

Operator's manual

AMAZONE

Cirrus 3001 Cirrus 4001 Cirrus 6001

**Packer coulters sowing combinations
with integrated transport wheels**



MG 1138
BAH0001 05.05
Printed in Germany



**Before starting operation,
please carefully read and
adhere to this operator's
manual and safety advice!**



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**

Manufacturer: AMAZONEN-WERKE
H. DREYER GmbH & Co. KG

Machine-Ident-Nr.:
Type: Cirrus 3001/4001/6001

Permissible pressure of system [bar]: max.200 bar

Year of construction:

Factory:

Power kW:

Basic weight kg:

Allowable total weight kg:

Address of manufacturer:

AMAZONEN-WERKE
H. DREYER GmbH & Co. KG
Postfach 51
D-49202 Hasbergen
Tel.: + 49 (0) 5405 50 1-0
Fax.: + 49 (0) 5405 501-234
E-mail: amazone@amazone.de

Spare parts ordering

AMAZONEN-WERKE
H. DREYER GmbH & Co. KG
P. O. Box 51
D-49202 Hasbergen
Tel.: + 49 (0) 5405 501-290
Fax.: + 49 (0) 5405 501-106
E-mail: et@amazone.de

Spare parts online catalogue: www.amazone.de

When ordering spare parts please always state the serial number of your machine.

Formal remarks to this instruction manual

Document Number: MG 1138

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Preface

Dear Customer,

You decided to purchase one of our high quality machines from the comprehensive range of farm machinery produced by AMAZONEN-WERKE, H. DREYER GmbH & Co. KG. Thank you for your confidence.

When receiving the machine, please check immediately that no damage has been caused in transit and that all parts are present. Please check whether all parts mentioned in the delivery note including the ordered optional equipment are present. Only the immediate reportage of damage will be considered for compensation.

Before the first operation, please read and adhere to this instruction manual and the safety advice. After having thoroughly read the instruction manual you can make fullest use of the advantages of your recently purchased machine.

Please ensure that this instruction manual is made available to any operator before he or she starts to operate the machine.

In case of any questions or problems, please refer to this instruction manual or just call us.

Maintenance and in regular intervals and the exchange of worn or damaged parts in time increases the life expectancy of your machine.

User's review

Dear reader,

Our instruction manuals are regularly updated. With your suggestions for improvement you will help to create an always user friendly instruction manual. Please send your suggestions by fax.

AMAZONEN-WERKE

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1 User advice

The chapter "User advice" provides information for dealing with the instruction manual.

1.1 Purpose of the document

The present instruction manual

- describes the operation and the maintenance for the machine.
- gives important hints for a safety conscious and efficient operation with the machine.
- is part of the implement and should be kept so that it is always to hand on the machine or in the towing vehicle.
- should be kept for future use.

1.2 Information about directions in this instruction manual

All information about direction in this instruction manual are to be understood in direction of travel.

1.3 Illustrations used

Operational action and react

The steps of operation to be carried out by the operational staff are described in a numbered list. Adhere to the sequence of the steps. The reactions on the individual operational step are marked with an arrow. Example:

1. Operational action step 1
→ Reaction of the machine on operational action step 1
2. Operational action step 2

Enumerations

Enumerations without indispensable sequence are described as a list with enumeration items. Example:

- Item 1
- Item 2

Position figures in illustrations

Figures in round brackets refer to position figures in illustrations. The first figure refers to the illustration, the second figure refers to the item number in the illustration.

Example (Fig. 3/6):

Figure 3

Item 6

2 General safety advice

This chapter contains important hints for the safety conscious operation of the machine.

2.1 Obligations and liability

Observe the advice given in this instruction manual

The knowledge of the basic safety advice and safety regulations are the pre-condition for the safety conscious dealing with the machine and its trouble free operation.

Obligation of the user

The user commits himself to have the machine only operated by persons who

- are acquainted with the basic prescriptions regarding the operational safety and accident prevention.
- have been introduced to the machine.
- have read and understood this instruction manual.

The owner commits himself

- to keep all warning signs on the machine in well readable condition.
- to replace damaged warning signs.

Obligation of the operator

Before commencing any operation all persons who are instructed to operate the machine commit themselves to

- observe the basic regulations regarding the operational safety and accident prevention,
- to read and to adhere to the chapter "Safety".
- to read and to adhere to the chapter "Warning signs and other signs on the machine", on page 17.
- In case of queries, please contact the manufacturer.

Danger when dealing with the machine

The machine has been manufactured according to the state of the art and the certified safety regulations. Nevertheless, the operation of the machine could cause danger and adverse effects on

- body and life of the operator or third parties,
- the machine itself,
- other tangible assets.

Only use the machine

- for the purpose it has been designed for.
- in a perfect safety engineering condition.

Immediately remedy all failures affecting the safety.

Warranty and liability

As a matter of principle our "General terms of sale and delivery" prevail. These will be made available to the user on the date of conclusion of contract at the latest. Warranty and liability claims for injury to life or property are rejected when they have been put down to one or several of the following causes:

- not designed use of the machine,
- improper fitting, putting into work, operation and maintenance of the machine,
- operating the machine with defective safety facilities or incorrectly fitted or non functioning safety devices and guards,
- not adhering to the instruction manual regarding putting into work, operation and maintenance,
- arbitrary changes on the machine.
- poor monitoring of the wearing parts of the machine,
- improper repair work,
- in an emergency due to alien elements and force majeure

2.2 Illustration of safety advice

The safety advice is identified by a symbol and a warning. The warning describes the seriousness of the threatened danger. The individual symbols have the following meaning:



Danger!

Immediate imminent danger to life and health of persons (severe injuries or death).

Not adhering to this advice will cause severe damage to health with the possibility of life threatening injuries.



Warning!

Possible danger to life and health of persons.

Not adhering to these hints may cause severe adverse health effects with the possibility of life threatening injuries.



Caution!

Possible dangerous situation (slight injuries, material damage).

Not adhering to these warnings may cause slight injury or material damage.



Important!

Obligation of a particular behaviour or action for the appropriate handling of the machine.

Not adhering to these hints may cause trouble with the machine or the environment.



Hint!

Hint for use and particularly useful information.

These hints will help you to optimally make use of the function of the machine.

2.3 Organising measures

The operator must ensure the availability of the personal protective equipment, e.g.:

- safety glasses
- safety shoes
- protective clothing
- skin protecting agent, etc.



Important!

The instruction manual

- **should always be kept at the place where the machine is operated.**
- **should always be available for the operator and the servicing staff.**

Regularly check all existing safety devices

2.4 Safety device and guards

Only operate the machine with all safety devices and guards fitted and properly functioning. Regularly check all safety devices and guards.

Defective safety devices

Defective or missing safety device and guards will cause dangerous situations.

2.5 Informal safety measures

Besides the safety advice in this instruction manual observe and adhere to the national, local and generally valid advice for operational safety, accident prevention and environmental care.

Please particularly observe the accident prevention prescriptions of your national authorised trade association.



2.6 Training of the staff

Only people who are trained and familiarised may operate with/on the machine. The responsibility of persons for operation and maintenance should clearly be prescribed.

A trainee may only operate the machine under the supervision of a skilled person.

Action \ Personnel	Particularly trained persons	Instructed operator	Persons with specialist training (authorised workshop*)
Loading/Transport	X	X	X
Putting into operation	--	X	--
Installation, setting up	--	--	X
Operation	--	X	--
Maintenance	--	--	X
Searching for faults and remedy	X	--	X
Disposal	X	--	--

Legend: X.. allowed --..not allowed

*) All maintenance and repair work marked with the addition "authorised workshop" should only be carried out in an authorised workshop. The staff in the authorised workshop has the necessary knowledge and suited auxiliaries (tools, lifting and supporting devices) for the professional and safe execution of this maintenance- and repair work.

2.7 Safety measures and normal operation

Operate the machine only with all safety devices and guards properly functioning.

Check the machine at least once a day for externally recognisable damage and for function of the safety devices and guards.

2.8 Danger from residual power

Observe the incidence of mechanic, hydraulic, pneumatic, and electric/electronic residual power on the machine.

Undertake appropriate measures when instructing the operating staff. Detailed hints are again given in the relevant chapters of this instruction manual

2.9 Maintenance and repair, remedy of faults

Carry out all prescribed setting-, maintenance and servicing work in due time.

Secure all operating systems like compressed air and hydraulics against unintended starting.

When exchanging larger components carefully affix them to the hoisting implement.

Check slackened screw joints for firm seating. After having finished maintenance work, carefully check all safety devices for proper function.

2.10 Constructional changes

Never carry out any alterations or fittings or changes on the machine without approval of the **AMAZONEN-WERKE**. This also applies for welding work on bearing parts.

All fitting or alteration measures require the written approval of **AMAZONEN-WERKE**. Only use the conversion and optional parts approved by Messrs **AMAZONEN-WERKEN** so that the operating permit remains valid according to national and international regulations.

Vehicles with an official licence or implements and equipment connected with a vehicle with an official licence or permit for road traffic should be maintained in the appropriate condition.



Important!

Prohibited on principle is

- boring on the frame or the chassis.
- reboring existing holes on the frame or the chassis.
- welding on bearing parts.



2.10.1 Spare parts and wearing parts and auxiliary parts

Immediately exchange defective machine parts.

Only use original -**AMAZONE**- spare- and wearing parts or the parts approved by Messrs **AMAZONEN-WERKEN** so that the operating permit remains valid according to the national and international regulations. When using spare and wearing parts from other manufacturers it is not ensured that they have been designed and manufactured to fulfil the operational stress and safety demands.

The **AMAZONEN-WERKE** do not accept any liability for damage by using not approved spare or wearing parts or auxiliary parts.

2.11 Cleaning and disposal

Utilise agents and materials and dispose them in the appropriate manner particularly

- when working with greasing systems and devices and
- when cleaning with solvent agents.

2.12 Workplace of the operator

The machine may only be operated by one single person from the seat in the tractor cab.

2.13 Safety symbols and other identifications on the machine



Important!

Always keep all safety symbols on the machine clean and in well readable condition! Replace not readable safety symbols. Ask your dealer for warning signs stating the relevant order number (e.g. MD 075).

Warning signs - composition

Warning signs indicate dangerous points on the machine and warn about danger. At these points permanently existing or unexpectedly occurring danger prevail.

The warning sign consists of 2 fields:



Field 1

Gives a vivid description of the danger and is surrounded by a triangle safety symbol.

Field 2

Gives the vivid instruction to avoid these dangers.

Warning sign - Explanation

The column **Order Number and explanation** provides the description to the opposite warning sign. The description of the warning sign is always the same and states in the sequence indicated:

1. Description of danger.
For example: Danger from cutting or cutting off!
2. Consequences when not adhering to the given advice how to avoid dangers.
For example: will cause severe injury on finger or hand.
3. The advice to avoid danger.
For example: Touch machine parts only then when they have come to a full standstill.

Picture No. and Explanation

Safety symbols

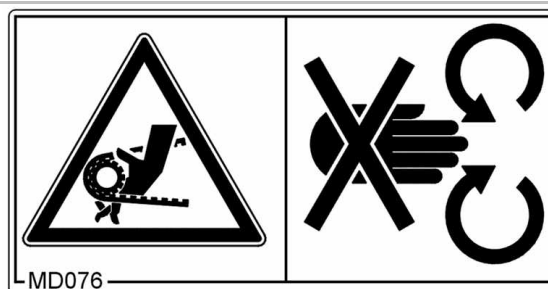
MD 076

Danger from getting pulled in or getting caught!

Will cause severe injury to hand or arm.

Never ever open or remove the guards from chain or belt drives

- as long as the tractor engine is still running with connected PTO shaft / coupled hydraulic drive
- or the ground wheel drive is moving.



MD 077

Danger from getting pulled in or getting caught!

Will cause severe injury to hand or arm.

Never ever reach into the star wheel operational area as long as the tractor engine is running.

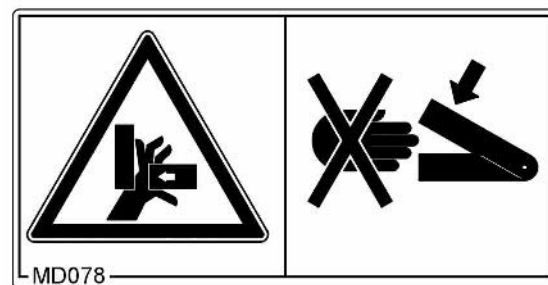


MD 078

Danger of squeezing!

Will cause severe injury on finger or hand.

Never reach into this zone as long as parts are still moving.

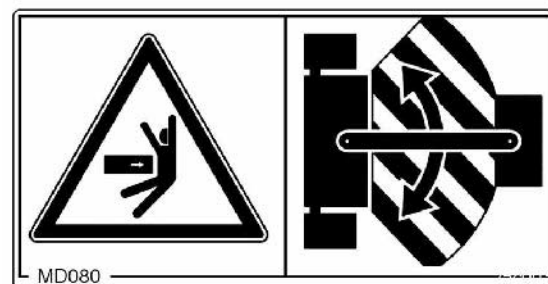


MD 080

Danger of squeezing

Will cause severe to the entire body or even fatal injury.

Never stay within the kinking area of the draw bar between tractor and machine as long as the tractor engine is running.



MD 082

Danger of falling for persons!

Will cause severe injury to the entire body.

Riding on the machine and/or climbing the running machine is prohibited. This prohibition is also valid for machines with steps or platforms.

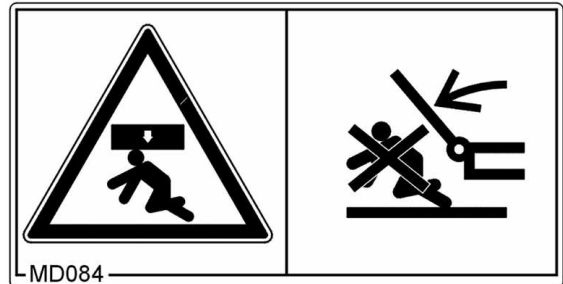


MD 084

Danger of squeezing!

Will cause severe to the entire body or even fatal injury.

Persons are not allowed to stay within the swivel area of machine parts.

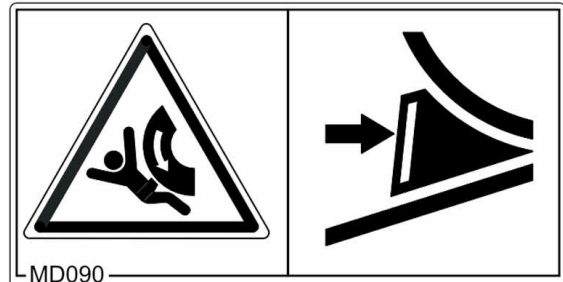


MD 090

Danger from unintended moving of the machine.

Will cause severe or fatal injury on the whole body.

Secure the machine against unintended moving before you couple the machine off the tractor. Make use of the parking brake and/or chock(s).

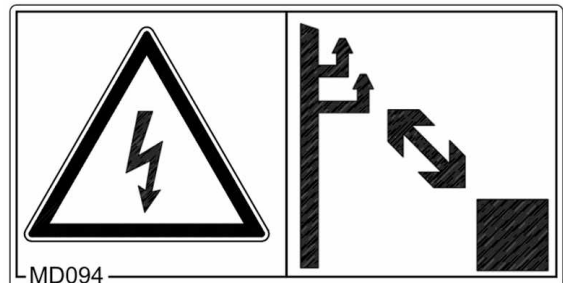


MD 094

Danger from electricity!

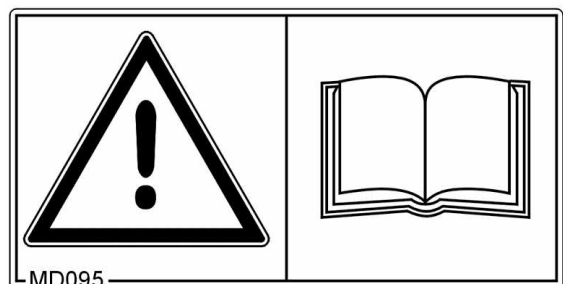
Will cause severe to the entire body or even fatal injury.

When folding in and out the machine observe sufficient clearance distance when near high voltage power lines.



MD 095

Before commencing operation read thoroughly operators manual and safety advice!

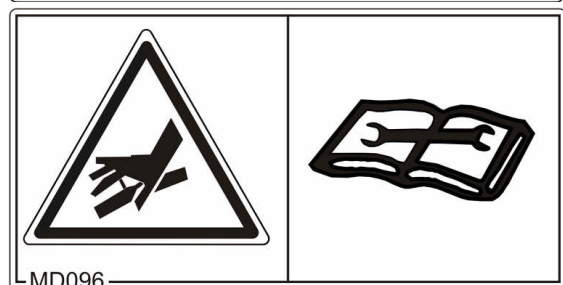


MD 096

Danger from liquids leaking under high pressure (hydraulic oil).

Liquids leaking under high pressure will penetrate the skin and cause severe injury.

Before commencing any maintenance and repair work read and adhere to the hints in the technical manual.



General safety advice

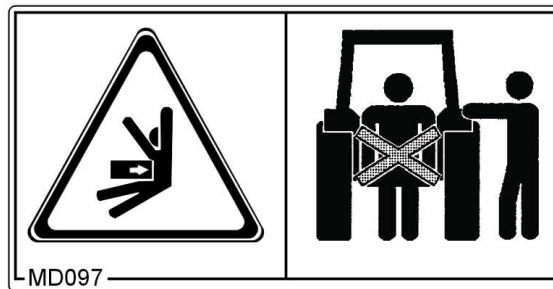
MD 097

Danger of squeezing!

Will cause severe to the entire body or even fatal injury.

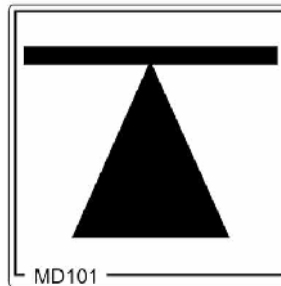
When actuating the power lift observe sufficient clearance distance from the lifting area of the three point linkage.

When the three point lifting device is actuated, the standing of persons within the lifting area of the three point linkage is prohibited!



MD101

Positioning of jack in case of repair.!



MD 102

Danger from unintended starting the machine.

Will cause severe to the entire body or even fatal injury.

- Prior to any maintenance and repair work stop the tractor engine and remove the ignition key.
- Before commencing any maintenance and repair work read and adhere to the hints in the technical manual.

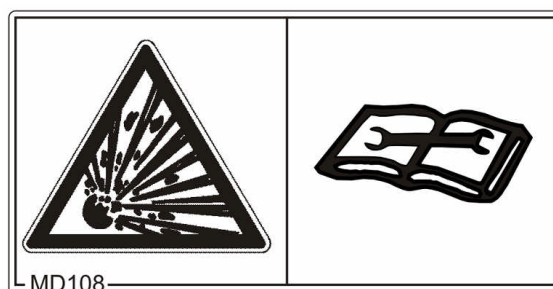


MD 108

Danger from the pressure reservoir being under gas and oil pressure.

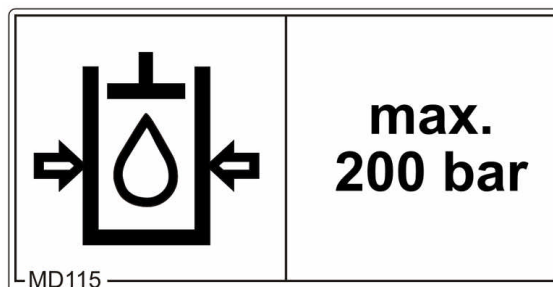
Will cause severe to the entire body or even fatal injury.

Before commencing any maintenance and repair work read and adhere to the hints in the technical manual.



MD 115

The permissible max. hydraulic pressure is 200 bar!



2.13.1 Positioning of warning decals and other identifications

Warning decals

The following illustrations show the arrangement of the warning decals.

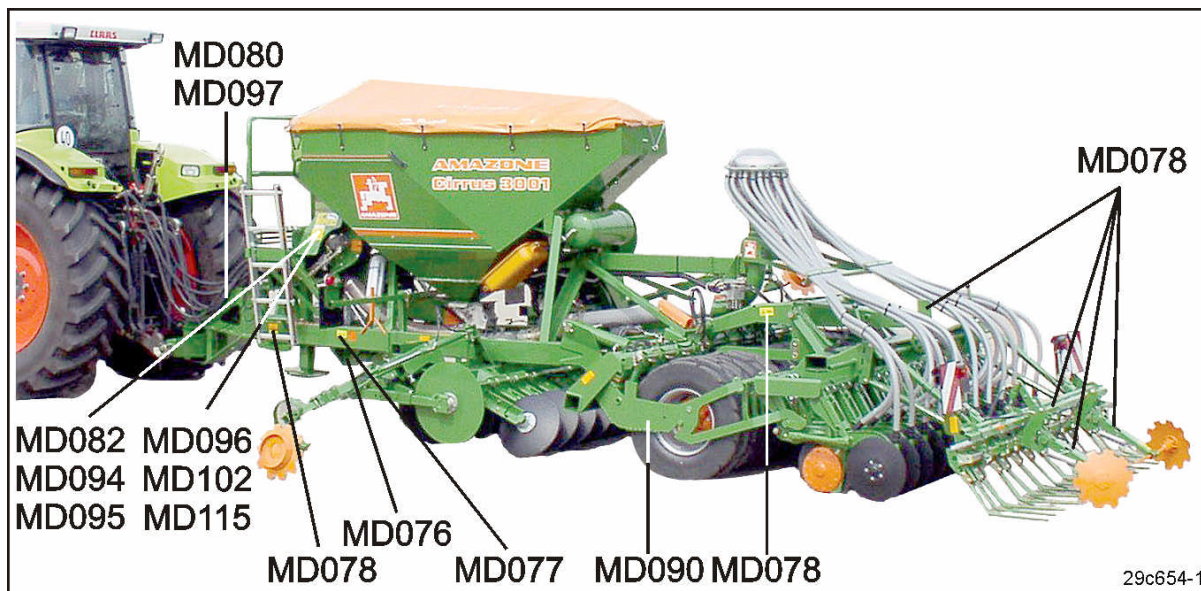


Fig. 1



Fig. 2

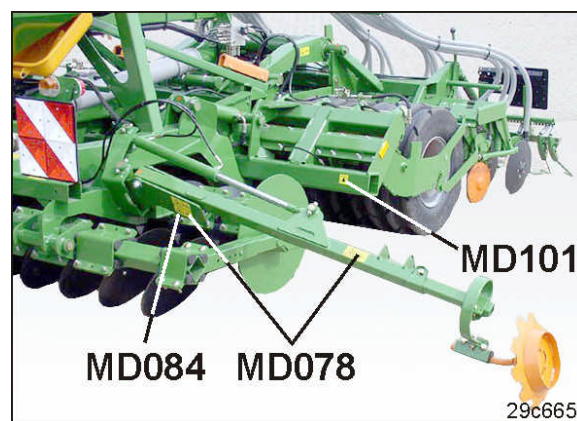


Fig. 3



Fig. 4

General safety advice

The following pictures show the warning signs which are only attached to foldable machines.



Fig. 5

2.14 Danger when not adhering to the safety advice

Not adhering to the safety advice

- may result in endangering persons, also the environment and also the machine itself.
- may result in the rejection of any claim for damage.

Not paying attention to the safety advice may cause the following risks:

- Danger to persons not excluded from operational areas.
- Failure of important functions within the machine.
- Failure of carrying out prescribed measures of maintenance and repair.
- Danger to persons through physical or chemical contact.
- Danger to persons, or the environment by leaking hydraulic oil.

2.15 Conscious operation

Besides the safety advice in this instruction manual additionally, the national, and generally valid operation safety and accident prevention advice of the authorised trade association are binding.

Adhere to the advice given on the warning signs to avoid danger.

When travelling on public roads observe the traffic regulations in force in your country.

2.16 Safety advice for the operator



Warning!

Always check traffic and operational safety before putting the machine to operation!

2.16.1 General safety and accident prevention advice

- Adhere to the general rules of health- and safety precautions besides the advice in this instruction manual!
- The fitted warning- and advising decals give important hints for a safe operation. Adhering to them protects your own safety!
- Before beginning to move, check surrounding area (children etc.)! Ensure sufficient visibility!
- Riding or any transport on the machine is prohibited.

Coupling and uncoupling the machine

- The machine should only be transported and driven by a tractor which fulfils the power requirements.
- When fitting to the three-point linkage the mounting categories at the tractor and the implement must be compatible!
- By mounting implements at the front or in the rear of a tractor, do not exceed
 - o the permissible tractor total weight
 - o the permissible tractor axle loads
 - o the permissible tyre carrying capacity of the tractor tyres
- Secure the tractor and the machine against unintended rolling away before mounting or dismounting the machine.
- Allow nobody to stand between tractor and implement while the tractor is backing up.

Any assistants may only stay at the side of the vehicle and help to direct it. Only when the vehicles have come to a full standstill they are allowed to step between them.
- Before mounting and dismounting the machine to the three-point linkage secure the control lever for the tractor hydraulics in such a position that an unintended lifting or lowering is impossible.
- When attaching or removing the machine bring any parking or storing devices into the corresponding position (standing safety)!
- Danger of squeezing and shearing when actuating the supporting device.
- Special care should be taken when coupling the machines on or off the tractor. There exist squeezing and shearing points at the coupling points between tractor and implement.
- Standing between tractor and implement when the three point hydraulic is actuated is prohibited.
- Attach implements as advised and couple the machine in the appropriate manner to the prescribed devices.
- The release ropes for quick coupler should hang freely and in the low position must not release the quick coupling by themselves.

- Park uncoupled machines safely.

Operation of the machine

- Become acquainted with the machine controls and functions before beginning the operation. Doing this during operation would be too late.
- Wear close-fitting clothes. Wearing loose-fitting clothes would increase the danger of getting caught by the drive shafts.
- Only start the machine with all guards fitted and in serviceable condition.
- Observe the maximum payload of the mounted / trailed machine and the permissible axle and support loads of the tractor. If necessary, only travel with partly filled hopper.
- The standing of persons within the operational range of the machine is prohibited.
- Standing of persons within the pivot and swivel area of the machine is prohibited.
- On all hydraulically actuated pivoting parts exists danger of injury by bruising and trapping.
- Machine parts may only be hydraulically actuated when persons observe sufficient clearance to the machine.
- Before leaving the tractor
 - lower the machine to the ground
 - stop the tractor engine
 - remove the ignition key.

Transport of the machine

- When travelling on public roads observe your legal national traffic regulations.
- Always ensure sufficient steering braking of the tractor.
Steering and braking of the tractor are influenced by mounted or trailed machines and front or rear ballast weights.
- If necessary, use ballasts weights.
The tractor front axle load must be at least 20 % of the tractor's net weight in order to ensure a sufficient steering.
- Attach the front or rear ballast weights in the appropriate manner on the fixing points provided.
- Observe the max. payload of the mounted / trailed machine and the permissible axle and support loads of the tractor.
- The tractor must provide the prescribed brake lag for the laden combination (tractor plus mounted / trailed machine).
- Before starting to travel on public roads, check function of brakes.
- When driving round bends note the width of the mounted or trailed machine and the gyrating mass of the machine.
- Before starting to travel on public roads ensure the sufficient lateral locking of the tractor lower link arms when the machine is fixed to the three point hydraulics or the lower link arms of the

tractor.

- Before starting to travel get all swivelling machine parts into transport position.
- Before starting to travel secure all swivelling machine parts in transport position against dangerous movement from their position. For this use the intended transport securing devices.
- Before starting to travel secure the lever of the three point hydraulics against unintended lifting or lowering of the mounted or trailed machine.
- Before any transport travel ensure that the required transport device is correctly fitted on the machine, as, e.g. traffic lights, warning devices, guards.
- Adapt your travelling speed to the prevailing conditions.
- Choose a lower gear when driving down hill.
- As a matter of principle switch off the single wheel braking (lock the pedal) before starting any transport travel.

2.16.2 Hydraulic system

- The hydraulic system is under high pressure!
- Connect hydraulic hoses to the hydraulic rams and motors according to the advice in the instructions!
- When fitting the hydraulic hoses to the tractor hydraulic sockets always ensure that the hydraulic system on the tractor as well as on the implement is without pressure!
- Before starting to do repair work to the hydraulic system,
 - lower machine to the ground,
 - release the pressure and
 - stop tractor engine.
- All hydraulic hoses must be checked for their operational safety by a skilled person at least once a year. In case of damage or ageing replace the hydraulic hoses. Only use original **AMAZONE** hydraulic hoses.
- The period of use of any hose circuit should not exceed six years including a possible storing period of two years maximum. Also when stored and used properly hoses and hose circuits do age. Therefore their longevity and period of use is limited. Deviations from the above may be accepted by the Health- and Safety Authorities depending on the experience they have had and the danger potential. For hoses and hose circuits made of thermoplasts other guide lines may prevail.
- Danger of infection! Liquids leaking under high pressure (hydraulic oil) can penetrate the skin and cause severe injury! When injured see a doctor immediately!
- When searching for leaks appropriate aids should be used because of the danger of injury!

