (except Cirrus 3001).

Always retract the integrated running gear beforehand (lower the machine). When the machine is uncoupled and the running gear is extended (machine raised) the pressure in the supply line can increase so much that later coupling to the tractor becomes impossible.



WARNING

If the Cirrus is parked uncoupled from the tractor with a full compressed air tank, the compressed air of the compressed air tank acts on the brakes and the wheels are then blocked.

The compressed air in the compressed air tank and hence the braking force will drop continuously until there is a complete brake failure, if the compressed air tank is not refilled. The Cirrus must therefore be parked only with wheel chocks.

The brakes are released immediately with a full compressed air tank when the supply line (red) is connected to the tractor. Before connection of the supply line (red) the Cirrus must therefore be connected to the tractor's lower links and the tractor's parking brake must be applied. The wheel chocks must also not be removed until the Cirrus is connected to the tractor's lower links and the tractor's parking brake is applied.

Coupling the machine:

1. Check whether the Cirrus is secured with 2 x 2 wheel chocks (Fig. 92) on each side of the machine under the outer tapered ring tyres.



Fig. 92

2. Fasten the ball of the lower linkage (Fig. 93/1) with a catch shell over the lower link pin (Cat. III) of the draw bar and secure it with linch pins.

The balls of the lower linkage are dependent on the tractor type (see tractor operating manual).

The Cirrus 3001 and Cirrus 4001 can be equipped with lower link pins (Cat. II).



Fig. 93



CAUTION

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

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 machine.
5. Direct people out of the danger zone between the tractor and

machine before you approach the machine with the tractor.

6. Drive the tractor in reverse up to the machine so that the lower link hooks of the tractor automatically pick up the ball of the lower linking points of the machine.
→ 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 sustainer (Fig. 94/1) 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. Connect the supply lines to the tractor.

12. Hold the sustainer (Fig. 94/1) tight and remove the positioning bolt (Fig. 94/2).
13. Push up the sustainer by the handle (Fig. 94/1) and position it with the positioning bolt.
14. Secure the positioning bolt with a linch pin.

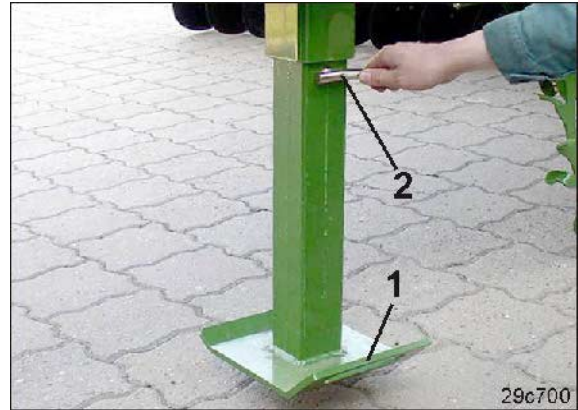


Fig. 94



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 other parts.

15. Check the function of the braking and lighting system.
16. Stow the wheel chocks in the mountings and secure them with spring tensioners (Fig. 95/1).
17. Before commencing a run, perform a braking test.



Fig. 95

7.1.1.1 Connecting the hydraulic connections



- Clean the hydraulic couplings before connecting them to the tractor. Minor oil impurities from particles can cause a failure of the hydraulic system.
- Where possible use only tractor control units with a settable oil flow rate.

Tractor control unit		Connection	Marking	Function
1	Double-acting	Feed line	1 cable tie, yellow	<ul style="list-style-type: none"> • Lowering / lifting the machine • Lowering / lifting the star wheel • Lowering / lifting the track marker • Lowering / lifting the share frame • Lowering / lifting the pre-emergence marker
		Return line	2 cable ties, yellow	

Tractor control unit		Connection	Marking	Function
2	Double-acting	Feed line	1 cable tie, green	<ul style="list-style-type: none"> • Folding the machine extension arm • Adjusting the disc array • Adjusting the track loosener (Cirrus 8001 / Cirrus 9001 only) • Adjusting the harroweeder pressure
		Return line	2 cable ties, green	

Tractor control unit		Connection	Marking	Function
3	Single-acting or double-acting	Feed line ¹⁾	1 cable tie, red	Hydraulic fan motor
		Return line ²⁾	2 cable ties, red	

¹⁾ Pressure line with priority

²⁾ Unpressurised line (see section "Installation regulations for the hydraulic fan drive connection", on page 86).



- During work the control unit 1 is actuated more frequently than any other control units. Assign the connections of control unit 1 to an easily reachable control unit in the tractor cab.
- Tractors with constant pressure hydraulic systems are designed only conditionally for the operation of hydraulic motors. Take heed of the recommendations of the tractor manufacturer.

7.1.1.2 Connecting the electrical connections

Connection/function	Installation information
Plug (7-pin) for the road traffic lighting system	
AMATRON⁺ machine plug	Connect the plugs to the terminal as described in the AMATRON⁺ operating manual.

7.1.1.3 Connecting the pneumatic service brake system

Tractor connection		Function
Connection	Marking	
Brake line	Yellow	Pneumatic braking system
Supply line	Red	



Couple to the tractor

- first of all the yellow hose coupling (brake line)
- then the red hose coupling (supply line).

Make sure that they engage correctly!

The brake is released immediately from braked position (braked position possible only if the compressed air tank is full) when the red hose coupling is coupled.

Before coupling the brake line or supply line ensure that the

- hose couplings are clean
- the sealing rings of the hose couplings are in perfect condition
- the seals are clean and undamaged.

7.1.1.4 Connecting the hydraulic service brake system

Required on the tractor face is an hydraulic braking device that drives the hydraulic braking system of the Cirrus (not allowed in Germany and several other EU countries).

Connect the hydraulic brake connection (Fig. 96) to the tractor's hydraulic brake connection.



29c734

Fig. 96



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.

7.2 Uncoupling the machine



WARNING

Risk of contusions, cutting, catching, drawing in and knocks through insufficient stability and possible tilting of the uncoupled machine!

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



When uncoupling the machine, there must always be enough space in front of the machine, so that you can align the tractor with the machine if necessary.

Uncoupling the machine:

1. Align the tractor and machine straight and park the empty machine on a horizontal parking surface with a firm base.
2. Lock the star wheel (see operating manual **AMATRON⁺**).
3. Retract the integrated running gear (lower the machine).
4. Press the button (switch off Fig. 97/1) (**AMATRON⁺**).
5. Apply the parking brake, switch off the tractor motor and remove the ignition key.
6. Release the spring pins (Fig. 98/1) and remove the 4 wheel chocks from the mountings at the front of the machine.



Fig. 97



Fig. 98

Coupling and uncoupling the machine

7. Secure the Cirrus on each side of the machine by placing 2 wheel chocks each (Fig. 99) under the outer tapered ring tyres.



DANGER

Always secure the machine with 4 wheel chocks before you uncouple the machine from the tractor! The wheel chocks replace the machine's parking brake!



Fig. 99

8. Uncouple all supply lines between the tractor and the machine.
9. Seal the hydraulic connectors and hose couplings of the supply line and brake line with protective caps.
10. Fasten all supply lines to the mountings (Fig. 100).



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!



Fig. 100

11. Hold the sustainer (Fig. 101/1) tight and remove the positioning bolt (Fig. 101/2).
12. Lower the sustainer and position it with the positioning bolt.
13. Secure the positioning bolt with the linch pin.



Fig. 101

14. Set the Cirrus down on the sustainer.

**WARNING**

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

Ensure that the sustainer does not sink into the ground. If the sustainer does sink into the ground, it will be impossible to recouple the machine!



Fig. 102

15. Open the securing device (Fig. 103) of the tractor's lower link (see tractor operating manual).
16. Uncouple the tractor's lower link.
17. Pull the tractor forwards.

**DANGER**

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



Fig. 103

**CAUTION**

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

8 Settings



WARNING

Risk of contusions, cutting, catching, drawing in and knocks through

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

Secure the tractor and the machine against unintentional starting and rolling away before you make any adjustments to the machine. On this subject see section 6.2, on page 85.

8.1 Selecting the dosing roller

Equip all seed dosers with the same dosing roller (see section 8.1.2, on page 100).

The requisite dosing roller is dependent on the seed type and application rate, see the table (Fig. 104, on page 99).

For seed not listed in the table select the dosing roller of one of the seed types listed in the table of a similar grain size.

8.1.1 Table of seed dosing rollers

Seed	Dosing roller
Spelt wheat	Coarse dosing roller
Oats	Coarse dosing roller
Rye	Coarse dosing roller or medium dosing roller
Spring barley	Coarse dosing roller
Winter barley	Coarse dosing roller
Wheat	Coarse dosing roller or medium dosing roller
Beans	Coarse dosing roller
Peas	Coarse dosing roller
Flax (dressed)	Medium dosing roller or fine dosing roller
Grass seed	Medium dosing roller
Millet	Medium dosing roller
Lupins	Medium dosing roller
Alfalfa	Medium dosing roller or fine dosing roller
Linseed (wet dressed)	Medium dosing roller or fine dosing roller
Fodder radish	Medium dosing roller or fine dosing roller
Phacelia	Medium dosing roller or fine dosing roller

Seed	Dosing roller
Rape	Fine dosing roller
Red clover	Fine dosing roller
Mustard	Medium dosing roller or fine dosing roller
Soy	Medium dosing roller
Sunflowers	Medium dosing roller
Turnips	Fine dosing roller
Vetches	Medium dosing roller

Fig. 104

8.1.2 Replacing the dosing roller

1. Remove the folding plug (Fig. 105/2) (only necessary to close the filled seed hopper with the slider (Fig. 105/1).



The dosing rollers can be replaced more easily, if the seed hopper is empty

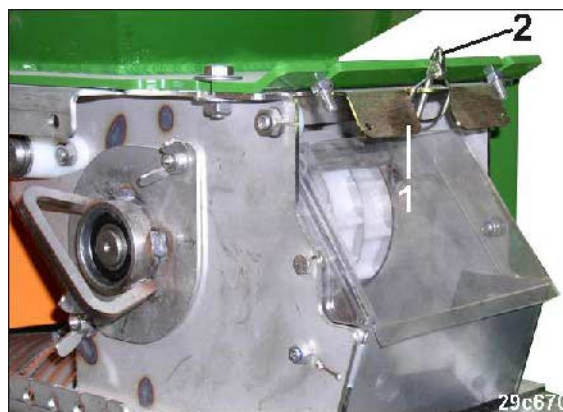


Fig. 105

2. Push the slider (Fig. 106/1) into the dosing unit up to the stop.



Fig. 106

3. Slacken but do not unscrew the two winged nuts (Fig. 107/1).
4. Turn the bearing cover and pull it off.

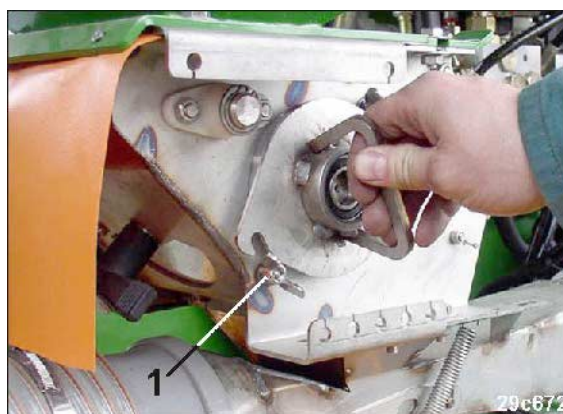


Fig. 107

5. Pull the dosing roller out of the seed doser.
6. Refer to table (Fig. 104, on page 99) for the requisite dosing roller and install in the reverse order.
7. Equip all the seed dosing units with the same dosing roller.

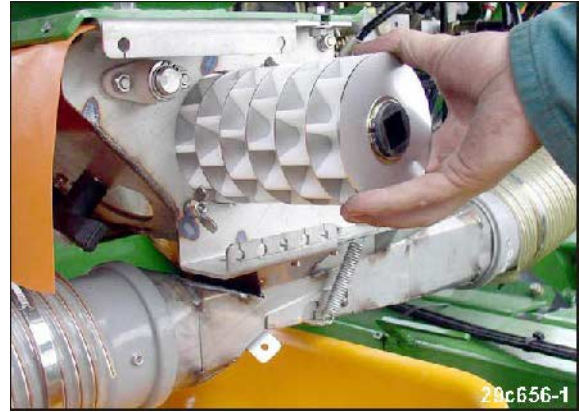


Fig. 108



Open all the sliders (Fig. 105/1) and secure them with folding plugs (Fig. 105/2).

8.2 Setting the level sensor

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

1. Apply the parking brake, switch off the tractor motor and remove the ignition key.
2. Climb the steps (Fig. 109) into the seed hopper.



Fig. 109

3. Loosen the wing nuts (Fig. 110/2).
 4. Adjust the height of the level sensor (Fig. 110/1) to the required seed volume.
- AMATRON+** emits an alarm when the level sensor is no longer covered with seed.
5. Tighten the wing nuts (Fig. 110/2).

Only machines with a working width of 6 m and greater:

6. Repeat the setting on the second level sensor.

Fasten the two level sensors at the same height in the seed hopper.



Fig. 110



Increase the residual seed volume, which triggered the alarm:

- the coarser the seeds
- the greater the sowing rate
- the greater the working width.

8.3 Setting the sowing rate on **AMATRON⁺**.

To set the sowing rate on the **AMATRON⁺**:

1. Open the menu "Job".
2. Select the job number.
3. Enter the job name (optional).
4. Enter job notes (optional).
5. Enter the seed type.
6. Enter the 1000 grain weight (required only with a grain meter).
7. Enter the desired sowing rate.
8. Start the job (press the "Start job" button).

8.4 Calibration test

It is tested by means of the calibration test whether the preset and actual sowing rates are equivalent.

Always carry out a calibration test:

- when the seed type is changed
- if the seed type is identical, but size grain, grain shape, specific weight and dressing are different
- after exchanging the dosing rollers
- if there are any differences between the determined and actual sowing rates **AMATRON⁺**.

8.4.1 Preparing for the calibration test



CAUTION

During preparation for the calibration test:

1. Shut down the tractor engine
2. Apply the parking brake
3. Remove the ignition key.

1. Fill the seed hopper with at least 200 kg of seed (in the case of fine seeds correspondingly less).
2. Remove the calibrating troughs from the transport mounting on the rear wall of the hopper.

The calibrating troughs are nested for transport and fastened to the rear wall of the hopper secured with a linch pin (Fig. 111/1).



Fig. 111

3. Push a calibrating trough into the mounting under each seed doser.



Fig. 112

Settings

4. Open the venturi cone flap (Fig. 113/1) on all seed dosing units.



CAUTION

Risk of contusions on opening and closing the venturi cone flap (Fig. 113/1)!

Hold the venturi cone flap only by the lug (Fig. 113/2), otherwise there is a risk of injury when the spring-loaded venturi cone flap snaps closed.

Never insert your hand between the injector sluice flap (Fig. 113/1) and the injector sluice!

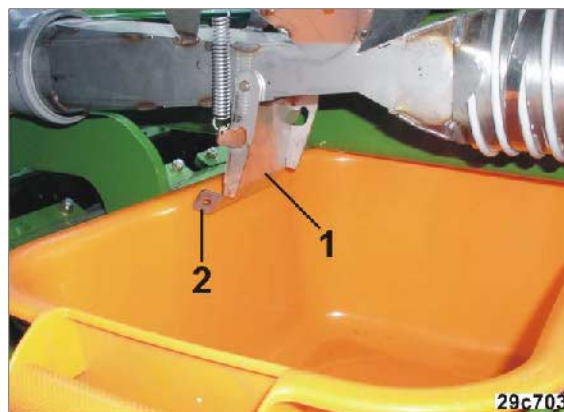


Fig. 113

8.4.2 Calibration test on the Cirrus with a Vario gearbox with seed volume adjustment

1. Remove the calibrating crank handle (Fig. 114/1) from the transport mounting next to the star wheel.



Fig. 114

2. Push the calibrating crank handle (Fig. 115/1) onto the star wheel (Fig. 115/2).
3. Turn the star wheel with the calibrating crank handle (Fig. 115/1) counterclockwise until all chambers of the dosing rollers are filled with seed and a uniform seed stream flows into the calibrating troughs.
4. Close the venturi cone flap (Fig. 113/1) with special care (danger of crushing, see danger notice [Fig. 113]).
5. Empty the calibrating troughs and push them back under the seed dosing units.



Fig. 115

6. Open the injector sluice flap (Fig. 113/1).
7. Perform the calibration test with the aid of the operating manual **AMATRON+**.



During the calibration test the **AMATRON⁺** requests that the calibrating crank handle be turned counterclockwise until a signal tone sounds.

