

Operator's manual

AMAZONE

Cirrus 3000

Cirrus 4000

Cirrus 6000

Packer coulters sowing combinations
with integrated transport wheels



MG997
DB2034GB 08.04
Printed in Germany



Before the first operation, please
read and adhere to this instruction
manual and the safety advice!





Identification data

Manufacturer

AMAZONEN-WERKE
H. DREYER GmbH & Co. KG

Machine serial number:

Type:

Cirrus 3000
Cirrus 4000
Cirrus 6000

Permissible pressure of system [bar]:

Max. 200 bar

Year of construction:

Net weight [kg]:

Permissible total weight [kg]:

Max. load for road transport [kg]

Address of manufacturer

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Ordering spare parts

AMAZONEN-WERKE

H. DREYER GmbH & Co. KG

P. O. Box

D-49202 Hasbergen / Germany

Tel.: + 49 (0) 5405 501-290

Fax.: + 49 (0) 5405 501-106

Spare parts catalogue-online: www.amazone.de

E-mail: et@amazone.de

Address for collection

Am Amazonenwerk 9 – 13

D-49205 Hasbergen / Germany

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

Formal remarks to this instruction manual

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H. DREYER GmbH & Co. KG. **AMAZONEN-WERKE**

Preface

Dear Customer,

You decided to purchase one of our high quality machines from the comprehensive range of farm machinery manufactured 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. Only after having thoroughly read the operator's 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 operator's manual or just call us.

Maintenance and care 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 operator's manuals are regularly updated. With your suggestions for improvement you will help to create an always user friendly operator's manual. Please send your suggestions by fax.

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1. Advice for the user

The chapter "Advice for the user" provides you with information for dealing with the operator's manual.

1.1 Purpose of the document

The present operator's 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
- Please keep this instruction manual for future use.

1.2 Information about directions in this operator's manual

All information about direction in this operator's manual are to be understood in direction of travel.

1.3 Illustrations used

Operational action and reactions

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.

Example:

- Operational action step 1
- Operational action step 2.

1.3.1 Enumerations

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

- Item 1
- Item 2.

1.3.2 Identification in illustrations (figures)

The first digit in the brackets relates to the figure, the second digit relates to the item No. in this figure.

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 operator's 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.

Maintain to the requirements of the EC guide line for making use of implements 89/655/EEG and any further generally accepted safety, working, medical and road traffic rules and regulations in your country.

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" and the warning hints in this instruction manual.

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, taking into operation, operating and maintaining the machine
- operating the machine with defect safety facilities or not properly fitted or not functioning safety devices and guards
- not adhering to the instruction manual regarding putting into operation, 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 are identified by a symbol and a signal word. The signal word describes the seriousness of the threatening danger. The individual symbols have the following meaning:



Danger!

Immediately imminent danger for life and health of persons (severe injuries or death).

Not adhering to this advice will cause severe damage to health up to life threatening injuries.



Warning!

Possibly danger for life and health of persons.

Not adhering to this advice will cause severe damage to health up to life threatening injuries.



Caution!

Possibly dangerous situation (slight injuries, material damage).

Not adhering to these hints may cause slight injuries or material damage.



Important!

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

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



Hint!

Hint for use and particularly useful information.

These hints will help you to optimally make use of the functions on your machine.

2.3 Designated use of the machine

The Cirrus packer coulters sowing combination

- is designed for the seed bed preparation in arable farming and for metering and application of all commercial seed types.
- is coupled to a tractor via the tractor's lower link arms and operated by an operator.

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 carries the full risk
- the **AMAZONEN-WERKE** does not accept any responsibility.

2.4 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!**



2.5 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.

2.5.1 Defective safety devices



Warning!

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

2.6 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.

Ensure that all safety and danger hints on the machine are clearly readable. If necessary replace damaged safety and danger hints.

2.7 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	Particularly trained persons	Instructed operator	Persons with specialist training (Mechanics/electrical engineering)
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)



2.8 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.

2.9 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.

2.10 Danger points in particular

Special danger points exists

- In the coupling range between tractor and machine
- Under the lifted machine
- In the operational range of moving parts.

2.11 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.



2.12 Constructional changes

Vehicles and devices and implements, connected with a vehicle with an official operating permit for road traffic according to the traffic law should correspond to the condition as stipulated by the relevant permit 29 § 4).

2.12.1 Alterations or 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-WERKE** so that the operating permit remains valid according to national and international regulations.



Important!

Prohibited on principle is

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

2.13 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-WERKE** 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.

2.14 Cleaning and disposal

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

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

2.15 Workplace of the operator

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

2.16 Safety symbols and other identifications on the machine

Safety symbols

The following safety symbols on the machine warn about residual danger which cannot constructively be remedied. The column Picture-No. and explanation provides you with explanations and relevant safety hints for the safety symbols.

Always keep all safety symbols on the mounted sprayer clean and in well readable condition! Unlesbare Sicherheits-Symbole sind über den Handel zu bestellen und zu erneuern.

The number on the safety symbol is the order number.



Important!

Always keep all safety symbols on the mounted sprayer clean and in well readable condition! Replace not readable safety symbols. Ask your dealer for replacement safety symbols. The Picture No. on the safety symbol is the order number.

Picture No. and Explanation

Safety symbol

MD076

Only operate the machine with all guards fitted.
Never remove guards whilst the motor is running!
Switch off tractor motor and remove ignition key before removing the guard.

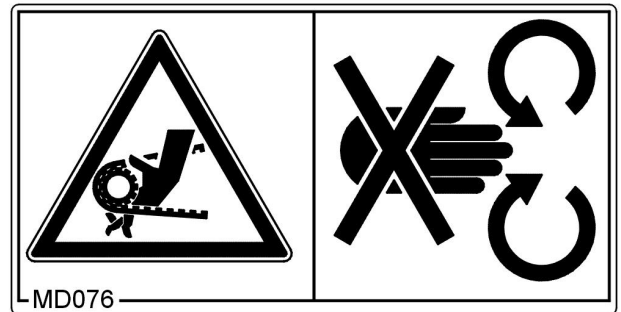


Fig. 1

Picture No. and Explanation

Safety symbol

MD078

Danger of squeezing. Never reach into the zone as long as parts are still moving.
Advise people to leave the danger area!

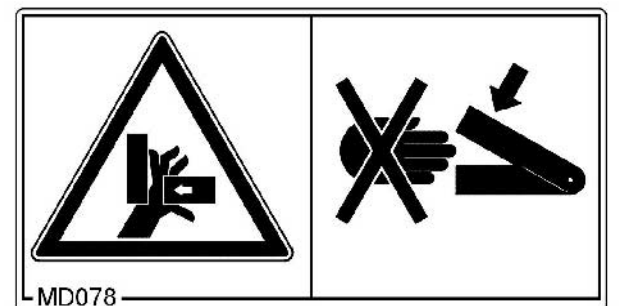


Fig. 2



Picture No. and Explanation

MD080

Never stand in the kinking zone between tractor and machine whilst the motor is running.

Safety symbol

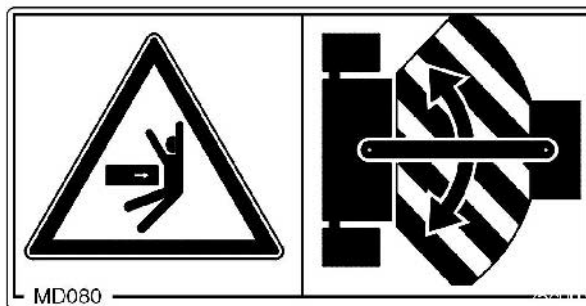


Fig. 3

Picture No. and Explanation

MD081

Secure hydraulic ram before entering the danger zone.