2.16.3 Electric outfit

- When working on the electric system always disconnect the battery (negative pole).
- Use prescribed fuses only. When using too strong fuses the electric circuit may be damaged - danger of fire.
- Make sure the polarity is correctly fitted. First connect positive pole and then negative pole. - When disconnecting vice versa.
- Always provide plus pole with supplied cover. At accidental earth contact there is danger of explosion!
- Danger of explosion! Avoid sparks and open fire near the battery!
- The function of the implements' electronic components and parts may be affected by the electro magnetic transmittance of other devices. Such affects may endanger third parties when the following safety advice has not been adhered to:
 - When retrofitting electric and electronic devices and/or components to the implement with a connection to the tractor's on-board electric circuit, the onus is on the user to ensure that the installation will not cause any disturbance to either the tractor's electronics or other components.
 - Special attention must be paid that the retrofitted electric

and electronic parts correspond to the EMV-guideline 89/336/EC in the relevant valid edition and that they bear the CE-mark.

2.16.4 Maintenance, repair- and care-work

- Repair-, maintenance- and cleaning operations as well as the remedy of function faults should principally be conducted with
 - o drive stopped
 - o engine stopped
 - o remove ignition key
 - o implement plugs removed from the on-board computer
- Check nuts and bolts for tightness and retighten if necessary!
- Before carrying out any maintenance-, repair- and cleaning work ensure the lifted implement or lifted implement parts against unintended lowering.
- When exchanging operational tools with cutting edges use appropriate tools and wear gloves.
- Dispose of oil, grease and filters in the appropriate manner.
- Before conducting any electric welding on the tractor and the mounted implements remove the cable from generator and tractor battery.
- Any spare parts fitted must, as a minimum meet with the implement manufacturers' fixed technical standards! Using original **-AMAZONE-** spare parts for example ensures this!

2.16.5 Trailed machines

- With one-axle machines observe the max. permissible support load of the tractor on the coupling device.
- Always ensure the sufficient steering and braking of the tractor.
Tractor mounted or trailed machines affect the driving behaviour as well as the steering and braking of the tractor, especially one-axle machines with support load on the tractor.
- Only an authorised workshop is allowed to carry out the adjustment of the draw bar height on straight draw bars.

2.16.6 Brake system

- Only authorised workshops or brake services are allowed to carry out adjustment or repair work on the brake system.
- The brake system must be carefully checked in regular intervals.
- Immediately stop the tractor when function faults are noted on the brake system. Care for immediate remedy of the function fault.
- Before carrying out any servicing on the brake system, safely park the machine and secure the machine against unintended lowering and unintended rolling away (chocks).
- Special care should be taken when carrying out welding, solder and boring work near brake hoses.
- As a matter of principle carry out a brake test after any setting and repair work.

Air brake system

- Before coupling the machine, clean the seal rings on the coupling claw of the secondary hose and the brake hose from any dirt.
- Only start driving with the machine coupled when the pressure gauge on the tractor indicates 5.0 bar.
- Daily drain the air reservoir.
- Before starting to travel without a coupled machine, cover the coupling claws on the tractor.
- Hang the coupling claws of the supply and brake line of the machine into the provided dummy couplings.
- Only use the prescribed brake fluid for topping up or renewing.
- You are not allowed to change the determined settings on the brake valves.
- Replace the air reservoir if
 - o the air reservoir can be moved within the tensioning belts
 - o the air reservoir is defective
 - o the type plate on the air reservoir starts to rust, is loose or missing.

Hydraulic brake system for export machinery

- Hydraulic brake systems are not allowed in Germany.
- For topping up or renewing only use the prescribed hydraulic oils. When renewing hydraulic oils, please observe the relevant prescriptions.

2.16.7 Tyres

- Repair work on tyres and wheels must only be carried out by skilled persons with appropriate tools.
- Check the air pressure in regular intervals.
- Observe the prescribed air pressure. Danger of explosion exists when the air pressure in the tyre is too high.
- Before carrying out any work on the tyres, safely park the machine and secure against unintended lowering and rolling away (apply parking brake, use chocks).
- Tighten or retighten all fixing bolts and nuts according to the advice of **AMAZONEN-WERKE**.

2.16.8 Seed drill operation

- Watch danger areas with rotating and oscillating machine parts whilst carrying out the calibration test.
- Only step on the platform to fill the tank.
Riding on the platform during transport or operation is prohibited.
- Before starting to travel on public roads remove the marker discs from the pre emergence marker.
- When filling the seed tank observe the hints of the implement manufacturer.
- Lock the track marker (depending on design) in transport position.
- Never place any parts into the seed tank.
- Observe the permissible filling quantity.
- Lock track markers in transport position.

3 Loading



Danger!

- Before loading or unloading the machine from the transport vehicle carefully couple the machine onto the tractor.
- For unloading and loading the machine only couple and transport the machine with a tractor which is designed for this task (sufficient power).
- Danger of accident if the tractor is not sufficiently dimensioned and if the brake system of the machine is not connected with the tractor.

For loading the Cirrus on to a transport vehicle or when unloading couple the Cirrus on to a suited tractor, as described in chapter "Putting into operation", on page 67 and chapter „Coupling and uncoupling the machine“, on page 73.

Connect all connections of the service brake and all hydraulic connections incl. the hydraulic blower connection with the tractor.

It is not necessary to connect the operator terminal **AMATRON+**.



Fig. 6

Loading:

Use the integrated running gear to lift the Cirrus into a medium position (via spool valve 1, see chapter 7.1.1.1, on page 76). Carefully push the Cirrus backwards from behind onto the transport vehicle.

The loading procedure requires one person for directing.

When the Cirrus has reached its transport position on the transport vehicle lower the Cirrus entirely (spool valve 1, see chapter 7.1.1.1, on page 76).

Secure the Cirrus as prescribed. Bear in mind that Cirrus is not provided with a parking brake. Finally uncouple the tractor from the Cirrus.



Fig. 7

Unloading:

Couple the tractor onto the Cirrus as prescribed above.

Remove the transport safety device.

Use the integrated running gear to lift the Cirrus into a medium position and carefully pull the Cirrus off the transport vehicle.

The unloading procedure requires one person for directing.

After unloading park the Cirrus and uncouple the tractor (see chapter. 7.2, on page 78).



Fig. 8

4 Description of product

This chapter

- provides you with a comprehensive survey about the design of the machine.
- provides the descriptions of the individual components and parts.

Read this chapter when standing at the machine. In this way you will get optimally acquainted to the machine.

4.1 Overview – Component groups

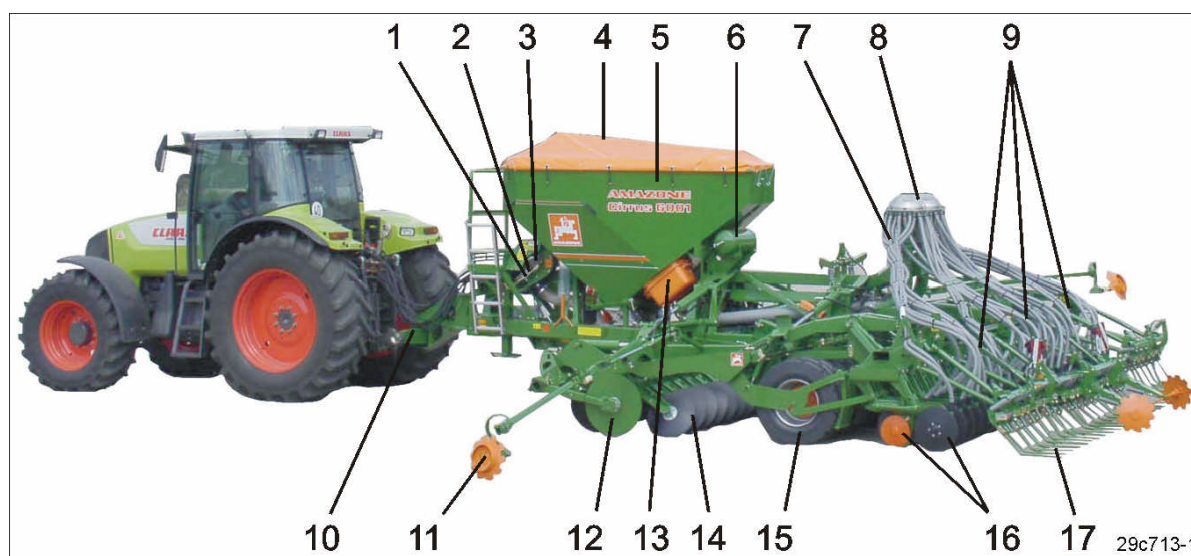


Fig. 9

- | | |
|--|---|
| (1) Pressure relief valve for fan drive | (10) Draw bar |
| (2) Hydraulic motor for fan drive | (11) Track markers |
| (3) Fan | (12) Side discs |
| (4) Hopper cover, swivelable | (13) Seed collecting container in transport retainer |
| (5) Seed hopper with central metering unit | (14) Two row disc segment |
| (6) Air pressure reservoir of air brake | (15) Wedge ring roller with integrated transport wheels |
| (7) Seed tubes | (16) Packer coulters |
| (8) Distributor head | (17) Extra coverage following harrow |
| (9) Seed placement depth adjustment of packer coulters | |

Fig. 10

Operator terminal-**AMATRON+**


Fig. 10

Fig. 11/...

- (1) Draw bar
- (2) Jack, telescopic



Fig. 11

Fig. 12/...

- (1) Bracket for
 - o hydraulic joints
 - o power supply joints
 - o air pressure joints
- (2) Chocks
- (3) Platform with ladder
- (4) Strap when stepping on the platform
- (5) Star wheel

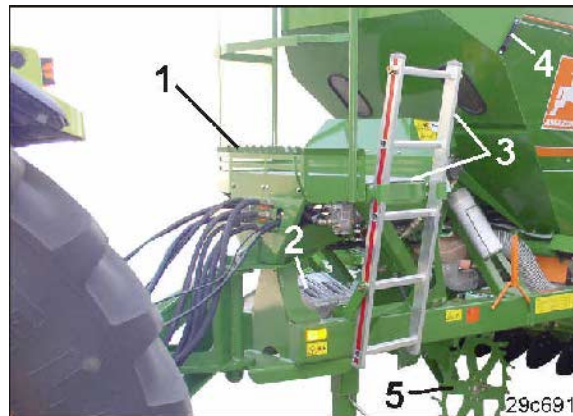


Fig. 12

Fig. 13/...

- (1) Vario gearbox



Fig. 13

Description of product

Fig. 14/...

- (1) Calibration crank in transport retainer
- (2) Metering device
- (3) Bracket for seed collection tray for calibration test
- (4) Injector sluice

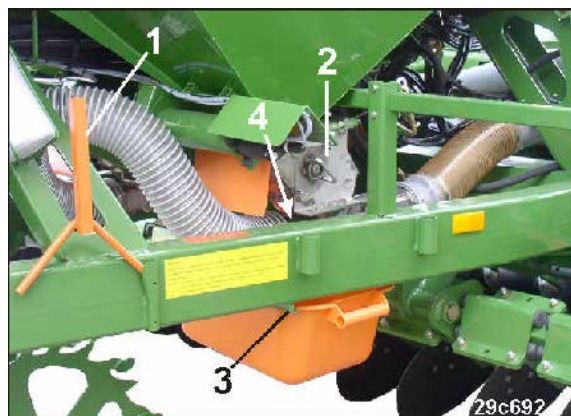


Fig. 14

Fig. 15/...

- (1) Sieve screen
- (2) Filling level sensor



Fig. 15

Fig. 16/...

- (1) Tramline marker

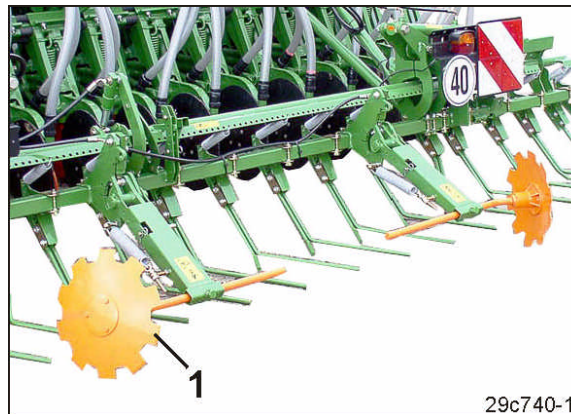


Fig. 16

Fig. 17/...

- (1) Adjustment for extra coverage following harrow
 - o mechanic
 - o hydraulic



Fig. 17

Fig. 18/...

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



Fig. 18

Fig. 19/...

- (1) Electr. hydr. control block

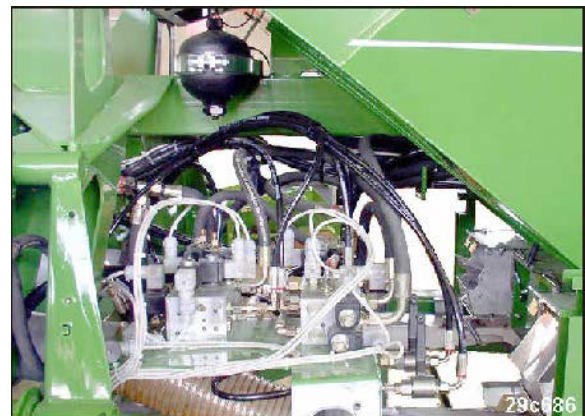


Fig. 19

Fig. 20/...

- (1) Hydraulic tap, secured against twisting
for flushing and calibrating the balancer



Fig. 20

Fig. 21/...

- (1) Hydraulic ram of balancer



Fig. 21

Description of product

Fig. 22/...

- (1) Hydro reservoir with nitrogen filling to pre-tension the folded out machine wings.



Fig. 22

4.2 Overview – Supply lines between tractor and machine

Connection	Function
Tractor-spool valve 1	<ul style="list-style-type: none"> Machine - lowering/lifting Star wheel – lowering/lifting Track marker – lowering/lifting Coulter frame – lowering/lifting Pre-emergence marker–lowering/lifting.
Tractor – spool valve 2	<ul style="list-style-type: none"> Folding the machine wings Adjusting the disc segment Adjusting the wheel mark eradicator Adjusting the exact harrow pressure.
Tractor – spool valve 3	<ul style="list-style-type: none"> Blower fan hydraulic motor
Plug (7-plug)	<ul style="list-style-type: none"> Lighting for road traffic light kit
Implement plug	<ul style="list-style-type: none"> AMATRON⁺
Brake line yellow	<ul style="list-style-type: none"> Air pressure brake system
Supply hose red	
Hydr. brake line (not allowed in Germany and some other EU countries)	<ul style="list-style-type: none"> Hydraulic brake system

4.3 Road traffic safety equipment

Fig. 23/...

- (1) 2 rear lights
- (2) 2 brake lights
- (3) 2 indicators
- (4) 2 red reflectors (round, rectangular, or triangular)
- (5) 1 carrier for the registration number with light
- (6) 2 warning plates facing to the rear
- (7) 1 transport guard.

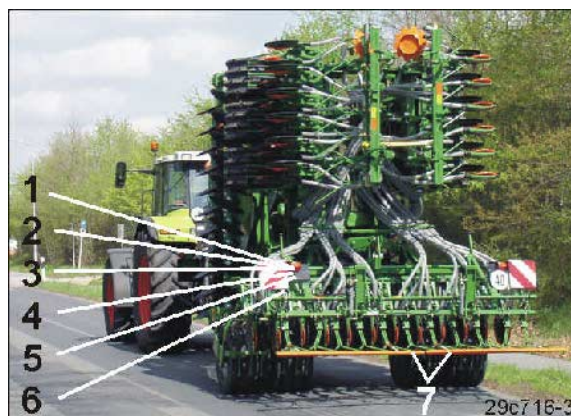


Fig. 23

Fig. 24/...

- (1) 2 limiting lights facing to the front
- (2) 2 warning plates facing to the front.



Fig. 24

Fig. 25/...

- (1) 2 x 4 spots, yellow, (lateral with a distance of max. 3 m)



Fig. 25

4.4 Designated use of the machine

The machine

- has been built for the seed bed preparation arable areas and for metering and sowing all kinds of commercial seeds.
- is coupled onto the tractor with the aid of tractor lower links and operated by one person.

Operating on slopes is possible under following conditions

- When operating across slopes

maximum angle of machine in the direction of travel to the left	20 %
maximum angle of machine in the direction of travel to the right	20 %
- When operating up and down hill

uphill	20 %
downhill	20 %

The declined use also includes:

- observing all hints in this instruction manual.
- adhering the service and maintenance work.
- the exclusive use of original **-AMAZONE-** spare parts.

Other use than that stipulated is prohibited and is no longer considered as designed use.

For damage resulting from not designed use

- the operator himself will carry the full risk,
- the manufacturer will not accept any responsibility.

4.5 Danger zones

Within these zones permanently existing danger or unexpectedly arising danger exist. Safety symbols identify these danger zones. Here particular safety advices are valid. Please refer to chapter "General safety advice", on page 24.

Danger zones prevail:

- between tractor and machine, in particular when coupling the machine and when loading the seed box.
- within the operational range of moving components
- when climbing up the machine
- within the swivel area of the track markers
- within the swivel area of the machine wings
- underneath lifted, unsecured machines and machine parts
- when folding the machine wings in and out within the vicinity of high voltage power lines.

4.6 Conformity

Guide lines- / Standard terms

The machine fulfils the:

- Machine guide line 98/37/EG
- EMV- guide line 89/336/EWG

4.7 Type plate and CE declaration

The following illustrations show the arrangement of the type plate and the CE declaration.

The type plate (Fig. 26/1) and the CE-identification (Fig. 26/2) are located on the right hand machine side next to the Vario gearbox.

The following details are stated on the type plate:

- Machine Ident-No.
- Machine type
- Permissible pressure of system bar
- Year of construction
- Factory
- Basic weight kg
- Permissible total weight kg
- Rear axle load kg
- Front axle load / support load kg.



Fig. 26

The CE-sign (Fig. 27) on the machine indicates the compliance with the valid EC guide lines.



Fig. 27



Description of product

4.8 Technical data

		Cirrus 3001	Cirrus 4001	Cirrus 6001
Working width	[m]	3,0	4,0	6,0
Number of packer coulter		24	32	48
Row spacing of coulter	[cm]	12,5		
Area output	[ha/h]	ca. 2,4	ca. 3,0	ca. 4,8
Capacity seed tank	[l]	2200	2200	3000
Sowing combination		Trailed with disc segment		
Operational speed	[km/h]	12 to 16		
Total length	[m]	7,42	7,92	7,92
Transport wheels		Integrated with 4 running gear wheels		
Number of wedge ring tyre		6	8	12
Max. support load (F _H) with the seed box filled	[kg]	2200	2400	2800
Brake system interface		air braking system or hydraulic brake system*		
Effective brake in the integrated running gear		hydraulic brake system		
Required tractor hydraulic capacity		min. 80 l/min, at max. 200 bar		
Pulling power requirement		from 90 kW/120HP	from 110 kW/150HP	from 147 kW/200HP
Tractor-lower links		cat. III		
Gearbox-/ hydraulic oil, Hint: suited for the combined hydraulic / gearbox oil circuits of all common tractor makes.		Gearbox-/Hydraulic oil Utto SAE 80W API GL4		
Electric tractor joint		12 Volt/7-pin socket		
Road transport data(only with empty seed tank):				
Permissible max. speed on all non public and public roads and ways.	[km/h]	40		
Basic weight	[kg]	4480	6230	8180
Permissible total weight	[kg]	4700	6500	8400
Max. load for road transport	[kg]	220		
Permissible rear axle load	[kg]	4000	5600	7300
Permissible front support load	[kg]	1200	1400	1500
Transport width	[m]	3,0		
Total weight in transport position (from 4 m working width when folded in)	[mm]	2700	2700	3500

* Not allowed in some EU countries.



Fig. 28



Fig. 29



Fig. 30

4.9 Required tractor equipment

In order to be able to operate the machine, the tractor must fulfil the power requirements and must be provided with the necessary electric, hydraulic and brake connections for the brake system.

Tractor engine power

Cirrus 3001	From 90 kW (120 PS)
Cirrus 4001	From 110 kW (150 PS)
Cirrus 6001	from 147 kW (200 PS)

Electrical system

Battery voltage:	12 V (Volt)
Socket for lights:	7-pin socket

Hydraulics

Max. service pressure::	200 bar
Tractor pump capacity:	min. 80 l/min at 150 bar
Hydraulic oil of the machine:	Gear / hydraulic oil Utto SAE 80W API GL4 The hydraulic / gear oil of the machine is suitable for the combined hydraulic/gear oil circuits of all common tractor types.
Spool valve 1:	double acting spool valve
Spool valve 2:	double acting spool valve
Spool valve 3:	<ul style="list-style-type: none"> 1 single or double acting spool valve with priority for the flow line 1 pressure free return flow with large plug coupling (DN 16) for the pressure free oil return flow. In the return flow the back pressure must not exceed.



Important!

Check the compatibility of the hydraulic oils before coupling the machine the hydraulic system of your tractor.

Never mix mineral oils and bio-oils.



Warning!

Blocking the spool valves 1 and 2 on the tractor is prohibited. The relevant hydraulic function must stop automatically when the relevant spool valve is released.

Brake system

- Dual circuit brake system:
 - o 1 Coupling claw - red - to secondary hose
 - o 1 Coupling claw - yellow - to brake hose.
- Hydraulic brake system



Hint!

The hydraulic brake system is not allowed in Germany and some EC countries!

4.10 Details about noise level

The tractor operator seat related emission value is 74 dB (A), measured when operating with shut tractor cab at the ear of the tractor operator.

Measuring implement: OPTAC SLM 5.

The noise level depends on the type of tractor used.

5 Assembly and function

The following chapter informs you about the assembly of the machine and the functions of the individual components.



Fig. 31

Cirrus packer coulters sowing systems allow sowing with or without prior soil cultivation in one operational pass.

The disc segment (Fig. 31/1) allows mulch sowing and conventional sowing following the plough.

The wedge ring roller (Fig. 31/2) reconsolidates the worked soil in strips and controls the working depth of the disc coulters.

The seed is transported in the seed hopper (Fig. 31/3).

The metering system (Fig. 31/4), driven by the star wheel (Fig. 31/5) or an electric motor, delivers the pre-set amount of seed into the air flow provided by the fan (Fig. 31/6).

The air flow delivers the seed to the distributor head (Fig. 31/7), that evenly distributes the seed to all packer coulters (Fig. 31/8).

The seed is placed into the re-consolidated strip and covered with loose soil by the extra coverage following harrow (Fig. 31/9).

The track markers (Fig. 31/10) mark the next bout in the tractor's centre.

Machines from 4 m working width can be folded in to a 3 m transport width.

5.1 Seed hopper and seed metering

The metering roller of the metering system (Fig. 32/2) meters the seed from the seed hopper (Fig. 32/1) into the airflow of the injector sluice (Fig. 32/3).

The air flow delivers the seed through the seed tube to the distributor head (Fig. 32/4) and to the sowing coulters (Fig. 32/5).

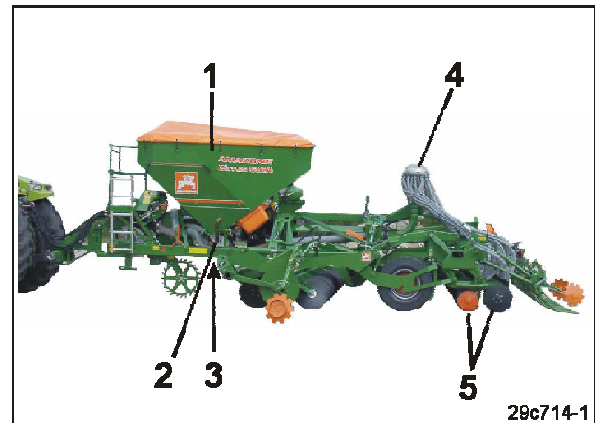


Fig. 32

5.2 Metering rollers

The seed metering units are equipped with exchangeable metering rollers. The type of metering roller depends on

- the grain size of the seed and
- the seed rate.

Utilise the metering rollers following the table (Fig. 83):

- Coarse metering roller (Fig. 33/1) for coarse seeds and big seed rates
- Medium metering rollers (option, Fig. 34/1) for medium size seeds and medium seed rates
- Fine metering rollers (Fig. 35/1) for fine seeds.

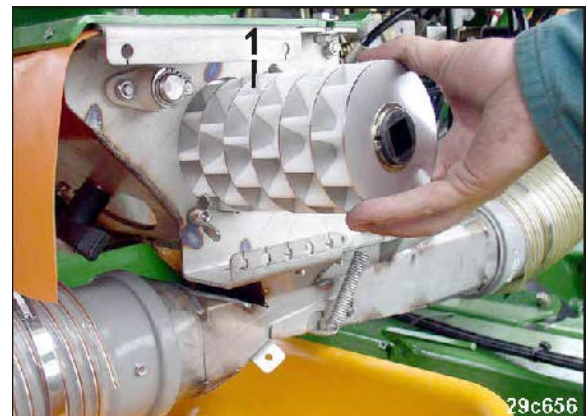


Fig. 33

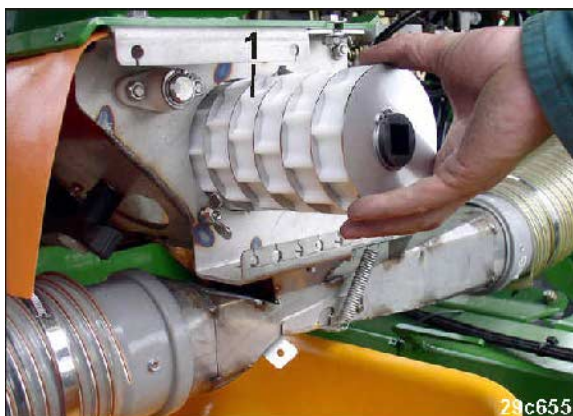


Fig. 34

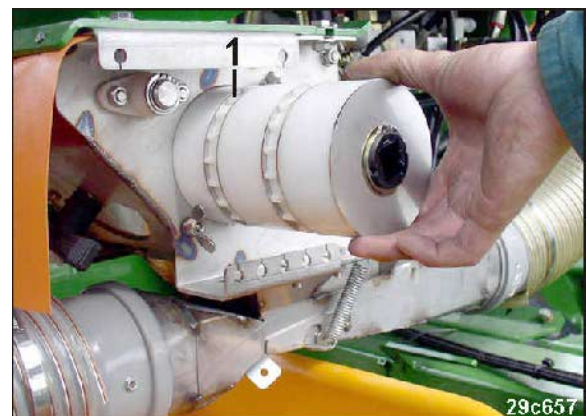


Fig. 35

Assembly and function

The metering rollers are driven at random

- with the aid of a star wheel via the Vario gearbox
- with the aid of an electric motor (full metering).

For sowing seeds with particularly big grains, e.g. large beans, the compartments (Fig. 36/1) of the coarse metering rollers can be increased by resetting the wheels and divisor plates.

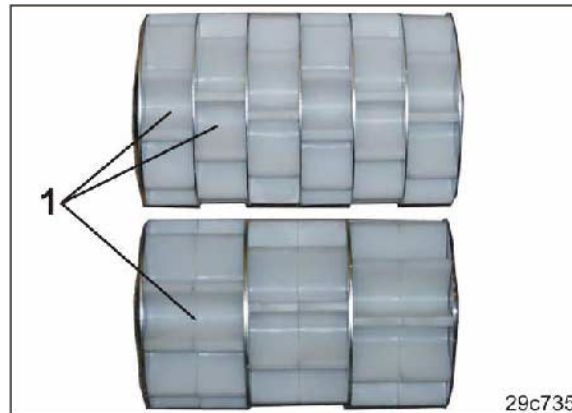


Fig. 36

5.3 Seed level sensor

The seed level sensor monitors the seed level in the seed hopper. If the seed level reaches the seed level sensor an alarm message (Fig. 37) appears in the display of **AMATRON+**, simultaneously a horn sounds. This alarm reminds the tractor operator to refill the hopper on time.

machine type:	Cirrus	Order
order No.:	6	drill calibr.
tramline rhythm No.:	15	machine
working width:	6.0m	Setup
level too low		29c214gb

Fig. 37

The height of the filling level sensor (Fig. 38/1) can be adjusted in the seed hopper. This allows to set the seed residual amount which will trigger the alarm message and the alarm signal.

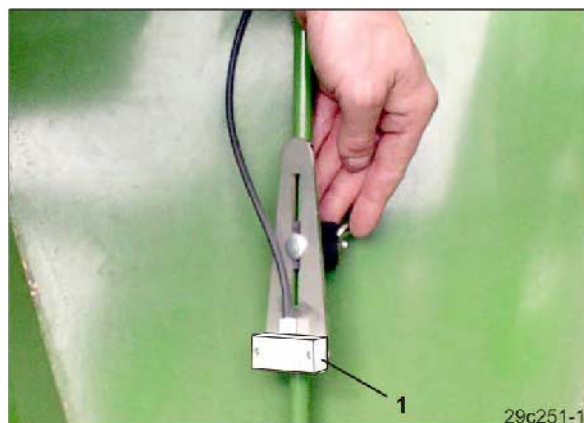


Fig. 38

5.4 Star wheel

Via the Vario gearbox the star wheel drives the metering rollers in the seed metering system.