The number of crank handle turns for the calibration test until the signal tone sounds is governed by the sowing rate and the calibrated area:

- Crank revolutions to 1/10 hectare from 0 to 14.9 kg
- Crank revolutions to 1/20 hectare from 15 to 29.9 kg
- Crank revolutions to 1/40 hectare from 30 kg upwards.

After the calibration test:

1. Push the calibrating crank handle (Fig. 114) into the transport mounting.
2. Close the venturi cone flap with special care (see danger notice [Fig. 113]).
3. Fasten the calibrating troughs (Fig. 111) to the transport mounting and secure them with a linch pin.

8.4.3 Calibration test on the Cirrus with full dosing

Perform the calibration test with the aid of the operating manual **AMATRON⁺** (see section "Calibrating machines with electric full dosing").

The number of motor revolutions for the calibration test until the signal tone sounds is governed by the sowing rate and the calibrated area:

- Motor revolutions to 1/10 hectare from 0 to 14.9 kg
- Motor revolutions to 1/20 hectare from 15 to 29.9 kg
- Motor revolutions to 1/40 hectare from 30 kg upwards.

After the calibration test:

1. Close the venturi cone flap with special care (see Fig. 113).
2. Secure the calibrating troughs (Fig. 111) to the rear wall of the hopper with a linch pin.

8.5 Fan speed



DANGER

Do not exceed the maximum fan speed of 4000 rpm.



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

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

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

8.5.1 Blower speed table

The fan speed (rpm) is dependent on

- The machine working width (Fig. 116/1)
- The seed
 - Fine seed types, e.g. rape (Fig. 116/2) or grass seed
 - Grain and pulses (Fig. 116/3).

Example:

- Cirrus 4001
- Cereal seed

Required fan speed: 3800 rpm


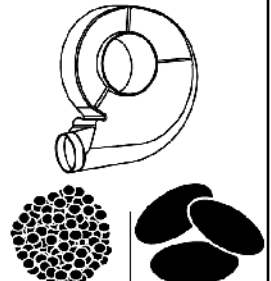
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">  <p>max. 4000 1/min</p> </div> <div style="text-align: center;">  </div> </div>		
3,0 m	2800	3500
4,0 / 4,5 m	3000	3800
5,0 / 6,0 m	3200	3900
8,0 / 9,0 / 12,0 m	3200	3900
ME532	1/min	1/min
1	2	3

Fig. 116

8.5.2 Setting the fan speed via the flow control valve of the tractor

1. Remove the protective cap (Fig. 117/1) from the machine's pressure control valve.
2. Loosen the lock nut.
3. Close the pressure control valve. To do so, turn the screwdriver clockwise.
4. Open the pressure control valve by half a turn.
To do so, turn the screwdriver counterclockwise by half a turn.
5. Set the requisite fan speed on the flow control valve of the tractor.

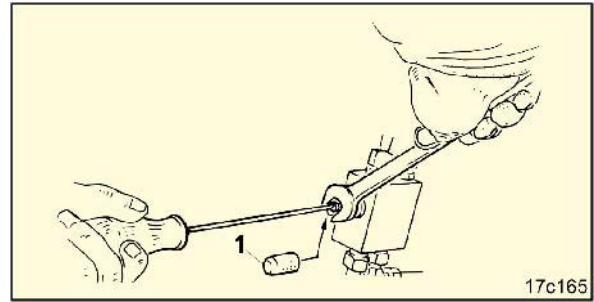


Fig. 117

The fan speed is displayed on the Machine Data menu (see section 8.5.4, on page 108) and on the menu Work

6. Tighten the lock nut.
7. Put on the protective cap.

8.5.3 Adjust the blower speed on the machine pressure limiting valve

1. Remove the protective cap (Fig. 118/1) of the machine's pressure relief valve.
2. Loosen the lock nut.
3. Set the fan speed with a screwdriver on the pressure relief valve.

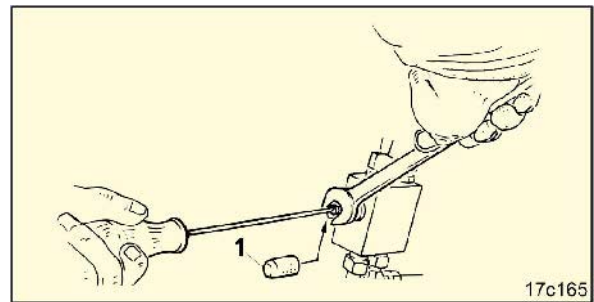


Fig. 118

Fan speed

Turning clockwise:
increases the fan speed

Turning to the left:
reduces the fan speed.

The fan speed is displayed on the Machine Data menu (see section 8.5.4, on page 108) and on the Work menu

4. Tighten the lock nut.
5. Put on the protective cap.

8.5.4 Setting the fan speed monitoring on the **AMATRON⁺**

Set the fan speed monitoring on the Machine Data menu (see **AMATRON⁺** operating manual)

- input the fan speed (rpm) that is to be monitored or
- adopt the current fan speed (rpm) during operation as the speed to be monitored.

8.5.4.1 Triggering of the alarm, if the fan speed differs from the setpoint

Setting of the alarm, if the fan speed differs from the setpoint in the Basic Data menu (see **AMATRON⁺** operating manual).

The gradual percentual deviation [± 10 (%)] from the setpoint has to be set.

8.6 Setting the seed depositing depth

1. Switch off the low lift function (see **AMATRON⁺** operating manual).



WARNING

Direct people out of the danger area.

2. Lift the machine until the bracket (Fig. 119/1) is freed from the depth regulation bolt (Fig. 119/2).
3. Apply the parking brake, shut down the tractor engine and remove the ignition key.



Fig. 119



WARNING

Perform settings only when the engine is switched off, the parking brake is applied and the ignition key removed!



WARNING

Hold the depth regulations bolt so that your hand is never between the bracket (Fig. 120/3) and the depth regulation bolt (Fig. 120/1)!

4. Position the depth regulation bolt (Fig. 120/1)
 - o in all machine segments
 - o in the same square hole.

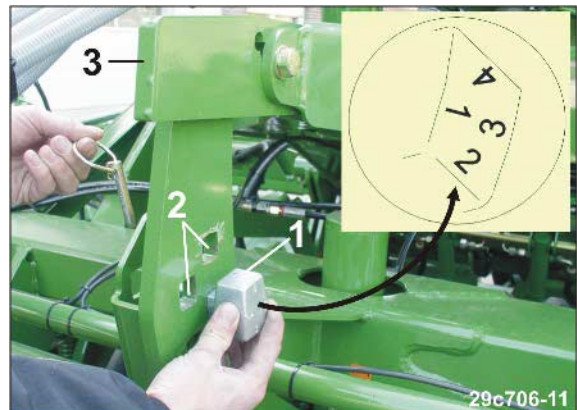


Fig. 120



The seed depositing depth increases

- the deeper is the square hole (Fig. 120/2) selected to position the depth regulation bolt
- the greater is the number of the depth regulation bolt on the contact surface of the bracket (Fig. 120/3).



- Repositioning of the depth regulation bolt from one number to another within a boring results in a seed depositing depth change of approx. 7 mm.
- Ensure that the depth regulation bolt comes into contact with the same edges and same marking on all brackets.
- The depositing depth of the seed is dependent on the type of soil and working speed.

Settings

5. After each repositioning secure the depth regulation bolt with linch pins (Fig. 121/1).



Fig. 121



WARNING

Direct people out of the danger area.

6. Lower the machine.
The brackets (Fig. 122/1) are supported on the depth regulation bolts (Fig. 122/2).
7. Switch on the low lift function (if required).



Fig. 122



Check the depositing depth after each repositioning of the depth regulation bolt!
To do so, traverse a suitable distance at the later working speed and check the depositing depth.

8.7 Adjusting the marker



DANGER

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

Perform track marker settings only when the parking brake is applied, the engine switched off and the ignition key removed.

8.7.1 Table values for setting the track marker length

The table values specify the distance "A" (Fig. 123)

- from the centre of the machine
- up to the contact surface of the track marker disc.

	Distance "A"
Cirrus 3001	3.0m
Cirrus 4001	4.0m
Cirrus 6001	6.0m
Cirrus 8001	8.0m
Cirrus 9001	9.0m

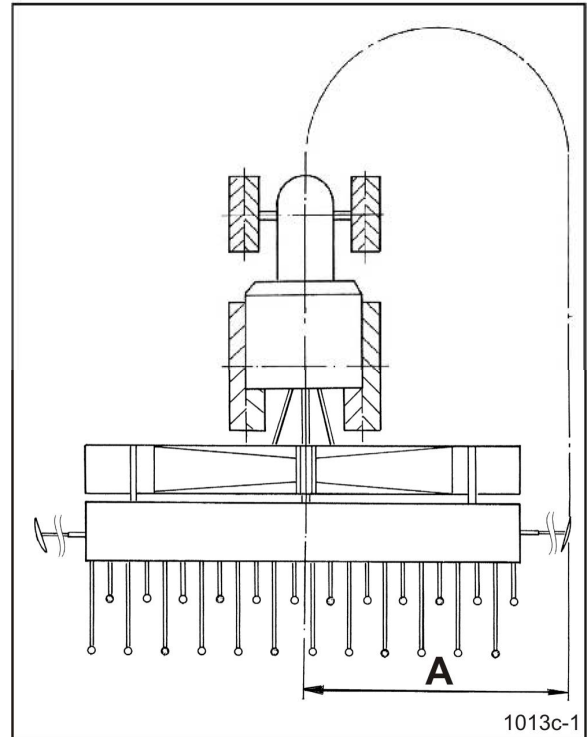


Fig. 123

8.7.2 Setting the track marker length (on the field)

1. Direct people out of the danger area.
2. Fold out both track markers simultaneously on the field (see **AMATRON⁺** operating manual) and drive several metres.
3. Apply the parking brake, switch off the tractor engine and remove the ignition key.
4. Slacken the wedge bolt (Fig. 124/1).
5. Set the track marker length to a distance "A" (see section 8.7.1, above).
6. Tighten the wedge bolt (Fig. 124/1).
7. Repeat the operation on the second screw.



Fig. 124

8.7.3 Adjusting the working intensity of the markers

1. Direct people out of the danger area.
2. Fold out both track markers simultaneously on the field (see operating manual **AMATRON⁺**) and drive several metres.
3. Loosen both screws (Fig. 125/1).
4. Turn the track marker disc to adjust the working intensity of the track markers so that they run roughly parallel to the direction of travel on light soil and are more attuned to grip on heavier soil.
5. Tighten the screws (Fig. 125/1).
6. Repeat the operation on the second screw.

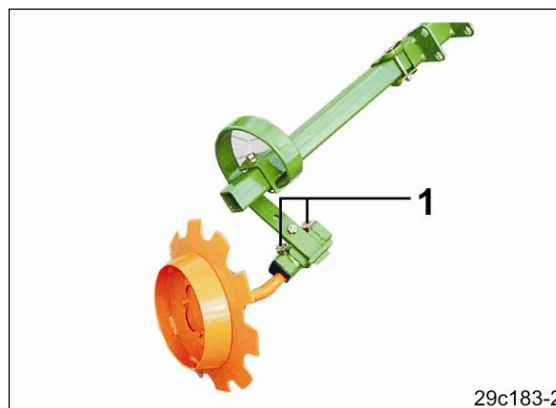



Fig. 125

8.8 Disc array

8.8.1 Setting the work intensity (on the field)

The working depth of the discs determines the working intensity of the disc array. Set the working depth of the discs on the field as follows:

1. Select disc array actuation  on **AMATRON⁺** (see **AMATRON⁺** operating manual).
2. Actuate control unit 2 to set the disc working depth.
3. Check the working intensity of the discs and correct the disc working depth as necessary.

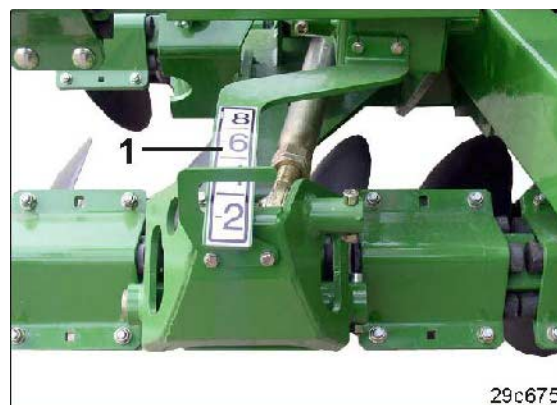


Fig. 126

The numbers on the scale (Fig. 126/1) are for the purpose of orientation for setting different disc working depths. The higher the number, the greater the disc working depth.

The scale of the (Fig. 127/1) Cirrus 3001 is located on the loading plate.

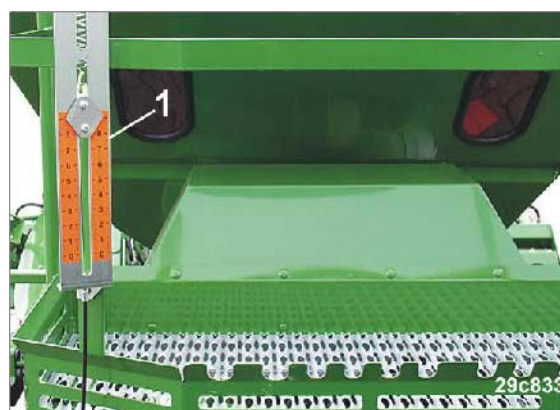


Fig. 127

8.8.2 Setting the length of the outer disc struts

In each disc row the length of the outer disc struts is adjustable.

Shorten the disc struts

- of the front row of discs, if the outer discs are conveying too much soil outwards.
- of the rear row of discs, if the outer discs are conveying too much soil inwards.

Then retighten the nuts that were loosened to adjust the disc struts.



Fig. 128

8.8.3 Adjusting the outside hollow discs

1. Adjust the outside hollow discs vertically so that the cultivated soil cannot escape laterally out of the working area of the machine and so that no earth banks are created. Fasten each outside hollow disc with a screw (Fig. 129/1).
2. Check whether any lateral earth banks are present. If yes, correct the outside hollow disc setting.



Fig. 129



CAUTION

Danger of getting crushed when adjusting the outside hollow discs.



The outside hollow discs of the Cirrus 3001 are folded inwards for transport (see section 9, on page 120).

8.9 Setting the track loosener



To avoid damage when setting down the machine

- fasten the rigid track looseners (Cirrus 3001, Cirrus 4001 and Cirrus 6001) at the very top after work and do not put them in working position until you are on the field.
- swing the swivelling track looseners (Cirrus 8001 and Cirrus 9001) up after work.



DANGER

Switch off the tractor's pto, apply the parking brake, shut down the tractor engine and remove the ignition key.

To set the track loosener horizontally:

1. Loosen the screws (Fig. 130/1) and slide the track loosener horizontally.
2. Tighten the screws.

To set the track loosener vertically:

1. Hold the track loosener by the handle (Fig. 130/2).
2. Remove the bolt (Fig. 130/3).
3. Put the track loosener in working position, position it with the bolt and secure it with a linch pin.



29c865

Fig. 130

8.10 Exact harrowweeder

8.10.1 Harrowweeder spring tine position

Set the spring tines of the exact harrowweeder so that they:

- Are horizontal on the ground and
- Have 5 - 8 cm free floating space beneath.

The distance of the harrowweeder frame from the ground is between 230 and 280 mm (see Fig. 131).

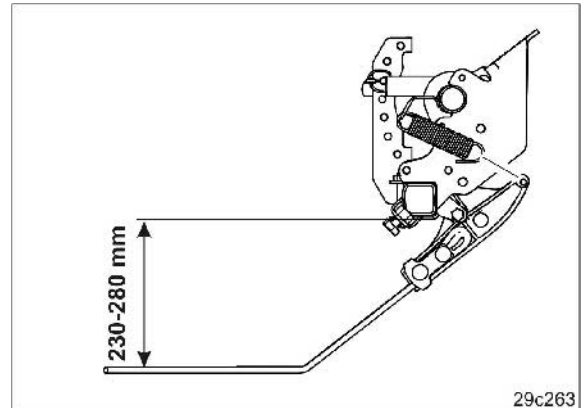


Fig. 131

Setting is performed by lengthening or shortening the holding tubes (Fig. 132/1) on the PacTeC share frame:

1. Move the machine on the field to the working position.
2. Apply the parking brake, switch off the tractor motor and remove the ignition key.
3. Loosen the lock nuts (Fig. 132/2).
4. Set all holding tubes (Fig. 132/1) to the same length dimension. To do so, turn all screws (Fig. 132/3) uniformly.
5. Tighten the lock nuts (Fig. 132/2) after completion of setting.
6. Check the working result of the exact harrowweeder.



Fig. 132

8.10.2 Harroweeder pressure

The harroweeder pressure is set with the bolt. The higher a bolt is inserted into the adjusting segment, the greater is the harroweeder pressure.