Safety symbol

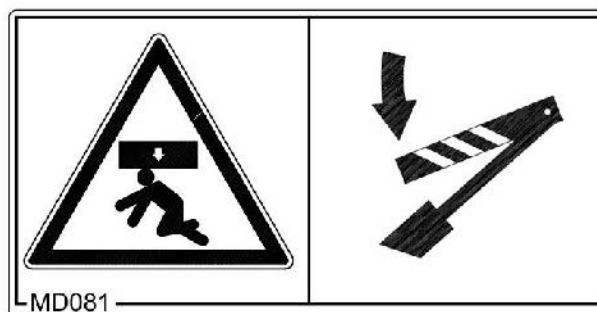


Fig. 4

Picture No. and Explanation

MD082

Sitting or standing on the implement during operation or during transport is not permissible!

Safety symbol



Fig. 5

Picture No. and Explanation

MD084

Never stay within the operational range of booms and track markers.

Safety symbol

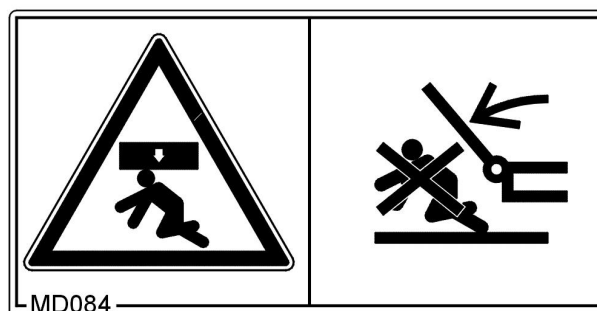


Fig. 6

Picture No. and Explanation

MD090

Before uncoupling the machine secure the machine against rolling away by using chocks.

Safety symbol

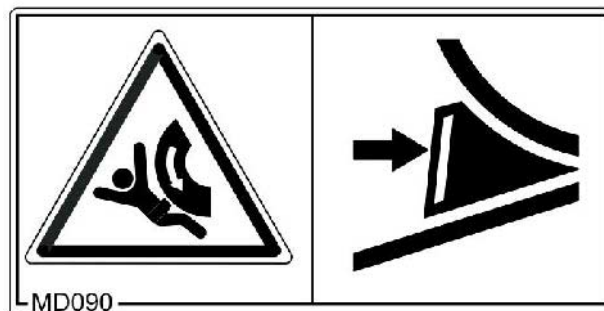


Fig. 7

Picture No. and Explanation

MD094

Observe sufficient clearance distance to high voltage lines.

Safety symbol

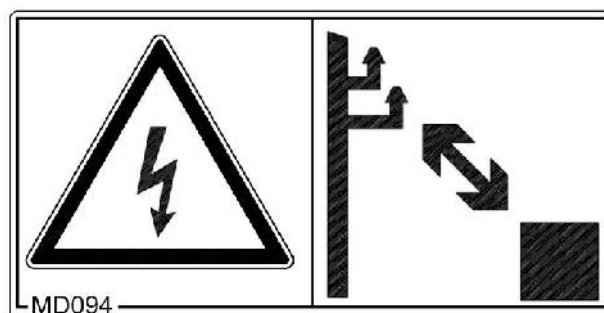


Fig. 8

Picture No. and Explanation

MD095

Before commencing operation read thoroughly operator's manual and safety advice!

Safety symbol

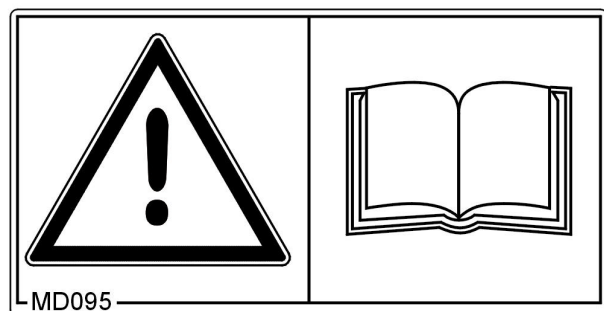


Fig. 9

Picture No. and Explanation

MD096

Beware of leaking high pressure liquid.
Observe the advice in the technical manual.

Safety symbol

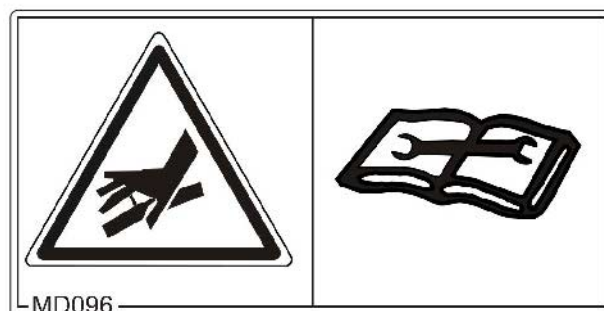


Fig. 10



Picture No. and Explanation

MD097

Never stand between tractor and implement while the engine is running.

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

Safety symbol

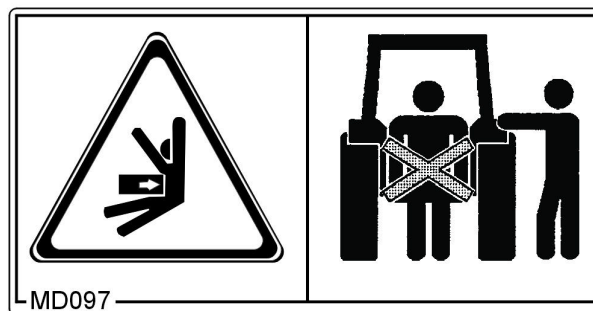


Fig. 11

Picture No. and Explanation

MD101

Place of positioning the jack in case of repair.

Safety symbol

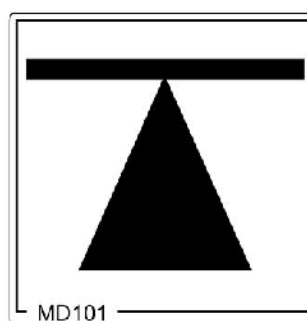


Fig. 12

Picture No. and Explanation

MD102

Before carrying out any maintenance and repair work apply the parking brake, stop tractor engine and remove the ignition key.

Safety symbol



Fig. 13

Picture No. and Explanation

MD108

Hydraulic accumulator is under gas and oil pressure!

Removal and repair are only allowed by following the advice in the technical manual.

Safety symbol

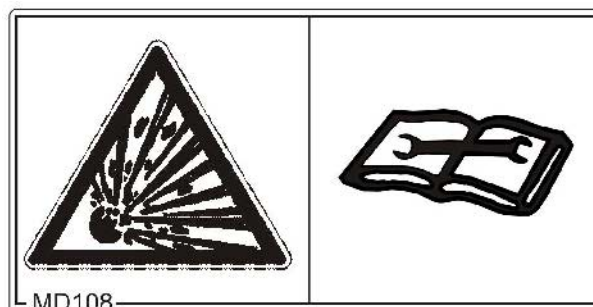


Fig. 14

Picture No. and Explanation

MD114

Greasing point!

Safety symbol

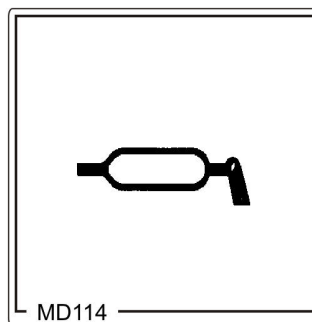


Fig. 15

Picture No. and Explanation

MD115

The permissible max. hydraulic pressure is 200 bar!