At full metering the star wheel acts as a touch wheel for the distance covered.

The drive rev. speed of the metering rollers

- determines the seed rate
- can be infinitely variably set on the Vario gearbox via **AMATRON+**. For this **AMATRON+** adjusts the gearbox lever. The higher the setting value on the scale on the Vario gearbox, the bigger the seed rate will be.

Via the star wheel the travelled distance can be measured. **AMATRON+** requires these data to calculate the forward speed and the worked area (hectare counter).

The star wheel controls the creation of tramlines. After approx. 5 seconds after the star wheel has been swivelled upwards, e.g. when turning at the headlands, the tramline counter shifts on.



Fig. 39

5.5 Vario gearbox

For setting the seed rate the setting motor (Fig. 40/1) adjusts the gearbox setting lever (Fig. 40/2). The higher the scale figure, the higher the seed rate will be.

Infinitely variable setting of the seed rate via the **AMATRON+**. The **AMATRON+** controls the gearbox position on the basis of the calibration test.

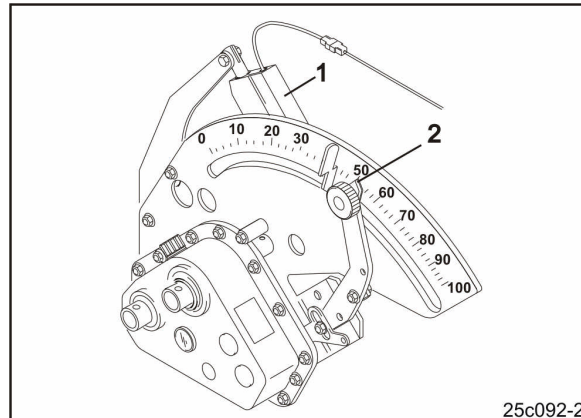


Fig. 40

5.6 Full electric metering system (Option)

With the full electric metering system each one electric motor (Fig. 41/1) drives a metering roller.

The forward speed and the pre-set seed rate determine the drive speed of the metering roller. The star wheel determines the operational speed and the travelled distance.

The seed rate is infinitely variably set via **AMATRON⁺**.

The drive rev. speed of the metering roller

- can infinitely be set via **AMATRON⁺**.
- determines the seed rate. The higher the drive rev. speed of the electric motor, the bigger the relevant seed rate will be.
- automatically adapts to the changing forward speeds.

The additional seed pre-metering is possible, e.g. at the headlands. The running time of the seed pre-metering is settable.

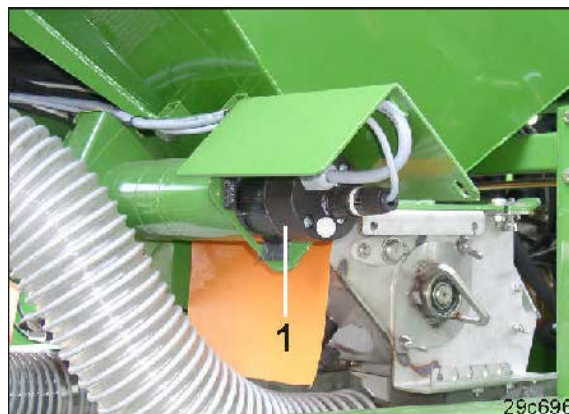


Fig. 41

5.7 Seed collecting trays

The seed for the calibration test drops into the seed collecting trays.

The number of seed collecting trays corresponds to the number of the metering units.

For transport the seed collecting trays are fitted into each other secured affixed using a linch pin (Fig. 42/1) on the hopper rear wall.



Fig. 42

5.8 Fan

The hydraulic motor (Fig. 43/2) drives the fan (Fig. 43/1) and creates an air flow. The air flow delivers the seed from the injector sluice to the coulters.

The blower fan rev. speed is settable

- on the power regulating valve on the tractor or (in case not available)
- on the pressure relief valve (Fig. 43/3) of the hydraulic motor.



Fig. 43

5.9 Two-row disc segment

The discs (Fig. 44/1) arranged in an diagonal angle towards the driving direction prepare the seed bed.

Adjustments can be carried out as follows

- operational intensity via the working depth of the disc segment
- the length of the two outer discs allowing the adaptation to varying soil conditions
- the two side discs (Fig. 44/2) in longitudinal and transverse direction.

Correctly set outer discs and side discs prevent soil flow beyond the working width of the machine.

The sprung rubber mounting of the individual discs allows

- the adaptation to the field contours
- the discs giving way when hitting firm obstacles, e.g. stones. In this way the individual discs are protected from damage.

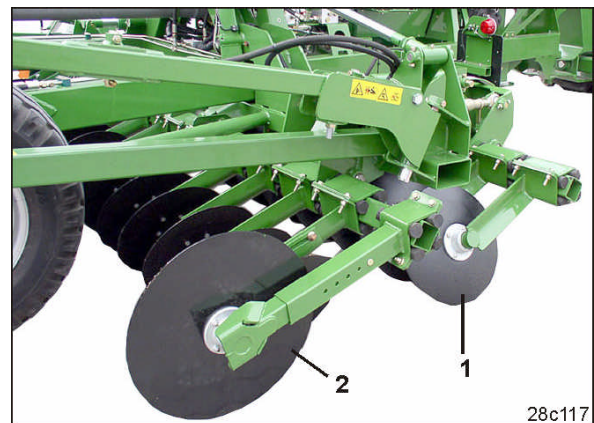


Fig. 44

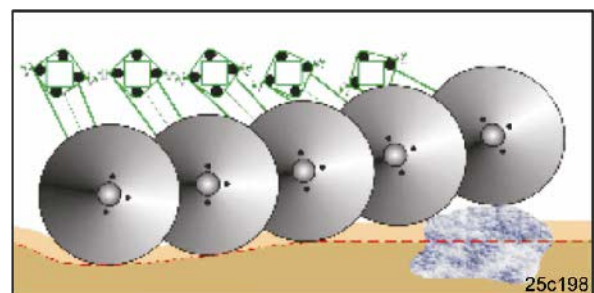


Fig. 45

5.10 Wedge ring tyre roller

The wedge ring tyre roller (Fig. 46/1)

- consists of wedge ring tyres individually arranged next to each other
- reconsolidates the worked soil in strips
- provides the depth control of the packer coulters (Fig. 46/2) for an even seed placement
- form the integrated transport wheels for road transport.

Each wedge ring tyre is individually hinged on the carrying frame and

- rests on the carrying arm with the aid of two hydraulic rams
- can individually adapt itself to the soil contour

provides the depth control for 4 packer coulters.

All hydraulic rams for the wedge ring tyres of each machine side are inter-connected in a closed hydraulic circuit.

This results in a hydraulic compensation system ensuring the constant reconsolidation underneath each and every roller even in undulated terrain.

As a matter of principle: clean and calibrate the compensation system after any repair work to ensure the appropriate operation.

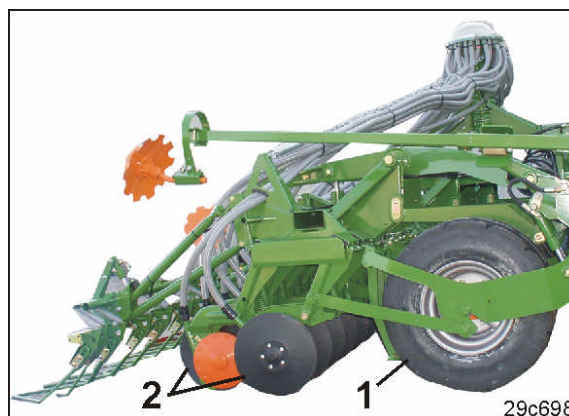


Fig. 46

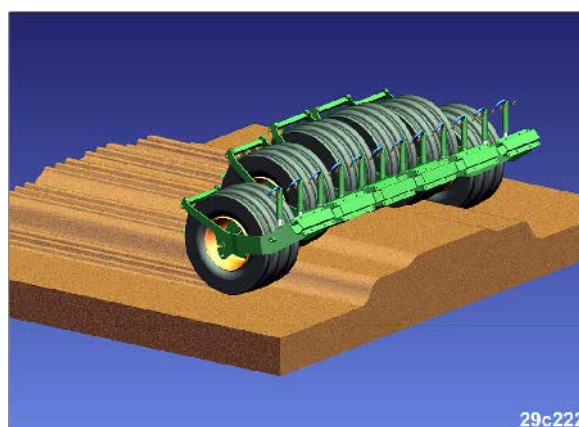


Fig. 47

5.11 Packer coulters

Each packer coulters (Fig. 48/1)

- cuts a groove for the seed into the pre-consolidated strips of the wedge ring tyre roller
- places the seed into the seed furrow.

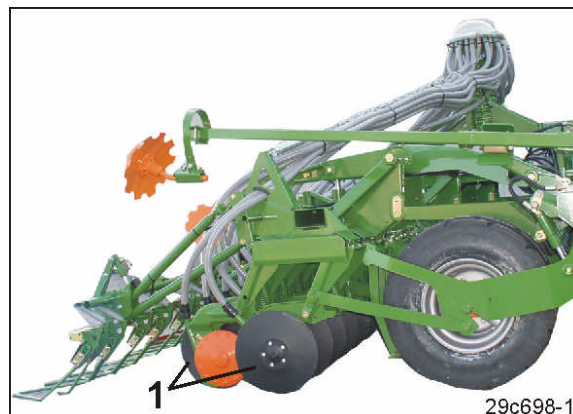


Fig. 48

The desired seed placement depth of the packer coulters is adjusted on each machine segment by re-inserting depth setting pins (Fig. 49/2). The different settings have an effect on the carrying arm (Fig. 49/1) that achieves the seed placement depth.



Fig. 49

The maintenance-free packer coulters stone safety device protects the individual packer coulters from damage when hitting firm obstacles.

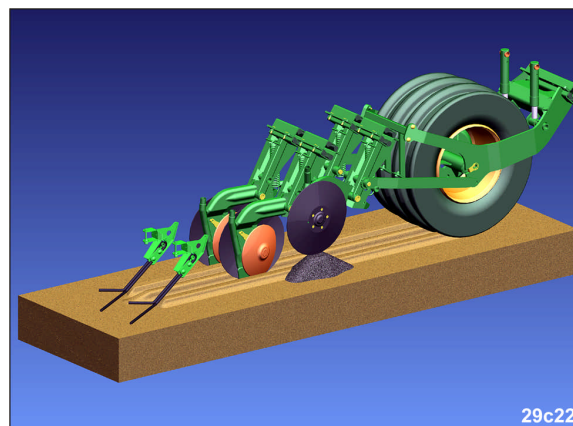


Fig. 50

5.12 Extra coverage following harrow

The extra coverage following harrow (Fig. 51/1) covers the seed in the seed furrows evenly with loose soil levels the soil.

Adjustable functions

- the extra coverage following harrow position for matching the pre-set seed placement depth.
- the extra coverage following harrow pressure. The extra coverage following harrow pressure determines the working intensity in relation to the soil conditions.

Set the exact harrow so that after seed coverage no ridge of soil will remain in the field.

The tensioning springs which provide the exact harrow pressure are pre-tensioned with the aid of a lever (Fig. 52/1).

The lever (Fig. 52/1) rests on a pin (Fig. 52/2) in the setting segment.

The higher the pin is inserted in the hole group, the higher the harrow pressure will be.

At the hydraulic exact harrow adjustment the second pin (Fig. 52/3) is inserted as a stop above the lever (Fig. 52/1) in the setting segment.

When – in heavy soil – the hydraulic ram is pressurised, the lever rests on the upper pin and increases the harrow pressure.

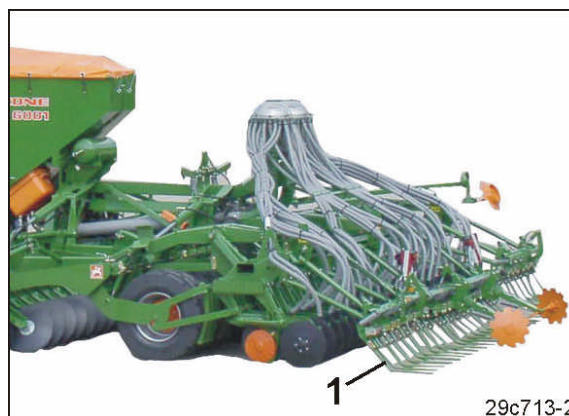


Fig. 51



Fig. 52

5.13 Track markers

The hydraulically actuated track markers alternately mark the soil on the right and left hand side of the machine. The track marker lowered into work creates a trace as guidance for the tractor operator for correctly driving the next bout when turning at the headlands. After having turned the tractor operator drives centrally over the trace.

The track markers are connected with the hydraulic system for

- the integrated transport wheels
- the coulter frame
- the star wheel
- the pre-emergence marker.



Fig. 53

Lifting the star wheel automatically starts the switching over procedure for the track markers.

For passing obstacles the track marker lowered into work can be folded in and out in the field. When, however, the track marker hits a firm obstacle the overload safety device of the hydraulic system reacts. The hydraulic ram gives way to the obstacle and in this way protects the track marker from damage.

When having passed the obstacle the tractor operator lowers the track marker again by actuating the spool valve.

- The length of the track markers and
- the working intensity of the track marker in relation to the soil conditions

can be adjusted.



Fig. 54

5.14 Operator terminal **AMATRON⁺**

AMATRON⁺ consists of the terminal (Fig. 55), the basic tractor equipment (fixed in the cab) and the job computer on the machine.

The terminal is designed for

- input of machine specific data
- input of job related data
- access of the machine to change the seed rate during the sowing operation
- release of the hydraulic functions before the hydraulic functions can be carried out via the relevant spool valve.
- monitoring the seed drill during sowing operation.



Fig. 55

AMATRON⁺ determines

- the actual forward speed [km/h]
- the actual seed rate [kg/ha]
- the estimated distance [m], to travel until the seed box is empty
- the actual seed box contents [kg].

AMATRON⁺ stores for the started job

- the quantity of seed sown, daily and in total [kg]
- completed area, daily and in total [ha]
- completed working hours, daily and in total [h]
- average work rate [ha/h].

For communication **AMATRON⁺** contains the menu operation and the main menu with the 4 sub menus order, calibration of seed drill, machine data, and setup.

The menu "operation"

- shows all required data for sowing operation. Within the menu job the seed drill is worked during operation.

In the menu "order"

- the seed rate is entered
- orders are created and the determined data of up to 20 jobs are stored.
- the desired order is started.

In the menu "calibration of seed drill"

- the entered seed rate is re-checked via a calibration test and if necessary the gearbox setting is corrected.

In the menu "machine data"

- the machine specific settings are entered, selected or determined with the aid of a calibration procedure.

5.15 Distributor head and tramline system

In the distributor head the seed is evenly distributed to all sowing coulters. The number of distributor heads depends on the machine's working width. Every individual distributor head is provided with one charger.

On seed drills with two distributor heads

- one distributor head provides the sowing coulters of one machine side with seed.
- the seed metering of one machine half (part section) can be switched off. For specific tramline systems it is necessary to start the sowing operation at the beginning of the field with just one half working width (part section).

The tramline control in the distributor head allows the creation of tramlines in the field in pre-selected distances. For setting the individual distances the relevant tramline rhythms have to be entered into the **AMATRON⁺**.

When creating tramlines

- the tramline control on the distributor head stops the seed flow to the seed tubes (Fig. 57/2) via shutter slides (Fig. 57/1).
- the tramline coulters do not sow seed into the soil.

When the electric motor (Fig. 57/3) closes the relevant seed tubes (Fig. 57/2) in the distributor head, the seed flow to the tramline coulters is stopped.

When creating tramlines the tramline counter shows the figure "0" in the **AMATRON⁺**. The reduced seed quantity for creating a tramline can be adjusted.

A sensor (Fig. 57/4) checks the proper function of the shutter slides (Fig. 57/1), which open and close the seed tubes (Fig. 57/2).

AMATRON⁺ triggers the alarm in case of faults.

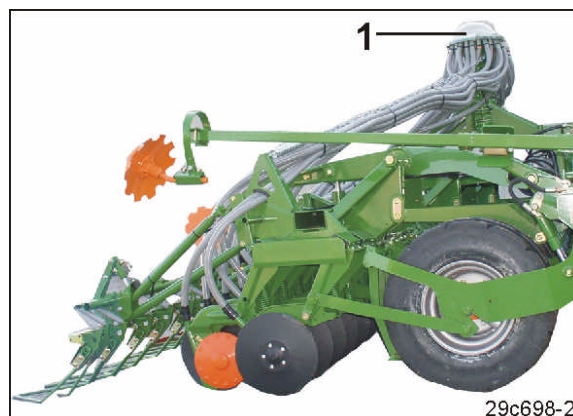


Fig. 56

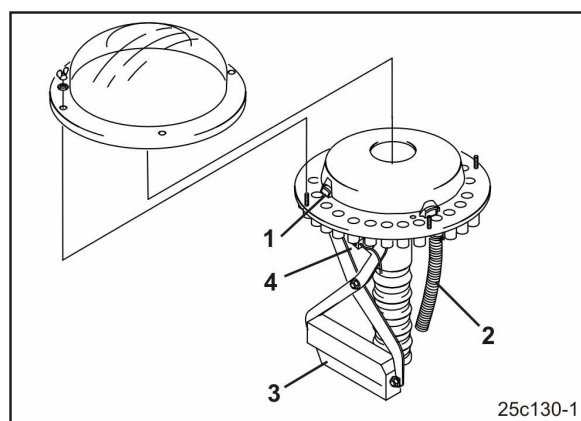


Fig. 57

5.15.1 Tramline rhythm

The tramline system allows the creation of tramlines in the field. Tramlines are marks in which no seed is sown (Fig. 58/A) for the later operation of fertilising and crop protection machines.

The tramline spacing (Fig. 58/b) relates to the working width of the husbandry machinery (Fig. 58/B), e.g. fertiliser spreaders and/or field sprayers, for later operation in the field.

For setting the different tramline spacing (Fig. 58/b) enter the relevant tramline rhythms into **AMATRON⁺**.

The necessary tramline rhythm (see table Fig. 59) results from the desired tramline distance and the working width of the seed drill.

Table (Fig. 59) does not contain all settable tramline rhythms. You will find the list for all settable tramline rhythms in the operator's manual for the **AMATRON⁺**.

The track width (Fig. 58/a) of the tramline corresponds to that of the husbandry tractor and can be adjusted.

The track width of the tramline increases in relation to the increasing number of tramline coulters arranged next to each other.

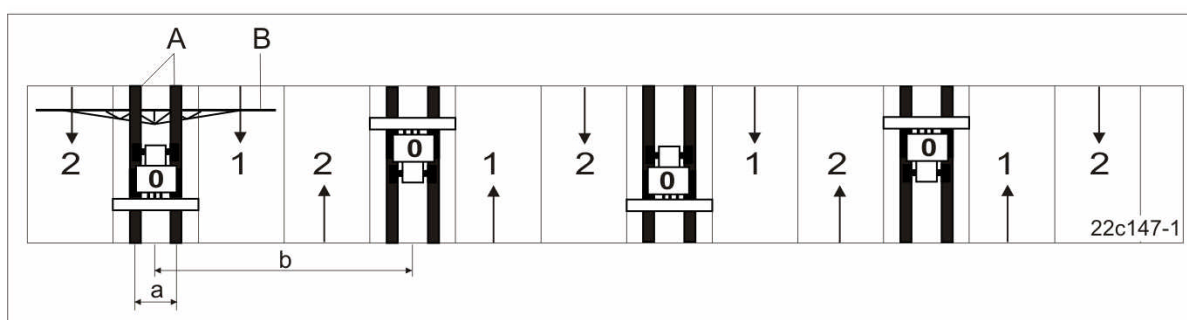


Fig. 58

Tramline rhythm	Seed drill working width				
	3,0 m	4,0 m	6,0 m	8,0 m	9,0 m
	Tramline spacing (Working width of fertiliser spreader and field sprayer)				
1			12 m		18 m
3	9 m	12 m	18 m	24 m	27 m
4	12 m	16 m	24 m	32 m	36 m
5	15 m	20 m	30 m	40 m	
6	18 m	24 m	36 m	48 m	
7	21 m	28 m	42 m		
8	24 m	32 m			
9		36 m			
2	12 m	16 m	24 m		
6 plus	18 m	24 m	36 m		

Fig. 59

5.15.1.1 Example for creating tramlines

Some examples for the creation of tramlines are illustrated in Fig. 60:

- A = Working width of the seed drill
- B = Tramline distance (= working width fertiliser spreader/field sprayer)
- C = Tramline rhythm (Input into **AMATRON+**)
- D = Tramline counter (during operation, the tramline travels are numbered all the way through and displayed in **AMATRON+**).

Carry out inputs and indications following the operator's manual for **AMATRON+**.

Example:

Working width seed drill: 6 m

Working width fertiliser spreader / field sprayer: 18 m = 18 m tramline distance

1. In the opposite table (Fig. 60) find:
in column A the working width of the seed drill (6 m) and
in column B the tramline distance (18 m).
2. In the same line in column "C" find the tramline rhythm (tramline rhythm 3) and set in **AMATRON+**.
3. In the same line in column "D" below the word "START" find the tramline counter for the first field travel (tramline counter 2) and set in **AMATRON+**. Enter this value only immediately before the first travel in the field.

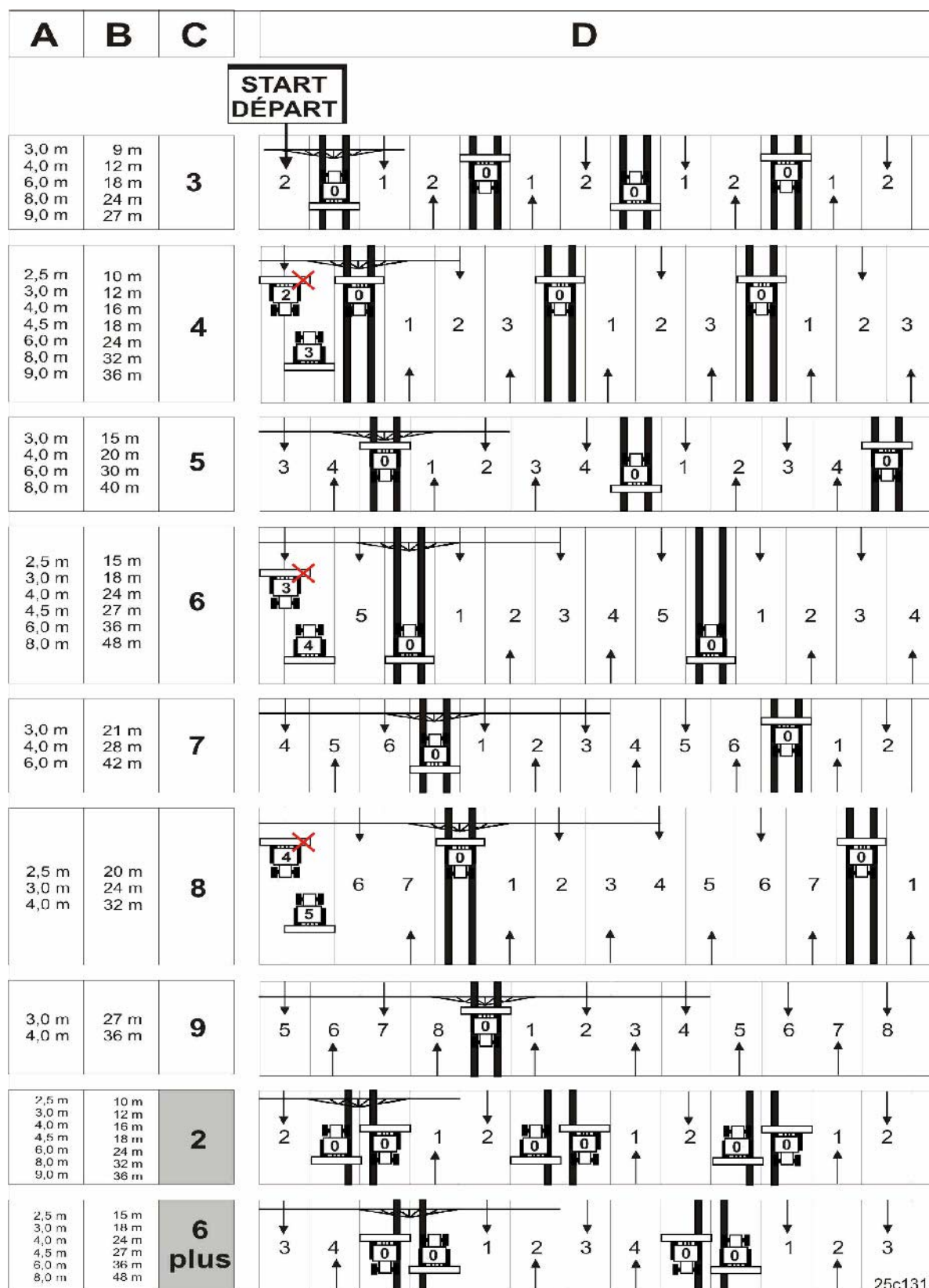


Fig. 60

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5.15.1.2 Tramline rhythm 4, 6 und 8

In illustration (Fig. 60) examples for the creation of tramlines with the tramline rhythm 4, 6 and 8 are shown.

The operation of the seed drill at half its working width (part width section) during the first travel in the field is illustrated.

During operation with the part width section switched off the drive for the relevant metering wheel is stopped. Please take the detailed description from the operator's manual for **AMATRON⁺**.

The part width section control is not available for Cirrus 3001/4001.

A second possibility to create tramlines with the tramline rhythm 4, 6 and 8 is to start the operation with the full working width and the creation of a tramline (see Fig. 61).

In this case the husbandry machine will work with half working width at the first run in the field.

Re-adjust the machine's working width after the first run in the field.

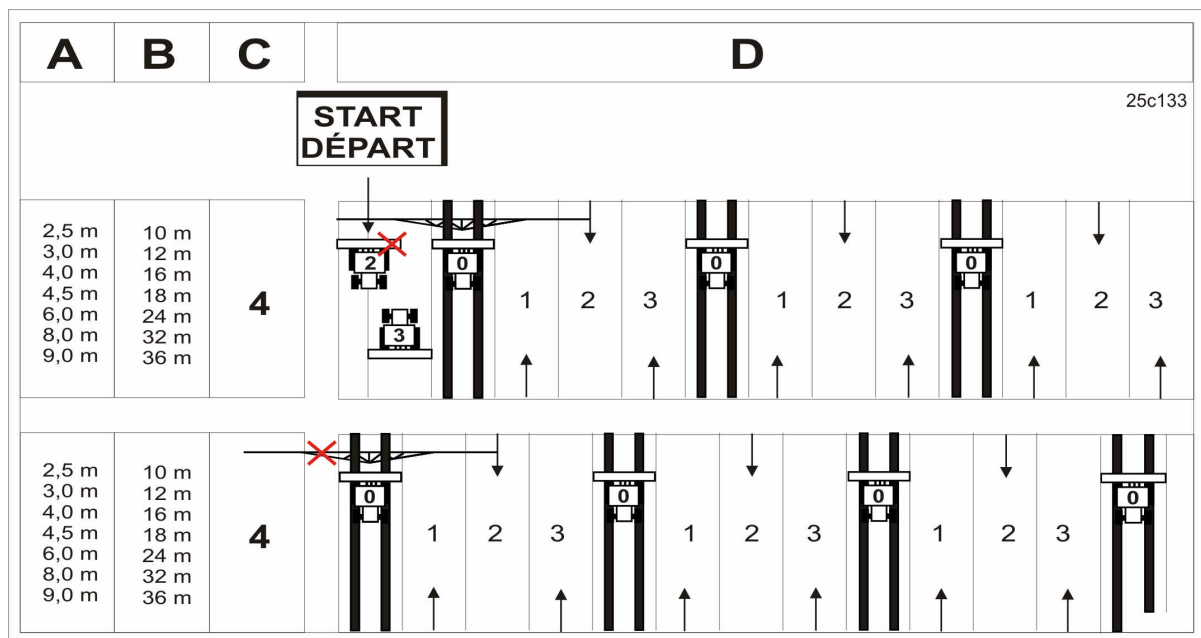


Fig. 61

5.15.1.3 Tramline rhythm 2 and 6plus

Illustration (Fig. 60) shows – among other things – examples for the creation of tramlines with tramline rhythm 2 and 6plus.

When creating tramlines with the tramline rhythm 2 and 6 plus (Fig. 62), the tramlines are created during one travel in the field to and fro.

On machines with

- tramline rhythm 2 the flow of seed to the tramline coulters may only be stopped on the right hand side of the machine
- tramline rhythm 6plus the flow of seed to the tramline coulters may only be stopped on the left hand side of the machine.

Start operation always on the right hand side of the field.