Harroweeder with hydraulic pressure adjustment have two bolts for different soils.

Perform the same settings on all adjusting segments.

8.10.2.1 Setting the harroweeder pressure

1. Apply the parking brake, switch off the tractor engine and remove the ignition key.
2. Tension the lever (Fig. 133/1) with the calibrating handle.
3. Insert the bolt (Fig. 133/2) into a boring under the lever.
4. Relieve the lever.
5. Secure the bolt with a safety splint.

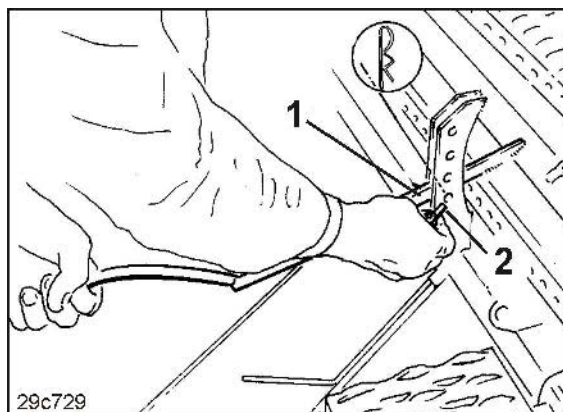


Fig. 133

8.10.2.2 Setting the harroweeder pressure (hydraulic adjustment)


1. Select the harroweeder button  on the **AMATRON⁺** and by actuating control unit 2
 - o admit pressure to the hydraulic cylinder or
 - o put it in float position.
2. Apply the parking brake, switch off the tractor engine and remove the ignition key.
3. Insert one bolt each (Fig. 133/2) under and over the lever into the adjusting segment and secure it with safety splints.



Fig. 134


8.10.3 Setting the tramlining rhythm/meter on the **AMATRON⁺**

1. Select the tramlining rhythm
(see table, Fig. 82, on page 73).
2. Set the tramlining rhythm on the Machine Data menu (see **AMATRON⁺** operating manual).
3. Refer to Fig. (Fig. 83 on page 75) for the tramline counter of the first field run.
4. Enter the tramline counter of the first field run in the Work menu (see **AMATRON⁺** operating manual).
5. Set seed volume reduction (%) when creating tramlines in the Machine Data menu (see **AMATRON⁺** operating manual).
6. Switch on/off the interval tramline switch in the Work menu (see **AMATRON⁺** operating manual).



The tramline counter is coupled with the operating position sensor on the star wheel.

Each time the machine is lifted the tramline counter indexes by one digit.

If the tramline counter is prevented from indexing when the machine is raised, first of all press the STOP key  (see **AMATRON⁺** operating manual) and then raise the machine.

If the machine is lowered in folded-in condition, lock the star wheel beforehand (see **AMATRON⁺** operating manual) to prevent unintentional lowering of the star wheel and hence undesired continued counting of the tramline counter. The star wheel is locked when **AMATRON⁺** is switched off.

8.10.4 Half-sided switching off

Cirrus 6001, Cirrus 8001 and Cirrus 9001 can be switched off on one side. The machines are equipped with two mechanically or electrically (full dosing) driven seed dosing units. For half-sided switching-off of the machines with full dosing please refer to the **AMATRON⁺** operating manual.

To switch off the machine on one half side with mechanically driven seed dosers:

1. Fold out the Cirrus.
2. Apply the parking brake, switch off the tractor engine and remove the ignition key.
3. Remove one of the two linch pins (Fig. 135/1).

Switch off the right side of the machine:
remove the right linch pin.

Switch off the left side of the machine:
remove the left linch pin.

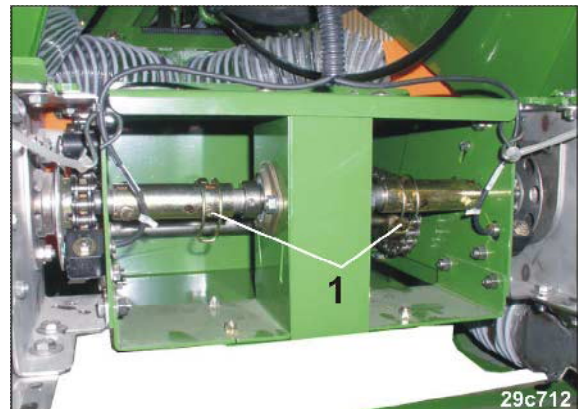


Fig. 135

8.11 Pre-emergence marker (optional)

8.11.1 Track disc carrier in operating / transport position

Put the track disc carrier in operating position:

1. Hold the track disc carrier tight.
2. Remove the bolt (Fig. 136/1) that is secured with a slit pin (Fig. 136/2).
3. Swing the track disc carrier down by hand.
4. Put the second track disc carrier in operating position in the same way.

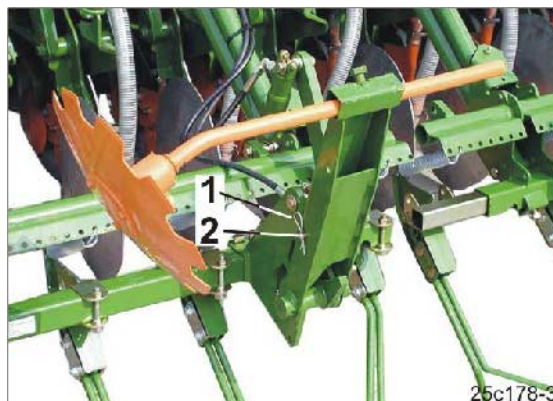


Fig. 136



Fig. 137

8.11.2 Setting the track width and working intensity of the pre-emergence marker

1. Direct people out of the danger area.
2. Set the tramline counter to "zero" (see **AMATRON⁺** operating manual).
3. Actuate control unit 1 and lower the track discs.
4. Lower the machine and cover a distance of approx. 10 m on the field.



DANGER

Before actuating the control unit direct any people out of the danger area.

5. Apply the parking brake, shut down the tractor engine and remove the ignition key.
6. Slacken the screws (Fig. 138/1).
7. Set the track discs so that they mark the tramline created by the tramline shares.
8. Adapt the work intensity to the soil by turning the discs (position the discs on light soils roughly parallel to the direction of travel and on heavy soils more on grip).
9. Tighten the screws (Fig. 138/1).

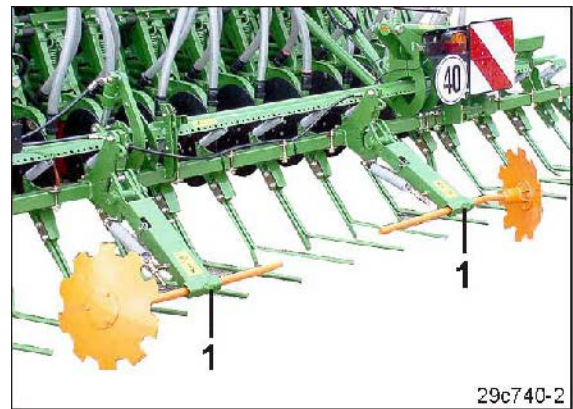


Fig. 138



When working with tramline rhythm 2 and tramline rhythm 6plus (see also section 5.19.1.3, on page 77) fit only one of the two marker discs. The track width of the cultivation tractor is then scored on the field on a back and forth run.

9 Transportation

When driving on public roads and ways the tractor and machine 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", on page 28.
- 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
 - The function of the brake system.



WARNING

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

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

**WARNING**

Risk of contusions, cuts, dragging, catching or knocks from tipping and insufficient stability.

- Drive in such a way that you always have full control over the tractor with the attached machine.
In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected machine.
- Before transportation, fasten the side locking of the tractor lower link, so that the connected or coupled machine 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 machine and the approved axle and support loads of the tractor. If necessary, drive only with a partially-filled hopper.

**WARNING**

Risk of falling from the machine if riding against regulations!

It is forbidden to ride on the machine and/or climb the running machine.

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

**WARNING**

Risk of stabbing other road users through machine parts extending out into the road area!

Cover any protruding parts on machines.

You must make protruding clearly visible if you cannot cover them easily.

**WARNING**

Risk of stabbing other road users during transportation from uncovered, sharp spring tines of the exact harroweeder on the central part of the machine pointing backwards!

Transportation without a correctly fitted transport guard rail is forbidden.



WARNING

Danger of cuts during transport journeys with the outer harrowweed elements extended!

Extended outer harrowweed elements extend laterally into the traffic area during transport journeys and endanger other road users. In addition the permissible transport width of 3 m is exceeded.

Push the outer harrowweed elements into the main tube of the harrowweed before you perform any transport journeys.

To put the Cirrus in transport position on the field after working:

1. Fold in both track markers (see **AMATRON⁺** operating manual).



DANGER

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

2. Empty the seed hopper (see section 10.7, on page 141).



DANGER

Empty the seed hopper on the field.

Transport journeys on roads and ways are prohibited when the seed hopper is filled. The brake system is designed for an empty machine only.



Fig. 139

3. Close the hopper cover and secure it with rubber loops (Fig. 140/1) against unintentional opening during travel.

Use the cover hook (Fig. 140/2).



Fig. 140

When not in use the cover hook (Fig. 141/1) remains inserted in the transport mounting (Fig. 141/2) on the lighting beam.

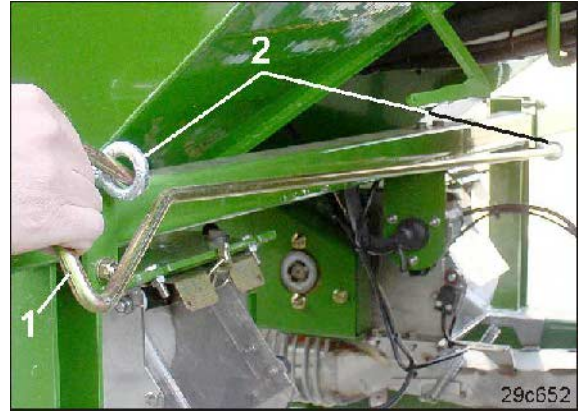


Fig. 141

4. Lift up and lock the ladder (Fig. 142).



CAUTION

Danger of getting crushed. Hold the ladder by the rungs only.



Fig. 142



Push the ladder (Fig. 142) up and lock it after each use or before transport and prior to working. This avoids damaging the ladder.

The draw bar can damage the lowered ladder when the machine is turned!

5. Position the two track disc carriers (Fig. 143/1) on the transport mountings (Fig. 143/2) of the pre-emergence marker and secure them with bolts (Fig. 143/3) and safety splints (Fig. 143/4).
6. Pull the track discs (Fig. 143/5) out of the track disc carriers (Fig. 143/1) and carry them with you in a suitable stowing space. Loosen the fastening screws (Fig. 143/6) beforehand.

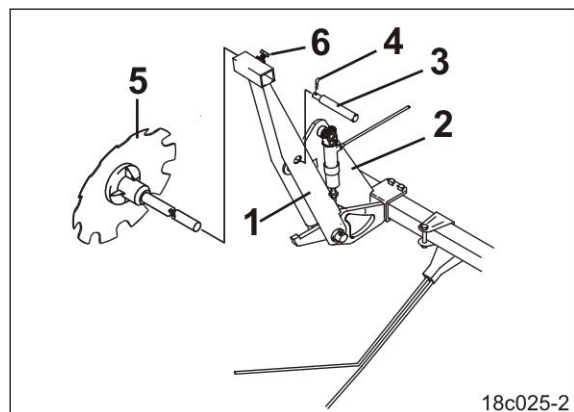


Fig. 143

Cirrus 3001 only

7. Close the track marker hydraulic stop-cocks.

There is a hydraulic stop-cock next to each track marker (Fig. 144/3).

The hydraulic stop-cock can assume two positions:

- Hydraulic stop-cock open (see Fig. 144/1)
- Hydraulic stop-cock closed (see Fig. 144/2).

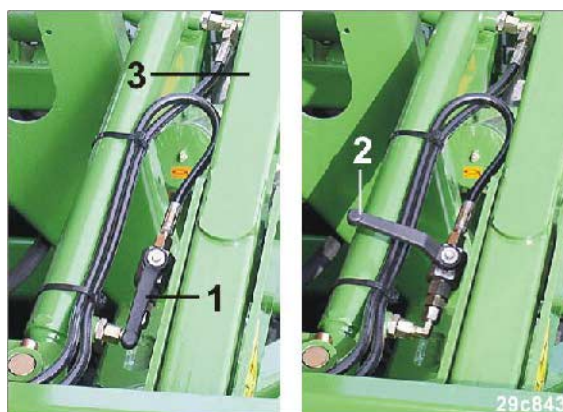


Fig. 144



Closing of the hydraulic stop-cocks prevents the tracker marker from swivelling during transport.

8. Put the right-hand outside hollow disc (Fig. 145/1) in transport position by shifting the lever (Fig. 145/2).



Fig. 145

The outside hollow disc is positioned in transport position and operating position with a bolt (Fig. 146/1) and secured with a linch pin.



Fig. 146

9. Swivel the left-hand outside hollow disc (Fig. 147/1) to transport position.

The outside hollow disc is fastened in transport position and in operating position to the lug (Fig. 147/2), positioned with a bolt (Fig. 147/3) and secured with a linch pin.



Fig. 147



DANGER

Put the outside hollow discs in transport position prior to transport.

10. Loosen the fastening screw and insert the outer harroweeder element (Fig. 148/1) to transport width (3.0 m).
11. Tighten the fastening screw and insert the second outer harroweeder element to transport width (3.0 m).



Fig. 148

All types

12. Push the two-part transport securing bar (Fig. 149/1) over the tine tips of the harrowweeder.
13. Fasten the transport securing bar with spring holders (Fig. 149/2) to the harrowweeder.

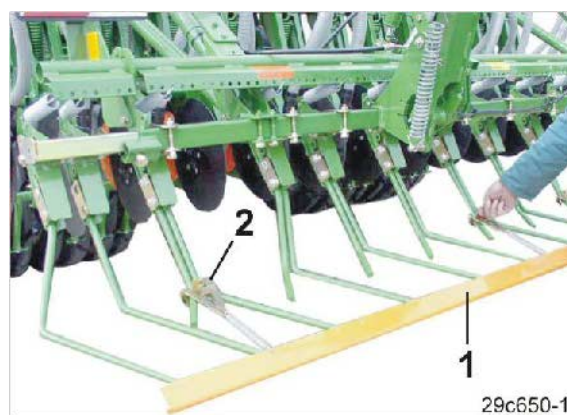


Fig. 149

14. Fold in the machine's extension arm (see section 10.2, on page 130).



Fig. 150

15. Switch off the **AMATRON⁺**. (see **AMATRON⁺** operating manual).



Fig. 151



Lock the tractor's control units during transport!

16. Check the lighting system for operability (see section "Transportation equipment", on page 47).
17. The warning boards and yellow reflectors must be clean and undamaged.



Fig. 152



The maximum speed of the machine is 40 km/h.

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

Switch on the all round lighting (if present), which is subject to authorisation, prior to starting a journey and check for operability.

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

10 Use of the machine



- When using the machine, observe the information in the sections
- "Warning pictograms and other signs on the machine", as of on page 17 and
 - "Safety information for users", on page 26.

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 connected machine and the approved axle and support loads of the tractor. If necessary, drive only with a partially-filled hopper.



WARNING

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

Drive in such a way that you always have full control over the tractor with the attached machine.

In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the driver and the connected machine.



WARNING

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

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

10.1 Removing the transport safety bar

1. Release the spring holder (Fig. 153/2) and remove the transport safety bar (Fig. 153/1).
2. Fasten the transport safety bar to the transport mounting.

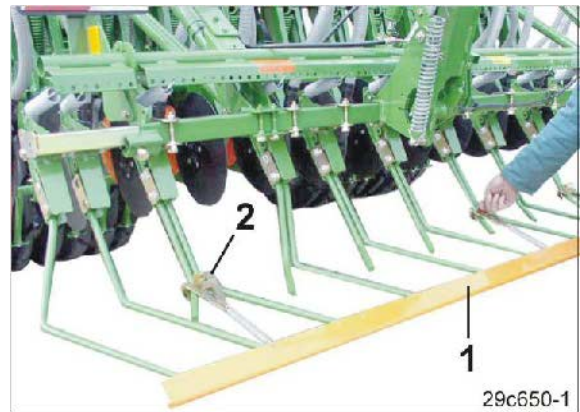


Fig. 153

10.2 Folding the machine extension arm out and in



DANGER

Instruct people to leave the swivel area of machine's extension arm before you fold the machine's extension arm out or in.



29c713-4

Fig. 154



Align the tractor and machine straight on a flat surface before you fold the machine's extension arm out or in!

Always raise the machine fully before you fold the machine's extension arm out or in. Only when the machine is fully raised do the soil cultivating tools have sufficient ground clearance and are thus protected against damage.