Safety symbol

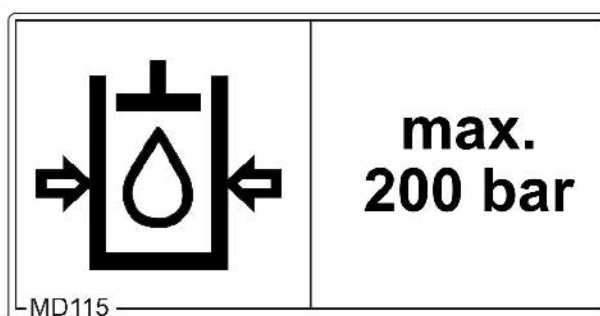


Fig. 16

Picture No. and Explanation

911888

The CE-sign on the machine indicates the compliance with the valid EC guide lines!

Safety symbol

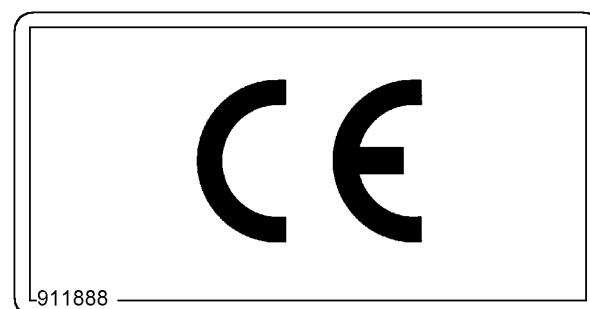


Fig. 17

Picture No. and Explanation

959967

Retighten bolts after some hours of operation!

Safety symbol

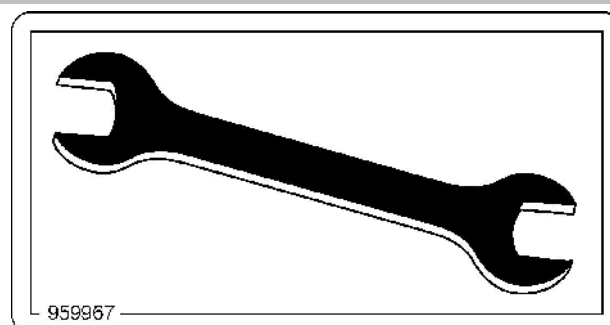


Fig. 18



2.17 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
- Danger to persons through physical or chemical contact
- Failure of important functions within the machine
- Failure of carrying out prescribed measures of maintenance and repair
- Danger to persons, or the environment by leaking hydraulic oil.

2.18 Safety conscious operation

Besides the safety advice in this operator's manual additionally adhere to the EC guide line for the use of implements 89/655/EEG and the national operation safety and accident prevention advice of the authorised trade association are binding.

Adhere to the safety advice on the decals on the machine.

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

2.19 Safety advice for the operator



Warning!

Basic principle:

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

2.19.1 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!
- When making use of public roads adhere to applicable traffic rules!
- Become acquainted with the machines controls and functions before beginning the operation. Doing this during operation would be too late!
- The operator should wear close-fitting clothes.
- Avoid danger of fire by keeping the machine clean!
- Before beginning to move, check surrounding area (children etc). Ensure sufficient visibility!
- Sitting or standing on the implement during operation or during transport is not permissible!

- Attach implements as advised and only to the advised devices!
- Special care should be taken when hitching on or off implements.
- When attaching or removing the machine bring any parking or storing devices into the corresponding position (standing safety)!
- Fit weights always to the fixing points provided and as advised for that purpose!
- Adhere to the maximum permissible axle loads, total weights and transport dimensions!
- Observe the transport dimensions in relation to the traffic regulations in force in your country.
- Fit and check transport devices, as e.g. traffic lights, warning plates and if necessary guards. !
- The release ropes for quick coupling three point linkages should hang freely and in the lowered position must not release by themselves!
- During driving never leave the operator's seat!
- Moving behaviour, steerability and braking are influenced by mounted implements, trailers and ballast weights. Therefore always ensure a sufficient steering and braking!
- When lifting the machine with the rear hydraulics the front axle of the transport vehicle is reduced. Observe sufficient front axle load (see Instruction manual of the vehicle manufacturer) – at least 20 % of the vehicle empty load!
- When driving round bends note the width of the machine and/or the changing centre of gravity of the implement!
- Put implement into operation only when all guards are fixed in position!
- Never stay or allow anyone stay within the operation area of the machine!
- Load the implement only with applied parking brake, engine switched off and removed ignition key.
- Never stay or allow anyone stay within the pivot and swivel area of the implement!
- Hydraulic folding frames should only be actuated if no persons are staying in the slewing area!
- On all hydraulically actuated pivoting parts exists danger of injury by bruising and trapping!
- Before leaving the tractor cab lower the machine to the ground, apply the parking brake, stop the engine and remove the ignition key!
- Never allow anyone to stay between tractor and implement without having secured away by applying the parking brake and/or chocks against rolling.
- Lock track markers in the transport position.

2.19.2 Operating devices

- Before starting to travel check function of brakes.
- Before travelling down hill put tractor in lower gear!
- Stop tractor immediately if any distortion in the function of the brakes is noticed. Repair faults without delay.



2.19.3 Operation – seed drills

- During the calibration test mind danger zones with rotating and oscillating implement parts.
- Use the platform only for filling.
During use riding on the platform is not permissible!
- For road transport remove the marker discs of the tramline marker.
- When filling the seed box observe the advice of the implement manufacturer.
- Lock track markers in the transport position.
- Never place any parts into the seed box.
- Observe the permissible filling amount.

2.19.4 Towed implements

- When fitting carefully observe that the mounting categories of tractor and implement coincide or that they are matched.
- Adhere to the manufacturer's advice!
- In the area of the tractor locker link arms there is danger of injury by its crushing and shearing areas.
- The exterior actuation of the tractor lower link arms is forbidden. Actuate the tractor lower link arms only from the tractor cab.
- Hitch the machine as prescribed. Check the function of the hitching brake system. Observe the manufacturer's prescriptions.
- The implement may only be trailed by a suitable tractor.
- There is danger of injury when mounting implements!
- Never allow anyone to stay between tractor and implement without having secured by chocks against rolling away!
- When operating the supporting devices danger by crushing or shearing may occur!
- 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.
- Observe the maximum payload of the mounted implement and the permissible axle loads of the tractor!
- Before starting to travel with the machine always ensure sufficient lateral locking of the tractor lower link arms.
- Before travelling on public roads secure the control lever for the tractor lower link arms against unintended lowering.
- For travelling on public roads bring all devices into transport position!
- Mounted implements and ballast weights affect the driving behaviour as well as steering and braking of the tractor!
- The tractor front axle load must be at least 20 % of the tractor's net weight in order to ensure a sufficient steering. If necessary use front weights!
- As a matter of principle always remove ignition key before conducting any repair, maintenance and cleaning operation!
- Keep all guards fitted and always in serviceable condition!



2.19.5 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 both the hydraulic system on the tractor and on the implement is without pressure.
- To avoid wrong hydraulic connection, sockets and plugs should be marked (e.g. colour coded!
- This helps to prevent contrary function (lifting instead of lowering or vice versa. Danger of accident!
- All hydraulic hoses must be checked for their operational safety in regular intervals. In case of damage or ageing replace the hydraulic hoses. The replacement hoses must correspond to the technical demands of the implement manufacturer.
- When searching for leaks appropriate aids should be used because of the danger of injury.
- Liquids leaking under high pressure (hydraulic oil) can penetrate the skin and cause severe injury!
- When injured see a doctor immediately! Danger of infection!
- Before starting to do repair work to the hydraulic system release the pressure, lower machine to the ground and stop tractor engine!
- All hydraulic hoses must be checked for their operational safety by a skilled person before the first operation of the machine and then at least once a year! Exchange hydraulic hoses in case of damage or ageing. The replacement hoses must correspond to the technical demands of the implement manufacturer.
- 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.