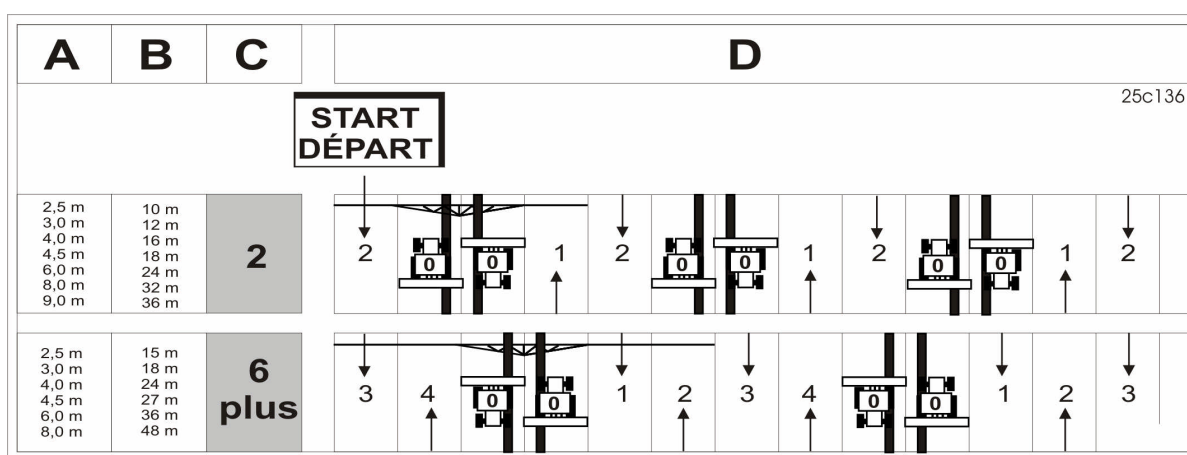


Fig. 62

5.16 Pre emergence marker (Option)

When creating tramlines the pre emergence marker (Fig. 63) automatically lowers into work and the marker discs mark the just created tramline. In this way tramlines are visible before the seed emerges.

Possible adjustments:

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



Fig. 63

The marker discs (Fig. 64) of the pre emergence marker are lifted when no tramline is created.



Fig. 64

5.17 Braking system



Important!

Cirrus is not provided with a parking brake.

Always secure the machine against rolling away with chocks before coupling the machine off the tractor.

Dual circuit air brake system

Cirrus is equipped with an air braking system with hydraulically actuated brake cylinder for the brake shoes in the brake drum.

Hydraulic brake system

Cirrus can be equipped with a hydraulic brake system. In Germany and some other EU countries the hydraulic brake system is not allowed.

5.18 Electric hydraulic control block

All hydraulic functions of the machine are actuated via the electric hydraulic control block.

Initially select the desired hydraulic function in **AMATRON+** and carry out the hydraulic function via the related control valve.

The release of the hydraulic functions in **AMATRON+** allows the operation of all hydraulic functions with only 2 spool valves for the machine functions and 1 spool valve for the blower fan.



Fig. 65

6 Putting into operation

In this chapter you will find information for putting your machine into operation.



Danger!

- **Before putting the machine into operation ensure that the operator has read and understood the instruction manual.**
- **Before hitching the machine on or off read the chapter "Safety advice for the operator", page 24**
 - **Coupling and uncoupling the machine**
 - **Transport of the machine**
 - **Operation of the machine**
- **Take account of these effects and allow sufficient steering and braking of your tractor!**
- **If necessary use ballast weights!**
- **When mounting of machines at the front and/or in the rear do not exceed**
 - **the permissible tractor total weight**
 - **the permissible tractor axle loads**
 - **the permissible tyre carrying capacity of the tractor tyres**
- **Before starting to operate the combination tractor/mounted implement, carefully determine the actual values for:**
 - **the tractor total weight**
 - **the tractor axle loads**
 - **the tyre carrying capacity**
 - **the minimum ballast**

(by calculating or weighing the tractor-implement combination)

For this please refer to chapter "Determining the actual values for the tractor total weight, tractor axle loads, tyre carrying capacity as well as the required minimum ballast weights", page 68.
- **The tractor must provide the prescribed brake lag for the laden combination according to the national legal traffic regulations.**
- **Tractor and machine must correspond to the local and national legal traffic regulations.**
- **Both, the vehicle owner and operator are responsible for adhering to the legal traffic rules.**
- **Observe the max. payload of the mounted or trailed machine and the axle loads of the tractor. If necessary travel with only partly filled hopper.**
- **Before any transport travel secure the control lever of the three point hydraulics against unintended lifting or lowering of the mounted or trailed machine.**

6.1 First operation

6.1.1 Determining the actual values for the tractor total weight, tractor axle loads, tyre carrying capacity as well as the required minimum ballast weights

6.1.1.1 Required data for the calculation

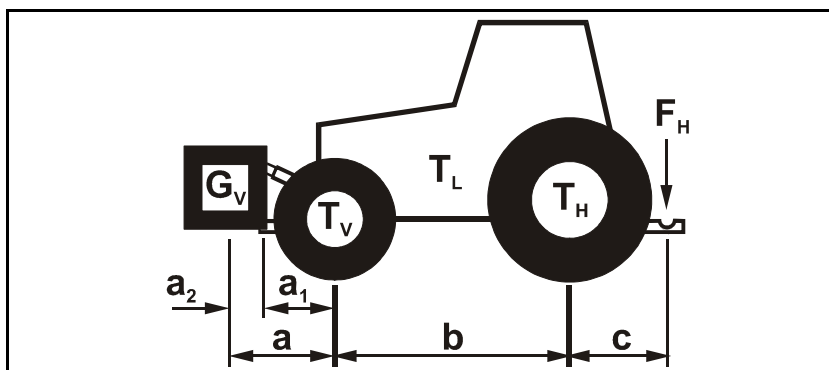


Fig. 66

T_L	[kg]	Tractor net weight	
T_V	[kg]	Front axle load of the empty tractor	please see tractor Instruction manual / registration papers
T_H	[kg]	Rear axle load of empty tractor	
G_V	[kg]	Front weight (if existing)	please see technical data of the machine
F_H	[kg]	Max. support load	see technical machine data
a	[m]	Distance between the centre of gravity of the front mounted machine or front weight and centre of the front axle (sum $a_1 + a_2$)	see technical data tractor and front mounted machine or front weight or measure out
a_1	[m]	Distance between centre of the front axle and the lower link joint	please see tractor Instruction manual or measure
a_2	[m]	Spacing between centre lower link ball and centre of gravity of the front mounted machine or front weight (point of gravity spacing)	see technical data front mounted machine or front weight or measure out
b	[m]	Wheel base of tractor	please see tractor Instruction manual or measure
c	[m]	Spacing between centre rear axle and centre lower link ball	please see tractor Instruction manual, registration papers or measure

6.1.1.2 Calculation of the minimum ballast front $G_{V \min}$ to ensure the steer ability

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

Enter into the table the figure for the determined minimum ballast weight $G_{V \min}$, which is required in the front of the tractor (on page 70).

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

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

Enter the figure for the calculated actual total front axle load and the permissible front axle load indicated in the instruction manual for the tractor into the table (on page 70).

6.1.1.4 Calculation of the actual total weight of the combination tractor/mounted implement

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

Enter the figure for the calculated actual total weight and the permissible tractor total weight as indicated in the tractor-instruction manual into the table (on page 70).

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

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

Enter the figure for the actual rear axle load and the permissible tractor rear axle load indicated in the tractor-instruction manual into the table (on page 70).

6.1.1.6 Tyre carrying capacity

Enter double the value (two tyres) of the tyre carrying capacity (please refer e.g. to the documentation of the tyre manufacturer) into the table (on page 70).

6.1.1.7 Table

	Actual value according to the calculation	Permissible value according to the tractor-instruction manual	Double the permissible tyre carrying capacity (two tyres)
Minimum ballast Front / rear	<div>/ kg</div>	--	--
Total weight	<div>kg</div>	≤ <div>kg</div>	--
Front axle load	<div>kg</div>	≤ <div>kg</div>	≤ <div>kg</div>
Rear axle load	<div>kg</div>	≤ <div>kg</div>	≤ <div>kg</div>



Hint!

Please take the permissible values for the tractor total weight, axle loads and tyre carrying capacity from the registration papers of your tractor.



Danger!

- The actual calculated values must be smaller than /equal to (≤) the permissible values!
- Coupling the machine on to the tractor on which the calculation is based is prohibited, if
 - o just one of the actual calculated values is bigger than the permissible value.
 - o the tractor is not provided with a front weight (if necessary) for the required minimum front ballasting ($G_{V \min}$).



Important!

- Use a front weight which at least corresponds to the required minimum front ballasting ($G_{V \min}$).

6.2 Fitting advice for the connection of the hydraulic blower fan drive

Hydraulic diagram blower fan drive connection

Fig. 67/...	Description
(A)	Implement side
(B)	Tractor side
(1)	Blower fan hydrostatic motor $N_{max.} = 4000 \text{ R.P.M.}$
(2)	Pressure relief valve with hydraulic free wheel
(3)	Controllable pressure relief
(4)	Check valve
(5)	Tractor hydraulic pump (the capacity of the tractor hydraulic pump must be in minimum 80 l/min. at 150 bar)
(6)	Free return flow <ul style="list-style-type: none"> Inner tube diam. min. $\varnothing 16 \text{ mm}$ Use couplings with sufficiently large inner diameter The return pressure in the return flow tube must not exceed 10 bar.
(7)	Filter
(8)	Single or double acting control valve with priority
(9)	Hydraulic oil tank
(10)	Hydraulic hose pressure hose with plug in coupling (Identification: 1 cable tie red)
(11)	Hydraulic hose return flow hose with plug in coupling "large" (Identification: 2 cable ties red)

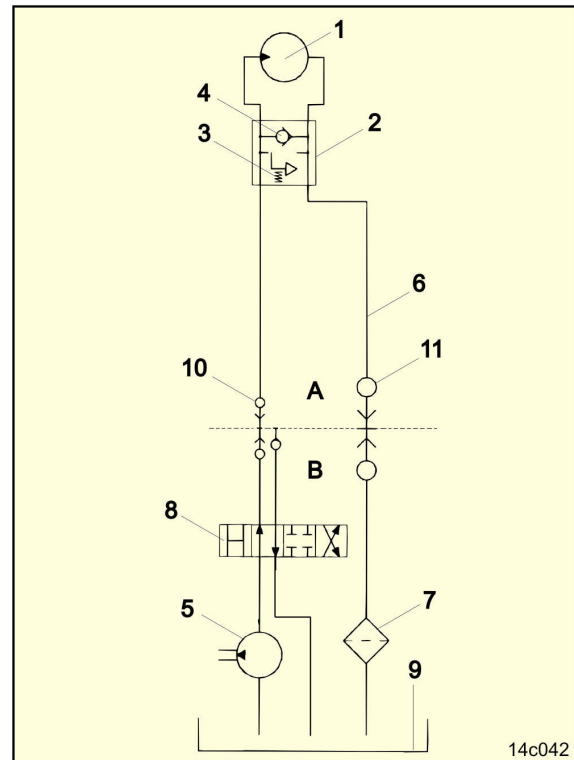


Fig. 67

Required on the tractor for the connection of the hydraulic blower fan drive

Hydraulic hose pressure hose (Fig. 67/10):	Connection with a single or double acting tractor spool valve with priority.
Hydraulic hose Return flow hose (Fig. 67/11):	<p>Connection of the large plug coupling with a pressure-free tractor.</p> <p>Do not connect with a tractor spool valve, the back pressure must not exceed 10 bar.</p> <p>For the installation of the tractor return flow line, only use tubes DN 16, e.g. Ø20 x 2,0 mm with short return flow route to the hydraulic oil tank.</p>
Required hydraulic oil delivery at 150 bar:	30 l/min.



Hint!

Do not allow the hydraulic oil to heat up excessively during operation.

Large oil delivery amounts in conjunction with small oil tanks promote the quick heating up of the hydraulic oil. The capacity of the oil tank (Fig. 67/9) should at least have the double of the oil delivery amount. In case the hydraulic oil heats up too much, the installation of an oil cooler on the tractor in a authorised workshop is required.

The back pressure must not exceed 10 bar. So connect the return flow hose with a pressure free tractor connection by using the supplied large plug in coupling.

If it is necessary to drive besides of the blower fan hydrostatic motor yet another hydrostatic motor, both motors should be switched parallel. When switching both motors in line, the maximum permissible oil pressure of 10 bar will be always exceeded behind the first motor.

6.3 Initial fitting of **AMATRON+**

Install the terminal (Fig. 68) of **AMATRON+**, in the tractor cab following the operator's manual for the **AMATRON+**.



Fig. 68

7 Coupling and uncoupling the machine



Danger!

- Only couple and transport the machine with a tractor which has been designed for this task and fulfils the power requirements.
- When fitting the machine to the tractor three point linkage the mounting categories on the tractor and the implement must coincide.
- When coupling tractor and implement, only use the prescribed tools.
- Standing of persons between the machine to be coupled and the tractor is prohibited whilst the tractor is backing up.

Any assistants may only stay at the side of the vehicle and help to direct it. Only when the vehicles have come to a full standstill they are allowed to step between them.

- When coupling and uncoupling implements, observe the chapter "Safety advice for the operator", on page 24.



Danger!

The Cirrus is not equipped with a parking brake. Therefore, always secure the Cirrus with 4 chocks (Fig. 69) when it is uncoupled from the tractor.



Danger!

The lower link arms of the tractor should not have any lateral play so that the machine always follows the tractor centrally and does not swing to and fro.



Caution!

Only carry out machine connections with tractor and machine coupled, with stopped tractor engine, applied parking brake and removed ignition key.

Only couple the supply line (red) of the service brake on to the tractor with the tractor engine has been stopped and the ignition key removed.

The Cirrus is not equipped with a parking brake.

Before uncoupling always secure the Cirrus with 4 chocks (Fig. 69), i.e. 2 chocks on each machine side underneath the outer wheels of the wedge ring roller.

The Cirrus can be coupled or uncoupled with the wings be folded in or out (except for Cirrus 3001). In both cases the Cirrus rests on all tyres of the wedge ring roller.



Fig. 69



Warning!

When the Cirrus has been uncoupled off the tractor and when it is parked with filled compressed air reservoir, the compressed air of the reservoir acts on the brakes and the wheels will block.

The air pressure in the compressed air reservoir and thus the braking power continuously decreases up to an entire failure of the brakes when the compressed reservoir is not refilled. For this reason, the Cirrus must only be parked with applied chocks.

With filled air pressure reservoir the brakes release immediately when the supply line (red) is connected with the tractor.

Therefore ensure that prior to this the supply line (red) of the Cirrus is connected to the tractor lower link arms and the parking brake of the tractor has been applied. Only remove the chocks when the Cirrus has been connected to the tractor lower link arms and the parking brake of the tractor has been applied.

7.1.1 Coupling of the machine

Coupling the machine:

1. Ensure that the Cirrus has been secured by 4 chocks.
2. The pins cat. III (Fig. 70/1) of the lower link pivoting pendulums, secured by lynch pins, should be provided with catching balls depending on the tractor type (see instruction manual of the tractor).
As option lower link pivoting pendulums (Fig. 70/1) with pins cat. II are available.
3. Open the tractor lower link safety device, i.e. it should be ready for the coupling procedure.
4. Carefully back up with the tractor.
5. Couple tractor lower links and machine.
6. Ensure that the safety device of the tractor lower link locking is closed and secured (see operator's manual for the tractor).
7. Lift the tractor link arms until the jack (Fig. 71/1) gets free from the ground.
8. Remove locking pins (Fig. 71/2).
9. Slide upwards the support jack by using the handle (Fig. 71/1) and secure using locking pins.
10. Secure locking pins using the circlip.



Fig. 70

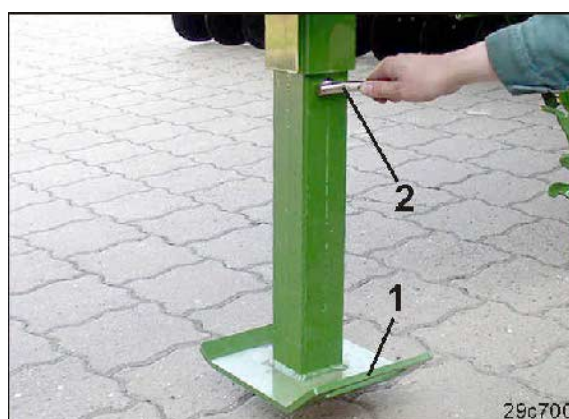


Fig. 71

11. Create the hydraulic connections according (see chapter 7.1.1.1, on page 76).
12. Create the electric power supply connections according (see chapter 7.1.1.2, on page 77).
13. Connect air pressure brake system (see chapter 7.1.1.3, on page 77).
14. Connect hydraulic brake system (see chapter. 7.1.1.4, on page 78).



Fig. 72

**Important!**

Check the routing of the supply hoses.

The supply hoses have to be fitted in such a way

- **that their natural placement and movement are not hindered when driving round bends**
- **that they do not rub on foreign parts.**

15. Check brake system and traffic light kit for proper function.
16. Deposit the chocks in the retainers and secure by using spring tensioners (Fig. 73/1).
17. Before transport carry out a brake test.



Fig. 73

7.1.1.1 Creating hydraulic connections



Important!

Clean hydraulic couplings before the hydraulic couplings are attached to the tractor.

Even slight oil pollution by foreign particles may cause the failure of the hydraulic system.



Important!

Only use tractor spool valves with adjustable oil delivery volumes.

Tractor connections				Function
Spool valve		Connection	Identification	
1	Double acting	Flow	1 cable tie yellow	<ul style="list-style-type: none"> Machine – lifting/lowering Star wheel – lifting/lowering Track marker – lifting/lowering Coulter frame – lifting/lowering Pre-emergence marker - lifting/lowering.
		Return flow	2 cable ties yellow	

Tractor connection				Function
Spool valve		Connection	Identification	
2	Double acting	Flow	1 cable tie green	<ul style="list-style-type: none"> Machine wing - folding Disc segment - adjustment Wheel mark eradicator - adjustment Exact harrow - adjustment.
		Return flow	2 cable ties green	

Tractor connection				Function
Spool valve		Connection	Identification	
3	single or double acting	Flow: pressure hose with priority	1 cable tie red	Blower fan hydraulic motor
		Return flow: pressure free hose	2 cable ties red	

*Please observe hint (see chapter: "Fitting instructions for hydraulic blower fan connection", on page 71).

Tractors with constant pressure hydraulic systems are suited for the operation of hydraulic motors only with restrictions. Please observe the recommendations of the tractor manufacturer.



Hint!

During operation the spool valve 1 is actuated more often than all other spool valves. Connect the joints of the spool valve 1 with a spool valve which can easily be reached in the tractor cab.

7.1.1.2 Electrical connections

Create power supply joints:

Connect the plugs of the machine power cable to the tractor as described in table (Fig. 74).

Connection / function	Fitting hint
Plug (7-plug) for road traffic light kit	
Machine plug AMATRON+	Connect the plug with the terminal as described in the operator's manual for AMATRON+ .

Fig. 74

7.1.1.3 Connection of air brake system

Tractor connection		Function
Connection	Identification	
Brake line	yellow	Air pressure brake system
Supply line	red	



Important!

First couple the yellow coupling head (brake line) and then the red coupling head (supply line) on to the tractor. Ensure proper catching.

When the air pressure reservoir is filled the brake is applied. The brake releases immediately from its braking position when the red coupling head has been coupled.

Before coupling the brake or the supply line ensure that the

- coupling heads are clean
- seal rings and coupling heads are in perfect condition
- seals are clean and not damaged.

7.1.1.4 Connection of hydraulic brake

A hydraulic braking device on the tractor is required which accesses the hydraulic brake system of the Cirrus (not allowed in Germany and some other EU countries).

Connect the hydraulic trailer brake (Fig. 75) to the joint of the hydraulic tractor brake.



Fig. 75



Important!

Before coupling check the hydraulic joint for cleanliness.

Danger!

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

7.2 Uncoupling the machine

Uncoupling the machine:

1. Align tractor and implement on level ground and stop.
2. Lock the star wheel (see operator's manual **AMATRON⁺**).
3. Retract the integrated running gear. Now Cirrus rests on all tyres of the integrated wedge ring roller.
4. Press key (Fig. 76/1) (switch off **AMATRON⁺**).
5. Stop tractor engine, apply the parking brake and remove the ignition key.
6. Slacken spring pins (Fig. 77/1) and take the 4 chocks out of their retainers at the front of the machine.



Fig. 76



Fig. 77

7. Secure the Cirrus on both sides of the machine by applying each 2 chocks (Fig. 78) underneath the outer tyre of the wedge ring roller.



Danger!

Always secure the machine with 4 chocks before you uncouple the machine from the tractor. The chocks replace the parking brake of the machine.



Fig. 78

8. Remove all supply line couplings between tractor and machine.
9. Cover the hydraulic plugs and coupling heads of the brake and supply line by using dust caps.
10. Attach all supply lines to the retainers (Fig. 79).



Important!

When uncoupling the air pressure brake lines first remove the red coupling head (supply line) from the tractor and then the yellow coupling head (brake line).

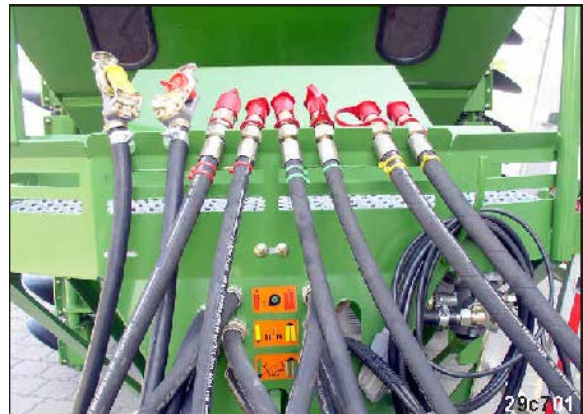


Fig. 79

11. Hold the jack (Fig. 80/1) and remove the locking pin (Fig. 80/2).
12. Lower the jack and secure with the locking pin.
13. Secure the locking pin by using the clip pin.

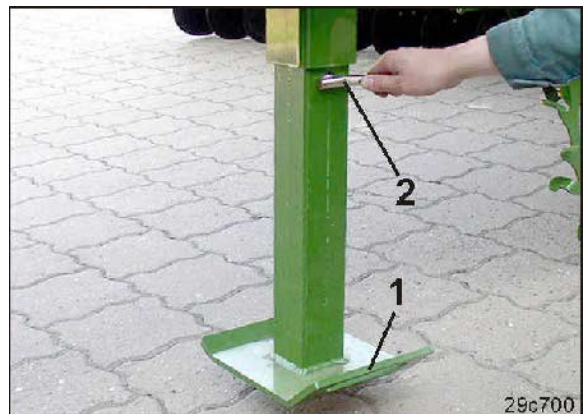


Fig. 80

Coupling and uncoupling the machine

14. Park the Cirrus on the jack.



Warning!

Only park the machine on level, firm ground.

Ensure that the jack does not sink into the soil. In case the jack sinks into the soil, coupling the machine again will be impossible.



Fig. 81

15. Open the securing device (Fig. 82) of the tractor lower links (see operator's manual for your tractor).
16. Uncouple tractor lower links.
17. Pull forward the tractor.



Danger!

Nobody is allowed to stay between tractor and machine when the tractor is pulled forward.

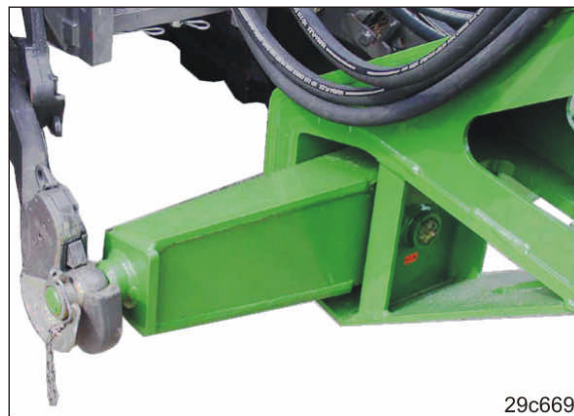


Fig. 82

8 Settings

8.1 Selection of metering wheels

Equip all metering units with the same metering roller (see chapter 8.1.2, on page 82).

Select the required metering wheel depending on the kind of seed and application rate and table (Fig. 83).

For seed not mentioned in the table (Fig. 83) look for the metering wheel for a seed of similar shape.

8.1.1 Table – kind of seed – metering wheels

Kind of seed	metering wheels	Kind of seed	metering wheels
Spelt	Coarse metering roller	Rape	Fine metering roller
Oats	Coarse metering roller	Red clover	Fine metering roller
Rye	Coarse metering roller or medium metering roller	Mustard	Medium metering roller or fine metering roller
Summer barley	Coarse metering roller	Soya beans	Medium metering roller
Winter barley	Coarse metering roller	Sunflowers	Medium metering roller
Wheat	Coarse metering roller or medium metering roller	Late turnip	Fine metering roller
Beans	Coarse metering roller	Vetches	Medium metering roller
Peas	Coarse metering roller		
Flax (dressed)	Medium metering roller or fine metering roller		
Grass seed	Medium metering roller		
Millet	Medium metering roller		
Lupine	Medium metering roller		
Lucerne	Medium metering roller or fine metering roller		
Oilseed (moist dressed)	Medium metering roller or fine metering roller		
Oil radish	Medium metering roller or fine metering roller		
Phacelia	Medium metering roller or fine metering roller		

Fig. 83

8.1.2 Exchanging metering wheels

Exchange the metering wheel in the metering unit:

1. Remove the lynch pin (Fig. 84/2) (only required for closing the filled seed hopper with the aid of the slide (Fig. 84/1).



Hint!

The exchange of metering wheels is easier when the seed hopper is empty.

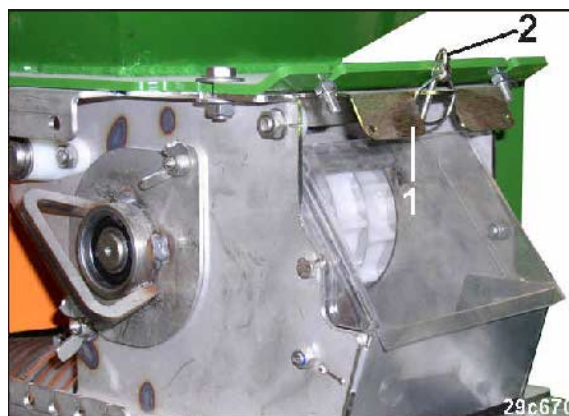


Fig. 84

2. Push the shutter (Fig. 85/1) until its stop into the metering unit.



Fig. 85

3. Just slacken the two thumb nuts (Fig. 86/1), do not remove them.
4. Twist the bearings and pull them off.

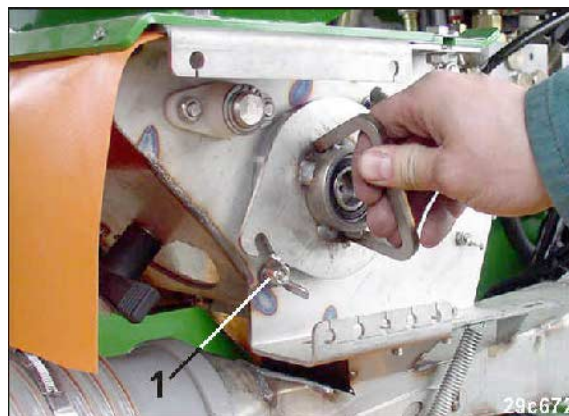


Fig. 86

5. Pull the metering wheel off the metering unit.
6. Take the necessary metering wheel from table (Fig. 83) and assemble in vice versa order.
7. Equip all other metering units with equal metering wheels.

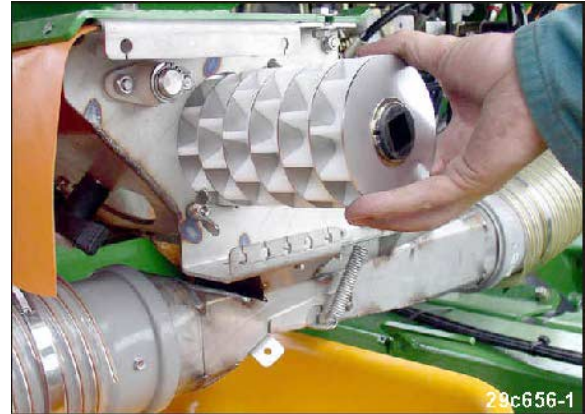


Fig. 87



Important!

Open all shutters (Fig. 84/1) and secure using lynch pins (Fig. 84/2) .

8.2 Setting the seed level sensor

The level for the filling level sensor can only be adjusted when the seed hopper is empty:

1. Stop tractor engine, apply parking brake and remove ignition key.
2. Use the stair steps (Fig. 88) to climb into the seed hopper.



Fig. 88

3. Open the sieve (Fig. 89).



Caution!

Always hold the opened sieve screen.

The sieve screen might fall down.