10.2.1 Folding out the machine's extension arm

1. Release the parking brake and take your foot off the brake pedal. Never leave the tractor cab with the parking brake released.
2. Actuate control unit 1 until the machine is fully raised (see Fig. 155).


Otherwise the tools will get damaged during the folding process.

Other than illustrated in Fig. (Fig. 155), the middle tapered ring tyres are not raised on the Cirrus 8001 and Cirrus 9001.



29c719

Fig. 155

3. Apply the parking brake.
4. Call the Work menu on the **AMATRON⁺**.
5. Press the shift key (key on the rear side of the **AMATRON⁺**)
6. Press button  until the corresponding symbol appears on the display.

7. Actuate control unit 2 until the machine extension arm is folded out.
8. Actuate control unit 2 for a further 3 secs. so that the hydraulic accumulator (Fig. 224) is filled with hydraulic fluid.



Fig. 156



The locking hooks (Fig. 157/1) open automatically before folding out the machine's extension arm.

Position control unit 2 briefly on "Fold in" and then again on "Fold out", should the locking hook (Fig. 157/1) not open.



Fig. 157

9. Actuate control unit 1 and lower the machine to operating position.




Fig. 158

10.2.2 Folding in the machine's extension arm

1. Release the parking brake and take your foot off the brake pedal.
Never leave the tractor cab with the parking brake released.
2. Actuate control unit 1 until the machine is fully raised (see Fig. 159).
Otherwise the tools will get damaged during the folding process.
3. Apply the parking brake.



Fig. 159

4. Call the Work menu on the **AMATRON⁺**.
5. Press the shift key
(key on the rear side of the **AMATRON⁺**)
6. Press button  until the corresponding symbol appears on the display.
7. Lock the star wheel (see operating manual **AMATRON⁺**).
8. Switch off the low-lift function (see operating manual **AMATRON⁺**).
9. Actuate control unit 2 until the machine extension arm is fully folded out.

The locking hooks (Fig. 160/1) form the mechanical transport locking device and engage onto the locking spigot (Fig. 160/2).



DANGER

Check whether the bars (Fig. 160/1) are engaged properly after folding in the extension arms.

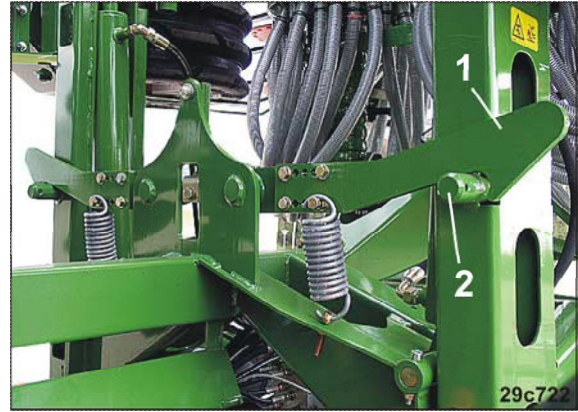


Fig. 160

10. Actuate control unit 1 and lower the machine for transport.



Lower the machine just enough so that the machine has sufficient ground clearance in all driving situations.



Fig. 161



DANGER

- Switch off the **AMATRON⁺**.
- Transport journeys on roads and ways are prohibited when the seed hopper is filled. The brake system is designed only for an empty machine.

10.3 Filling the seed hopper



DANGER

Fill the seed hopper on the field only!

Transport journeys on roads and ways are prohibited when the seed hopper is filled. The brake system is designed only for an empty machine.

Before filling the seed hopper apply the parking brake, switch off the tractor engine and remove the ignition key!

Observe the approved filling levels and total weights!

To fill the seed hopper:

1. Couple the Cirrus to the tractor (see section 7, on page 88).
2. Apply the parking brake, switch off the tractor engine and remove the ignition key!
3. Determine and fit the dosing roller(s) with the aid of the table (Fig. 104, on page 99) (see section. "Replacing the dosing roller", on page 100).
4. Release the rubber loops (Fig. 162/1) together with the cover hook (Fig. 162/1).



Fig. 162

5. Lift the ladder out of its locking device (Fig. 163/1) and lower it to the stop.



CAUTION

Danger of getting crushed. Hold the ladder by the rungs only.



Fig. 163

6. Climb on the loading plate via the ladder.
7. Release the rubber loops on the end face.
8. Open the swivel cover.
9. If necessary, remove foreign bodies in the seed hopper.
10. Set the level sensor (see section 8.2, on page 101).



Fig. 164

11. Load the seed hopper
 - o with sacked merchandise from a supply vehicle (see section "10.3.1", on page 136)
 - o with a filling auger from a supply vehicle (see section "10.3.2", on page 136)
 - o from bulk bags (see section "10.3.3", on page 137).
12. Switch the interior lighting of the seed hopper on and off for night-time working.

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



Fig. 165

13. Close the swivel cover and secure it with rubber loops.
14. Pull the ladder (Fig. 163) up and lock it.



Push the ladder (Fig. 163) up after each use or before any transport or work and lock it: this will avoid damage to the ladder or step. The draw bar can damage the lowered ladder when the machine is turned!

10.3.1 Load the seed hopper with sacked merchandise from a supply vehicle

1. Approach the open loading edge of the trailer with the Cirrus.
2. Put the tractor on an extreme steering lock (approx. 90° to the Cirrus).
3. Reverse onto the supply vehicle until the loading plate is lying up against the supply vehicle with no gap, but is not touching the vehicle (marshalling person required).
4. Raise / lower the tractor's lower link until the loading plate and the loading area of the trailer are level.
5. Apply the parking brake, shut off the tractor engine and remove the ignition key.
6. Fill the seed hopper from the loading plate only and constantly ensure firm support when transporting the sacked merchandise.



Fig. 166



DANGER

Manoeuvring the Cirrus requires a marshalling person.

Never stand between the supply vehicle and the machine.

Always hold tight when crossing the loading plate and supply vehicle (danger of stumbling).

10.3.2 Loading the seed hopper with a filling auger

1. Apply the parking brake, shut off the tractor engine and remove the ignition key.
2. Approach the machine carefully with the supply vehicle.
3. Load the seed hopper via the filling auger in consideration of the manufacturer's instructions.



Fig. 167



CAUTION

Never move between the supply vehicle and the machine.

10.3.3 Loading the seed hopper from bulk bags

1. Set the Cirrus down on a flat surface.
2. Apply the parking brake, shut off the tractor engine and remove the ignition key.
3. Approach the machine carefully with the bulk bag.
4. Climb onto the loading plate.
5. Unload the bulk bag into the seed hopper.



Fig. 168



DANGER

Never move between the supply vehicle and the machine.
Never stand under suspended loads.

10.3.4 Enter the filling volume on the **AMATRON⁺**

If the exact filling volume is known, enter the filling volume on the **AMATRON⁺** (see operating manual **AMATRON⁺**).

It is then possible to input the amount (kg) remaining in the seed hopper in which the level alarm is to be triggered.

The **AMATRON⁺** triggers an alarm, if

- the theoretically calculated remaining amount is reached and the level sensor is logged off on the **AMATRON⁺** or
- the level sensor is no longer covered with seed.

10.4 Work commencement

Upon commencement of work:

1. Direct people out of the danger area.
2. Move the machine to working position at the start of the field.
3. Actuate control unit 1.

This executes the following hydraulic functions:

- o lowering of the machine
 - o lowering of the star wheel
 - o lowering of the track marker
 - o lowering of the share frame.
4. Check the tramlining rhythm.
 5. Check the tramline counter and correct it as necessary.
 6. Check the fan speed and correct it as necessary.
 7. Start.
 8. After 100 m check and correct as necessary the:
 - o working intensity of the disc array
 - o depositing depth of the seed
 - o working intensity of the harrowweeder.



Only actuate the tractor control units from the tractor cabin!



Before starting work, check that the correct tramline counter is displayed for the first field trip.



Dressed seed is extremely poisonous to birds!

**The seed must be worked in fully and covered with earth.
When lifting out the shares, ensure that the seed does not trickle out.**

Remove spilt seed immediately!

10.5 During the work

Percentual change in the sowing rate during the work

During the work the sowing rate (100 %) can be increased in the Work menu by pressing a button (e.g. +10 %) or reduced (e.g. -10 %) or reset to 100 %.

The rate increment (e.g. 10 %), which has to be set prior to work commencement in the Machine Data menu, changes the sowing rate percentually. (see operating manual **AMATRON⁺**).

Lock the star wheel and switch off the tramline counter (STOP key)

When there is a work interruption, if the star wheel is prevented from lifting or lowering when control unit 1 is actuated, lock the star wheel actuation in the Work menu (see operating manual **AMATRON⁺**).

If the tramline counter is prevented from indexing when there is a work interruption, press the STOP button in the Work menu (see operating manual **AMATRON⁺**).

Lock the track marker actuation

The track marker actuation can be locked in the Work menu (see operating manual **AMATRON⁺**).

Fold the track marker in before any obstructions

Track markers can be folded in before an obstruction to avoid damage to the track marker when an obstruction is encountered (see operating manual **AMATRON⁺**).

While the obstruction button is being actuated the machine and the star wheel are not raised and the ground surface continues to be sown.

Visual inspection of the distributor heads

Check the distributor head/distributor heads from time to time for contamination.



Contamination and seed remains can block up the distributor heads and have to be removed immediately [see section "Cleaning the distributor head (workshop)", on page 151].

Seeding with difficult soil conditions

Mud holes can be passed through and seeded by raising the machine via the integrated running gear. The track marker, star wheel and share frame remain in operating position (see operating manual **AMATRON⁺**).

10.6 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. Actuate control unit 1.
4. Turn the combination (if desired, with the tractor on full steering lock) as soon as the machine is raised.



Fig. 169



If control unit 1 is actuated before turning

- the machine is raised via the integrated running gear
- the share frame is raised.
If the low-lift function is switched on, raising of the share frame is disabled. With the low-lift function switched on less time is required to redeploy the machine. Activate the low-lift function only if the shares cannot come into contact with the ground when turning.
- the star wheel is raised and the tramlining control system indexed
- the track markers are folded in
- the discs of the pre-emergence marker are raised.

After turning at the end of the field:

1. Actuate control unit 1 for at least 5 seconds so that the machine is fully lowered.
2. Start the field run.



Fig. 170



Upon actuation of control unit 1 after turning, depending on the preselection on the **AMATRON⁺**

- the machine and the share frame are lowered
- the track marker opposite is put in working position
- the star wheel is put in working position
- the discs of the pre-emergence marker are lowered.

10.7 Emptying the seed dosing unit and/or seed hopper

1. Apply the parking brake, switch off the tractor engine and remove the ignition key!
2. Fasten the calibrating trough(s) under the seed dosing unit(s).



Fig. 171

3. Close the slide (Fig. 172/1), if only the seed dosing unit and not the seed hopper are to be emptied (see section 8.1.2, on page 100).

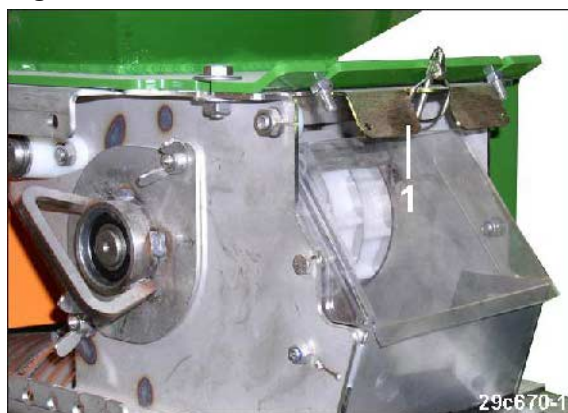


Fig. 172

4. Open the venturi cone flap (Fig. 173/1) so that the seed can flow into the calibrating trough.



CAUTION

Risk of contusions on opening and closing the injector sluice flap (Fig. 173/1)!

Hold the venturi cone flap only by the lug (Fig. 173/2), otherwise there is a danger of injury when the spring-loaded venturi cone flap snaps closed.

Never insert your hand between the injector sluice flap (Fig. 173/1) and the injector sluice!

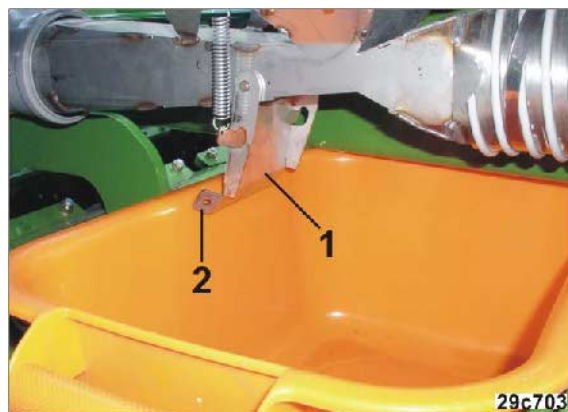


Fig. 173

Use of the machine

5. Open the remainder emptying flap by turning the handle (Fig. 174/1).



For emptying it is also possible to demount the dosing roller (see section 8.1.2, on page 100).

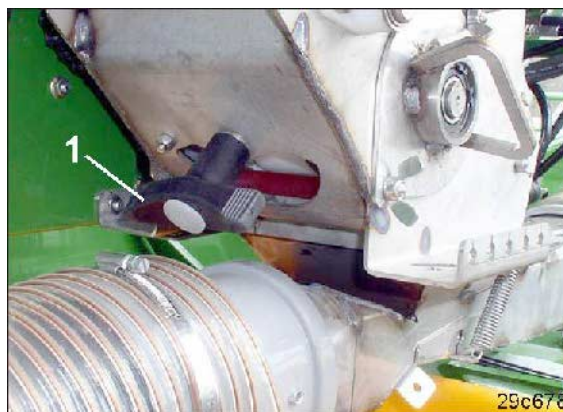


Fig. 174

6. Turn the star wheel (Fig. 175), as in the calibration test with the calibrating handle, counterclockwise until the dosing roller(s) and seed dosing unit are completely emptied.

For full dosing run the electric motor for a short while.

7. For complete cleaning when there is a seed change, demount the dosing rollers (see section 8.1.2, on page 100) and clean them together with the seed doser.
8. Close the residue emptying flap (Fig. 174) carefully and fasten the calibrating trough(s) on the transport mounting.



Fig. 175




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

Due to this rotation of the dosing rollers is blocked and damage can be caused to the drive!

10.8 End of work on the field

At the end of work put the machine in its transport position:

1. Switch off the fan.
2. Actuate control unit 1:
 - o Raise the machine
 - o Raise the star wheel
 - o Raise the track marker
 - o Raise the share frame (with the low-lift function is switched off).
3. When the machine is lowered, if the tramline counter is prevented from indexing, press the STOP key  as soon as the star wheel is raised (see operating manual **AMATRON⁺**).
4. Empty the seed hopper (see section 10.7, on page 141).
5. Fold in the machine extension arm (except for the Cirrus 3001) (see section 10.2, on page 130).



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

11 Faults



WARNING

Risk of contusions, cutting, catching, drawing in and knocks through

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

Secure the tractor and the machine against unintentional start-up and rolling away, before you eliminate any faults on the machine. On this subject see section 6.2 on page 85

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

11.1 Residual seed volume indicator

When volume drops below the residual seed volume, if the level sensor is correctly set, on the **AMATRON⁺** display a warning message (Fig. 176) appears with an acoustic signal.

The residual seed volume should be large enough to avoid fluctuations or gaps in the output rate.

machine type:	Cirrus	Order
order No.:	6	drill calibr.
tramline rhythm No.:	15	machine
working width:	6.0m	Setup
level too low		29c214_GB

Fig. 176

11.2 Failure of the **AMATRON⁺** during work

If a failure of the **AMATRON⁺** comes about while working on the field, the seeding can be continued in emergency mode.

In emergency mode the track marker and the tramlining control system cannot be actuated.

Working in emergency mode:

1. Shut down the tractor engine, apply the parking brake and remove the ignition key.
2. Remove the guard panelling on the electrohydraulic control blocks (Fig. 177).
3. Undo the Allen screw (Fig. 177/1) up to the stop.
Undoing the Allen screw causes raising/lowering of the star wheel with the machine.
4. Fasten the guard panelling on the electrohydraulic control blocks.
5. Start working in emergency mode.