2.19.6 Electric outfit

- The function of the implements' electronic components and parts may be affected by the electro-magnetic transmittance of other devices. Such affects may endanger people if the following safety advice has not been adhered to.
- When retrofitting electric and electronic devices and/or components of 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

2.19.7 Maintenance, repair and care work

- Repair, maintenance and cleaning work as well as the remedy of function faults should principally be conducted with drive and engine stopped and with removed hydraulic, air pressure and electric connections. Remove ignition key
- Check nuts and bolts for tightness and retighten if necessary!
- For maintenance work on the lifted machine care for securing by appropriate supports.
- When changing operational tools with cutting edges, use proper tools and wear gloves.
- Dispose of oil, grease and filters in the appropriate manner.
- Before commencing any work on the electric system disconnect the electricity supply.
- Before conducting electric welding operations on tractor or on the mounted implements, remove cable from generator and battery.
- Any spare parts fitted must, as a minimum, meet with the implement manufacturer's fixed technical standards. Using original spare parts for example ensures this.

2.19.8 Brakes and tyres

- Before starting to travel check function of brakes.
- Brake systems should regularly be carefully checked.
- Setting and repair work on the braking system must be conducted only by approved workshops. Only use prescribed brake fluid and replace as prescribed.
- Before carrying out any work on the tyres ensure that the machine is safely parked and secured against rolling away (chocks).
- The fitting of tyres requires sufficient knowledge and appropriate tools.
- Repair work on tyres and wheels may only be carried out by qualified personnel with the appropriate tools.
- Regularly check the air pressure. Observe the prescribed air pressure.

3. Description of product

This chapter shows the design of the Cirrus and should be read directly at the machine in order to get acquainted with it.

Cirrus consists of the following components

- Transport frame with draw bar (cat. III)
- Track markers
- Seed box with metering and seed delivery unit
- Twin row disc cultivator
- Wedge ring roller with integrated transport wheels
- Packer coulters
- Extra coverage following harrow

3.1 Overview - Components

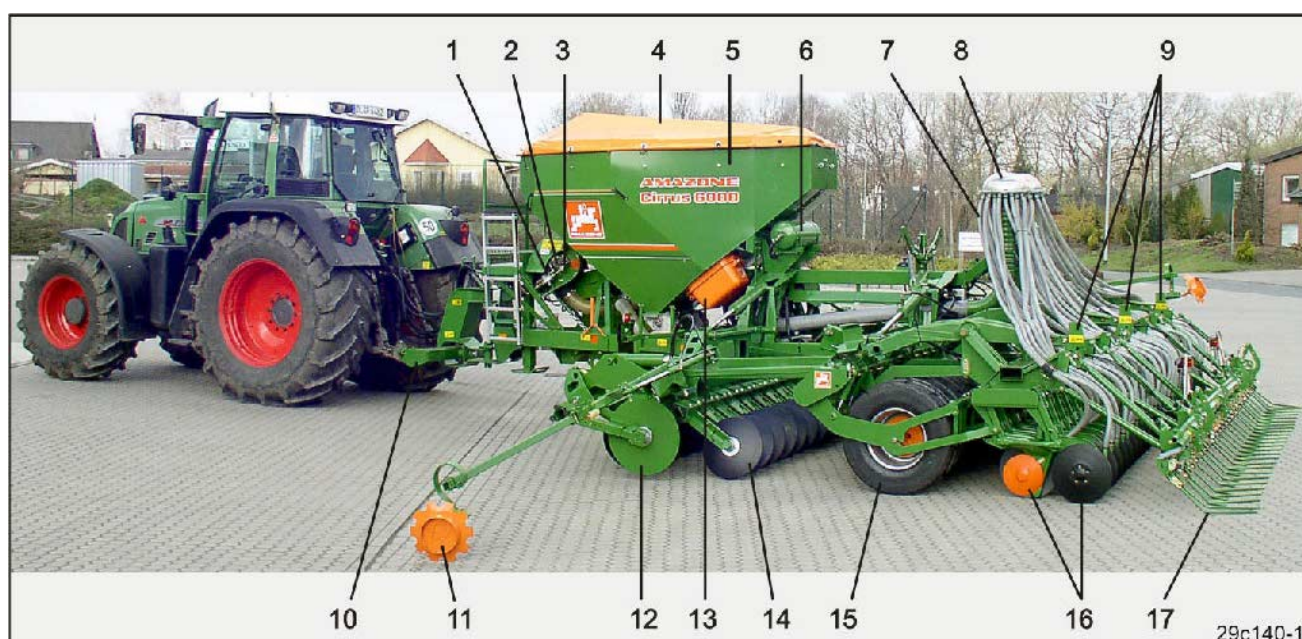


Fig. 19

- | | |
|--|---|
| 1 Pressure relief valve for fan drive | 10 Transport frame with draw bar (cat. III) |
| 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 | 14 Two row disc harrow |
| 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. 20/...

- 1 Operator terminal-**AMATRON⁺**



Fig. 20

Fig. 21/...

- 1 Draw bar (cat. III)
- 2 Jack, telescopic



Fig. 21

Fig. 22/...

- 1 Bracket for
 - hydraulic joints
 - power supply joints
 - air pressure joints
- 2 Chocks
- 3 Platform with ladder
- 4 Strap when stepping on the platform
- 5 Strap when climbing the stair step
- 6 Star wheel
- 7 Stair step, telescopic



Fig. 22

Fig. 23/...

- 1 Vario gearbox
- 2 Type plate



Fig. 23

Fig. 24/...

- 1 Calibration crank in transport retainer
- 2 Metering device
- 3 Spare shear bolts
- 4 Bracket for seed collection tray for calibration test
- 5 Injector sluice



Fig. 24

Fig. 25/...

- 1 Sieve screen
- 2 Filling level sensor



Fig. 25

Fig. 26/...

- 1 Tramline marker

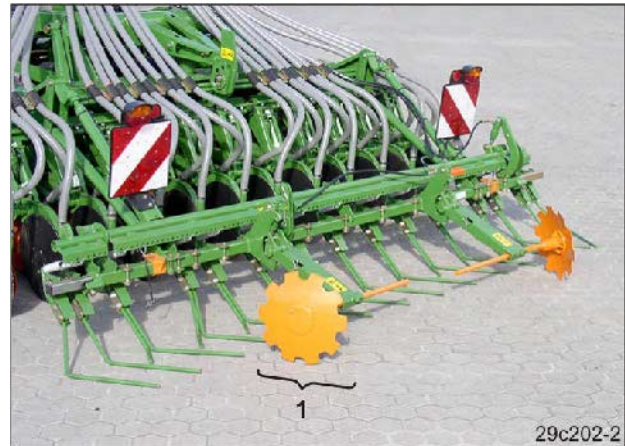


Fig. 26

Fig. 27/...

- 1 Adjustment for extra coverage following harrow



Fig. 27

Fig. 28/...

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



Fig. 28

Fig. 29/...

- 1 Electr. hydr. control block
- 2 Hydraulic ram, secured against twisting for filling the balancer

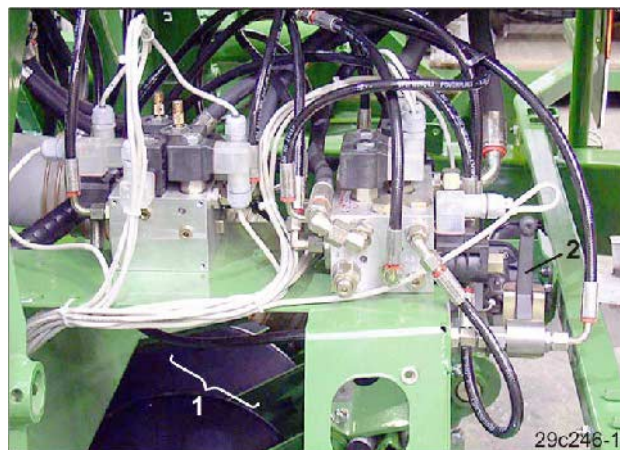


Fig. 29

Fig. 30/...