Fig. 89

Settings

4. Slacken thumb nut (Fig. 90/2).
5. Adjust the level of the filling level sensor (Fig. 90/1) according to the desired residual amount of seed.

AMATRON⁺ triggers the alarm when the filling level sensor is not covered with seed any more.

6. Tighten thumb nut (Fig. 90/2) .

Only for machines with a working width larger than 6 m:

7. Repeat the adjustment on the second filling level sensor.

Affix both filling level sensor at the same height inside the seed hopper.

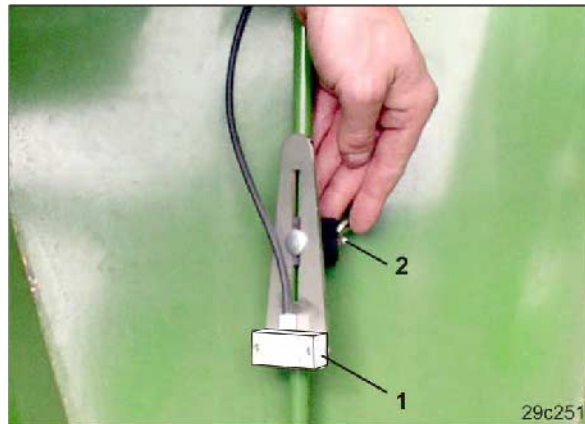


Fig. 90



Important!

As a matter of principle follow the illustration (Fig. 90) to fit the filling level sensor.

The filling level sensor should not rest on the hopper housing as shown in illustration (Fig. 91).



Fig. 91



Hint!

Increase the residual amount of seed which triggers the alarm

- the coarser the seed
- the bigger the sowing rage
- the larger the working width.

8.3 Setting the application rate in **AMATRON⁺**.

Setting the application rate in **AMATRON⁺**:

1. Open the menu "order".
2. Select the order number.
3. Enter name of order (if desired).
4. Enter order note (if desired).
5. Enter kind of seed.
6. Enter 1000-grain weight (only necessary with grain counter).
7. Enter the desired seed rate.
8. Start the order.

8.4 Calibration test

With the calibration test the coincidence of the pre-set and the actual seed rate is checked.

Always carry out a calibration test

- when changing the seed type
- in cases with the same seed type, however, with different grain shape, grain size, bulk density and or different dressing
- after having changed the metering wheels
- in cases of a deviation between the seed rate determined by **AMATRON⁺** and the quantity of seed applied in the field.



Caution!

Before commencing the calibration test

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

8.4.1 Calibration test on Cirrus with Vario gearbox with seed rate remote control

Calibration test on the Cirrus with Vario gearbox with seed rate remote control:

1. Fill the seed hopper up to min. 1/3 of its volume with seed (correspondingly less for fine seeds at fine seeds).
2. Take the seed collecting trays off the transport retainer on the rear side of the hopper.

For transport the seed collecting trays are fitted into each other and secured with a lynch pin (Fig. 92/1) on the rear side of the seed hopper.



Fig. 92

3. Slide the seed collection tray (Fig. 93) into the bracket and place one seed collecting tray underneath every individual metering unit.



Fig. 93

4. Open the injector sluice (Fig. 94/1) on all metering units.



Warning!

Danger of squeezing when opening and closing the injector sluice (Fig. 94/1)!

Hold the injector sluice only on the strap (Fig. 94/2), danger of injury when the sprung loaded injector sluice flap shuts (Fig. 94/1).

Never ever reach with your hand between the injector sluice flap (Fig. 94/1) and the injector sluice.

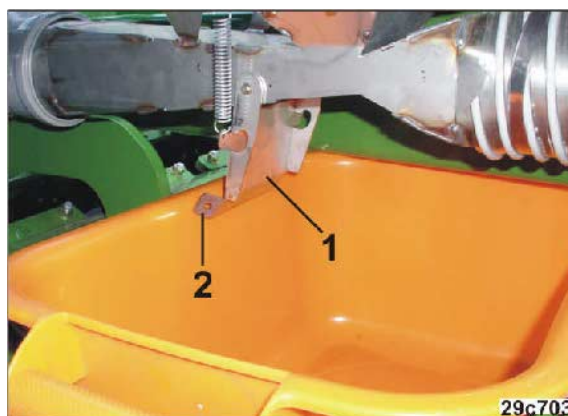


Fig. 94

5. Take the calibration crank (Fig. 95/1) out of its transport retainer next to the star wheel.



Fig. 95

6. Put the calibration crank (Fig. 96/1) on the star wheel (Fig. 96/2).
7. Turn the star wheel with the aid of the calibration crank (Fig. 96/1) in counter clockwise direction until all compartments of the metering wheels are filled with seed and the seed evenly flows into the seed collecting trays.
8. Close the injector sluice flap (Fig. 94/1) with special care (danger of squeezing, see danger advice [Fig. 94]).
9. Empty the seed collecting trays and replace them underneath the metering units.
10. Open the injector sluice (Fig. 94/1).
11. Carry out the calibration test as described in the operator's manual for the **AMATRON+** (see chapter "Machines with Vario gearbox with seed rate remote control").



Fig. 96



Hint!

At the calibration test **AMATRON+** requires to turn the calibration crank in counter clockwise direction until a signal sounds.

The number of crank turns for the calibration test until the signal sounds depends on the seed rate and area size:

- Crank turns for 1/10 ha from 0 to 14,9 kg
- Crank turns for 1/20 ha from 15,0 to 29,9 kg
- Crank turns for 1/40 ha from 30,0 kg.

After the calibration test

1. Replace the calibration crank (Fig. 95) into its transport retainer.
2. Close the injector sluice flap with special care (see danger advice Fig. 94).
3. Affix the seed collecting trays (Fig. 92) in their transport retainer and secure by using a lynch pin.

8.4.2 Calibration test of the Cirrus with full electric metering

Calibration test on the Cirrus with full electric metering:

1. Fill the seed hopper up to min. 1/3 of its volume with seed (correspondingly less for fine seeds at fine seeds).
2. Take the seed collecting tray out of the transport retainer on the hopper rear wall.

For transport the seed collecting trays are fitted into each other and secured with a lynch pin (Fig. 97/1) on the rear side of the seed hopper.



Fig. 97

3. Slide the seed collecting tray (Fig. 98) into the bracket.

Place one seed collecting tray underneath every individual metering unit.



Fig. 98

4. Open the injector sluice flap (Fig. 99/1) on all metering units.



Danger!

Danger of squeezing when opening and closing the injector sluice flap (Fig. 99/1).

Only hold the injector sluice flap on its strap (Fig. 99/2). Danger of injury when the sprung loaded flap shuts (Fig. 99/1).

Never ever reach with your hand between the injector sluice flap (Fig. 99/1) and the injector sluice.

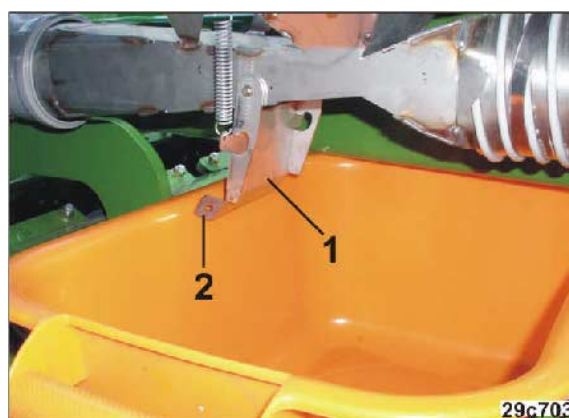


Fig. 99

Carry out the calibration test as described in the operator's manual for **AMATRON+** (Chapter: "Calibrating machines with electr. full metering")

The number of motor rev.'s for the calibration test until the signal sounds depends on the seed rate and the calibrated area:

- Motor rev.'s for 1/10 ha from 0 to 14,9 kg
- Motor rev.'s for 1/20 ha from 15 to 29,9 kg
- Motor rev.'s for 1/40 ha from 30 kg.

After the calibration test:

1. Close the injector sluice with special care (see danger hint Fig. 99)
2. Secure the calibration trays (Fig. 97) on the hopper rear wall with the aid of a lynch pin.

8.5 Fan speed

The fan speed determines the volume of the air flow.

The higher the fan speed, the bigger the resulting air flow will be.

Take the required fan speed from the fan speed table (Fig. 100).

Set the fan speed as follows

- on the oil flow control valve of the tractor (see chapter 8.5.2, on page 90)
- on the pressure relief valve of the machine (see chapter 8.5.3, on page 91), in case your tractor is not provided with a oil flow control valve.

AMATRON+ monitors the maintenance of the fan speed (see chapter 8.5.4, on page 91).

8.5.1 Fan speed table

The fan speed (1/min.) depends on

- the machine's working width (Fig. 100/1)
- the kind of seed
 - fine seeds, e.g. rape (Fig. 100/2)
 - grain and legumes (Fig. 100/3).

Example:

- Cirrus 4000
- grain seed
- required fan speed: 3800 1/min.



Danger!

Never exceed the max. fan speed of 4000 1/min.


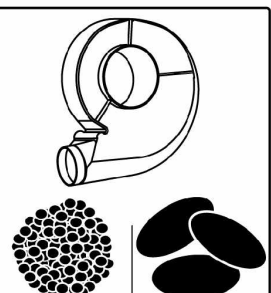
 max. 4000 1/min		
	3,0 m	2800 3500
	4,0 / 4,5 m	3000 3800
	5,0 / 6,0 m	3200 3900
	8,0 / 9,0 / 12,0 m	3200 3900
ME532	1/min	1/min
	1	2 3

Fig. 100

8.5.2 Setting the fan speed on the oil flow control valve of the tractor

The pressure relief valve (Fig. 101/2) returns oil volumes, larger than necessary, back into the oil tank and unnecessarily heat up the hydraulic oil.

The fan speed is changing until the hydraulic oil has reached its operational temperature.

At the first use the fan speed should be corrected until the operational temperature has been reached.

When the fan is operated after a prolonged period of standstill again the pre-set fan speed will only be reached when the hydraulic oil has reached its operational temperature.

On tractors with controllable hydraulic pump (Fig. 101/1) set the fan speed on the oil flow control valve:

1. Close the pressure relief valve (Fig. 101/2) (turn clockwise) and then open ½ turn (see chapter 8.5.3, on page 91), so that the oil volume is as little as possible.
2. Set the necessary fan speed on the oil volume control valve of the tractor.
3. The blower fan rev. speed is displayed in the menu operation.

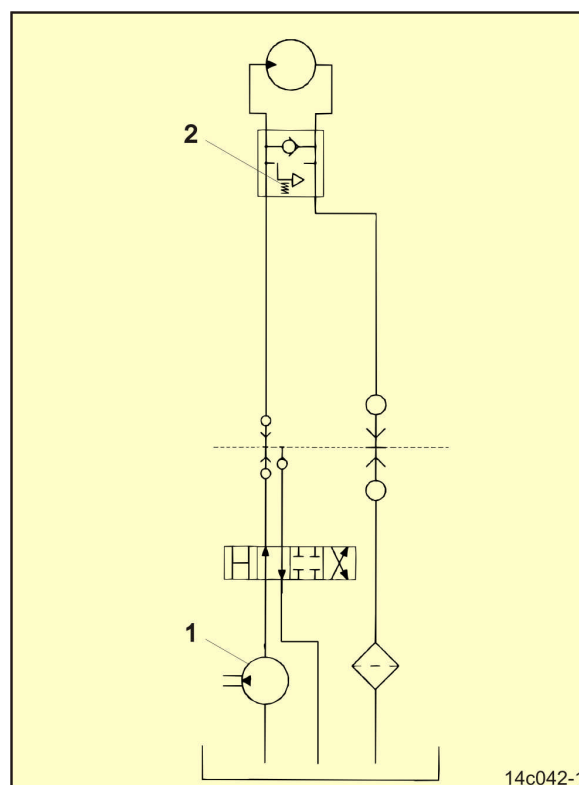


Fig. 101

8.5.3 Setting the fan speed on the pressure relief valve of the machine

On tractors without controllable hydraulic pump (Fig. 101/1) set the fan speed on the pressure relief valve (Fig. 101/2) of the machine:

1. Remove protective cap (Fig. 102/1)
2. Slacken counter nut
3. Use a screw driver to set the speed on the valve as follows:

Turn to the right = Increase fan speed

Turn to the left = Reduce fan speed

4. After setting, secure the valve position using the counter nut and put on the protective cap (Fig. 102/1).

The blower fan rev. speed is displayed in the menu machine data (see chapter 8.5.4, below) and in the menu operation.

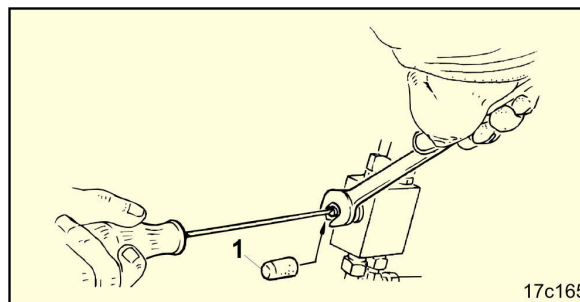


Fig. 102

8.5.4 Setting the fan speed in **AMATRON+**

Set the blower fan rev. speed monitoring in the menu machine data (see operator's manual for **AMATRON+**)

- Input of the blower fan rev. speed (1/min.), which is to be monitored
- or
- take over during operation the actual blower fan rev. speed (1/min.) as the rev. speed which should be monitored.



Danger!

Never exceed the max. fan speed of 4000 1/min.

8.5.4.1 Alarm trigger limit when the fan speed deviates from the required value

Set the alarm trigger limit for blower fan rev. speed deviation from the required value in the menu basic data (see operator's manual for **AMATRON+**).

Set the gradual proportional deviation [± 10 (%)] from the required value.

8.6 Setting the seed placement depth

Setting the seed placement depth:

1. Advise people to leave the danger area.
2. Switch off low-lift-function (see operator's manual for **AMATRON⁺**).
3. Lift the machine until the carrying arm (Fig. 103/1) gets free from the depth setting pin (Fig. 103/2).
4. Stop tractor engine, apply parking brake and remove ignition key.



Fig. 103



Danger!

Only carry out any settings with the tractor engine stopped, applied parking brake and removed ignition key.

Hold the depth setting pins in such a way that your hand never gets between the carrying arm (Fig. 103/1) and the depth setting pins (Fig. 103/2) .

5. Insert depth setting pins (Fig. 104/1) according (see chapter 8.6.1, on page 93).
 - o in all setting segments
 - o in the same square hole
6. After re-inserting, use linch pins (Fig. 104/2) to secure the depth setting pins.

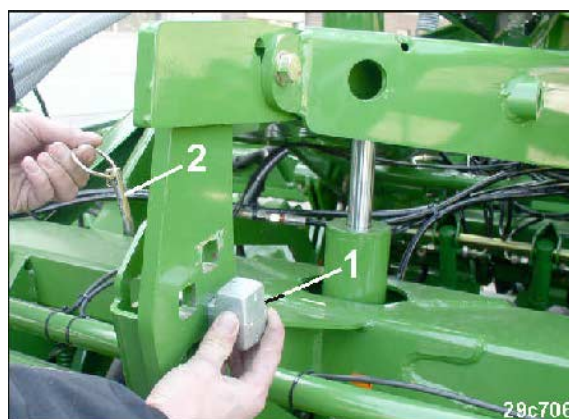


Fig. 104

7. Advise people to leave the danger area.
8. When the machine is lowered the carrying arms (Fig. 105/1) rest on the depth regulating pins (Fig. 105/2).
9. Switch on low-lift-function (if necessary).



Important!

Recheck the placement depth after any re-inserting of the depth setting pins.

For this drive an appropriate distance with the later operational speed and check the placement depth.



Fig. 105

8.6.1 Advice for setting the seed placement depth

The seed placement depth is set in relation to the relevant rest on the wedge ring tyre roller.

Insert the depth setting pins (Fig. 106/1) for setting the seed placement depth into the desired hole in the setting segments underneath the carrying arms and secure using lynch pins (Fig. 106/3).

The depth setting pins (Fig. 106/1) are provided with a square end with different distances. The edges are marked with the figures 1 to 4 (Fig. 106/2).

The different distances on the square end allow an even better tuning of the seed placement depth than between the individual square holes on the setting segment.

Ensure that the edges and figures of the depth setting pins coincide on all carrying arms.

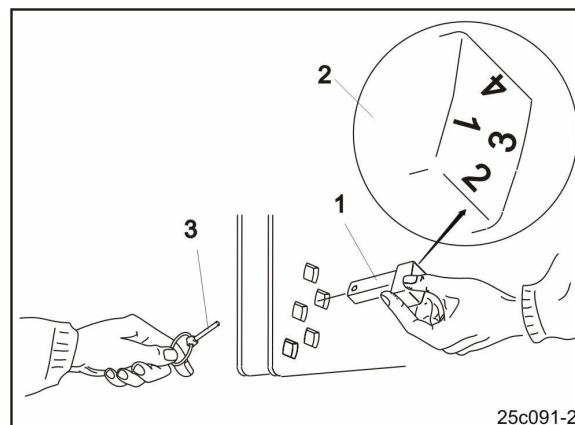


Fig. 106

The deeper the hole (Fig. 107/2) is chosen and the higher the figure is (Fig. 107/1) on the contact surface of the carrying arm, the deeper the placement depth of the seed will be.

The placement depth of the seed depends on the kind of soil and the forward speed.

Inserting the depth setting pins within one hole from figure to figure results in a seed placement depth change of approx. 7 mm.

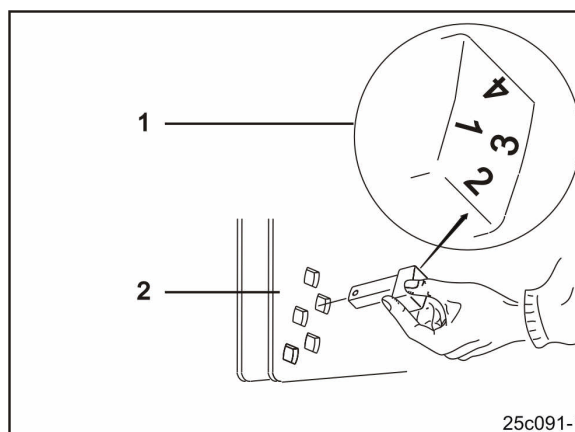


Fig. 107

8.7 Setting the length of the track markers (in the field)

Setting the length of the track markers (in the field):

1. Simultaneously fold down both track markers in the field (see operator's manual for **AMATRON⁺**) and drive some metres.
2. Stop tractor engine, apply the parking brake and remove the ignition key.
3. Slacken tapered screw (Fig. 108/1).
4. Set the track marker length to distance "A" (see chapter 8.7.1, below).
5. Retighten the tapered screw (Fig. 108/1) firmly.
6. Repeat this procedure on the other track marker.

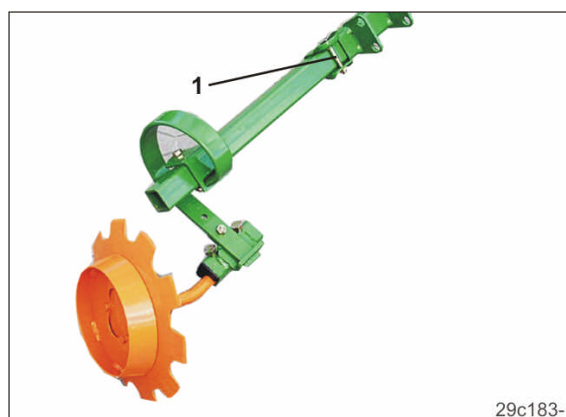


Fig. 108



Danger!

Standing within the operational range of the track marker arm is prohibited.

Carry out settings only with the tractor engine stopped, the parking brake applied and the ignition key removed.

8.7.1 Track marker length dimensions

The track markers mark a trace in the tractor's centre.

Measured is distance "A" (Fig. 109)

- from the machine's centre
- to the contact point of the track marker disc.

Set both track markers to the same length.

	Distance "A"
Cirrus 3001	3,0 m
Cirrus 4001	4,0 m
Cirrus 6001	6,0 m

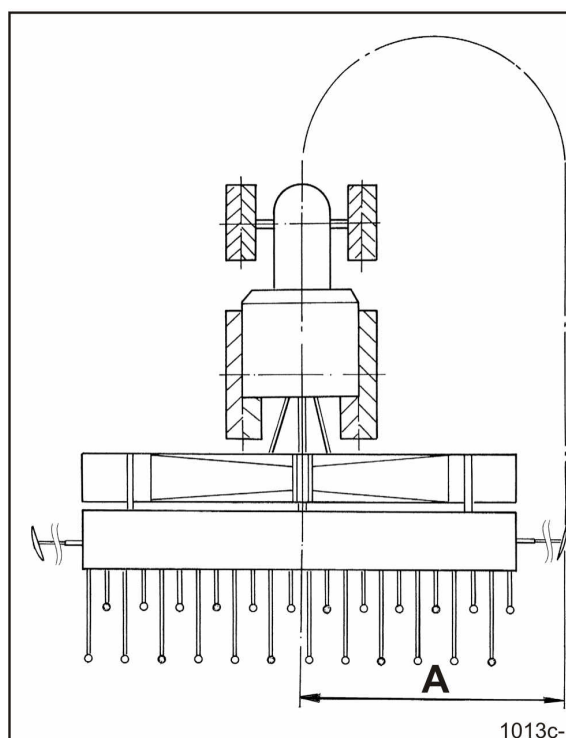


Fig. 109

8.7.2 Setting the working intensity of the track markers

Setting the working intensity of the track markers:

1. Slacken the two bolts (Fig. 110/2)
2. Set the working intensity of the track marker by twisting the track marker discs in such a way that they run about parallel to the forward direction on lighter soils and more on grip on heavier soils.
3. Retighten bolts (Fig. 110/2) firmly.
4. Repeat this procedure on the other track marker.

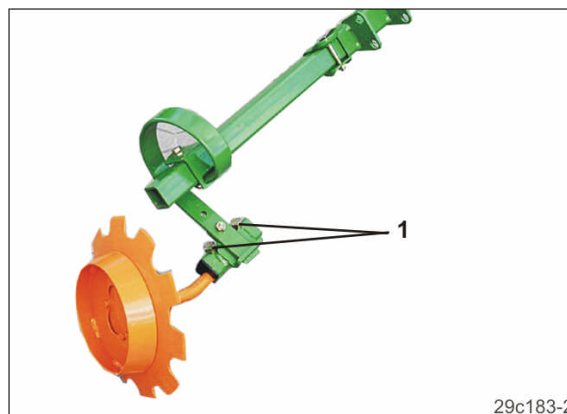



Fig. 110

8.8 Disc segment

8.8.1 Setting the working intensity

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

1. Select the disc harrow actuation  in **AMATRON+** (see operator's manual for **AMATRON+**).
2. Actuate control valve 2 and set the desired disc working depth on the scale (Fig. 111/1).
The figures on this scale are a guide for setting various disc working depths. The higher the figure is, the deeper the discs will work.
3. Check the working intensity of the discs and if necessary correct the disc working depth.

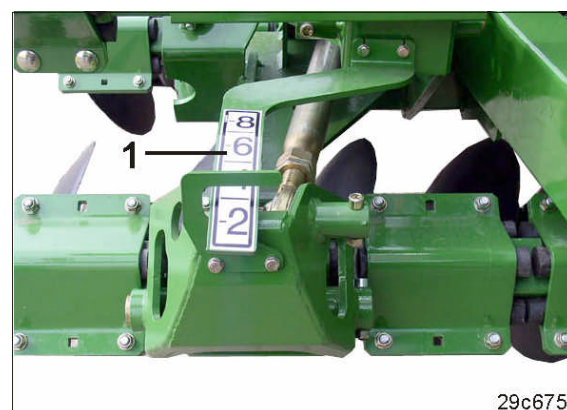


Fig. 111

8.8.2 Setting the length of the outer disc legs

In every disc row the length of the two outer disc legs can be adjusted (Fig. 112/1).

Shorten the disc legs of the front disc row when the outer discs throw outwards too much soil.

Shorten the disc legs of the rear disc row when the outer discs throw inwards too much soil.

After adjustment of the disc legs, retighten the earlier slackened the nuts firmly.



Fig. 112

8.8.3 Setting the side discs

Setting the side discs:

1. Lift the disc harrow.
2. Stop the tractor engine, apply the parking brake and remove the ignition key.
3. Set the side discs (Fig. 113/1) by using pins (Fig. 113/2) in longitudinal and diagonal direction in such a way that the worked soil cannot escape to the sides preventing lateral ridges of earth.
4. After any setting secure the pins by using lynch pins.
5. Watch out for lateral soil ridges. If noticed correct the side disc setting, if necessary.



Fig. 113



Caution!

Danger of squeezing when shifting the side discs (Fig. 113/1)

Hint!

In the transport position the side discs of the Cirrus 3000 are placed in the transport retainer.

8.9 Extra coverage following harrow

8.9.1 Extra coverage following harrow – spring tine position

Set the spring tines of the extra coverage following harrow in such a way, that they

- are placed parallel on the ground and
- can move 5 - 8 cm downwards.

The distance between the extra coverage following harrow and the soil is then from 230 to 280 mm (see Fig. 114).

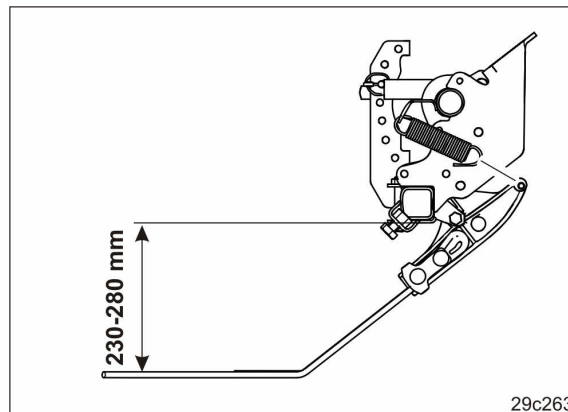


Fig. 114

The setting is achieved by lengthening or shortening the carrying tubes (Fig. 115/1) on the packer coulter frame:

1. Putting the machine into operation in the field.
2. Stop tractor engine, apply parking brake, remove ignition key.
3. Slacken the counter nut (Fig. 115/2).
4. Set all carrying tubes (Fig. 115/1) to an equal measure of length. For this turn all bolts (Fig. 115/3) equally.
5. After setting, retighten the counter nut (Fig. 115/2) firmly.
6. Check the working result of the exact harrow.



Fig. 115

8.9.2 Exact following harrow pressure

The exact harrow pressure is set with the aid of pins. The higher the pin will be inserted in the setting segment, the higher the harrow pressure will be.

Exact following harrows with hydraulic pressure adjustment are provided with two pins for different kinds of soil.

Carry out the same setting on all setting segments.

8.9.2.1 Setting the exact following harrow pressure

Setting the exact harrow pressure:

1. Apply the parking brake, stop the tractor engine and remove the ignition key.
2. Tension the lever (Fig. 116/1) with the aid of the calibration crank.
3. Insert the pin (Fig. 116/2) into a hole below the lever.
4. Slacken the lever.
5. Secure the pin by using a clip pin.

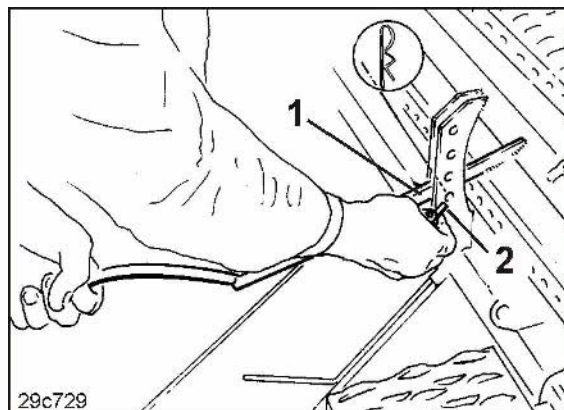


Fig. 116

8.9.2.2 Setting the exact following harrow pressure (hydr. adjustment)

Setting the following harrow pressure:


1. Select the harrow pressure key  in **AMATRON+** and the hydraulic ram by actuating the spool valve 2
 - o Pressurize or.
 - o set in float position.
2. Apply the parking brake, stop the tractor engine and remove the ignition key.
3. Insert each one pin (Fig. 116/2) into the setting segment above and below the lever and secure using clip pins.



Fig. 117

8.9.3 Setting the tramline rhythm / - counter in the **AMATRON⁺**

1. Selecting the tramline rhythm (see table, Fig. 59).
2. Setting the tramline rhythm in the menu machine data (see operator's manual for **AMATRON⁺**).
3. Take the tramline bout counter for the first circuit of the field from Figure (Fig. 60).
4. Entering the tramline bout counter of the first run in the field into the menu operation (see operator's manual for **AMATRON⁺**).
5. Setting the seed rate reduction (%) necessary during tramline creation in the menu machine data (see operator's manual for **AMATRON⁺**).
6. Switching on/off the intermittent tramline function in the menu operation (see operator's manual for **AMATRON⁺**).