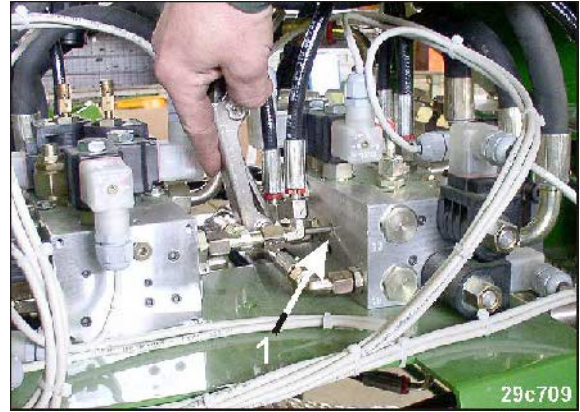


Fig. 177

Put the machine in transport position after failure of the **AMATRON⁺**:

1. Shut down the tractor engine, apply the parking brake and remove the ignition key.
2. Remove the guard panelling of the electrohydr. control blocks (Fig. 178).
3. Take the two valve pins (Fig. 178/1) out of the valves and turn them through 45 degrees to lock.

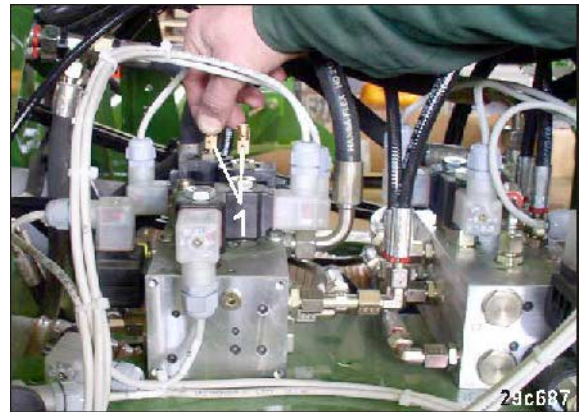


Fig. 178

4. Direct people out of the danger area.
5. Fold in the machine.
6. Check whether the locking hook (Fig. 160) locks the extension arm.
7. Put the machine in road transport position (see section 9, on page 120).
8. Go to the nearest repair workshop.



DANGER

- Only if the **AMATRON⁺** fails, fold the machine on emergency actuation.
- Actuate the tractor's control units only in the tractor cab.
- Before actuating the tractor's control units, direct any people out of the danger area.



DANGER

- Before transporting check whether the locking hook (Fig. 160) is locking the extension arm.
- Go to the nearest repair workshop without delay.



After repair

- **Screw in the Allen screw (Fig. 177/1).**
- **Put the two valve pins (Fig. 178/1) in their normal position.**

11.3 Deviations between the preset and actual sowing rates

Possible causes that can lead to a deviation between the preset and actual sowing rates:

- For acquisition of the cultivated area and of the requisite seed output rate the **AMATRON⁺** requires the impulses of the drive wheel over a measuring distance of 100 m.

The slippage of the star wheel can alter during the work, e.g. when changing from light to heavy soils. This also alters the calibration value "Imp./100 m".

If there are differences between the preset and actual sowing rates the calibration value "Imp./100 m" has to be redetermined by travelling a measured distance.

- When seeding with moist dressed seeds, differences between the preset and actual sowing rates can come about, if there is a period of less than 1 week (2 weeks recommended) between the dressing and seeding.

- A defective or wrongly set dosing lip (Fig. 179/1) will cause dosing errors.

Set the dosing lip so that it is lying lightly up against the dosing roller (Fig. 179/2).

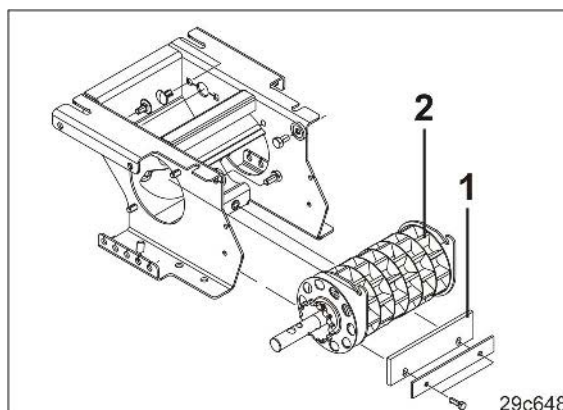


Fig. 179

11.4 Fault table

Fault	Possible cause	Remedy
Track marker not changing	Work position sensor wrongly set	Set the sensor
	Work position sensor defective	Replace the work position sensor
	Hydraulic valve jamming	Replace the hydraulic valve
Track marker switching too early or too late	Working position sensor wrongly set	Set the sensor
	Working position sensor defective	Replace the working position sensor
Tramline counter not working	Stop key actuated	Switch off the stop key
	Tramlining rhythm wrong	Set the tramlining rhythm
	Working position sensor defective	Replace the working position sensor
Fan sensor alarmed	Alarm limit wrongly set	Alter the alarm limit
	Oil volume too low or too high	Set the oil volume
	Fan sensor defective	Replace the fan sensor
Path sensor (star wheel/Vario gearbox) not functioning	Path sensor defective	Replace the path sensor
Slide in the distributor head (tramlining control system) not functioning		Clean the distributor head
		Clean the control disc
	Automatic safety device has responded	Switch the AMATRON+ off and back on. The safety device is functioning again properly.
Seed depositing depth varies across the machine width		Calibrate the equalising system
		Check the equalising system for oil losses

12 Cleaning, maintenance and repairs



WARNING

Risk of contusions, cutting, catching, drawing in and knocks through

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

Secure the tractor and machine against unintentional starting and unintentional rolling away before you perform any cleaning, servicing or maintenance work on the machine. On this subject see on page 85.



WARNING

Risk of contusions, cutting, catching, drawing in and knocks through unprotected danger points!

- Mount protective equipment, which you removed when cleaning, maintaining and repairing the machine.
- Replace defective protective equipment with new equipment.

While still coupled with the tractor set the machine down on the sustainer (Fig. 180/1) as protection against unintentional lowering of the tractor's lower links.



Fig. 180

Secure the fully raised machine against unintentional lowering with the spacer (Fig. 181/1), before working on the machine.

Position the spacer (Fig. 181/1) on the piston rod with two bolts and secure with linch pins. When not in use the spacer is fastened to the transport mounting (Fig. 181/2).

Fasten the second spacer to the hydraulic cylinder opposite.



Fig. 181



DANGER

If the machine is not fully raised

- the shares can suddenly shoot to the rear and upwards at any time and cause extremely serious injuries
- never remain in the share swivelling area.

Danger of injury when cleaning the shares, if the machine is not fully raised.

When raising the machine a spring-actuated mechanism (Fig. 182/1) lifts up the shares and steers them around the tyres.

The mechanism

- lifts up the shares suddenly, before the machine is completely raised.
- sets the shares in brisk motion and can cause very serious injuries.
- can respond at any time, if the machine is not completely raised.



Fig. 182

12.1 Cleaning



DANGER

Clean the shares only

- if the machine is lowered or
- if the machine is completely raised and secured.



- Pay particular attention to the brake, air and hydraulic hose lines.
- Never treat brake, air and hydraulic hose lines with benzene, benzole, petroleum or mineral oils.
- After cleaning, grease the machine, in particular after cleaning with a high pressure cleaner / steam jet or liposoluble agents.
- Observe the statutory requirement for the handling and removal of cleaning agents.



DANGER

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

Clean with a pressure cleaner / steam cleaner



- Always observe the following points when using a high pressure cleaner / steam jet for cleaning:
 - Do not clean any electrical components.
 - Do not clean any chromed components.
 - Never aim the cleaning jet from the nozzle of the high pressure cleaner / steam jet directly on lubrication and bearing points.
 - Always maintain a minimum jet distance of 300 mm between the high pressure cleaning or steam jet cleaning nozzle and the machine.
 - Comply with safety regulations when working with high pressure cleaners.

12.1.1 Cleaning the machine

1. Empty the seed hopper and seed dosing unit (see section 10.7, on page 141).
2. Clean the distributor head [see section "Cleaning the distributor head (workshop)", on page 151].
3. Clean the machine with water or with a high pressure cleaner.



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

Due to this rotation of the dosing rollers is blocked and damage can be caused to the drive!

12.1.2 Cleaning the distributor head (workshop)

1. Fold out the machine's extension arm (see section 10.2.1, on page 130).
2. Apply the parking brake, switch off the tractor engine and remove the ignition key.



WARNING

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

Before climbing on it, clean the path to the distributor head and the area of the distributor head (danger of slipping).

There is the risk of an accident on the path to the distributor head and in the area of the distributor head.

3. Slacken the winged nuts (Fig. 183/1) and remove the clean plastic flap (Fig. 183/2) from the distributor head.
4. Remove any impurities with a brush, and wipe out the distributor head and plastic cap with a dry cloth.
5. Install the plastic cap (Fig. 183/2).
6. Fix the plastic cap with winged nuts (Fig. 183/1).

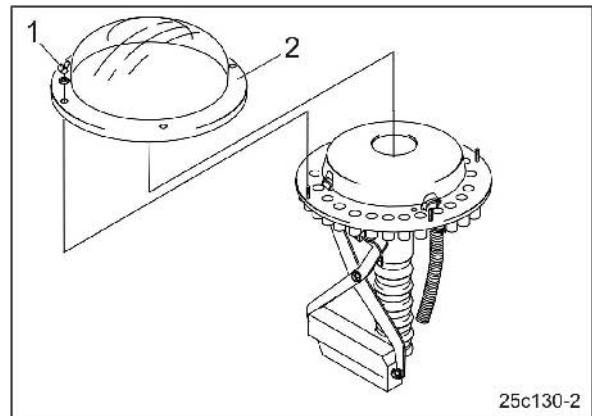


Fig. 183



Intensive cleaning requires the slides to be demounted in accordance with the section 12.4.1.1.

12.1.3 Shutdown of the machine over a long period of time

1. Do not raise the shares, but set them down on a firm base.
2. Thoroughly clean and dry the PacTeC shares.
3. To prevent rust conserve the shares (Fig. 184) with an environmentally friendly anti-corrosion agent.



Fig. 184

12.2 Lubrication regulations



- Lubricate the machine in accordance with the specifications of the manufacturer.
- Carefully clean the lubrication nipple and grease gun before lubrication so that no dirt is pressed into the bearings. Press the dirty grease completely into the bearings and replace it with new grease.

The lubrication points on the machine are marked with a foil sticker (Fig. 185).

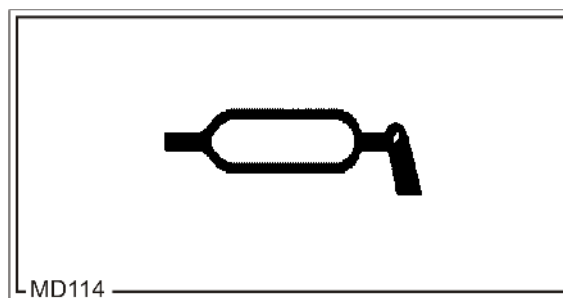


Fig. 185



WARNING

Some of the lubrication points are located in the middle of the machine.

Clean the machine before climbing on it (danger of slipping).

12.2.1 Lubricants



For lubrication work use a lithium saponified multipurpose grease with EP additives:

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

12.2.2 Lubrication point overview

	Number of lubrication nipples					Lubrication interval
	Cirrus 3001	Cirrus 4001	Cirrus 6001	Cirrus 8001	Cirrus 9001	
Fig. 187/1	1	1	1	1	1	25 h
Fig. 187/2	1	1	1	1	1	25 h
Fig. 188/1	2	2	2	2	2	25 h
Fig. 188/2	2	2	2	2	2	25 h
Fig. 189/1	1	3	3	3	3	25 h ¹⁾ 50 h ²⁾
Fig. 191/1	2	4	6	6	6	25 h ¹⁾ 50 h ²⁾
Fig. 191/2	2	6	6	6	6	25 h ¹⁾ 50 h ²⁾
Fig. 191/3	2	6	6	6	6	25 h ¹⁾ 50 h ²⁾
Fig. 191/4	2	6	6	6	6	25 h ¹⁾ 50 h ²⁾
Fig. 191/5	-	4	4	4	4	25 h
Fig. 192/1	2	2	2	2	2	25 h
Fig. 192/2	2	2	2	2	2	25 h
Fig. 192/3	2	2	2	2	2	25 h
¹⁾ Low-lift is seldomly used ²⁾ Low-lift is often used						

Fig. 186

12.2.2.1 Lubricating the lubrication nipples when the machine is folded out and lowered

1. Fold out the machine extension arm (see section 10.2.1, on page 130).
2. Lower the machine.
3. Apply the parking brake, shut down the tractor engine and remove the ignition key.
4. Lubricate the lubrication nipple (Fig. 187 to Fig. 189) in accordance with the table (Fig. 186).

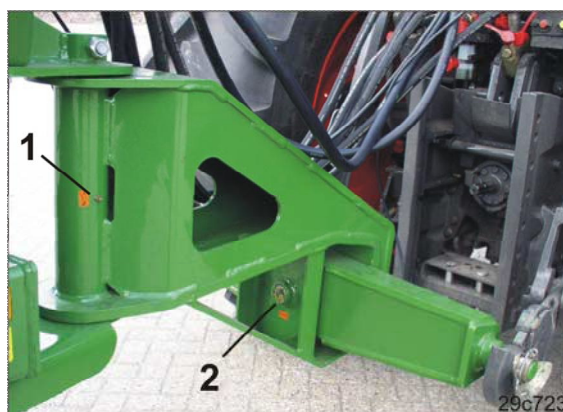


Fig. 187



Fig. 188



Fig. 189

12.2.2.2 Lubricating the lubrication nipple when the machine is raised



DANGER

Secure the raised machine with spacers (Fig. 190/1).

The spacers will prevent the machine from lowering, if the hydraulic line is defective.

Lubricate the lubrication nipple when the machine is raised:

1. Fold the machine extension arm in (see section „Folding in the machine's extension arm", on page 132).
2. Raise the machine.
3. Apply the parking brake, shut down the tractor engine and remove the ignition key.
4. Position the spacer (Fig. 190/1) on the piston rod with two bolts and secure it with linch pins.
When not in use the spacer is fastened to the transport mounting (Fig. 190/2).
5. Fasten the second spacer to the hydraulic cylinder opposite.
6. Lubricate the lubrication nipple (Fig. 191) in accordance with the table (Fig. 186).



Fig. 190



Fig. 191

7. Fold the machine extension arm out (see section "Folding out the machine's extension arm", on page 130).
8. Lubricate the lubrication nipple (Fig. 192) in accordance with the table (Fig. 186).
9. Fold in the machine's extension arm.
10. Fasten the spacers (Fig. 190/1) to the transport mountings (Fig. 190/2).
11. Lower the machine.



Fig. 192

12.3 Service plan – overview



- Carry out maintenance work when the first interval is reached.
- The times, continuous services or maintenance intervals of any third party documentation shall have priority.