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



Fig. 30

Fig. 31/...

- 1 Hydraulic ram of balancer



Fig. 31

Fig. 32/...

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



Fig. 32

3.2 Danger zones

Danger zones exist

- between tractor and implement, particularly when hitching on or off or when filling the seed tank
- within the operational range of moving parts
- when climbing on to the machine
- in the swivel range of the track markers
- in the swivel range of the machine wings
- underneath lifted, not secured machines or machine parts
- when folding in and out the machine wings within the range of high voltage lines by touching them.

Within these zones permanently existing danger or unexpectedly arising danger exist. Safety symbols identify these danger zones. In this case, particular safety advices are valid (please also refer to chapter 2.16, page 17).

3.3 Positioning of safety symbols and other identifications

The following illustrations show the arrangement of the safety symbols on the machine.

The safety symbols are explained in chapter 2.16 .

Always keep all safety symbols on the machine clean and in well readable condition. Replace damaged or missing warning symbols and hint signs (Picture No. = Order No.).



Fig. 33

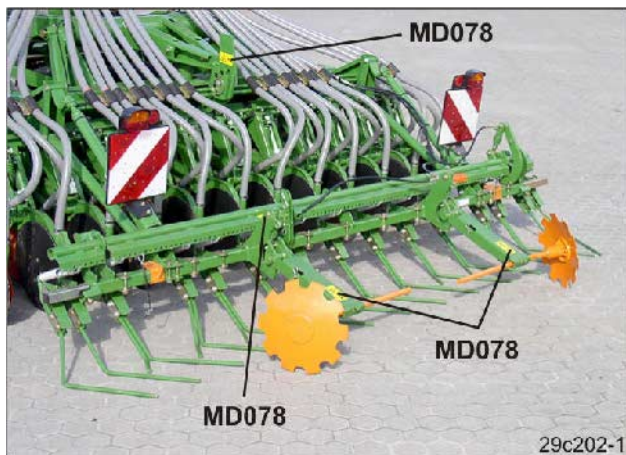


Fig. 34



Fig. 35



Fig. 36



Fig. 37



Fig. 38



Fig. 39

Figure (Fig. 40) shows the safety symbols which are exclusively fixed on the Cirrus 3000.



Fig. 40

3.4 Type plate and CE-sign

The type plate (Fig. 41) and the CE sign are located on the right hand machine side on the frame next to the blower fan.

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. 41



3.5 Technical data

		Cirrus 3000	Cirrus 4000	Cirrus 6000
		see Figure (Fig. 42)	see Figure (Fig. 43)	see Figure (Fig. 44)
Working width	[m]	3,0	4,0	6,0
Number of packer coulters		24	32	48
Row spacing of coulters	[cm]	12,5		
Area output	[ha/h]	ca. 2,2	ca. 3,0	ca. 4,8
Capacity seed tank	[l]	2200	2200	3000
Soil cultivation		trailed with disc cultivator		
Operational speed	[km/h]	12 to 16		
Total length	[m]	7,92		
Brakes-interface		air braking system		
• tractor joint				
• effective brake system in the integrated transport device		hydraulic brake system		
Transport wheels		4x400/50-15,5		
Required tractor hydraulic capacity		min. 80 l/min, at max. 200 bar		
Drawbar coupling		lower link cat. III		
Gearbox, hydraulic oil, Tip: suitable 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		
Permissible max. speed on all not public and public roads and ways (only with an empty seed box)	[km/h]	40		
Basic weight	[kg]	4530	6080	7880
Permissible total weight	[kg]	4700	6300	8000
Max. load for road transport	[kg]	170	220	120
Permissible rear axle load	[kg]	4000	5300	6650
Permissible front support load	[kg]	1200	1500	1230
Transport width (from 4 m working width, folded)	[m]	3,0		
Total height in transport position (from 4 m working width, folded)	[mm]	2700	2700	3500



29c141

Fig. 42



29c150

Fig. 43



29c140

Fig. 44

3.6 Location of optional equipment required in road traffic

Fig. 45/...

- 1 2 rear lights
- 2 2 brake lights
- 3 2 indicators
(required in case the tractor indicator is hidden)
- 4 2 red rear reflectors
(round, rectangular, or triangular)
- 5 1 carrier for the registration number with light
(required in case the tractor registration number is hidden)
- 6 2 warning plates facing to the rear
- 7 1 transport guard for extra coverage following harrow



Fig. 45

Fig. 46/...

- 1 2 limiting lights facing to the front
- 2 2 warning plates facing to the front



Fig. 46

Fig. 47/...

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



Fig. 47



3.7 Conformity

Guide lines, standard terms and descriptions
Cirrus fulfils the machine guide line 98/37/EC

3.8 Details about noise level

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

Measuring implement: OPTAC SLM 5.

The height of the noise level mainly depends on the tractor used.

4. Assembly and function

The following chapter informs you about the assembly of the Cirrus packer coulters sowing combination and the function of its individual components

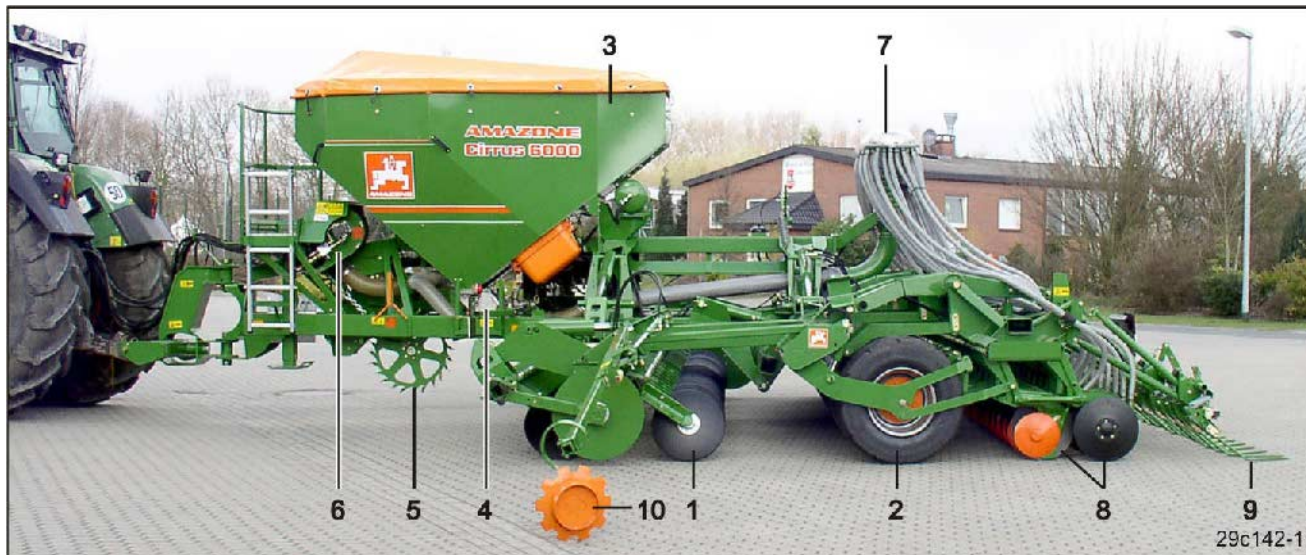


Fig. 48

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

The disc cultivator (Fig. 48/1) allows mulch sowing and conventional sowing following the plough.