Hint!

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

At every lifting of the machine the tramline bout counter shifts on by one figure.

If it is intended to prevent the tramline bout counter from shifting on

when lifting the machine, first press the STOP key  (see operator's manual for **AMATRON⁺**) and then lift the machine.

Lock the star wheel before the machine is lowered with the wings folded in (see operator's manual **AMATRON⁺**), to prevent the star wheel from an unintended lowering and the tramline bout counter from going on counting.

8.9.4 Half side shut off

The half side shut off on machines with two metering units or with full metering is possible.

Half side shutting off on machines with two metering units:

1. Fold down the Cirrus.
2. Apply the parking brake, stop the tractor engine and remove the ignition key.
3. Remove one of the two lynch pins (Fig. 118/1).
In order to shut off the right machine side remove the right hand lynch pin seen in driving direction. The drive of the right hand metering roller is interrupted.

For the half side shut off on machines with full electric metering, please see the operator's manual for **AMATRON⁺**.



Fig. 118

8.10 Pre-emergence marker (option)

8.10.1 Marker disc carrier in the operational / transport position

Lowering the marker disc carrier into work:

1. Hold marker disc carrier.
2. Remove the pin (Fig. 119/1) which is secured with a cotter pin (Fig. 119/2).
3. Swivel the marker disc carrier downwards by hand.
4. Lower the second marker disc carrier into work in the same way.



Fig. 119



Fig. 120

8.10.2 Setting the track width and the working intensity of the pre emergence marker

Setting the track width and the working intensity of the pre emergence marker:

1. Advise people to leave the danger area.
2. Return tramline counter back to "zero" (see operator's manual for **AMATRON⁺**).
3. Actuate control valve 1 and lower the marker discs.



Danger!

Before actuating the control valve, advise people to leave the danger area.

4. Apply parking brake, stop the tractor engine and remove the ignition key.
5. Slacken bolts (Fig. 121/1).
6. Adjust the marker discs in such a way that they mark the tramline which has been created by the tramline coulters.
7. Turn the discs (on light soils the discs should be placed about parallel seen in driving direction and more on grip on heavy soils) to adapt the working intensity to the prevailing soil contour.
8. Firmly retighten bolts (Fig. 121/1).

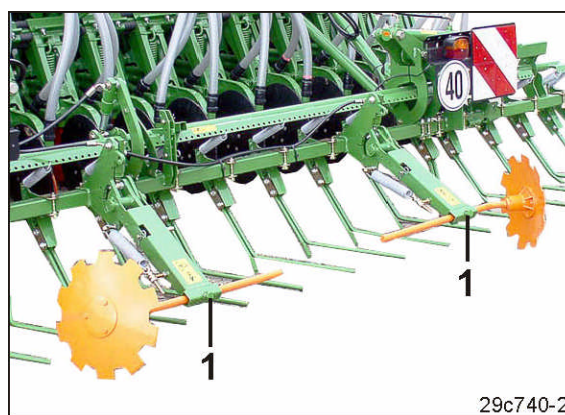


Fig. 121



Hint!

When operating with tramline rhythm 2 and tramline rhythm 6plus (also see chapter 5.15.1.3, on page 64) only fit one of the two marker discs.

The wheel track of the husbandry tractor is marked during one travel to and fro in the field.

9 Transport on public roads



Danger!

Prior any transport travel observe the chapter "Safety advice for the operator", on page 24.

When travelling on public roads and ways, ensure that tractor and machine correspond to the national road transport and traffic rules (in Germany STVZO and STVO) and to the accident prevention advice (in Germany the trade association).

Both, the vehicle owner and the operator are responsible for adhering to the legal traffic rules.

In addition all advice given in this chapter should be adhered to before and during travelling.

1. Empty the seed hopper (see chapter 10.7, on page 115).



Danger!

Empty the seed hopper in the field.

The transport on roads and ways with filled seed hopper is prohibited. The brake system is only designed for the empty machine.

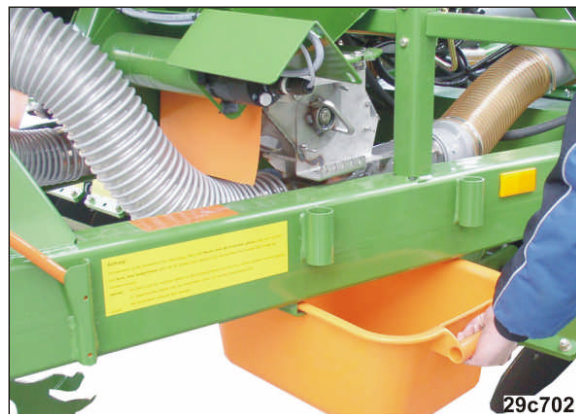


Fig. 122

2. Stop tractor engine, apply parking brake and remove ignition key.
3. Close the hopper cover and secure by using the rubber loops (Fig. 123/1) against unintended opening whilst travelling. Use the hopper cover hook (Fig. 123/2).



Caution!

Stop tractor engine, apply parking brake and remove ignition key.



Fig. 123

When not in use, the hopper cover hook (Fig. 124/1) is located in the transport retainer (Fig. 124/2) on the bar for the traffic light kit.

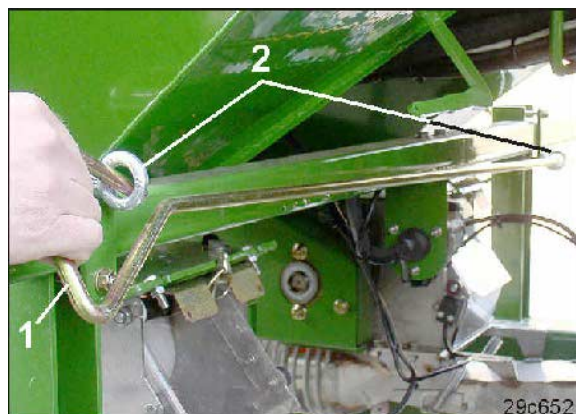


Fig. 124

4. Slide stair step upwards and secure using a clip pin (Fig. 125/1).


Caution!

Danger of squeezing. Only touch the ladder at its steps.


Important!

After any use and before transport and commencing operation push up the stair step (Fig. 125) and secure. This will help to avoid any damage on the stair step



Fig. 125

5. Lock both track marker carriers (Fig. 126/1) and secure on the transport brackets (Fig. 126/2) of the pre emergence marker by using pins (Fig. 126/3) and clip pins (Fig. 126/4).
6. Pull the marker discs (Fig. 126/5) out of the marker disc carriers (Fig. 126/1) and carry them along in a suited compartment. Prior to this slacken the fixing bolts (Fig. 126/6).

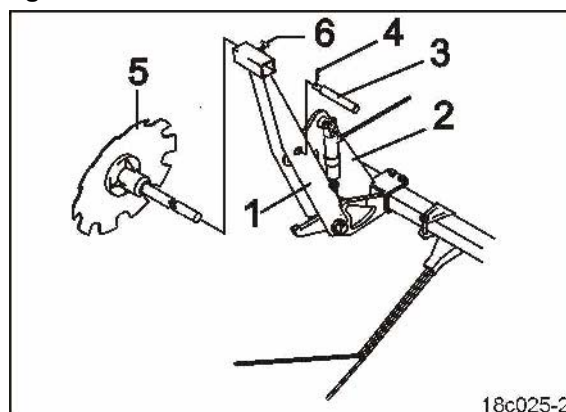


Fig. 126

Only Cirrus 3001:

7. Slacken the fixing bolt and push in the outer harrow element (Fig. 127/1) until the transport width (3,0 m) has been reached.
8. Tighten the fixing bolt and push in the second outer harrow element until the transport width (3,0 m) has been reached.

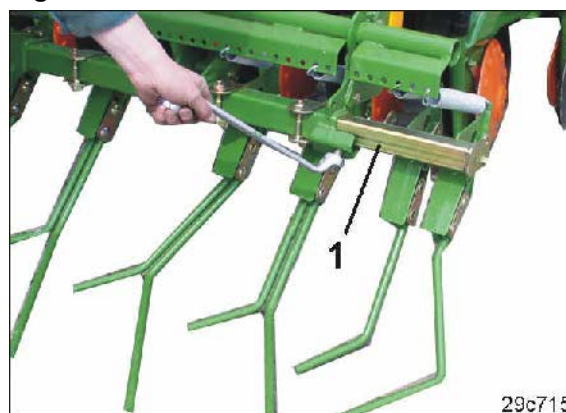


Fig. 127

Transport on public roads

For all types:

9. Push the two-section traffic safety board (Fig. 128/1) over the tine tips of the exact harrow.
10. Affix the traffic safety board by using lynch pins (Fig. 128/2) on the exact following harrow.

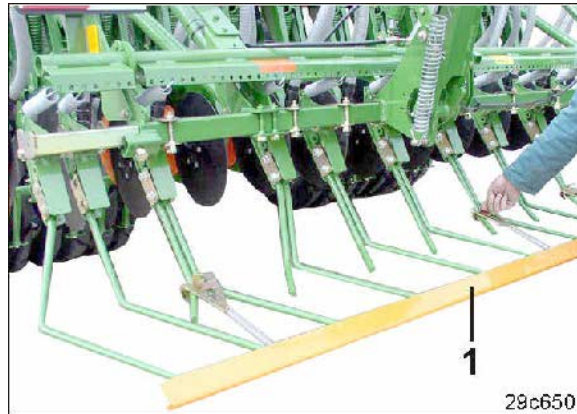


Fig. 128

Only Cirrus 3001:

11. Push the side discs (Fig. 129/1) into the transport retainers and lock and secure by using pin (Fig. 129/2) and lynch pin.



Danger!

For transport push the side discs (Fig. 129/1) into the transport retainers.



Fig. 129

all types, except for Cirrus 3001:

12. Fold in machine wing (see chapter 10.2, on page 106).



Fig. 130

all types:

13. Switch off **AMATRON⁺**.
(see **AMATRON⁺**-operator's manual).



Important!

Shut the tractor spool valves during transport.



Fig. 131

The traffic safety kit, as described in chapter "Road traffic safety equipment", on page 40, is prescribed.

14. Check the traffic light kit for proper function.
15. Ensure that the warning plates and yellow reflectors are clean and not damaged.



Fig. 132



Important!

Adhere to the precautions of accident prevention in public road traffic.

Adhere to the permissible axle loads, tyre load capacities, support load of the tractor lower links and the total weight of the tractor (see chapter 6, on page 67).

For transport of the machine always ensure that the sufficient front axle load – min. 20 % of the tractor's net weight) is maintained. Otherwise the steering ability of the tractor is not ensured.

Before starting to travel, switch on the signal light (requires a licence) and check for function.

Lock tractor lower link arms against unintended lowering.

Observe the sufficient lateral securing of the tractor lower link arms.

The maximum speed of the machine is 40 km/h. Especially in bad road conditions a clearly reduced speed would be allowed.

The driving behaviour and the steering and braking ability is affected by the machine weight.

When driving into bends mind the projection to the sides and the gyrating mass of the implement.

Sitting or standing on the machine during transport is prohibited.

10 Operation



Danger!

- When operating the machine observe the chapter "Safety advice for the operator", on page 24.
- Observe the warning signs on the machine. The warning signs provide you with important hints for the safe operation of the machine. Adhering to these hints serves your safety.

10.1 Removal of road traffic safety board

Removal of road traffic safety board:

1. Slacken the lynch pin (Fig. 133/2) and deposit the road traffic safety board (Fig. 133/1) at the side of the field.



Fig. 133

10.2 Folding the machine wings down and in



Danger!

Advise people to leave the operational range of the machine wings before folding the machine wings down and in.



Fig. 134



Important!

Before folding the machine wings down and in align tractor and the machine on level ground.

Fully lift the machine before folding the machine wings down or in. Only with the entirely raised machine the operational tools will have sufficient ground clearance and are thus protected from damage.

10.2.1 Folding down the machine wings

Folding down the machine wings:

1. Release the parking brake and remove your foot from the brake pedal.
Never leave the tractor cab with the parking brake released.
2. Actuate control unit 1 until the machine has been fully lifted (see Fig. 135).
Otherwise the operational tools will get damaged during the folding procedure.
3. Apply parking brake.



Fig. 135


4. Recall operation menu in **AMATRON+**.
5. Press shift key
(key on the rear side of the **AMATRON+**)
6. Press key  until the symbol appears.
7. Lock the star wheel (see operator's manual for **AMATRON+**).
8. The Low-Lift-function is switched off (see operator's manual for **AMATRON+**)
9. Actuate control unit 2 until the machine wings have been folded down.
10. Actuate control unit 2 for another 3 sec. to fill the hydr. reservoir (Fig. 194) with hydraulic oil.



Fig. 136



Hint!

The locking hooks (Fig. 137/1) open automatically before the machine wings are folded down.

In case, the catching hooks (Fig. 137/1) do not open, briefly set the control unit 2 to "folding in" and then again to "folding down".



Fig. 137

Operation

11. Actuate control unit 1 to lower the machine down into work.



Fig. 138

10.2.2 Folding in machine wings

Folding in machine wings:

1. Release the parking brake and remove your foot from the brake pedal.
Never leave the tractor cab with the parking brake is released.
2. Actuate control unit 1 until the machine has been fully lifted (see Fig. 139).
Otherwise the operational tools will be damaged during the folding procedure.
3. Apply the parking brake.



Fig. 139


4. Recall operation menu in **AMATRON+**.
5. Press shift key
(key on the rear side of the **AMATRON+**)
6. Press key  until the symbol appears.
7. Lock the star wheel (see operator's manual for **AMATRON+**).
8. The Low-Lift-function is switched off (see operator's manual for **AMATRON+**)
9. Actuate control unit 2 until the machine wings have fully been folded in.



Fig. 140

The locking hooks (Fig. 141/1) act as a mechanical transport locking and catch on the locking journals (Fig. 141/2).



Danger!

Ensure that the latches (Fig. 141/1) have caught properly after having folded in the wings.

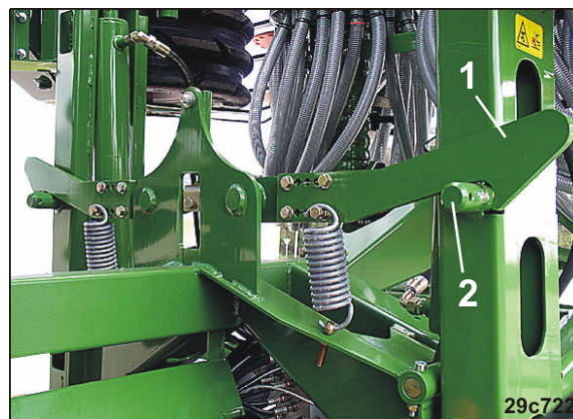


Fig. 141

10. Actuate control unit 1 to lower the machine into the transport position.



Important!

Lower the machine only to that extent that the machine has sufficient ground clearance in all situations of travel.



Danger!

Switch off **AMATRON+**



Danger!

The transport of the machine with filled seed hopper on public roads and ways is prohibited. The braking system is only designed for the empty machine.



Fig. 142

10.3 Filling the seed hopper

Filling the seed hopper:

1. Couple the Cirrus on to the tractor (see chapter 7, on page 73).
2. Apply the parking brake, stop the tractor engine and remove the ignition key.
3. Determine the metering roller(s) following table (Fig. 83) and install according to chapter "Exchanging metering wheels", on page 82.



Danger!

Only fill the seed hopper in the field.

The transport of the machine with filled hopper is prohibited on all roads and ways. The brake system is only designed for the empty machine.

Before filling the seed hopper, stop the tractor engine, apply the parking brake and remove the ignition key.

4. Slacken the rubber loops (Fig. 143/1) with the hopper cover hook (Fig. 143/1).



Fig. 143

5. Take the ladder out of the catch (Fig. 144/1) and lower until the stop.



Caution!

Danger of squeezing. Only touch the ladder at its steps.



Fig. 144

6. Climb onto the platform using the ladder.
7. Slacken the rubber loops.
8. Open the hopper cover.
9. If necessary, remove foreign parts from the seed hopper.



Fig. 145

10. Filling the seed hopper, e.g.
 - o with the aid of a filling auger from a supply vehicle.



Fig. 146

- o From big-bags.



Danger!

Never stand between supply vehicle and machine.

Never stand underneath a lifted implement (unsecured load).

Observe the permissible filling quantities and total weights!



Fig. 147

11. Switching on and off the interior lighting of the seed hopper for nightly operation.

The interior lighting is coupled with the headlight of the tractor.



Fig. 148

12. Close the swivel hopper cover and secure using rubber loops.
13. Pull up the ladder (Fig. 144) and lock.



Important!

After any use and before commencing road transport and operation push the ladder (Fig. 144) upwards and lock. In this way damage on the ladder or the step is prevented. The draw bar could damage the lowered ladder when turning the machine.

10.3.1 Entering filling quantity into **AMATRON+**

In case the exact filling quantity of seed is known, enter the filling quantity into the **AMATRON+** (see operator's manual **AMATRON+**).

This allows entering the residual amount (kg) in the seed box at which the filling level alarm should be triggered.

The **AMATRON+** triggers the alarm when

- the theoretically calculated residual amount has been reached and the seed box level indicator in **AMATRON+** is switched off or
- the seed box level sensor is not covered with seed any more.

10.4 Starting operation

When starting operation:

1. Advise persons to leave the danger area.
2. Get the machine into operational position at the beginning of the field.
3. Actuate spool valve 1.

The following hydraulic functions are carried out:

- o Lowering the machine
- o Lowering the star wheel
- o Lowering the track marker
- o Lowering the coulter frame.

4. Checking the tramline rhythm.
5. Checking the tramline bout counter, re-adjust if necessary.
6. Checking blower fan rev. speed, re-adjust if necessary..
7. Start driving.
8. After 100 m check and re-adjust if necessary:
 - o Working intensity of the disc segment
 - o Placement depth of the seed
 - o Working intensity of the exact following harrow.



Important!

The tractor control units should only be actuated within the tractor cab.


Hint!

Before commencing work check whether the correct tramline bout counter for the first circuit of the field is shown.

Hint!

Dressed seed is very poisonous to birds.

The seed should be incorporated carefully and should be covered with soil.

When lifting up the coulters avoid the trickling of seed.

Remove spilled seed immediately!

10.5 During operation

Proportional change of seed rate during operation

During operation the seed rate can proportionally be changes in the menu machine data (see operator's manual for **AMATRON⁺**).

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

If it is intended to prevent the lifting or lowering of the star wheel when the spool valve 1 is actuated, lock the star wheel actuation in the menu operation (see operator's manual for **AMATRON⁺**).

If it is intended to prevent the shifting on of the tramline bout counter when the operation is interrupted, press the STOP-key in the menu operation (see operator's manual for **AMATRON⁺**).

Locking the track marker actuation

The track marker actuation can be locked in the menu operation (see operator's manual for **AMATRON⁺**).

Folding in track markers at obstacles

In order to avoid damage on the track marker when hitting an obstacle the track markers can be folded in (see operator's manual for **AMATRON⁺**).

The Machine and the star wheel are not lifted and the sowing operation is continued.

Visual check of the distributor heads

From time to time check the distributor head(s) for cleanliness.


Important!

Dirt and seed residues might block the distributor heads and should be removed immediately following chapter "Cleaning the distributor head (authorised workshop)", on page 123.

Sowing in difficult soil conditions

Mud holes can be passed and sown by lifting the machine with the aid of the integrated running gear. Track markers, star wheel and coulter frame remain in their operational position. (see operator's manual for **AMATRON⁺**).

10.6 Turning at the headlands

Before turning at the headlands

1. slow down the speed
2. do not reduce the tractor's rev. speed too much to ensure that the hydraulic functions will react properly at the headlands.
3. actuate control unit 1
4. as soon as the machine is lifted, turn (if desired until full lock of the tractor steering).



Fig. 149



Hint!

When actuating the control unit 1

- the machine is lifted with the aid of the integrated running gear.
- the coulters are lifted.
With the low-lift function switched on the lifting of the coulters is locked. With the Low-Lift function being switched on less time is required to lower the machine again. Ensure that the Low Lift function is only actuated when the coulters do not touch the soil when turning at the headlands.
- the star wheel is lifted and the tramline control shifts on.
- the track markers are folded in.

After turning:

1. Actuate spool valve 1 for at least 5 seconds so that the machine is entirely lowered.
2. Start driving in the field.



Fig. 150



Hint!

When actuating the spool valve 1 after turning at the headlands, and depending on the pre-selection in the **AMATRON⁺**

- the machine and the coulters are lowered
- the opposite track marker is lowered into work
- the star wheel is set into operational position.

10.7 Emptying the metering unit or seed hopper and metering unit

Emptying the metering unit or seed hopper and metering unit:

1. Stop the tractor engine, apply the parking brake and remove the ignition key.
2. Attach the seed collecting tray underneath the metering unit(s).

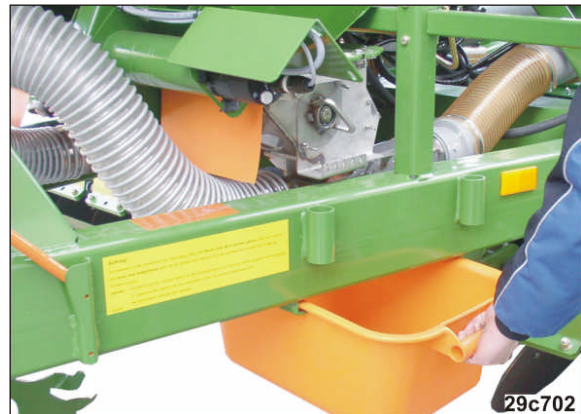


Fig. 151

3. Close the shutter(Fig. 152/1) if only the metering unit and not the seed box should be emptied (see chapter 8.1.2, on page 82).

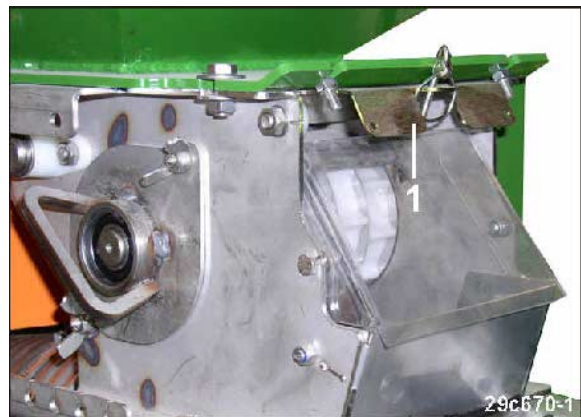


Fig. 152

4. Open the injector sluice flap (Fig. 153/1) to allow the seed to flow into the seed collection trays.



Danger!

Danger of squeezing when the injector sluice flap (Fig. 153/1) is opened or closed!

Only hold the injector sluice flap on its strap (Fig. 153/1). Otherwise danger of injury when the sprung loaded flap will bang.

Never hold your hand between injector sluice flap (Fig. 153/1) and injector sluice!

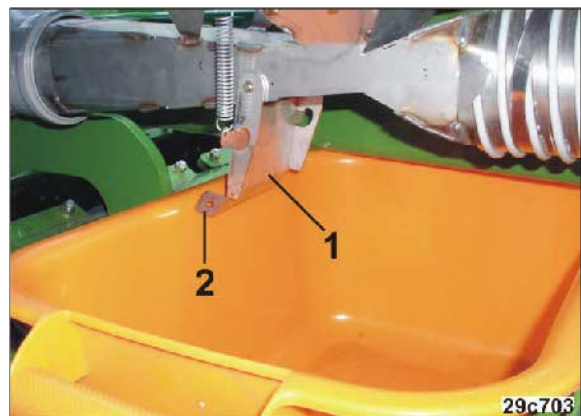


Fig. 153

Operation

5. Turn the handle (Fig. 154/1) to open residue emptying flap.



Hint:

For emptying the removal of the metering roller is possible (see chapter 8.1.2, on page 82).

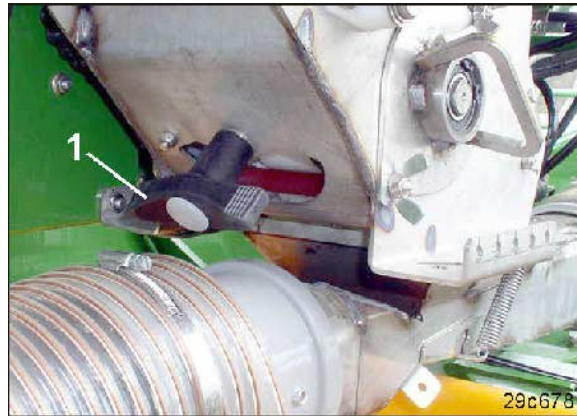


Fig. 154

6. In the same way as for the calibration test, turn the star wheel (Fig. 155) to the left until the metering wheels and the metering units are completely empty.

For full metering, briefly run the electric motor.

7. For the complete cleaning when changing the seed type, remove the metering wheels (see chapter 8.1.2, on page 82) and clean together with the metering unit.
8. Close the flap for emptying residual amounts (Fig. 154) and affix the calibration tray on the transport retainer.



Fig. 155




Important!

Seed residue in the metering units might swell and germinate when the metering units have not been emptied completely.

This will cause blockage of the metering wheel rotation and result in damage to the drive.

10.8 Finishing operation in the field

When the operation has been finished get the machine into the transport position:

1. Actuation spool valve 1:
 - o Lifting the machine
 - o Lifting the star wheel
 - o Lifting the track marker
 - o Lifting the coulter frame (with Low-Lift-function switched off).
2. Switch off blower fan.
3. Emptying the seed box (see chapter 10.7, on page 115).
4. If it is intended to prevent the tramline bout counter to shift on during lifting or lowering the machine, first press the STOP-key -  (see operator's manual for **AMATRON+**).
5. Cirrus 4001/6001 folding in (see chapter 10.2, on page 106).



Important!

The tractor control units should only be actuated within the tractor cab.

11 Faults

11.1 Indication of low seed hopper contents

When the seed level falls below the residual amount (with properly adjusted seed level sensor) a warning alarm (Fig. 156) appears in the **AMATRON+** with an audible signal.

The residual amount should be sufficiently large to avoid deviations in the application rate or now sown areas.

machine type:	Cirrus	Order
order No.:	6	drill calibr.
tramline rhythm No.:	15	machine
working width:	6.0m	Setup 29c214gb
level too low		

Fig. 156

11.2 Failure of **AMATRON+** during operation

In case of a failure of **AMATRON+** is noted during operation in the field, the sowing operation can be continued in an emergency mode.

During the emergency mode the track markers and the tramline bout counter can not be actuated.

Operation with emergency mode:

1. Stop the tractor engine, apply the parking brake and remove the ignition key.
2. Remove the guards from the electr.-hydr. control block.
3. Turn out the Allen screw (Fig. 157/1) until the stop.
Turning out of the Allen screw will cause the lifting/lowering of the star wheel together with the machine.
4. Attach the guards to the electr.-hydr. control block (Fig. 157).
5. Start operation with emergency mode.

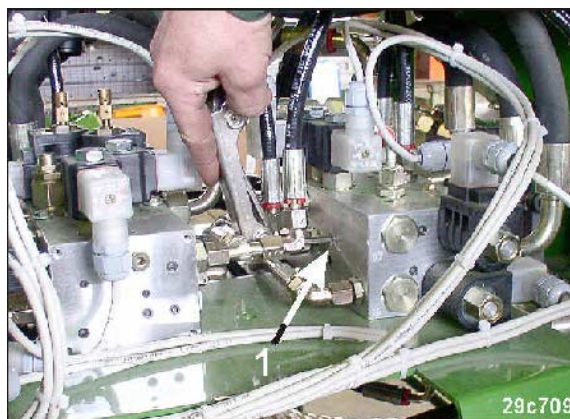


Fig. 157

Getting the machine in transport position when the failure of **AMATRON⁺** is noted during operation:

1. Stop the tractor engine, apply the parking brake and remove the ignition key.
2. Remove the guards of the electr.-hydr. control block (Fig. 158).
3. Pull two valve rods (Fig. 158/1) out of the valves and twist by 45 degree for locking.



Fig. 158

4. Advise persons to leave the danger area.
5. Fold in the machine wings.
6. Ensure that the locking hooks (Fig. 141) lock the wings properly.
7. Get the machine into road transport position (see chapter 9, on page 102).
8. Immediately see the nearest authorised workshop.

Danger!

- Only in case of a failure of **AMATRON⁺** fold the machine in emergency mode.
- Only actuate the tractor spool valves within the tractor cab.
- Before actuating the tractor spool valves advise persons to leave the danger area.

Danger!

- Before starting transport ensure that the locking hooks (Fig. 141) lock the machine wings properly.
- Immediately go to see the next authorised workshop.

Important!

After repair

- Screw in the stud bolt (Fig. 157/1).
- Get the two valve rods (Fig. 158/1) into normal position.



11.3 Deviations between the adjusted and the actual seed rate

Possible reasons for the deviation between the pre-set and the actual seed rate:

- For the adjustment of seed rate, the accumulation of the worked area or an indication of forward speed **AMALOG⁺** requires the impulses of the seed drill drive wheel over a measured distance of 100 m.