Before initial operation	Specialist workshop	Check and service the hydraulic hose lines. Recording of the inspection by the operator.	Section 12.3.6
		Check the oil level in the Vario gearbox.	Section 12.3.5
After the first 10 operating hours	Specialist workshop	Retighten the wheel and hub bolts	Section 12.3.1
	Specialist workshop	Check and service the hydraulic hose lines. Recording of the inspection by the operator.	Section 12.3.6
Daily before starting work		Drain the compressed air tank (pneumatic brake)	Section 12.3.8.1
When the seed hopper is filled or hourly		Check the seed depositing depth	
		Check the seed dosing unit for contamination	
		Check the seed hoses for contamination	
During work		Check the distributor heads for contamination	Section 12.1.2
Daily at the end of work		Empty and clean the seed dosing unit	Section 10.7
		Clean the machine (as required)	Section 12.1
Every week, at the latest every 50 operating hours	Specialist workshop	Check and service the hydraulic hose lines. This inspection has to be recorded by the operator.	Section 12.3.6
		Check the brake fluid level	Section 12.3.9.1
Every 2 weeks, at the latest every 100 operating hours		Tyre pressure	Section 12.3.2
		Check the oil level in the Vario gearbox	Section 12.3.5
Every month, at the latest every 200 operating hours		Check the brake fluid level	Section 12.3.9.1

Every 3 months, at the latest every 500 operating hours	Specialist workshop	Check the brake lining thickness	Section 12.3.9.4
		External testing of the compressed air tank of the dual-circuit pneumatic braking system	Section 12.3.8.2
	Specialist workshop	Check the pressure in the compressed air tank of the dual-circuit pneumatic braking system	Section 12.3.8.3
	Specialist workshop	Seal-tightness testing of the dual-circuit pneumatic braking system	Section 12.3.8.4
	Specialist workshop	Clean the line filter of the dual-circuit pneumatic braking system	Section 12.3.8.5
Every 6 months before the season	Specialist workshop	Check and service the hydraulic hose lines. This inspection has to be recorded by the operator.	Section 12.3.6
	Specialist workshop	Check the brake lining thickness	Section 12.3.9.4
Every 6 months after the season		Service the roller chains	Section 12.3.3
		Service the sowing shaft bearing	Section 12.3.4
Every 12 months	Specialist workshop	Check the service brake system for safe operating condition	Section 12.3.7.1
	Specialist workshop	Brake control on the hydraulic part of the braking system	Section 12.3.9.3
Every 2 years	Specialist workshop	Replace the brake fluid	Section 12.3.9.5

12.3.1 Wheel bolts and hub tightening torques (specialist workshop)

Fig. 193/...	Bolt	Tightening torque
(1)	Wheel bolt M18 x 1.5	325 Nm
(2)	Bolt M20 x 1.5 10.9	600 Nm

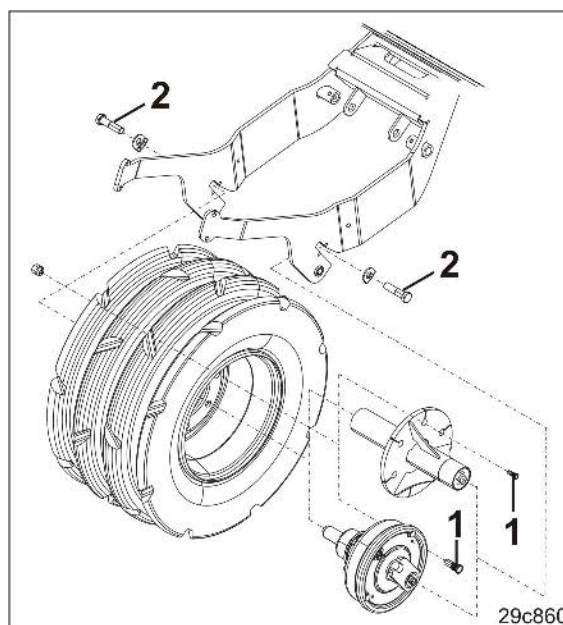


Fig. 193

12.3.2 Tyre pressure

Tyres	Tyre pressure
Running gear tyres (Fig. 194/1)	3.5 bar
Field tyres (Fig. 194/2)	1.5 bar

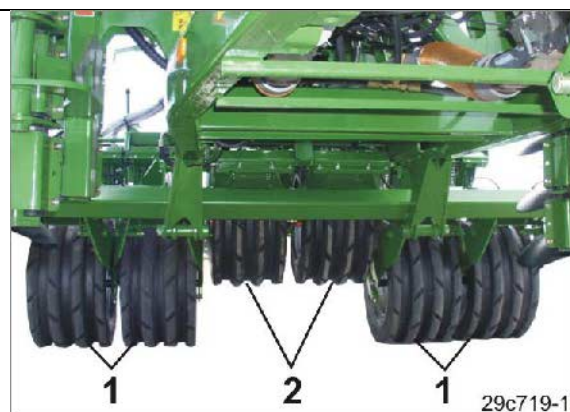


Fig. 194



Inflate the tyres (Fig. 194/2) of the Cirrus 8001 and Cirrus 9001 the same as the running gear tyres (Fig. 194/1)!

The tyres (Fig. 194/2) are not raised when driving on the road.

12.3.3 Roller chains and chain wheels

Clean all roller chains after the season

1. (including the chain wheels and chain tensioner)
2. check the condition
3. lubricate with low-viscosity mineral oil (SAE30 or SAE40).

12.3.4 Sowing shaft bearings

Lightly grease the seat of the sowing shaft bearing with a thin mineral oil (SAE 30 or SAE 40).



Fig. 195

12.3.5 Oil level in the Vario gearbox

There is no need to change the oil.

Checking the oil level in the Vario gearbox:

1. Position the machine on a horizontal surface.
2. The oil level must be visible in the oil sight glass (Fig. 196/1).
3. Check the gearbox for leak points.
4. If there are any leak points, have the Vario gearbox repaired in a specialist workshop.
5. Refer to the table (Fig. 197) for the requisite type of transmission oil.
6. Fill the Vario gearbox through the oil filler neck (Fig. 196/2) up to the oil sight glass (Fig. 196/1) with transmission oil.
7. After filling close the oil filler neck with the cap (Fig. 196/2).

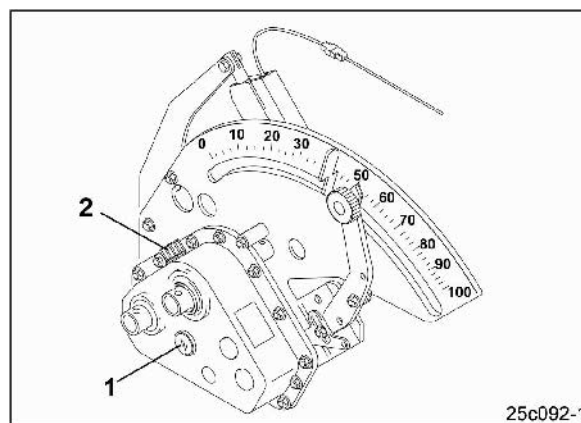


Fig. 196

Hydraulic fluid types and filling level of the Vario transmission	
Total filling level:	0.9 litres
Transmission fluid (alternatives):	Wintershall Wintal UG22 WTL-HM (ex-works)
	Fuchs Renolin MR5 VG22

Fig. 197

12.3.6 Hydraulic system



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.
- Depressurize the hydraulic system before carrying out work on the hydraulic system.
- When searching for leak points, always use suitable aids.
- Never try to bung untight hydraulic lines with your hand or with your 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 line checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is 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 ageing, 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 connections made from thermoplastics, other guide values may be decisive.
- Dispose of old oil in the correct way. 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.

12.3.6.1 Labelling hydraulic hose lines

The assembly labelling provides the following information:

Fig. 198/...

- (1) Manufacturer's marking on the hydraulic hose line (A1HF)
- (2) Date of manufacture of the hydraulic hose line (04/02 = Year / Month = February 2004)
- (3) Maximum approved operating pressure (210 BAR).

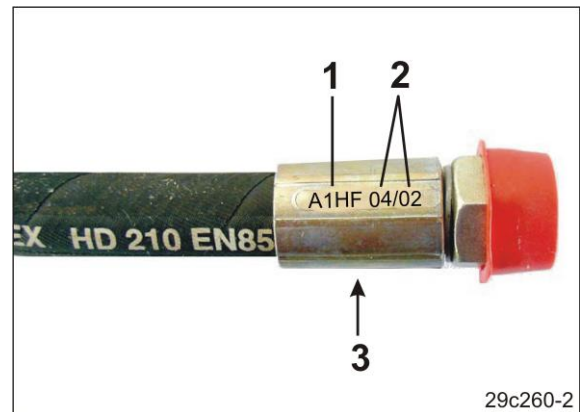


Fig. 198

12.3.6.2 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.

12.3.6.3 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 or the hose line. Both in a depressurised and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
- Untight 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 is decisive for determining these six years. If the date of manufacture on the assembly is "2004", then the hose should not be used beyond February 2010. See also "Labelling of hydraulic hose lines".

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

12.3.7 Service brake system: dual-circuit pneumatic braking system - hydraulic braking system

The Cirrus is equipped with a dual-circuit pneumatic braking system with a hydraulically actuated brake cylinder.

The dual-circuit pneumatic braking system does not actuate as normally a rod or brake cable connected to the brake shoe.

The dual-circuit pneumatic braking system acts on a hydraulic cylinder, which actuates the hydraulic brake cylinder of the brake shoes in the brake drum.



WARNING

The service brake system does not have a parking brake!

Always use wheel chocks before uncoupling the machine from the tractor.



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.



CAUTION

Observe the legal regulations for all service work.

Only genuine spare parts may be used.

The brake valve settings laid down by the manufacturer must not be altered.



DANGER

- **Only specialist workshops or recognised brake services may perform adjustment and repair work on the brake system.**
- **Have the brake system checked regularly.**
- **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", on page 26.**

General visual check

Carry out a general visual check of the brake system. Observe and check the following criteria:

- 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.
 - May not have any visible cracks.
 - May not be knotted.
- Check the piston stroke on the brake cylinders, and adjust as necessary.

12.3.7.1 Checking the service brake system for safe operating condition (specialist workshop)

Have the safe operating condition of the service brake system checked in a specialist workshop.

Piping, hose lines and hose couplings must not be externally damaged or rusted.



**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.**

12.3.8 Dual-circuit pneumatic braking system

12.3.8.1 Draining the compressed air reservoir

1. Run the tractor engine (approx. 3 mins.), until the compressed air reservoir (Fig. 199/1) has filled.
2. Shut down the tractor engine, apply the parking brake and remove the ignition key.
3. Pull the drain valve (Fig. 199/2) in a sideways direction by the ring until no more water escapes from the compressed air reservoir.
4. If the escaping water is dirty, let off air, unscrew the drainage valve from the compressed air reservoir and clean the compressed air reservoir.
5. Fit the drainage valve and check the compressed air reservoir for seal tightness (see section 12.3.8.4, on page 166).



Fig. 199

12.3.8.2 External inspection of the compressed air reservoir

External testing of the compressed air reservoir (Fig. 200/1).

If the compressed air reservoir moves in the tensioning bands (Fig. 200/2)

→ tension or replace the compressed air reservoir

If the compressed air reservoir has any external corrosion damage or is damaged

→ replace the compressed air reservoir.

If the type plate (Fig. 200/3) is rusty, loose or the type plate is missing from the compressed air reservoir

→ replace the compressed air reservoir.

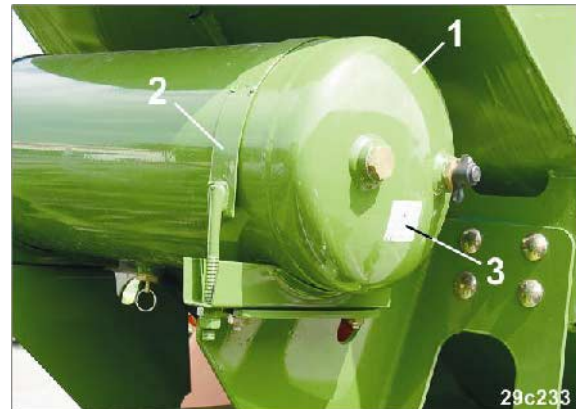


Fig. 200



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

12.3.8.3 Checking the pressure in the compressed air reservoir (specialist workshop)

1. Connect a pressure gauge to the test connection on the compressed air reservoir.
2. Run the tractor engine (approx. 3 mins.) until the compressed air reservoir has filled.
3. Check whether the pressure gauge displays 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.

12.3.8.4 Seal-tightness test (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 applies as being seal-tight, 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
- braking system replaced at a specialist workshop.

12.3.8.5 Cleaning the line filter (specialist workshop)

The dual-circuit pneumatic braking system is equipped with two line filters (Fig. 201/1). Clean both line filters as described above.

To clean the line filters

1. Press the two lugs (Fig. 201/2) 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. When re-assembling in the reverse order, ensure that the O-ring does not jam in the guide slot.

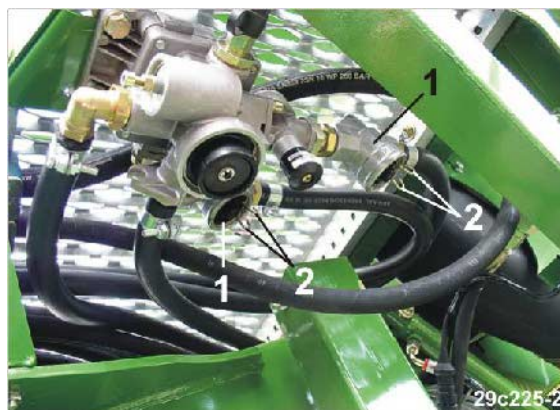


Fig. 201

12.3.9 Hydraulic braking system

12.3.9.1 Checking the brake fluid level

The equalising tank (Fig. 202) is filled in accordance with DOT 4 up to the "max." marking with brake fluid.

The brake fluid must be between the marks "max." and "min.".



If any brake fluid is lost, visit a specialist workshop!



Fig. 202

12.3.9.2 Brake fluid

When handling brake fluid observe the following:

- Brake fluid is corrosive and must therefore not come into contact with the paint on the machine. If necessary, wipe it off immediately and wash it off with plenty of water.
- Brake fluid is hygroscopic, i.e. it absorbs moisture from the air. Therefore store the brake fluid only in closed containers.
- Brake fluid that has already been used in the braking system must not be reused. Even when venting the braking system, use only new brake fluid.
- The requirements made of brake fluid are subject to the standard SAE J 1703 or the American safety statutes DOT 3 and DOT 4. Use only brake fluids in compliance with DOT 4.
- Brake fluid must never come into contact with mineral oil. Even small traces of mineral oil will render brake fluid unusable or cause a failure of the braking system. Plugs and collars on the braking system will be damaged, if they come into contact with agents that contain mineral oil. For cleaning purposes do not use any wiping cloths that contain mineral oils.



WARNING

Under no circumstances may drained brake fluid be reused.

Under no circumstances may drained brake fluid be poured away or put in the household waste, but must be collected separately from used oil and disposed of via authorised waste disposal companies.

12.3.9.3 Brake check on the hydraulic part of the braking system (specialist workshop)

Brake check on the hydraulic part of the braking system:

- check all flexible brake hoses for wear
- check all brake lines for damage
- check all screw unions for seal tightness
- renew any worn or damaged parts.

12.3.9.4 Checking the brake lining thickness (specialist workshop)

The brake lining wear must be checked every 500 operating hours, at the latest before the start of the season.

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

Renew the brake shoes at a residual lining thickness of less than 1.5 mm (use only genuine brake shoes with type-tested brake linings). When doing so the shoe return springs may have to be renewed.

12.3.9.5 Changing the brake fluid (specialist workshop)

If possible, change the brake fluid after the winter.

12.3.9.6 Venting the hydraulic braking system (specialist workshop)

After each brake repair, for which the system has been opened, vent the brake system, because air may have entered the pressure lines.

At specialist workshops the brake is vented with a brake filling and venting device:

1. Remove the equalising tank screw union.
 2. Fill the equalising tank up to the top edge.
 3. Fit the venting muff to the equalising tank.
 4. Connect the filling hose.
 5. Open the stop valve of the filling union piece.
 6. Vent the main cylinder.
 7. Via the system's venting screws remove brake fluid until it flows out clear and bubble-free. To do so, the transparent venting hose, which leads to a collecting cylinder one-third filled with brake fluid, is pushed onto the venting valve to be vented.
 8. After venting the complete brake system close the stop valve on the filling union piece.
 9. Relieve the residual pressure coming from the filling device.
 10. Close the last venting valve when the residual pressure coming from the filling device has dropped and the brake fluid level in the equalising tank has reached the "MAX" mark.
 11. Remove the filling union piece.
 12. Close the equalising tank.
-



Carefully open the venting valves so that they are not turned off. It is recommended that the valves be sprayed with a rust releasing agent for approx. 2 hours before venting.



Perform a safety check:

- Are the venting screws tightened?
- Has sufficient brake fluid been filled?
- Check all connections for seal-tightness.



After each brake repair apply the brakes on a road with little traffic. When doing this at least one emergency braking application must be performed.

Caution: when you do this pay attention to any traffic behind you!

12.4 Elimination of malfunctions and repair work - Overview

Adjusting the marker		Setting the track markers for correct threading into the transport mounting	Section 12.4.2
Setting the tramline to tractor track width	Specialist workshop		Section 12.4.1
Repair of the equalising system	Specialist workshop		Section 12.4.3
Repair of the pressure tank	Specialist workshop		Section 12.4.4
10 operating hours after a wheel change	Specialist workshop	Retighten the wheel and hub bolts	Section 12.3.1
After a brake repair	Specialist workshop	Vent the braking system	Section 12.3.9.6
After a repair to the machine's extension arm	Specialist workshop	Check the lock nut's tightening torque	Section 12.4.6

12.4.1 Setting the tramline to the tractor's track (specialist workshop)

When the machine is delivered or when buying a new tractor, check that the tramline set in the distributor head is set to the wheel gauge of the tractor.



WARNING

The distributor head is located at the centre of the machine.

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

Before approaching, clean the path to the distributor head and the area of the distributor head (danger of slippage).

There is the risk of an accident on the path to the distributor head and in the area of the distributor head.

Check that the tramline circuit is correctly set to the wheel gauge of the tractor:

- The seed line tubes (Fig. 203/1) of the tramline shares must be fixed to the distributor head openings, which can be closed by the sliders (Fig. 203/2). If necessary, interchange the seed line tubes.
- The track changes with the number of shares not outputting seed when the tramlines are created.

To create two tracks, in the distributor head it is possible to close the sliders (Fig. 203/2):

- o by up to 3 openings on the Cirrus 3001/4000
- o by up to 6 openings on the Cirrus 6001.
- Deactivate any non-required sliders (Fig. 203/2 (see section 12.4.1.1, on page 172).