The wedge ring roller (Fig. 48/2) reconsolidates the worked soil in strips.

The seed is transported in the seed hopper (Fig. 48/3) .

The metering system (Fig. 48/4), driven by the star wheel (Fig. 48/5) or an electric motor, delivers the pre-set amount of seed into the air flow provided by the fan (Fig. 48/6).

The air flow delivers the seed to the distributor head (Fig. 48/7), that evenly distributes the seed to all packer coulters (Fig. 48/8).

The seed is placed into the re-consolidated strip and covered with loose soil by the extra coverage following harrow (Fig. 48/9).

The track markers (Fig. 48/10) 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.

4.1 Seed hopper and seed metering

The metering roller of the metering system (Fig. 49/2) meters the seed from the seed hopper (Fig. 49/1) into the airflow of the injector sluice (Fig. 49/3).

The air flow delivers the seed through the seed tube to the distributor head (Fig. 49/4) and to the sowing coulters (Fig. 49/5).



Fig. 49

4.2 Metering rollers

The seed metering system should be equipped with different metering rollers, depending on the seed to be sown, namely with normal, medium fine and fine metering roller (see chapter 4.2.1 to chapter 4.2.3).

The metering rollers are driven either

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

The seed rate depends on

- the metering roller used in the seed metering system and
- the drive rev. speed of this metering roller.

4.2.1 Normal metering roller

The normal metering roller (Fig. 50/1) is supplied as standard and is used following table (Fig. 78).

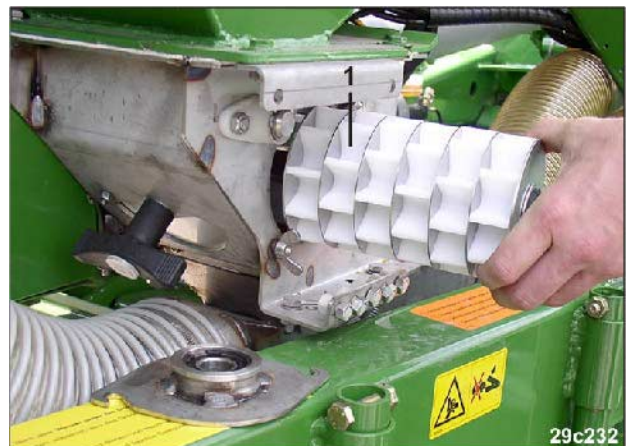


Fig. 50

4.2.2 Fine metering roller (Option)

The table (Fig. 78) shows the operational range for the fine metering roller (Fig. 51/1).

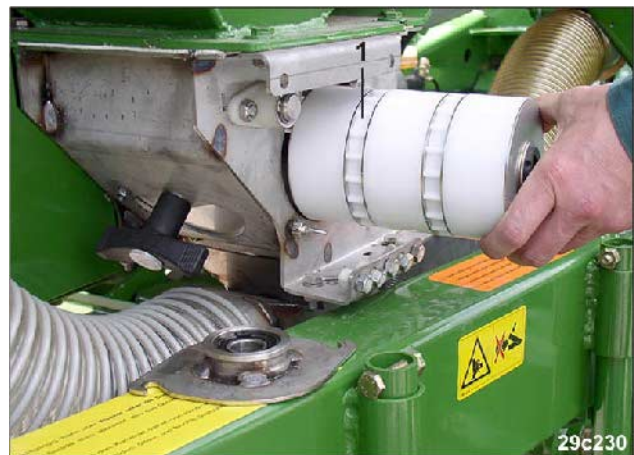


Fig. 51

4.2.3 Medium fine metering roller (Option)

Table (Fig. 78) shows the operational range for the medium fine metering roller (Fig. 52/1).



Fig. 52

4.3 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. 53) 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 29c214gb
level too low		

Fig. 53

The height of the filling level sensor (Fig. 54/1) 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.

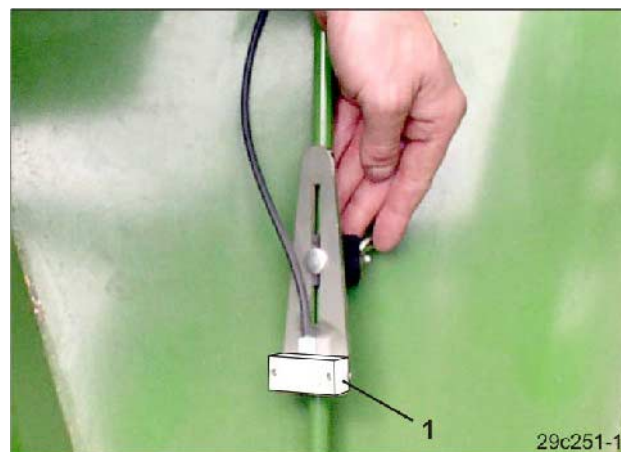


Fig. 54

4.4 Star wheel

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

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. 55

4.5 Vario gearbox

For setting the seed rate the setting motor (Fig. 56/1) adjusts the gearbox setting lever (Fig. 56/2).

The seed rate can be set infinitely variably via **AMATRON+**. The seed rate is read off at the pointer (Fig. 56/2) of the scale. The higher the scale value, the bigger the seed rate will be.

The desired seed rate is entered into **AMATRON+** and re-checked with the aid of calibration tests.

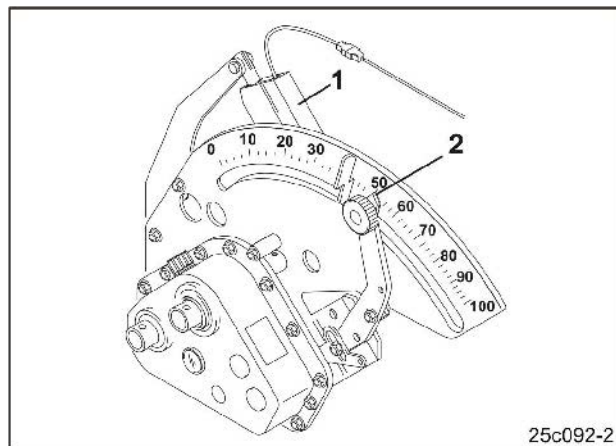


Fig. 56

4.6 Full electric metering system (Option)

With the full electric metering system each one electric motor (Fig. 57/1) 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.

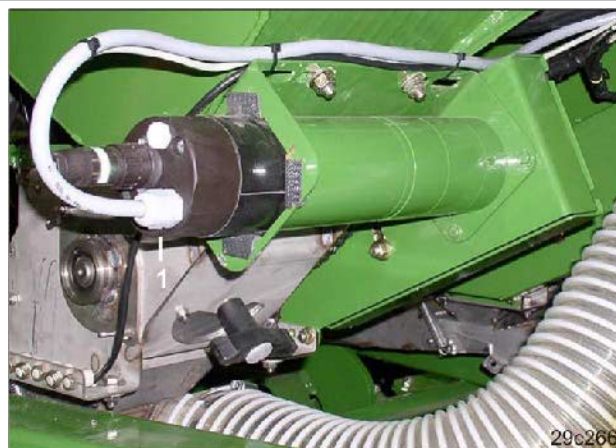


Fig. 57

4.7 Seed collecting trays

The seed collecting trays are required for the calibration test.

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. 58/1) on the hopper rear wall.