Slip on the seed drill drive wheel may vary in changeable soils (e.g. from heavy to light land) resulting in a change of the value of 'Imp./100m'

In case of deviations between the adjusted and the actual seed rate, the calibration figure "Imp./100m" should be re-determined by driving down a test distance.

- Sowing moist dressed seeds may result in deviations between the adjusted and the actually sown seed rate, when there is a period of less than one week (recommended 2 weeks) between dressing and sowing.
- A defective or wrongly set metering lip (Fig. 159/1) will cause metering faults.

Set the metering lip in such a way that it slightly rests on the metering roller (Fig. 159/2).

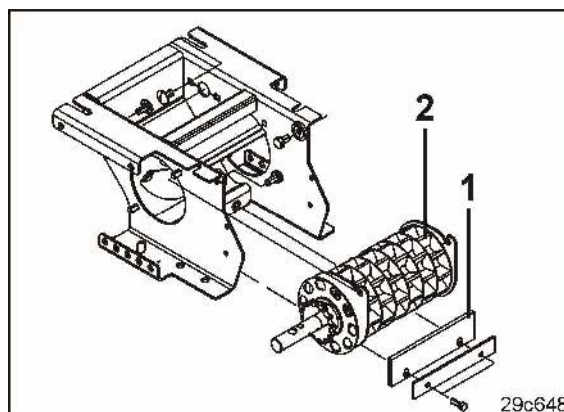


Fig. 159

11.4 Table of malfunctions

Fault	Possible cause	Remedy
Track marker does not change	Sensor operational position has been set wrongly	Adjust the sensor
	Sensor operational position is defective	Exchange sensor operational position
	Hydr. valve has got stuck	Exchange hydr. valve
Track marker shifts too early or too late	Wrong setting of sensor operational position	Adjust the sensor
	Sensor operational position is defective	Exchange the sensor operational position
Tramline bout counter does not work	Actuate the STOP key	Switch off the STOP key
	Tramline rhythm wrong	Adjust the tramline rhythm
	The sensor operational position is defective	Exchange the sensor operational position
Blower fan sensor triggers an alarm	Wrong setting of alarm trigger limit	Change the alarm trigger limit
	Oil volume too high or too low	Adjust the oil volume
	The sensor blower fan is defective	Exchange the sensor blower fan
Forward speed sensor (star wheel / Vario gearbox) without any function	Forward speed sensor is defective	Exchange the forward speed sensor
Shutters within the distributor head (tramline shifting) do not work		Clean the distributor head
		Clean the control disc
	Automatic safety reacts	Switch off AMATRON⁺ and switch on again. The safety device should work properly now.
The seed placement depth varies within the machine width		Calibrate the balance system
		Check the balance system for loss of oil

12 Maintenance, repair and care

**Important!**

When carrying out any maintenance, repair and care work, observe the chapter "Maintenance, repair- and care-work", on page 28.

The maintenance intervals are valid for normal operation. Operation in difficult conditions will reduce the time of interval.

Thoroughly clean the machine prior to prolonged operational breaks.

**Danger!**

Operations marked with "authorised workshop" must only be carried out in a skilled authorised workshop.

**Danger!**

After maintenance-, repair work and cleaning attach the safety devices and guards again.

12.1 Cleaning

**Important!**

- Monitor brake-, air and hydraulic hoses with special care.
- Never ever treat brake-, air- and hydraulic hoses with petrol, benzole, paraffin or mineral oils.
- After cleaning grease the machine, especially after cleaning with a high pressure cleaner / steam jet or fat soluble agents.
- Observe the legal prescriptions for the handling and disposal of cleaning agents.

**Danger!**

Wear a protective mask. Do not inhale dust of dressed seed when using an air pressure cleaner to remove the dust.

Cleaning by using a high pressure cleaner / steam jet



Important!

- Implicitly observe the following points when using a high pressure cleaner / steam jet for cleaning:
 - o Do not clean any electric parts.
 - o Do not clean any chromium plated parts.
 - o Never point with the cleaning jet of the cleaning nozzle of the high pressure cleaner / steam jet directly at grease or bearing points.
 - o Always ensure a minimum distance between the cleaning jet of the high pressure cleaner or steam jet and the machine.
 - o Observe the safety advice for operating with high pressure cleaners.

12.1.1 Cleaning the machine

Cleaning the machine:

1. Cleaning seed box and metering units (see chapter 10.7, on page 115).
2. Cleaning distributor head(s) (see chapter 12.1.2, below).
3. Clean the machine with water or a high pressure cleaner.

12.1.2 Cleaning the distributor head (authorised workshop)



Hint!

Immediately clean distributor heads with have been dirtied by seed residues. Dirty distributor heads may affect the seed rate.

Cleaning the distributor head:

1. Stop the.
2. Fold down the combination (see chapter 10.2.1, on page 107).
3. Apply the parking brake, stop the tractor engine and remove the ignition key.



Warning!

The distributor head is in the machine centre.

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

Before stepping on clean the way towards the distributor head within the area of the distributor head (danger of slipping).

Danger of accident on the way towards the distributor head and within the area of the distributor head.

Maintenance, repair and care

4. Slacken the thumb nuts (Fig. 160/1) and pull the translucent plastic hood (Fig. 160/2) off the distributor head.
5. Remove dirt using a broom, clean out the distributor head and the plastic hood by using a dry cloth.
6. Reinstall the plastic hood (Fig. 160/2).
7. Affix plastic hood by using thumb nuts (Fig. 160/1).

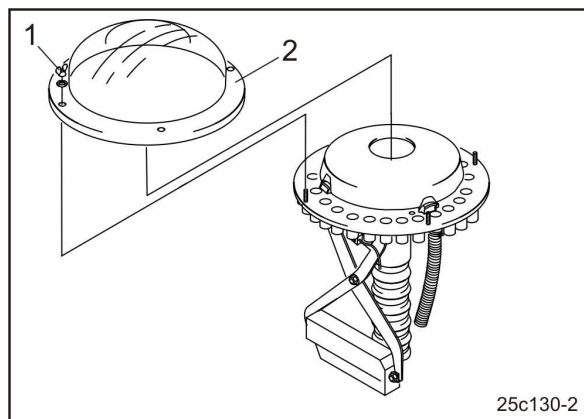


Fig. 160

12.2 Lubrication point review

The greasing points on the machine are identified with a decal (Fig. 161).

Carefully clean the grease nipples and grease gun before the grease is applied, so that no dirt penetrates the bearings. Carefully remove the dirty grease from the bearings and replace by ne3w grease!

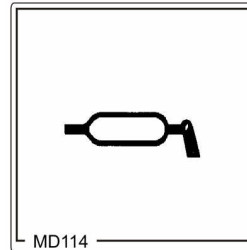


Fig. 161



Warning!

The greasing points are partly located in the machine's centre.

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

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

There is danger of accident on the way towards the greasing points.



Danger!

Before greasing lock the spacer (Fig. 162/1) on the piston rod and secure using lynch pins.

If not in use, affix the spacer on the transport retainer (Fig. 162/2) (see Fig. 167)

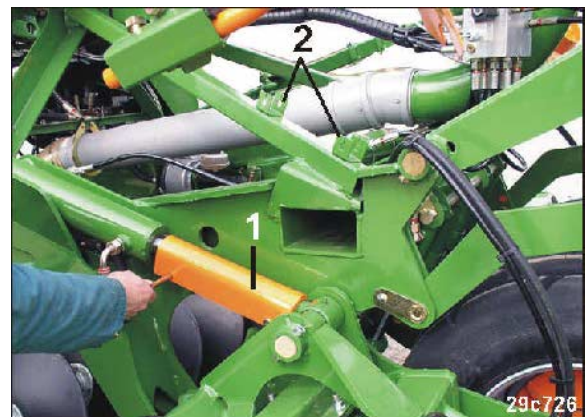


Fig. 162

	Number of grease nipples			Greasing interval
	Cirrus 3001	Cirrus 4001	Cirrus 6001	
Fig. 164/1	1	1	1	25 h
Fig. 164/2	1	1	1	25 h
Fig. 165/1	2	2	2	25 h
Fig. 165/2	2	2	2	25 h
Fig. 166/1	2	2	2	25 h
Fig. 166/2	2	2	2	25 h
Fig. 166/3	2	2	2	25 h
Fig. 167/1	2	4	6	25 h* 50 h**
Fig. 167/2	2	6	6	25 h* 50 h**
Fig. 167/3	2	6	6	25 h* 50 h**
Fig. 167/4	2	6	6	25 h* 50 h**
Fig. 168/1	1	3	3	25 h* 50 h**
Fig. 169/1	-	4	4	25 h
* Low-Lift is seldomly used ** Low-Lift is often used				

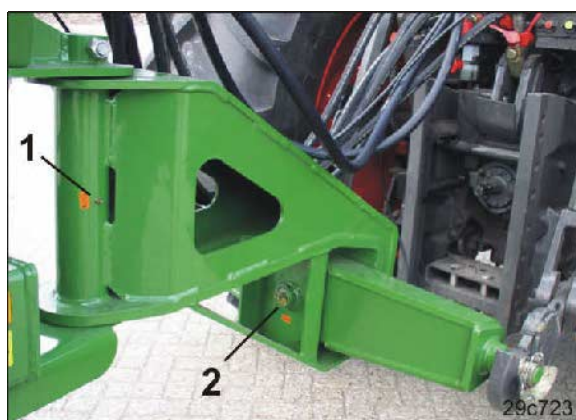
Fig. 163

Fig. 164

Fig. 165

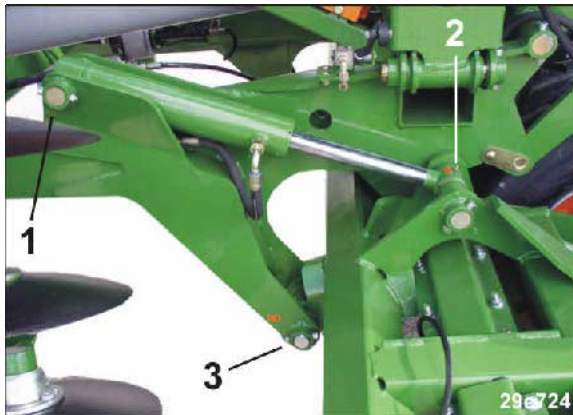


Fig. 166



Fig. 167



Fig. 168



Fig. 169

12.3 Lubricants



Hint!

Only use lithium saponified multipurpose grease with EP additives.:

Manufacturer	Name of lubricant
ARAL	Aralub HL2
FINA	Marson L2
ESSO	Beacon 2
SHELL	Ratinax A

12.4 Maintenance and care - Review



Important!

- Carry out maintenance in the shortest mentioned intervals.
- Give priority to the intervals, running times and maintenance intervals stated in the possibly provided documentation of other manufacturers.

Maintenance before operation	Authorised workshop	Checking and servicing the hydraulic hose lines. The inspection should be recorded by the operator	Chapter 12.9
		Checking the oil level in the Vario gearbox.	Chapter 12.8
	Authorised workshop	Checking whether the tramline which has been adjusted in the distributor head corresponds to the track width of the husbandry tractor.	Chapter 12.14
Maintenance after the first 10 hours of operation	Authorised workshop	Retightening of wheel and hub bolts	Chapter 12.11.3.3
	Authorised workshop	Checking and servicing hydraulic hose lines. The inspection should be recorded by the operator	Chapter 12.9
Daily before commencing work		Drain the air pressure reservoir (Air brake system)	Chapter 12.11.2.1
When refilling the seed box of hourly		Check the seed placement depth	
		Check the metering devices for cleanliness	
		Check seed hoses for cleanliness	
During operation		Check distributor heads for cleanliness	Chapter 12.1.2
Daily after having finished work		Empty metering devices and clean	Chapter 10.7
		Clean the machine (if necessary)	Chapter 12.1
Every week, after every 50 hours of operation at the latest	Authorised workshop	Check and service hydraulic hose lines. The inspection should be recorded by the operator.	Chapter 12.9
		Check brake fluid level	Chapter 12.11.3.1
Every 2 weeks, after every 100 operational hours at the latest		Check tyre pressure	Chapter 10.7
		Check oil level in the Vario gearbox	Chapter 12.8
	Authorised workshop	Lubricate the machine	Chapter 12.2
Every month, after every 200 operational hours at the latest		Check brake fluid level	Chapter 12.11.3.1

Every 3 months, after every 500 operational hours at the latest	Authorised workshop	Check thickness of brake linings	Chapter 12.11.3.6
		External inspection of the air pressure reservoir of the dual circuit air brake system	Chapter 12.11.2.2
	Authorised workshop	Pressure check of the air pressure reservoir of the dual circuit air brake system	Chapter 12.11.2.3
	Authorised workshop	Leak test of the dual circuit air brake system	Chapter 12.11.2.4
	Authorised workshop	Cleaning the hose filters of the dual circuit air brake system	Chapter 12.11.2.5
Every 6 months before start of the season	Authorised workshop	Checking and servicing the hydraulic hose lines. The inspection should be recorded by the operator.	Chapter 12.9
	Authorised workshop	Checking the brake lining thickness	Chapter 12.11.3.6
Every 6 months after the season		Servicing the roller chain	Chapter 12.5
Every 12 months	Authorised workshop	Checking the service brake for operational safety	Chapter 12.11.1
	Authorised workshop	Brake check on the hydraulic part of the brake system	Chapter 12.11.3.4
Every 2 years	Authorised workshop	Exchanging the brake fluid	Chapter 12.11.3.5

12.4.1 Remedy of function faults and repair work

Setting the track marker		Setting the track marker for the correct arrangement in the transport retainer	Chapter 12.13
Changing the tramline bout width	Authorised workshop		Chapter 12.14
Repair on the balancing system	Authorised workshop		Chapter 12.10
Repair on the pressure reservoir	Authorised workshop		Chapter 12.12
10 operational hours after wheel change	Authorised workshop	Retighten wheel and hub bolts	Chapter 12.11.3.3
After repair of brakes	Authorised workshop	Venting of brake system	Chapter 12.11.3.7

12.5 Roller chains and chain wheels

After the season all roller chains should be

1. dismantled
2. cleaned (incl. chain wheels and chain tensions)
3. checked for proper condition
4. lubricate with light mineral oil (SAE30 or SAE40)
5. assemble and tension.

12.6 Seed shaft bearings

Seed shaft bearings:

Slightly apply oil to the seating of the seed shaft bearings by using a light mineral oil (SAE 30 or SAE 40).



Fig. 170

12.7 Tyre pressure

Tyres	Tyre pressure
Running gear tyres (Fig. 171/1)	3,5 bar
Farm tyres (Fig. 171/2)	1,5 bar

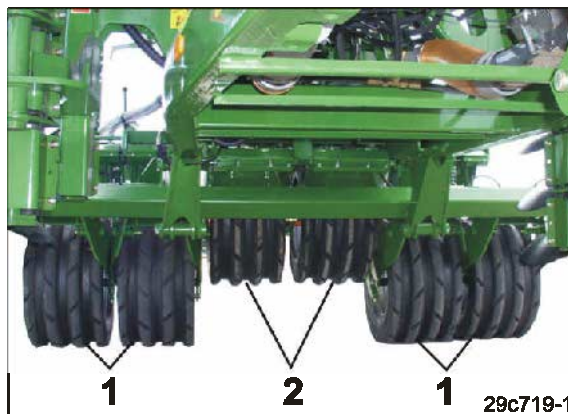


Fig. 171

12.8 Check the oil level inside the Vario gearbox

Oil change not necessary.

Check the oil level inside the Vario gearbox:

1. Park the machine on level ground
2. The oil level must be visible in the oil gauge window (Fig. 172/1) of the Vario gearbox.
3. Check the Vario gearbox for leakage.
4. When leaks are noticed, have the Vario gearbox repaired in an authorised workshop.
5. Take the required gearbox oil from table (Fig. 173).
6. Fill the Vario gearbox up to the oil gauge window (Fig. 172/1) via the oil filler neck (Fig. 172/2) with gear oil. .
7. After filling cover the filler neck with the dust cap (Fig. 172/2).

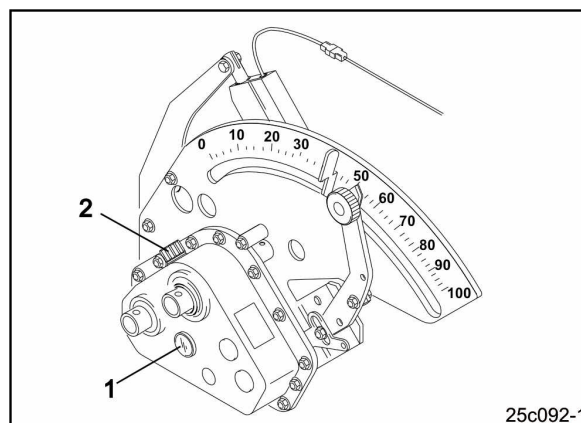


Fig. 172

Filling quantity and hydraulic oil type for the Vario gearbox	
Total filling quantity:	0,9 litre
Gear oil (at random):	Wintershall Wintal UG22 WTL-HM (factory)
	Fuchs Renolin MR5 VG22

Fig. 173

12.9 Hydraulic system



Danger!

- Only an authorised workshop is allowed to carry out repair work on the hydraulic system.
- The hydraulic system is under high pressure.
- When searching for leaks, appropriate aids should be used.
- Before starting and work on the hydraulic system, relief the system from pressure.
- Under high pressure any fluids (such as hydraulic oil) may penetrate the skin and cause serious injury. Immediately call for a doctor. There is danger of infection.
- When connecting hydraulic hoses to the tractor hydraulic system ensure that the hydraulic system on the tractor and on the trailed implement is at zero pressure.
- Dispose of old oil as prescribed. In case of problems contact your oil supplier.
- Store hydraulic oil out of reach of children.
- Hydraulic oil must not get into the earth or water.
- When carrying out maintenance and repair work on the hydraulic system, observe chapter "Safety advice for the operator", on page 24.



Important!

- Ensure the correct connection of the hydraulic hoses.
- Check all hydraulic hoses and connections for damage and cleanliness in regular intervals.
- All hydraulic hoses must be checked for their operational safety by a skilled person at least once a year.
- Replace damaged and aged hydraulic hoses. Only use original **AMAZONE** hydraulic hoses.
- The period of use of any hose circuit should not exceed six years, including a possible storing period of two years maximum. Also when stored and used properly hoses and hose circuits do age. Therefore their longevity and period of use is limited. Deviations from the above may be accepted depending on the experience and the danger potential. For hoses and hose circuits made from thermoplasts other guide lines may prevail.

Identification of hydraulic hoses

The identification provides the following information:

Fig. 174/...

- (1) Manufacturer's identification for the hydraulic hose line.
- (2) Date of production of the hydraulic hose circuit (04/12 = December, 2004)
- (3) Max. permissible operating pressure (bar).

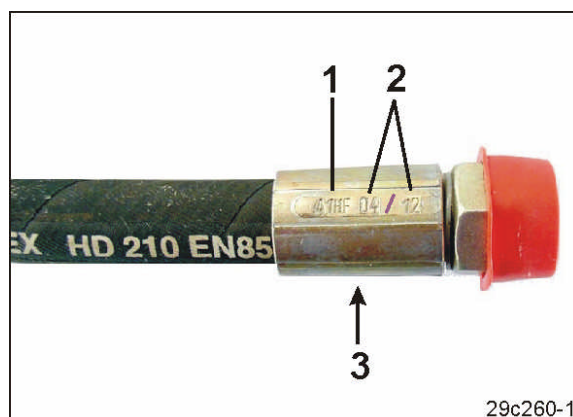


Fig. 174

Maintenance intervals

After the first 10 operating hours and thereafter every 50 operating hours

1. Check all components of the hydraulic system for leaks.
2. If necessary retighten the joints..

Prior to any putting to operation

1. Check the hydraulic hose circuits for obvious defects.
2. Remedy any rubbing points on hydraulic hoses and tubes.
3. Exchange worn or defective hydraulic hoses immediately.

Inspection criterion for hydraulic hose circuits



Important!

Please adhere to the following inspection criterion. This serves your own safety!

Replace the hydraulic hoses if the following inspection criterion are noticed:

- Defects from the casing to the inner lining (e.g. rubbing points, cuts, tears).
- Check whether the hose casing is brittle (tears in the hose material).
- Check hose for deformation which deviate from the common shape of the hose or which do not correspond to the hose circuit. This applies both to the pressure free and the pressurised condition or when bending the hose (e.g. separation of layers, bubbles, buckling, squeezing).
- Leakages.
- Damage or deformation of the hose fitting (tightness is affected), slight surface damage is no reason for a replacement..
- Movement of the hose out of the fitting.
- Corrosion on the fitting which affects function and strength.
- Demands on the assembly not observed.

- The 6 years' period of use has been exceeded.

The permissible period of use of 6 years is exceeded.

Decisive is the date of production of the hydraulic hose on the fitting plus 6 years. If the date of production on the fitting is "2004" the operational life will end in February, 2010. For this, please refer to "Identification of hydraulic hoses".

12.9.1 Mounting and dismounting hydraulic hoses



Hint!

As a matter of principle follow to the following advice when mounting and dismounting hydraulic hoses:

- Only use original-**AMAZONE** hydraulic hoses!
- Always ensure cleanliness.
- As a matter of principle install the hydraulic hoses in such a way, that – in all operational conditions -
 - the hose is not under tension, except for its own weight
 - short hoses are not upset.
 - exterior mechanic affects on the hydraulic hoses are avoided.

the hoses are arranged and affixed properly to prevent the hoses from rubbing on components or against each other. If necessary secure the hydraulic hoses by using guard covers. Cover sharp edged components.
 - the permissible bending radius is observed.
- When connecting a hydraulic hose with moving parts, ensure that in the entire range of movement the hose length ensures that the smallest permissible bending radius is maintained and/or the hydraulic hose is not tensioned.
- Affix the hydraulic hoses on the fixing points given. Avoid hose fixings where they would hinder the natural movement and length change of the hose.
- It is forbidden to paint hydraulic hoses.

12.10 Repair work on the balancer (authorised workshop)

Every tyre of the wedge ring roller rests on two hydraulic rams (Fig. 175/1).

All hydraulic rams of each individual machine half are connected to a closed hydraulic system.

The two closed hydraulic systems are described as balancers.

Repair work on the balancer must be carried out by an authorised workshop.

Before any repair work empty the balancer.

After repair rinse, fill and calibrate the balancer. At the rinsing procedure air which had been gathered during the repair work is removed from the hydraulic circuit.



Fig. 175

12.10.1 Emptying, rinsing, filling and calibrating the balancer (authorised workshop)

Emptying the balancer:

1. Couple the Cirrus onto the tractor (see chapter 7, on page 73).
2. Create all hydraulic connections (see chapter 7.1.1.1, on page 76). Of importance is the connection of the pressure free return flow hose of the blower fan hydraulic motor.
3. Connect **AMATRON⁺** (see operator's manual for **AMATRON⁺**).
4. Lift the disc segment.
5. Align the cirrus on level ground.
6. Fold down the Cirrus (except for Cirrus 3001) (see chapter 10.2, on page 106).
7. Switch off the Low-Lift function.
8. In all segments insert the depth regulating pins (Fig. 176/1) with the figure "1" facing upwards into the upper most hole of the setting segments and secure (see chapter 8.6, on page 92).
This is necessary to prevent the coulters from touching the ground.



Fig. 176

Maintenance, repair and care

9. Actuate spool valve 1 (lowering the machine). The machine rests on all tyres of the wedge ring roller. The piston rod (Fig. 177/1) of the reservoir cylinder must be entirely retracted. Illustrated is the extracted piston rod.
10. Lower the tractor lower links, in case the coulters touch the ground.



Fig. 177

For emptying the balancer every hydraulic circuit is provided with a hydraulic tap (Fig. 178/1).

The hydraulic taps are provided with a twisting safety device (Fig. 178/2) against unintended opening.

Figure (Fig. 178) shows the closed hydraulic tap secured against twisting.

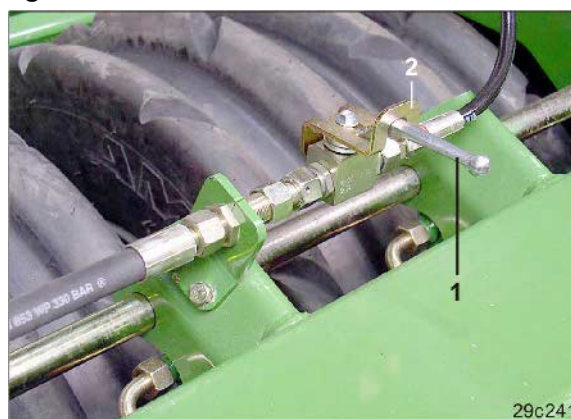


Fig. 178

11. Unbolting the twisting safety device (Fig. 179/1).

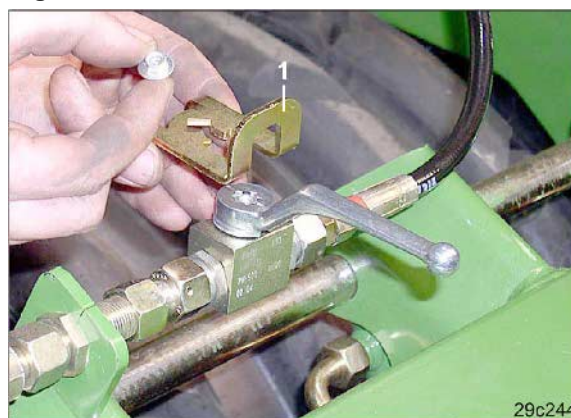


Fig. 179

12. Open both hydraulic taps (see Fig. 180).
Via the pressure free return flow hose of the blower fan hydraulic motor the hydraulic oil is returned into the tractor hydraulic oil tank.


Warning!

The machine resting on the wedge ring roller is lowered.

13. Carrying out repair work on the balancer.

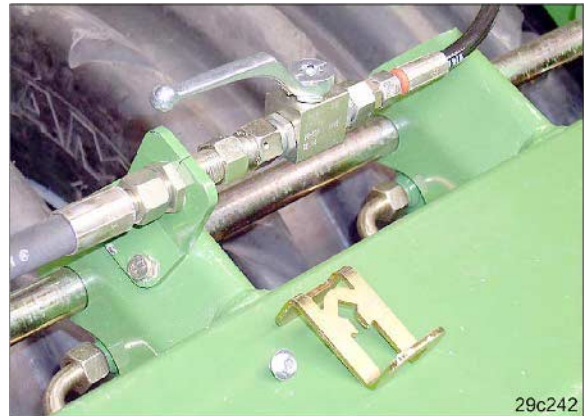


Fig. 180

Rinsing the balancer:

The hydraulic circuits of the balancer are connected to a feed hose for the hydraulic ram of the exact following harrow (also applicable for mechanic exact following harrow adjustment).

The connections are closed with the lever position (Fig. 181/1) of the hydraulic taps.




Fig. 181

1. Remove the twisting safety device of the hydraulic taps (see Fig. 179).
2. The hydraulic taps open (see lever position Fig. 182/1).



Fig. 182

3. Start the tractor engine (guide exhaust fumes into the open air, at workshop job).
4. Open the operation menu in **AMATRON⁺** (Fig. 183).
5. Press key harrow adjustment  (Fig. 183).
6. Pressurize spool valve 2.
The balancer is rinsed.
7. After approx. 3 min. get the control unit 2 into its floating position.

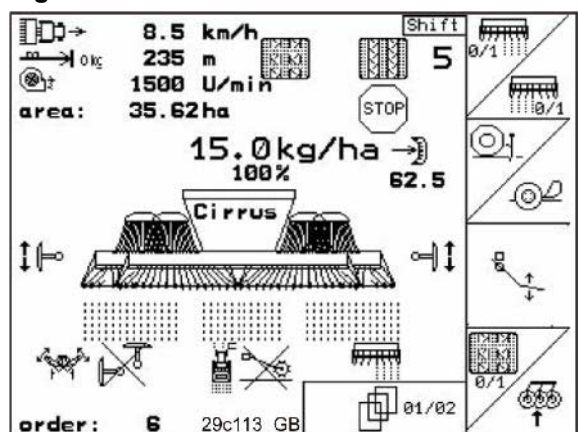


Fig. 183

8. Shut both hydraulic taps (Fig. 184) of the balancer.

Figure (Fig. 184) shows the closed hydraulic tap.



Fig. 184

Filling the balancer:


1. Actuate key following harrow adjustment
 (Fig. 183).
2. Pressurize spool valve 2 .
 In this way the balancer incl. the hydraulic rams (Fig. 175/1) is filled with hydraulic oil.
3. Shut the hydraulic taps (Fig. 185/1) as soon as all hydraulic rams (Fig. 175/1) have been extracted completely.
4. Bring spool valve 2 into a neutral position.
5. Apply the parking brake, stop the tractor engine and remove the ignition key.
6. Secure the hydraulic taps (Fig. 185/1) by using a twisting safety device (see Fig. 179).