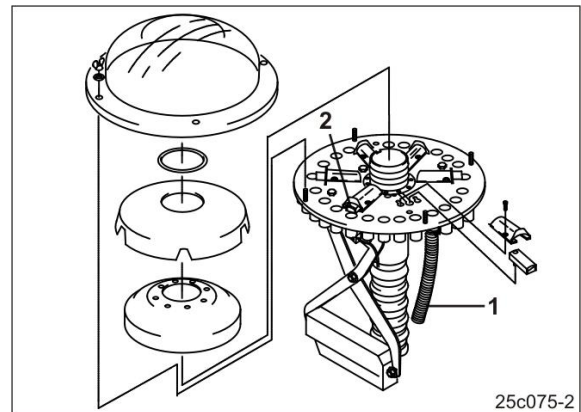


Fig. 203



Set the track discs of the pre-emergence marker (if present) to the new track (see section 8.11.2, on page 119).

12.4.1.1 Adjusting the track (activate or deactivate the sliders)

The track of the tramline increases if the number of tramline shares arranged next to each other increases.

Six tramline shares can be connected to one distributor head.

The sliders close the feed lines to the tramline shares.

Deactivate the sliders (Fig. 205/2) when they are not used.

Deactivated sliders do not close the feed lines to the tramline shares.

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



WARNING

The distributor head is located at the centre of the machine.

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

Before approaching, clean the path to the distributor head and the area of the distributor head (danger of slippage).

There is the risk of an accident on the path to the distributor head and in the area of the distributor head.

Activating or deactivating sliders:

1. Apply the parking brake, switch off the tractor engine and remove the ignition key.
2. Switch off the **AMATRON⁺**.
3. Remove the outer distributor cover (Fig. 204/1).
4. Remove the ring (Fig. 204/2).
5. Remove the inner distributor cover (Fig. 204/3).
6. Remove the foam insert (Fig. 204/4).

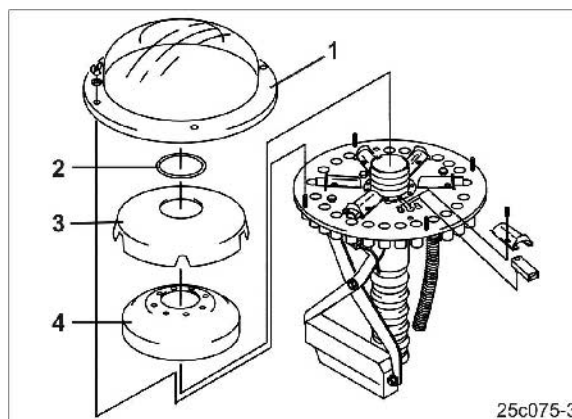


Fig. 204

7. Slacken the screws (Fig. 205/1).
8. Remove the slider tunnel (Fig. 205/2).

Activating the sliders:

9. The slider (Fig. 205/3) is in the guide, as shown in the diagram.

Deactivating the sliders:

10. Turn the sliders around (Fig. 205/3) and push them into the drill hole (Fig. 205/4).
11. Screw the slider tunnel (Fig. 205/2) onto the base plate.

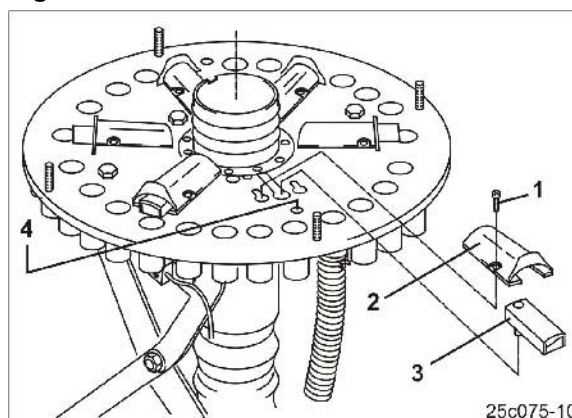


Fig. 205

12. Install the foam insert (Fig. 206/1).
13. Install the inner distributor cover (Fig. 206/2).
14. Install the ring (Fig. 206/3).
15. Install the outer distributor cover (Fig. 206/4).
16. Check the function of the tramline circuit.

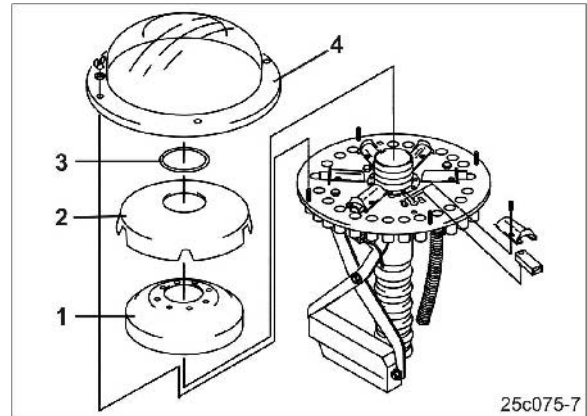


Fig. 206

12.4.2 Setting the track markers for correct threading into the transport mounting

When the track marker is folded in, the roller (Fig. 207/1) runs on the raceway (Fig. 207/2) into the mounting.

To set the track marker:

1. Apply the parking brake, switch off the tractor engine and remove the ignition key.
2. Loosen the lock nut.
3. Adjust the screw (Fig. 207/3) until the roller (Fig. 207/1) of the track marker is running properly over the raceway (Fig. 207/2) into the mounting.
4. Tighten the lock nut.



Fig. 207



DANGER

Apply the parking brake, switch off the tractor engine and remove the ignition key before working on the track marker.

12.4.3 Repair of the equalising system (specialist workshop)

Each tapered tyre is supported by two hydraulic cylinders (Fig. 208/1).

The hydraulic cylinders of one half of the machine are connected to a closed hydraulic circuit.

The two closed hydraulic circuits are designated as an equalising system.

Have any repairs to the equalising system performed only in a specialist workshop.

Drain the equalising system before any repairs.


Flush, fill and calibrate the equalising system after a repair. In particular the air collected after a repair is removed from the hydraulic circuits by the flushing.



Fig. 208

12.4.3.1 Draining, filling and calibrating (specialist workshop) the equalising system

Draining the equalising system

1. Couple the Cirrus to the tractor (see section 7, on page 88).
 2. Connect all the hydraulic connections (see section 7.1.1.1, on page 92). Connection of the unpressurised return line of the fan's hydraulic motor is important.
 3. Connect the **AMATRON⁺** (see operating manual **AMATRON⁺**).
 4. Raise the disc array.
 5. Align the Cirrus straight on a flat surface.
 6. Fold out the Cirrus (except for Cirrus 3001) (see section 10.2, on page 130).
 7. Switch off the low-lift function.
 8. Position the depth regulation bolt (Fig. 209/1) with the number "1" pointing upwards in all segments in the top hole of the adjusting segments and secure (see section 8.6, on page 109). Necessary so that the shares do not touch the ground.
 9. Lower the machine (control unit 1)
- 

The piston rod (Fig. 210/1) of the lift-out accumulator must be fully retracted. The extended piston rod is illustrated.
10. Lower the tractor's lower link if the shares touch the ground.



Fig. 209



Fig. 210

Cleaning, maintenance and repairs

To empty the equalising system each hydraulic circuit is equipped with a hydraulic stop-cock (Fig. 211/1).

The hydraulic stop-cocks are equipped with an anti-rotation lock (Fig. 211/2).

Figure (Fig. 211) shows the anti-rotation locked hydraulic stop-cock when it is closed.

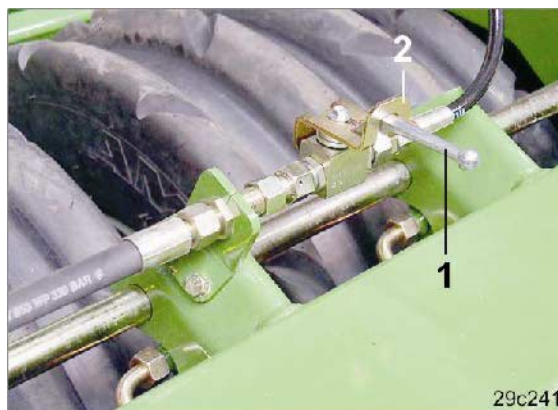


Fig. 211

11. Unscrew the anti-rotation lock (Fig. 212/1).



Fig. 212

12. Open both hydraulic stop-cocks (see Fig. 213).

The hydraulic fluid flows through the unpressurised return line of the fan's hydraulic motor back into the tractor's hydraulic fluid tank.



WARNING

The machine supported on the tapered ring tyres drops.

13. Perform any repairs on the equalising system.

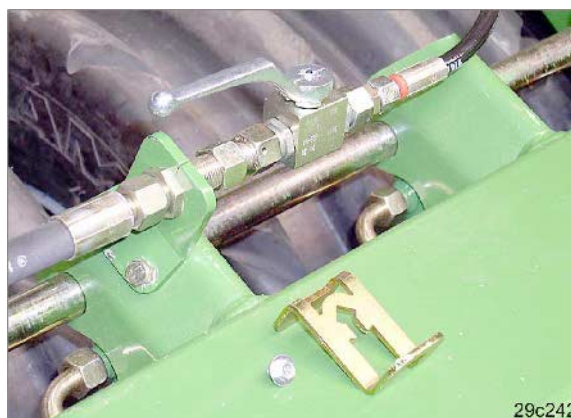


Fig. 213

Flushing the equalising system

The hydraulic circuits of the equalising system are connected to a supply line for the hydraulic cylinder of the harrowweeder (also if the harrowweeder pressure adjustment is mechanical).

The connections are closed with the hydraulic stop-cocks in the lever position indicated (Fig. 214/1).




Fig. 214

1. Remove the anti-rotation lock of the hydraulic stop-cocks (see Fig. 212).
2. Open the hydraulic stop-cocks (see lever position Fig. 215/1).



Fig. 215

3. Start the tractor motor (conduct the exhaust gases into the open air when performing workshop work).
4. Call the Work menu (Fig. 216) on the **AMATRON⁺**.
5. Press the harrowweeder adjustment button  (Fig. 216).
6. Pressurised control unit 2.
The equalising system is flushed.

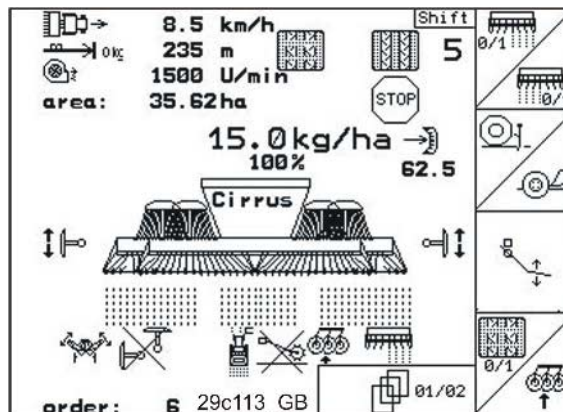


Fig. 216

7. During the flushing actuate control unit 1. Raise and lower the machine several times. Any enclosed air is thereby removed from the lift-out accumulator (Fig. 213).
8. Lower the machine (control unit 1).
9. After approx. 3 mins. put control unit 2 in floating position.

Cleaning, maintenance and repairs

10. Close both hydraulic stop-cocks (Fig. 217) of the equalising system.

The illustration (Fig. 217) shows the hydraulic stop-cock closed.

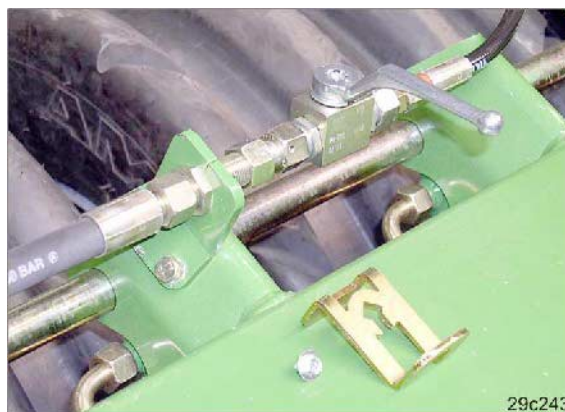


Fig. 217

Filling the equalising system

1. Lower the machine (control unit 1).



The piston rod (Fig. 218/1) of the lift-out accumulator must be fully retracted. The extended piston rod is illustrated.



Fig. 218

2. Press the harrowweeder adjustment button



(Fig. 216).

3. Pressurised control unit 2.
This fills the equalising system including the hydraulic cylinders (Fig. 208/1) with hydraulic fluid.
4. Close the hydraulic stop-cocks (Fig. 219/1) as soon as all hydraulic cylinders (Fig. 208/1) are fully extended.
5. Put control unit 2 in neutral position.
6. Apply the parking brake, shut down the tractor engine and remove the ignition key.
7. Secure the hydraulic stop-cocks (Fig. 219/1) with an anti-rotation lock (see Fig. 212).



Fig. 219

Calibrating the equalising system

1. Measure the frame height (see Fig. 220) from the wheel contact surface.
2. The machine is correctly calibrated when both frame halves are set to a height of 825 mm.

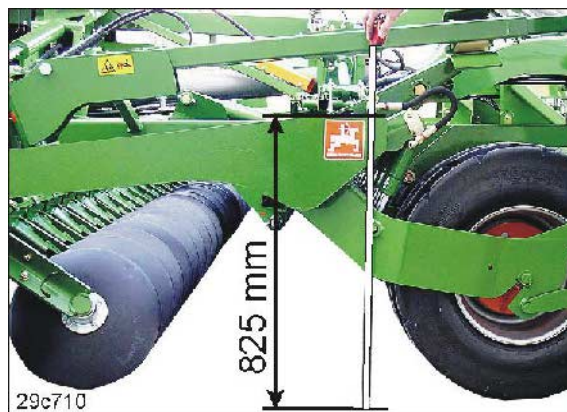


Fig. 220

The measuring edges of the machine are marked with stickers (Fig. 221).

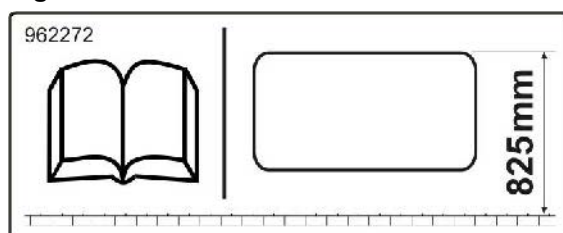


Fig. 221

3. To set the frame height (825 mm) open and close the hydraulic stop-cocks (Fig. 222) on the right-hand and left-hand sides of the machine.

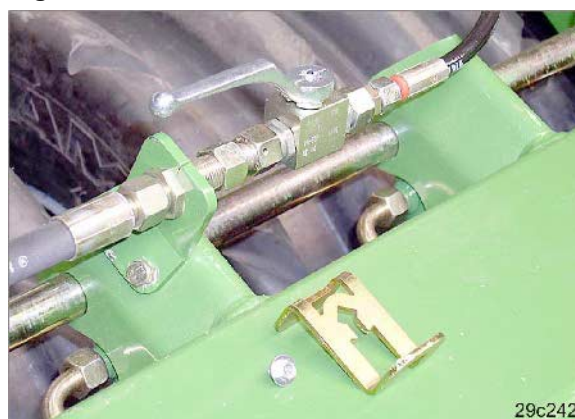


Fig. 222

4. Close the hydraulic stop-cocks (Fig. 223/1) and secure them with the anti-rotation lock (Fig. 223/2).

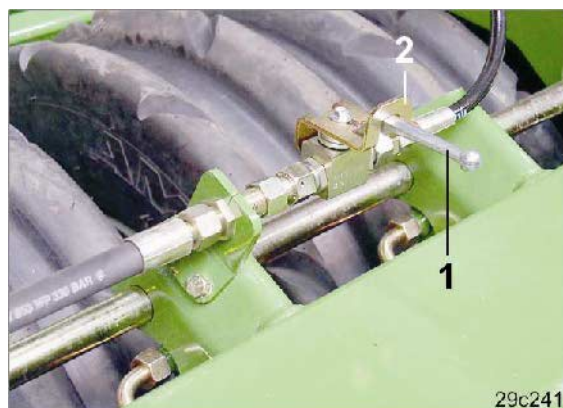


Fig. 223



Secure the hydraulic stop-cocks with the anti-rotation lock (Fig. 223/2) against unintentional opening.

12.4.4 Repairs to the pressure tank (specialist workshop)

Functional description of the pressure tank

For re-compaction of the soil the tapered ring tyres are subjected to the weight of the machine.

The weight of the machine also has to be conducted via the folding cylinders into the tapered ring tyres which are fastened to the extension arms. As the hydraulic fluid is almost non-compressible, the pressure does not remain constant even when the folding cylinders are shut off, i.e. when the oil is cooling down. The folding cylinders retract by several millimetres.