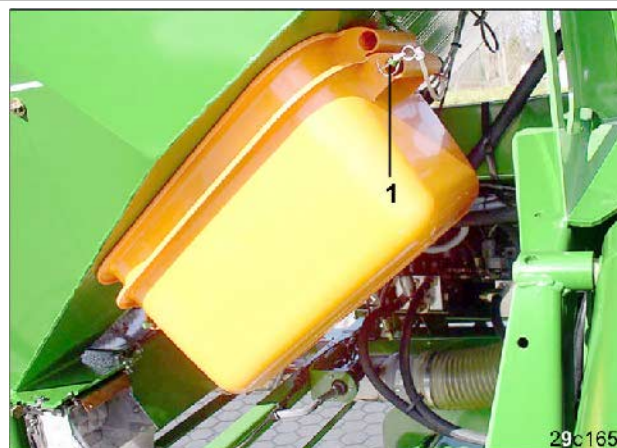


Fig. 58

4.8 Fan

The hydraulic motor (Fig. 59/2) drives the fan (Fig. 59/1) and creates an air flow. The air flow delivers the seed from the injector sluice to the coulters.

The fan rev. speed can be set on the current regulating valve of the tractor or on the pressure relief valve (Fig. 59/3).



Fig. 59

4.9 Twin row disc cultivator

The discs (Fig. 60/1) arranged in an diagonal angle towards the driving direction prepare the seed bed..

Adjustments can be carried out as follows

- the working intensity of the discs across the working depth of the disc cultivator
- the length of the two outer discs allowing the adaptation to varying soil conditions
- the two side discs (Fig. 60/2) in longitudinal and transverse direction.

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



Fig. 60

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.

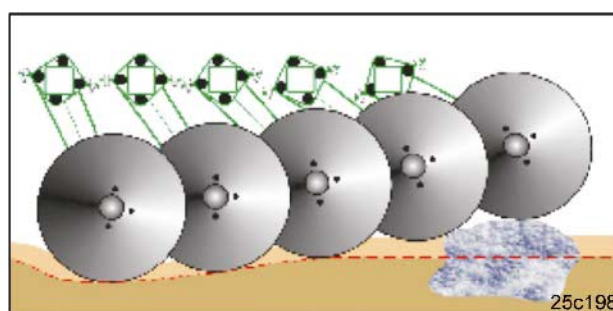


Fig. 61

4.10 Wedge ring tyre roller

The wedge ring tyre roller (Fig. 62/1)

- 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. 62/2) 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. 62

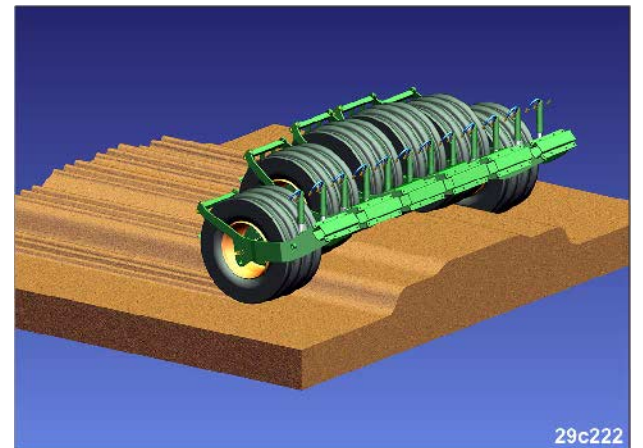


Fig. 63

4.11 Packer coulters

Each packer coulters (Fig. 64/1)

- 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. 64

The desired seed placement depth of the packer coulters is adjusted on each machine segment by re-inserting depth setting pins (Fig. 65/2). The different settings have an effect on the carrying arm (Fig. 65/1) that achieves the seed placement depth.



Fig. 65

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

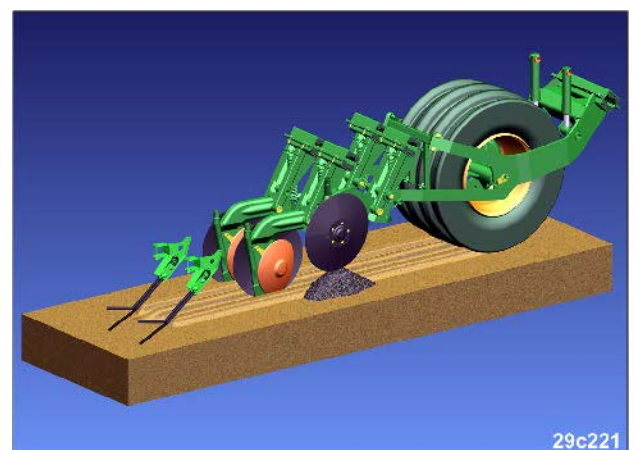


Fig. 66

4.12 Extra coverage following harrow

The extra coverage following harrow (Fig. 67/1) 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 (normal or increased). The extra coverage following harrow pressure determines the working intensity in relation to the soil conditions.



Fig. 67

The pressure of the extra coverage following harrow can be pre-adjusted for operation on light and heavy soil.

Hydraulic rams tension the springs providing the extra coverage following harrow pressure. The tensioning can be set via a lever (Fig. 68/1).

Two pins (Fig. 68/2) function as stop for the lever (Fig. 68/1) in the setting segment. The lever rests on the lower pin when the hydraulic ram is not pressurised and it rests on the upper pin when the hydraulic ram is pressurised.

The higher the pin is inserted in the quadrant plate, the higher the harrow pressure will be..

Set the extra coverage following harrow pressure in such a way that the seed coverage does not leave any ridge of soil in the field.



Fig. 68

4.13 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 packer coulter frame and
- the star wheel.



Fig. 69

When **AMATRON+** shows the symbol (Fig. 70/1), the lifting of transport wheels, packer coulter frame and star wheel automatically releases the switching over 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.

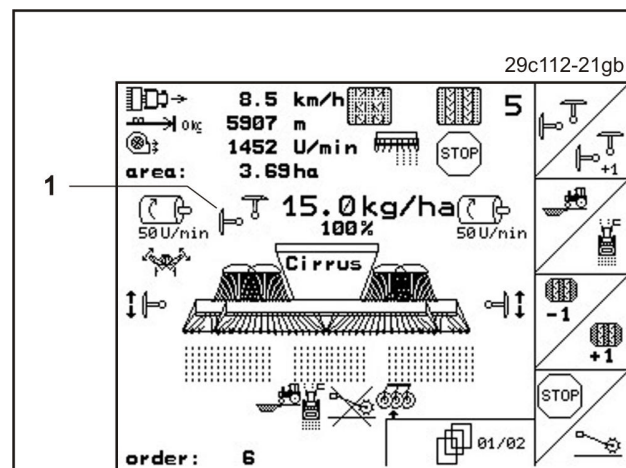


Fig. 70

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



Fig. 71

4.14 Operator terminal **AMATRON+**

AMATRON+ consists of the terminal (Fig. 72), 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 control valve.
- monitoring the seed drill during sowing operation.

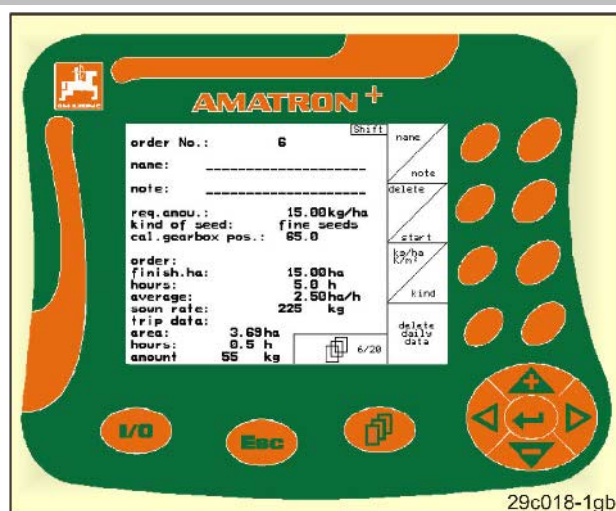


Fig. 72

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 the communication **AMATRON+** consists of the main menu and the 4 sub menus job, machine data, setup and operation.