Fig. 185

Calibrating the balancer:

1. Measure out the frame height Die (see Fig. 186) from the wheel contact surface.
2. The machine calibration is correct when both frame halves have been adjusted to a height of 825 mm.

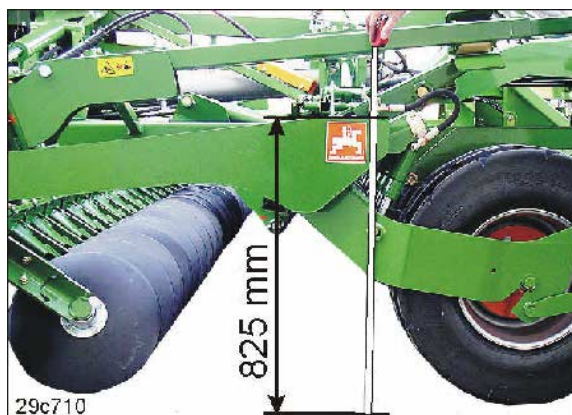


Fig. 186

The measuring edges of the machine are identified by stickers (Fig. 187).

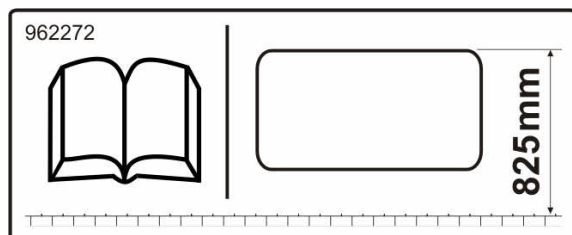


Fig. 187

3. To adjust the frame height (825 mm) mutually open and shut the hydraulic rams (Fig. 188) on the right and left hand machine side.



Fig. 188

4. Shut the hydraulic rams (Fig. 189/1) and secure using the twisting safety devices (Fig. 189/2).

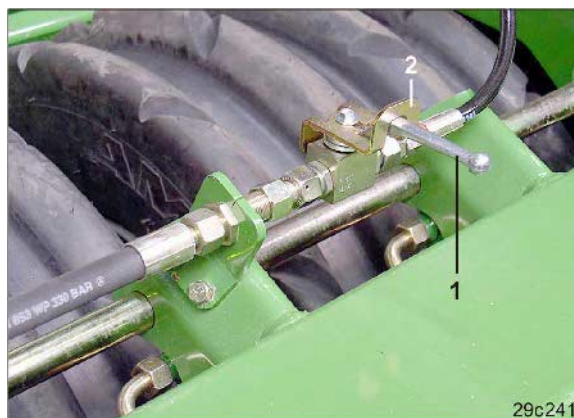


Fig. 189



Important!

Secure the hydraulic taps against unintended opening by using the twisting safety device (Fig. 189/2).

12.11 Service brake system: Two circuit air brake system – hydraulic brake system

The Cirrus is equipped with a dual circuit air brake with hydraulically actuated brake cylinder.

The dual circuit air brake does not react – as otherwise usual – on a rod linkage or a brake cable for actuating the brake shoes. The dual circuit air brake reacts on a hydraulic ram which works on the hydraulic brakes of the brake shoes inside the brake drum.



Warning!

The brake system has not got a parking brake.

Before coupling the machine off the tractor, always apply chocks.



Important!

In case the visual, functional or braking check results in any damage, immediately carry out a thorough inspection of all components in an authorised workshop.



Caution!

At all maintenance work observe the legal prescriptions.

Only use original spare parts.

Never change the settings on the brake valves determined by the manufacturer.



Danger!

- **Settings and repair work on the brake system must only be carried out by authorised workshops or brake service stations!**
- **Ensure the regular thorough checking of the brake system.**
- **One has to be especially careful at welding-, soldering and boring work next to brake lines.**
- **No welding or soldering is allowed on valve chests and tubes. Replace damaged parts.**
- **As a matter of principle conduct a brake test after any setting and repair work on the brake system.**
- **When carrying out maintenance and repair work on the brake system observe the chapter "Safety advice for the operator", page 24.**

General visual check

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

- Tubings, hoses and coupling heads should not show any external damage or rust.
- Hinges, e.g. on yokes should be secured in an appropriate manner, they should be smooth and not worn out.
- Ropes and Bowden-cables
 - should be perfectly routed.
 - must not show any noticeable fissures.
 - must not be knotted.

- Check the piston stroke on the brake cylinders, re-adjust if necessary.

12.11.1 Checking the service brake for operational safe condition (authorised workshop)

The operational safe condition of the service brake should be checked in an authorised workshop.

Tubings, hoses and coupling heads of the service brake system should not show any external damage or rust.



Important!

Required in Germany as per § 57 of the BGV D 29 of the trade association:

If necessary, at least, however, once a year, the owner is obliged to have the vehicles inspected by an expert for their operational safe condition.

12.11.2 Dual circuit air brake system

12.11.2.1 Draining the air pressure reservoir

Draining the air pressure reservoir:

1. Run the tractor engine (approx. 3 min.), until the air pressure reservoir (Fig. 190/1) is filled.
2. Stop tractor engine, apply parking brake and remove ignition key.
3. Pull the drain valve on the ring (Fig. 190/2) to the side until no water will escape from the air pressure reservoir.
4. When the escaping water is dirty, deflate air, unscrew the drain valve from the air pressure reservoir and clean the air pressure reservoir.
5. Attach the drain valve and check the air pressure reservoir for leaks (see chapter 12.11.2.4, on page 143).



Fig. 190

12.11.2.2 External inspection of the air pressure reservoir

External inspection of the air pressure reservoir (Fig. 191/1).

In case the air pressure reservoir is moving in the tensioning belts (Fig. 191/2)

→ tension or replace the belts or replace

In case the air pressure reservoir is corroded or damaged

→ replace the air pressure reservoir.

In case the type plate on the air pressure reservoir (Fig. 191/3) is rusty, loose or missing

→ replace the type plate.



Fig. 191



Important!

The air pressure reservoir must only be exchanged in an authorised workshop.

12.11.2.3 Checking the air pressure in the air pressure reservoir (authorised workshop)

Checking the pressure in the air pressure reservoir:

1. Connect the pressure gauge on the checking point of the air pressure reservoir.
2. Run the tractor engine (approx. 3 min.), until the air pressure reservoir has been filled.
3. Check whether the pressure gauge shows the rated value of 6,0 to 8,1 bar.
4. If the rated value is not maintained, the defective components of the brake system should be replaced in an authorised workshop.

12.11.2.4 Leak test (authorised workshop)

Leak test:

- Check all connections, tube-, hose and bolted joints for leakage.
- Remedy rubbing points on tubes and hoses
- Replace porous and damaged hoses (authorised workshop)
- The dual circuit service brake system is considered to be tight when the engine is stopped and the drop in pressure does not exceed 0.10 bar within 10 minutes, so not more than 0.6 bar per hour.
- If the values are not maintained, tighten leaking points in an authorised workshop or
- replace defective components of the brake system.

12.11.2.5 Cleaning the hose filters- quarterly (authorised workshop)

The dual circuit air brake system is provided with two hose filters (Fig. 192/1)

Clean both hose filters as described below:

Cleaning the hose filters:

1. Press together the two straps (Fig. 192/2) and remove the cap with O-ring, pressure spring and filter insert.
2. clean the filter insert by using petrol or diluting agent (wash out) and dry with air pressure.
3. Reassemble in the vice versa order and be careful that the O-ring does not get wedged in the guide slit.



Fig. 192

12.11.3 Hydraulic brake system

12.11.3.1 Checking the brake fluid level

Checking the brake fluid level:

The equaliser tank (Fig. 193) is filled with brake fluid according to DOT 4 up to the "max." mark.

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



Important!

When a loss of brake fluid is noted, go to see a professional workshop.



Fig. 193

12.11.3.2 Brake fluid

Observe when handling brake fluid:

- Brake fluid is caustic. It should not touch the varnish. If necessary immediately wipe off and wash down with much water.
- Brake fluid is hygroscopic, that means it absorbs humidity from the air. Therefore only store brake fluid in closed containers.
- Never reuse brake fluid that had been used in the brake system before.
Also when venting the brake system only use new brake fluid.
- The high requirements on the brake fluid are subject to the standard SAE J 1703 or to the American safety precaution law DOT 3 or DOT 4.
Only use brake fluids according to DOT 4 .
- Brake fluid must never ever touch mineral oil. Even a little trace of mineral oil would waste the brake fluid and would cause a failure of the brake system. Plugs and sleeves of the brake system are damaged when they get into touch with mineral oil agents. Do not use mineral oil containing cloths for cleaning.



Warning!

Never ever reuse drained brake fluid.

By no means pour away drained brake fluid or dispose it with the household waste. Collect it separated from used oil and dispose it via authorised waste disposal companies.

12.11.3.3 Wheel bolts- and hub torques (authorised workshop)

Wheel bolts and hubs	Torque
Wheel bolts	350 Nm
Hub without brake drum	400 Nm
Hub with brake drum	500 Nm

12.11.3.4 Brake test on the hydraulic part of the brake system (authorised workshop)

Brake test on the hydraulic part of the brake system:

- check all flexible brake hoses for wear
- check all brake lines for damage
- check all bolted joints for tightness
- replace worn or damaged parts.

12.11.3.5 Exchanging the brake fluid (Authorised workshop)

Exchange the brake fluid – if possible – in the cold season of the year.

12.11.3.6 Checking the brake lining (Authorised workshop)

Checking the brake lining:

Every 500 hours of operation, at least, however before the season, check the brake lining wear.

This maintenance interval is just a recommendation. Depending on the use, e.g. when constantly driving in the mountains, this interval should be reduced if necessary.

Renew the brake shoe when the lining is less than 1.5 mm (only use original brake shoes with approved brake linings). If necessary, also the brake shoe draw back spring should be replaced.

12.11.3.7 Venting the brake system (Authorised workshop)

After any repair work at which the system has been opened, vent the brake system as air might have penetrated the pressure hoses.

The brake is vented by using a brake filling and venting device in a professional workshop.

The procedure is as follows:

1. Remove the equaliser tank screw joint
2. Fill the equaliser tank up to the upper edge
3. Install the air bleed neck on the equalising tank
4. Connect the filling hose
5. Open the stop tap of the filler
6. Vent the main ram
7. Take brake fluid one after the other off the bleeder screws of the system until the brake fluid flows clear and without any bubbles. To do this, attach at the relevant bleeder valve the transparent venting hose which leads into a collecting bottle filled to one third with brake fluid.
8. After the complete brake system has been vented, shut the stop tap on the filler.
9. Remove the remaining pressure coming from the filling device
10. Close the last bleeder screw after the remaining pressure coming from the filling device has been removed and the brake fluid level in the equaliser tank has reached the "MAX" mark.
11. Remove the filler
12. Shut the equalising tank.



Hint!

Carefully open the bleeder valves to prevent them from being twisted off. We recommend you that you spray the valves with penetrating oil approx. 2 hours prior to the venting procedure.



Important!

Carry out a safety check:

- Have all bleeder screws been tightened properly?
- Is there been filled in enough brake fluid?
- Check all connections for tightness.



Important!

After any repair work carry out some brake tests on a road with little traffic. At least one full braking should be carried out.

Attention: Bear in mind the following traffic.

12.12 Repair work on the air pressure reservoir (Authorised workshop)

Pressure reservoir – way of function

The wedge ring roller is loaded with the machine weight to reconsolidate the soil.

With the aid of hydraulic rams the machine weight is also applied to the wedge ring rollers attached to the wings. As hydraulic oil is nearly incompressible, the pressure is not maintained, e.g. when the oil cools down, even with locked hydraulic rams. The hydraulic rams retract for a few millimetres.

In order to pressurise the hydraulic rams without burdening the tractor hydraulic pump, a pressure of approx. 100 bar is built up in a pressure reservoir filled with nitrogen (Fig. 194/1).

Observe in the case of repair:

The hydraulic system and the pressure reservoir Die (Fig. 194/1) are under high pressure (approx. 100 bar).

In case of necessary repair work only a professional workshop with appropriate tools authorised to remove the hydraulic hose assemblies or to unbolt or open the pressure reservoir.

For all work on the pressure reservoir and the connected hydraulic system the standard EN 982 (safety technical demands on fluidic devices) should be adhered to.



Fig. 194



Danger!

The hydraulic system and the connected pressure reservoir are under high pressure (approx. 100 bar).

12.13 Setting the track marker for the correct arrangement in the transport retainer

When folding the track marker the roller (Fig. 195/1) runs on the running surface (Fig. 195/2) into the retainer.

Setting the track marker:

1. Apply the parking brake, stop the tractor engine and remove the ignition key.
2. Slacken the counter nut.
3. Adjust the bolt (Fig. 195/3) until the roller (Fig. 195/1) of the track marker properly runs into the retainer via the running surface (Fig. 195/2).
4. Firmly retighten the counter nut.

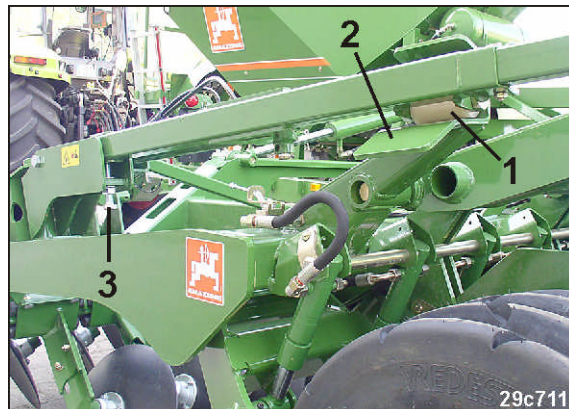


Fig. 195



Danger!

Before commencing any work on the track marker, apply the parking brake, stop the tractor engine and remove the ignition key.

12.14 Setting the tramling bout according to the tractor track width (Authorised workshop)



When purchasing the machine and the husbandry tractor, check whether the tramline setting in the distributor head corresponds to the track width of the husbandry tractor.

Warning!

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

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

Before stepping on, clean the way towards the distributor head and within the range of the distributor head (danger of slipping).

Danger on the way towards the distributor head and within the area of the distributor head.

Check whether the tramline switching has been properly adjusted in relation to the track width of the husbandry tractor:

- The seed tubes (Fig. 196/1) of the tramline coulter must be affixed to the distributor head openings which can be closed by the shutters (Fig. 196/2). If necessary exchange the seed tube among each other.
- The track width changes according to the number of coulters which do not sow seed when creating tramlines..

For creating two bouts, the following shutters in the distributor head (Fig. 196/2) are closed per bout

- o on Cirrus 3001/4000 up to 3 openings
- o on Cirrus 6001 up to 6 openings.
- Deactivation of shutters (Fig. 196/2) not in use (see chapter. 12.14.1, on page 150).

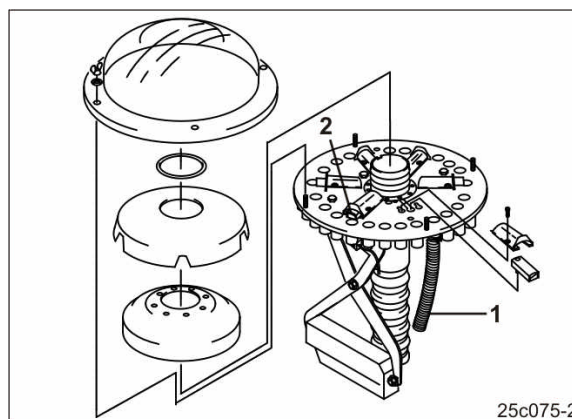


Fig. 196



Important!

Adjust the marker discs of the pre emergence marker (if existing) to the new track width (see chapter 8.10.2, on page 101).

12.14.1 Setting the track width (activation and deactivation of shutters)

With the increasing number of tramline coulters arranged side by side the bout width of the tramline increases.

6 tramline coulters can be connected to one distributor head.

The shutters close the feed tubes of the tramline coulters.

Deactivate the shutters (Fig. 198/2) when not in use. Deactivated shutters do not close the feed tubes of the tramline coulters. .

Always activate and deactivate the shutters in pairs, always two opposite shutters on the base plate.



Warning!

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

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

Before stepping on, clean the way towards the distributor head and within the range of the distributor head (danger of slipping).

Danger on the way towards the distributor head and within the area of the distributor head.

Activate or deactivate the shutters:

1. Apply the parking brake, stop the tractor engine and remove the ignition key.
2. Switch off the **AMATRON⁺**.
3. Remove the distributor outer hood (Fig. 197/1) d.
4. Remove the ring (Fig. 197/2).
5. Remove the distributor inner hood (Fig. 197/3).
6. Remove the foam rubber insert (Fig. 197/4).
7. Slacken the bolts (Fig. 198/1) n.
8. Remove the shutter tunnel (Fig. 198/2).

Activation of shutter:

9. The shutter (Fig. 198/3) is positioned in the guide way as illustrated.

Deactivation of shutter:

10. Turn the shutter (Fig. 198/3) and insert into the hole (Fig. 198/4).
11. Bolt the shutter tunnel (Fig. 198/2) onto the base plate.

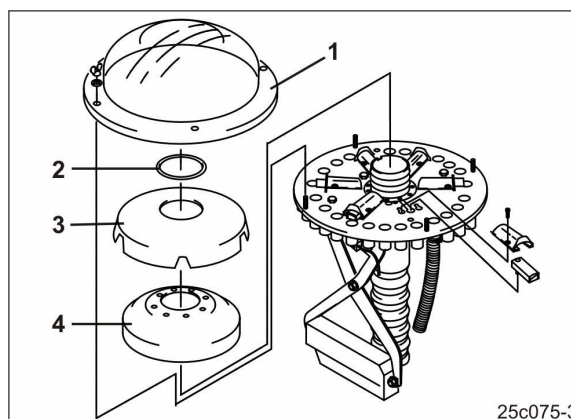


Fig. 197

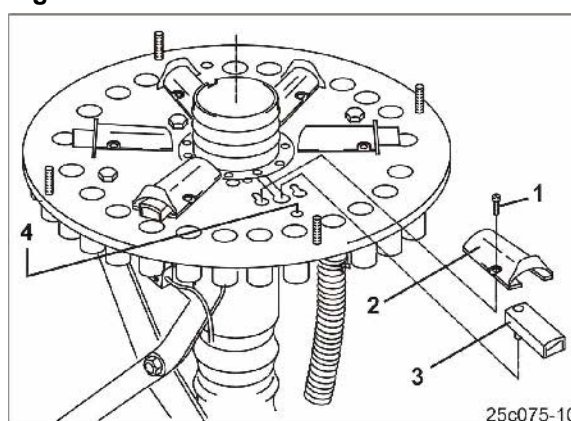
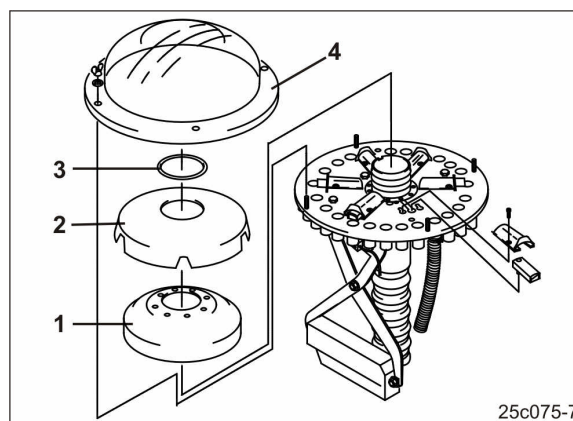


Fig. 198

12. Attach foam rubber insert (Fig. 199/1)
13. Attach distributor inner hood (Fig. 199/2)
14. Attach the ring (Fig. 199/3)
15. Attach distributor outer hood (Fig. 199/4)
16. Check the tramline control for proper function.

**Fig. 199**

12.15 Bolt torques

Thread	Spanner size [mm]	Torques [Nm] depending on bolt / nut quality		
		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



Important!

Please look for torques of the wheel and hub bolts in chapter 12.11.3.3, on page 145.



13 Hydraulic diagrams

13.1 Hydraulic diagram Cirrus 3001

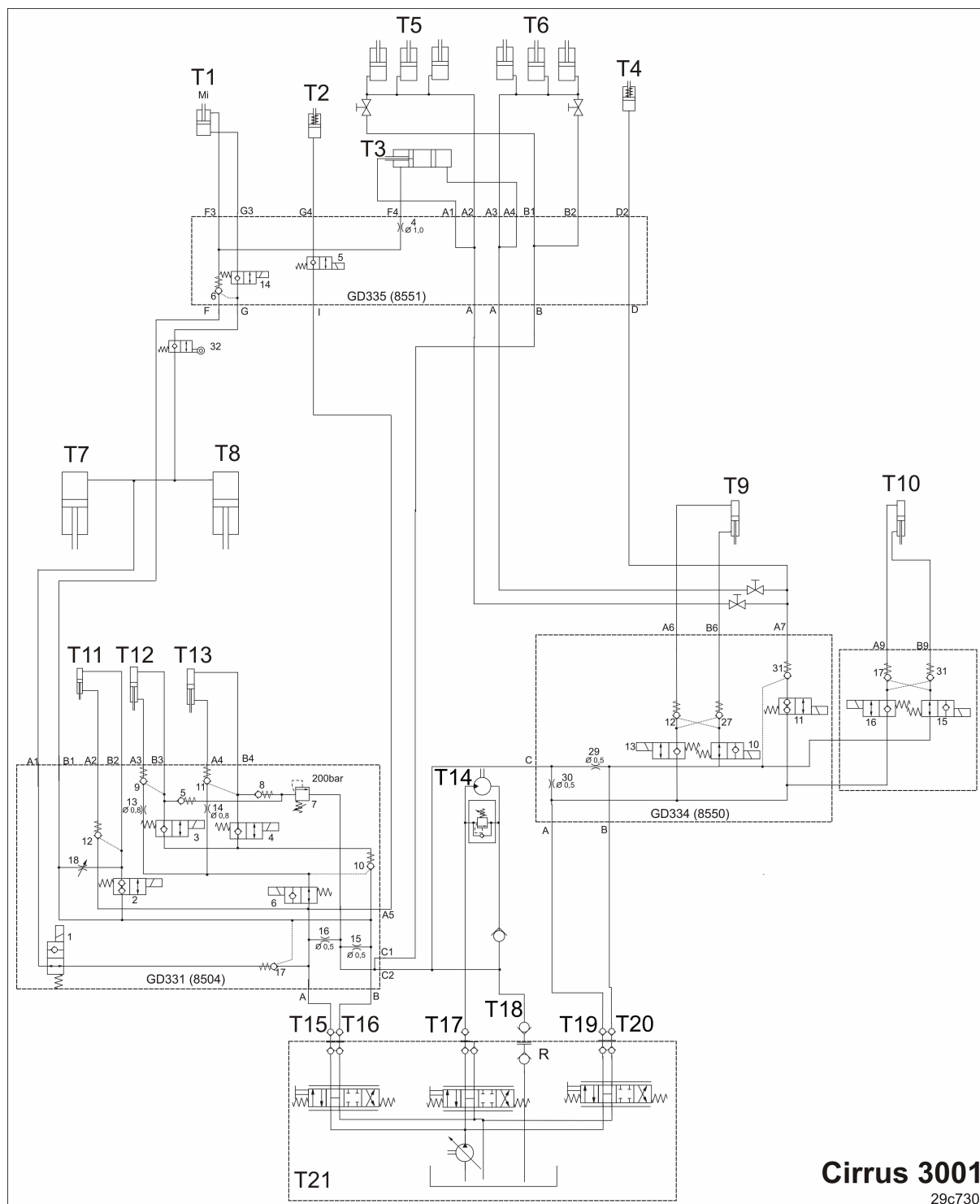


Fig. 200

Fig. 200/...	
T1	Coulter lift
T2	Pre emergence marker
T3	Lifting reservoir
T4	Following harrow pressure adjustment
T5	Balancer left hand side (seen in driving direction)
T6	Balancer right hand side (seen in driving direction)
T7	Running gear right hand side
T8	Running gear left hand side
T9	Disc segment adjustment
T10	Wheel mark eradicator (option)
T11	Star wheel
T12	Track marker left hand side
T13	Track marker right hand side
T14	Blower fan
T15	2 x Cable tie yellow
T16	1 x Cable tie yellow
T17	1 x Cable tie red
T18	2 x Cable tie red
T19	1 x Cable tie green
T20	2 x Cable tie green
T21	Tractor

13.2 Hydraulic diagram Cirrus 4001/6001

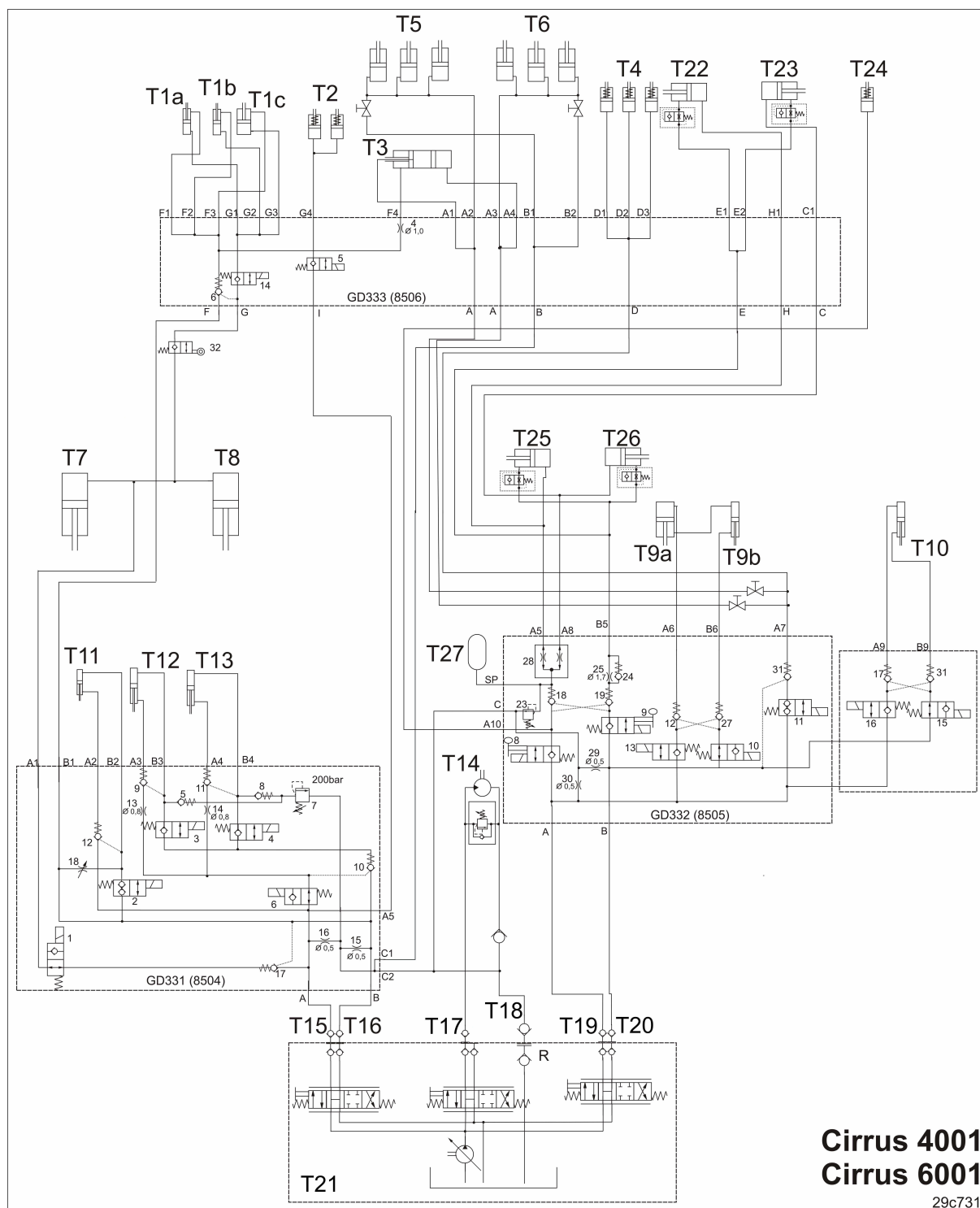


Fig. 201

Fig. 201/...	
T1a	Coulter lift left hand side
T1b	Coulter lift right hand side
T1c	Coulter lift centre
T2	Pre emergence marker
T3	Lifting reservoir
T4	Following harrow pressure adjustment
T5	Balancer left hand side
T6	Balancer right hand side
T7	Running gear right hand side
T8	Running gear left hand side
T9a	Disc segment adjustment (Slave)
T9b	Disc segment adjustment(Master)
T10	Wheel mark eradicator (Option)
T11	Star wheel
T12	Track marker left hand side
T13	Track marker right hand side
T14	Blower fan
T15	2 x Cable tie yellow
T16	1 x Cable tie yellow
T17	1 x Cable tie red
T18	2 x Cable tie red
T19	1 x Cable tie green
T20	2 x Cable tie green
T21	Tractor
T22	Folding ram rear left hand side
T23	Folding ram rear right hand side
T24	Folding frame securing device
T25	Folding ram front left hand side
T26	Folding ram front right hand side
T27	Reservoir



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