In order that the pressure acts on the folding cylinders without burdening the tractor's hydraulic pump, a pressure of approx. 100 bar is generated in a pressure tank filled with nitrogen (Fig. 224/1).

In the event of a repair observe the following:

The hydraulic system and the pressure tank connected to it (Fig. 224/1) 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. 224



DANGER

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

12.4.5 Repair of the share unit (specialist workshop)

Installation and demounting of the draw springs (Fig. 225/1) is only possible with special tools.



DANGER

Use special tools.
Danger of injury if the spring is installed or demounted with unsuitable tools.

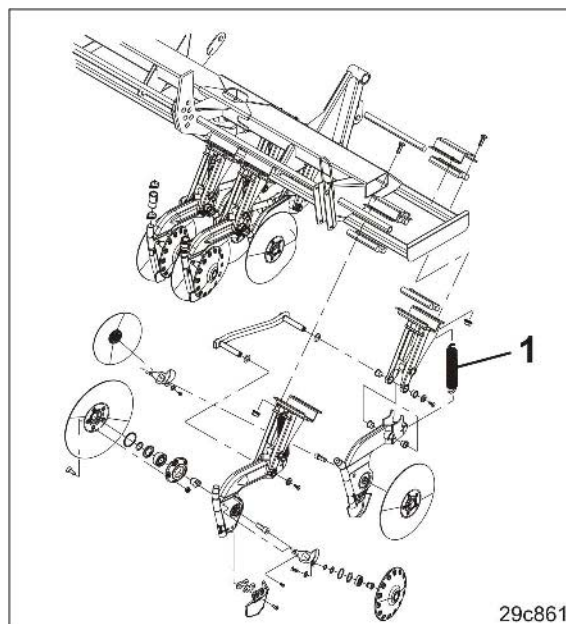


Fig. 225

12.4.6 Lock nut tightening torque (specialist workshop)

Tightening torque of the lock nuts (Fig. 226/1) on the piston rods of the hydraulic cylinders.

	Lock nut	Torque
Cirrus 4001 Cirrus 6001	M 27 x 2	150 Nm
Cirrus 8001 Cirrus 9001	M 42 x 2	200 Nm



Fig. 226

12.5 Lower link pin



WARNING

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

Check the lower link pin for conspicuous defects whenever the machine is coupled. Replace the draw bar, if there are any clear signs of wear to the lower link pin.

12.6 Screw tightening torques

Thread	Width across flats [mm]	Tightening torques [Nm] depending on the quality of the nuts/bolts		
		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



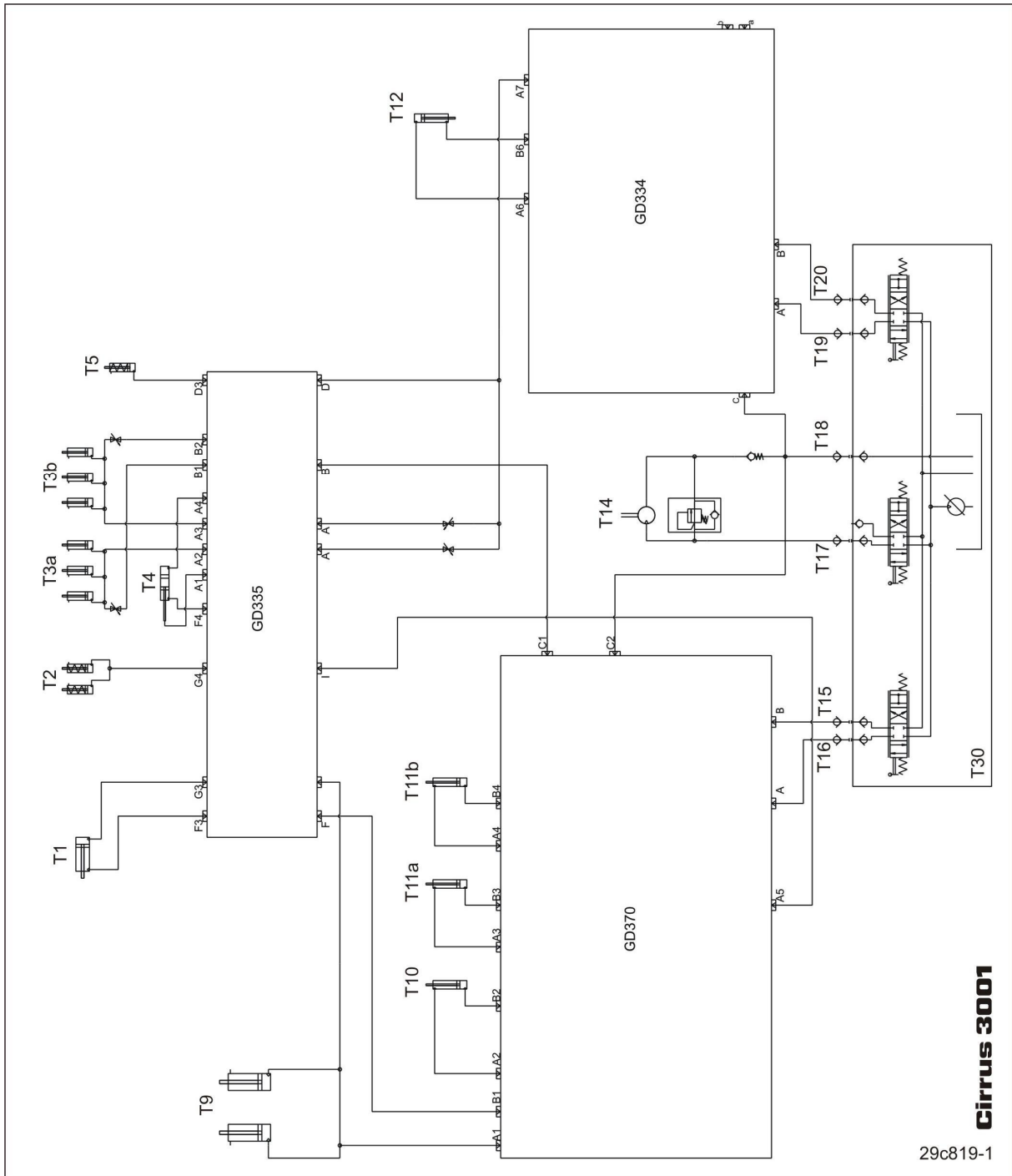
For the tightening torques of the wheel and hub bolts, see section 12.3.1, on page 158.

13 Hydraulic plans

13.1 Hydraulic plan of the Cirrus 3001

Fig. 227/...	Designation
T1	Share lift-out
T2	Pre-emergence marker
T3a	Equalising system left
T3b	Equalising system right
T4	Lift-out accumulator
T5	Harroweeder pressure adjustment
T9	Running gear
T10	Star wheel
T11a	Track marker left
T11b	Track marker right
T12	Disc array adjustment
T14	Blower
T15	1 x cable tie, yellow
T16	2 x cable ties, yellow
T17	1 x cable tie, red
T18	2 x cable ties, red
T19	1 x cable tie, green
T20	2 x cable ties, green
T30	Tractor

All position specifications in direction of travel



Cirrus 3001

29c819-1

Fig. 227

13.2 Hydraulic plan of the Cirrus 4001/6001

Fig. 228/...	Designation	Notes
T1a	Share lift-out left	
T1b	Share lift-out right	
T1c	Share lift-out middle	
T2	Pre-emergence marker	
T3a	Equalising system left	
T3b	Equalising system right	
T4	Lift-out accumulator	
T5	Harroweeder pressure adjustment	Cirrus 4001: connection to D3 only
T6a	Folding cylinder, rear left	
T6b	Folding cylinder, rear right	
T7	Folding frame securing device	
T8a	Folding cylinder, front left	
T8b	Folding cylinder, front right	
T9	Running gear	
T10	Star wheel	
T11a	Track marker left	
T11b	Track marker right	
T12	Disc array adjustment	
T14	Blower	
T15	1 x cable tie, yellow	
T16	2 x cable ties, yellow	
T17	1 x cable tie, red	
T18	2 x cable ties, red	
T19	1 x cable tie, green	
T20	2 x cable ties, green	
T21	Harroweeder folding	Cirrus 4001 only
T30	Tractor	

All position specifications in direction of travel

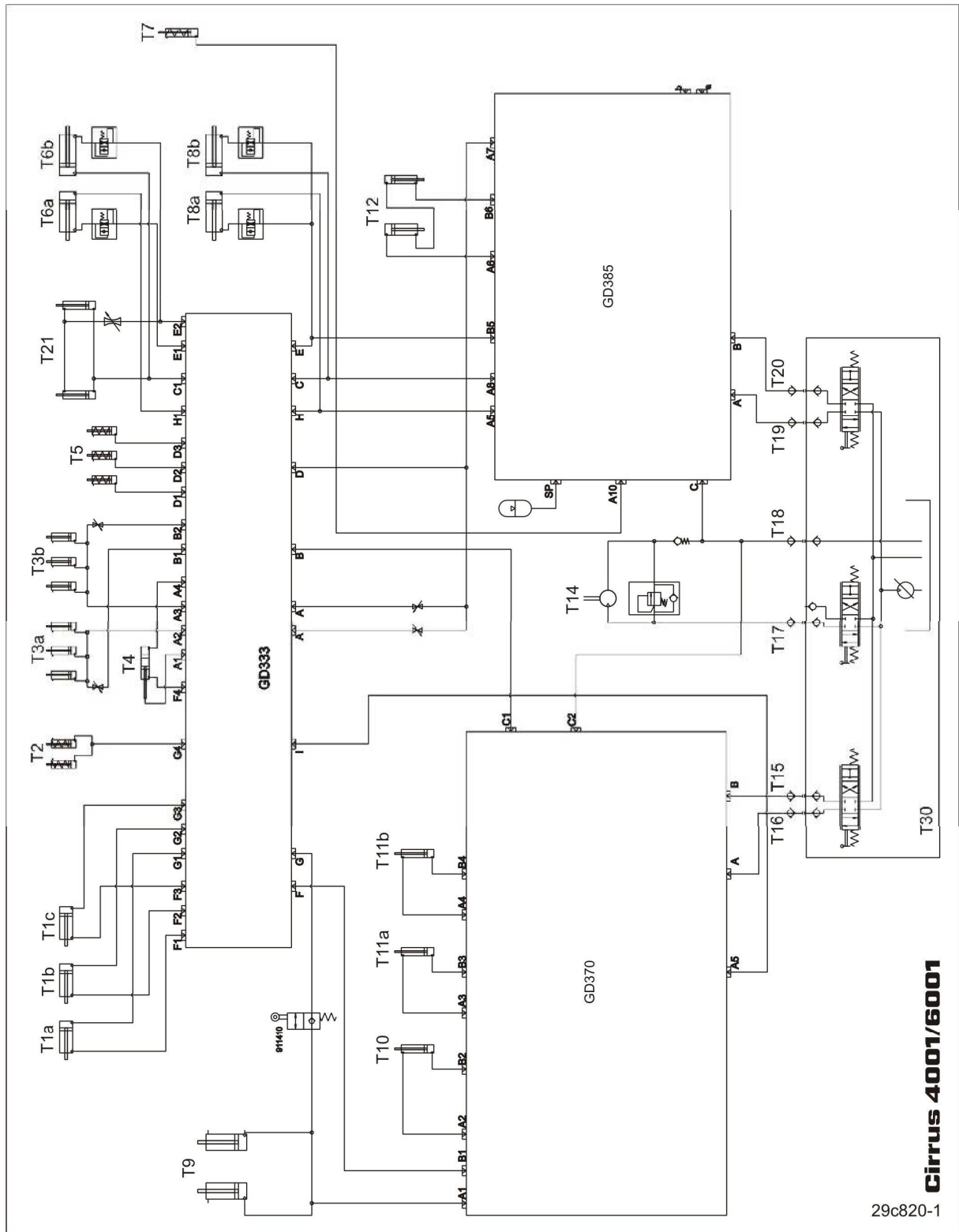


Fig. 228

13.3 Hydraulic plan of the Cirrus 8001/9001

Fig. 229/...	Designation
T1a	Share lift-out left
T1b	Share lift-out right
T1c	Share lift-out middle
T2	Pre-emergence marker
T3a	Equalising system left
T3b	Equalising system right
T4	Lift-out accumulator
T5	Harroweeder pressure adjustment
T6a	Folding cylinder, rear left
T6b	Folding cylinder, rear right
T7	Folding frame securing device
T8a	Folding cylinder, front left
T8b	Folding cylinder, front right
T9a	Running gear left
T9b	Running gear middle
T9c	Running gear right
T10	Star wheel
T11a	Track marker left
T11b	Track marker right
T12	Disc array adjustment
T13	Track loosener (optional)
T14	Blower
T15	1 x cable tie, yellow
T16	2 x cable ties, yellow
T17	1 x cable tie, red
T18	2 x cable ties, red
T19	1 x cable tie, green
T20	2 x cable ties, green
T30	Tractor

All position specifications in direction of travel

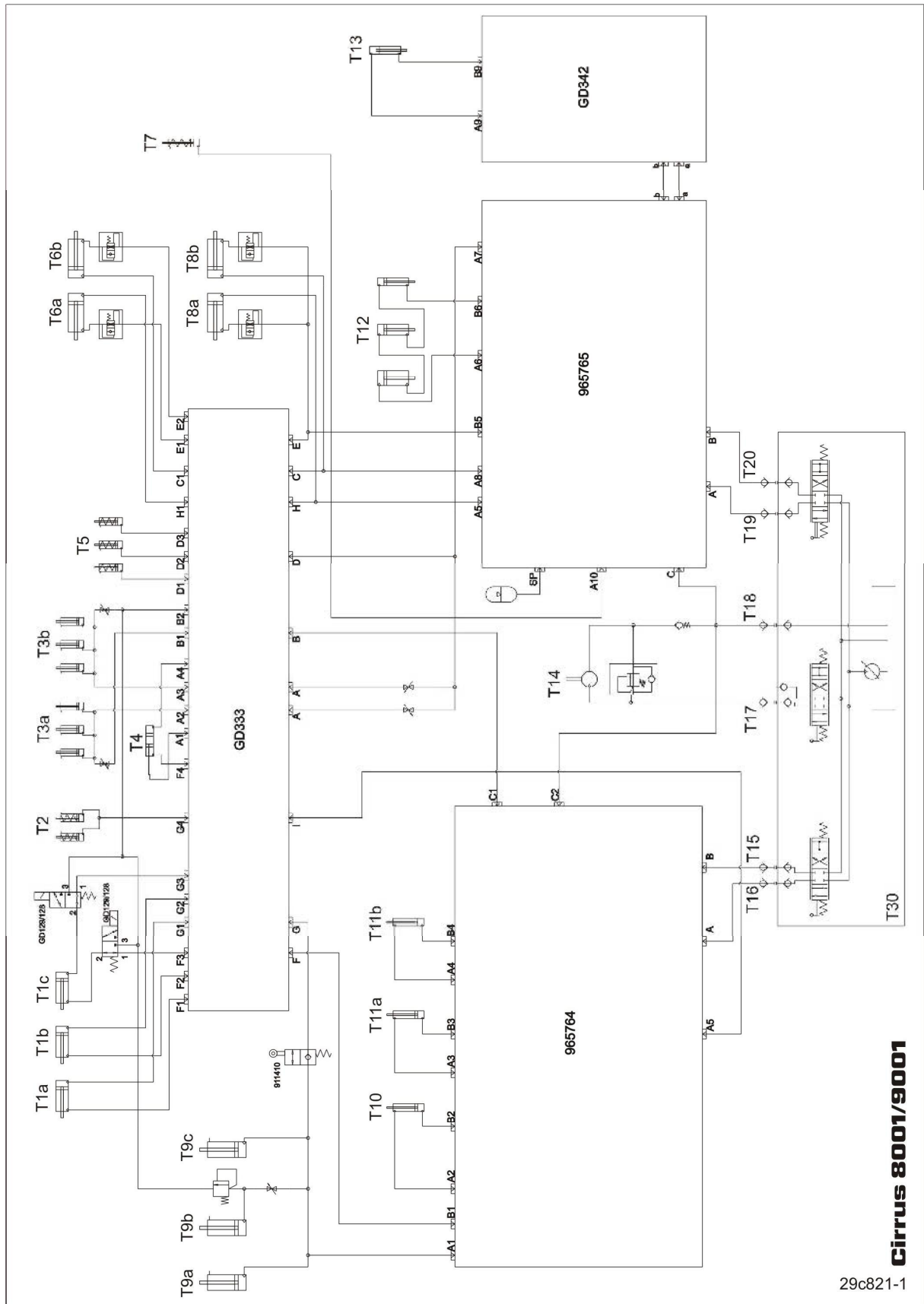


Fig. 229



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