Job menu

- In the job menu jobs are created and the determined data of up to 20 jobs are stored.

Menu machine data

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

Applications in the Setup menu

- Input and output of diagnosis data, selecting and entering machine basic data. These settings may only be carried out by the service staff.

Menu operation

- The menu operation shows all necessary data during the sowing operation. From the menu operation the seed drill is controlled during operation.

4.15 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. 74/2) via shutter slides (Fig. 74/1).
- the tramline coulters do not sow seed into the soil.

When the electric motor (Fig. 74/3) closes the relevant seed tubes (Fig. 74/2) 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. 74/4) checks the proper function of the shutter slides (Fig. 74/1), which open and close the seed tubes (Fig. 74/2).

AMATRON⁺ triggers the alarm in case of faults.

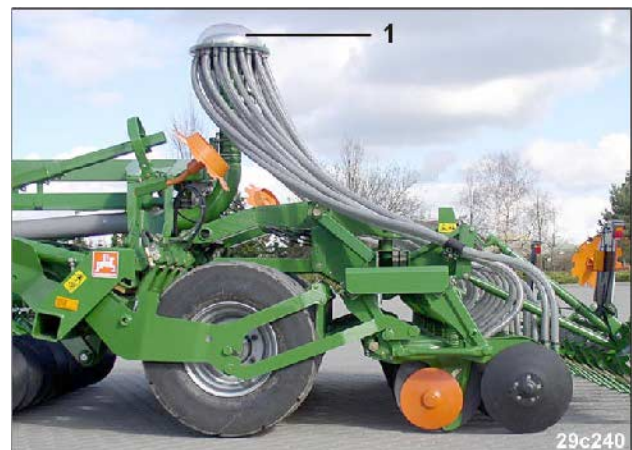


Fig. 73

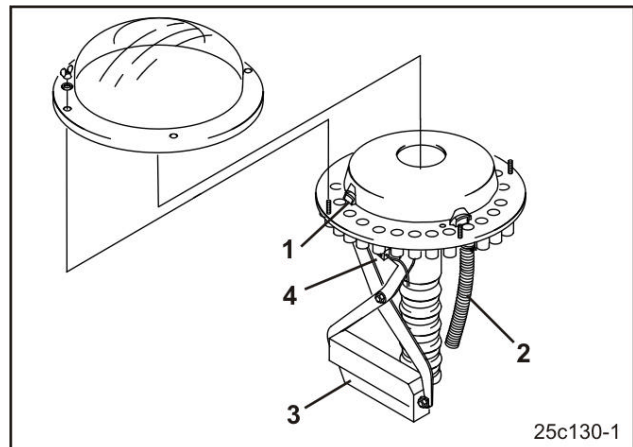


Fig. 74

4.16 Pre emergence marker (Option)

When creating tramlines the pre emergence marker (Fig. 75) 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. 75

The marker discs (Fig. 76) of the pre emergence marker are lifted when no tramline is created.



Fig. 76

4.17 Braking system

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



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.

4.18 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 actuation of all hydraulic functions with just 3 control valves.

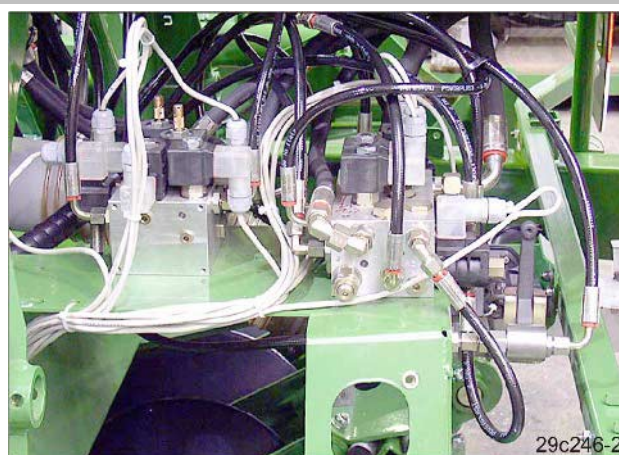


Fig. 77

5. Settings

5.1 Selection of metering wheels

Equip all metering units with equal metering wheels according to chapter 5.1.2.

The required metering wheel depends on the kind of seed according to table (Fig. 78).

For seed not mentioned in the table (Fig. 78) look for the metering wheel for a seed of similar shape.

5.1.1 Table – kind of seed – metering wheels

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

Fig. 78

5.1.2 Exchanging metering wheels



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

Hint!

Exchange the metering wheel in the metering unit:

- Close the shutter (Fig. 79/1) so that no seed can escape from the seed hopper.

Illustration (Fig. 79) shows the opened shutter.



Fig. 79

- Illustration (Fig. 80) shows the closed shutter.



Fig. 80

- Just slacken the two thumb nuts (Fig. 81/1), do not remove them.

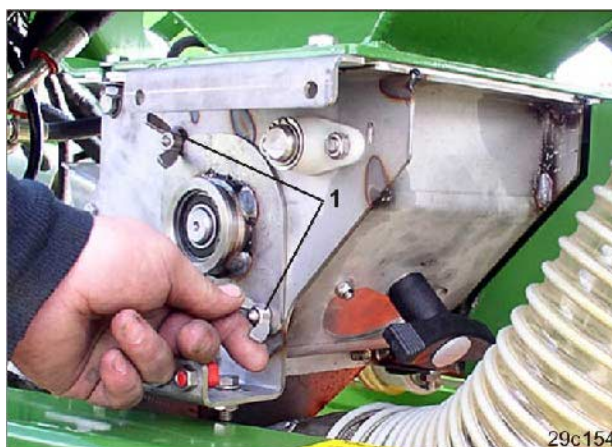


Fig. 81

- Twist the bearings and pull them off.



Fig. 82

- Pull the metering wheel off the metering unit.
- Take the necessary metering wheel from table (Fig. 78) and assemble in vice versa order.
- Equip all other metering units with equal metering wheels.

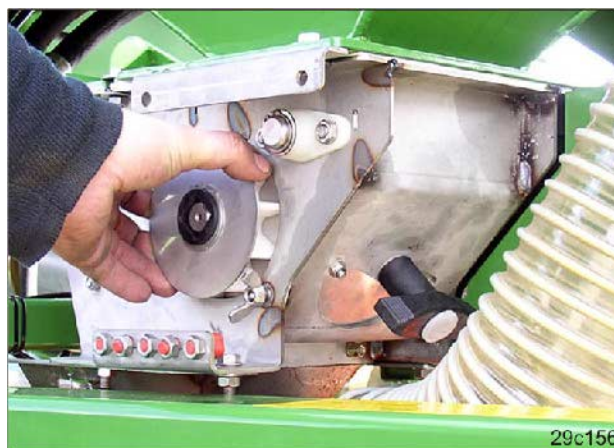


Fig. 83



Important!

Open the shutter(s) (Fig. 79/1) .

5.2 Setting the seed level sensor

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

- Stop tractor engine, apply parking brake and remove ignition key.
- Use the stair steps (Fig. 84) to climb into the seed hopper.



Fig. 84

- Open the sieve (Fig. 85).



Fig. 85

- Slacken thumb nut (Fig. 86/2).
- Adjust the level of the filling level sensor (Fig. 86/1) according to the desired residual amount of seed.

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

- Tighten thumb nut (Fig. 86/2) .

Only for machines with a working width larger than 4 m:

- Repeat the adjustment on the second filling level sensor.

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

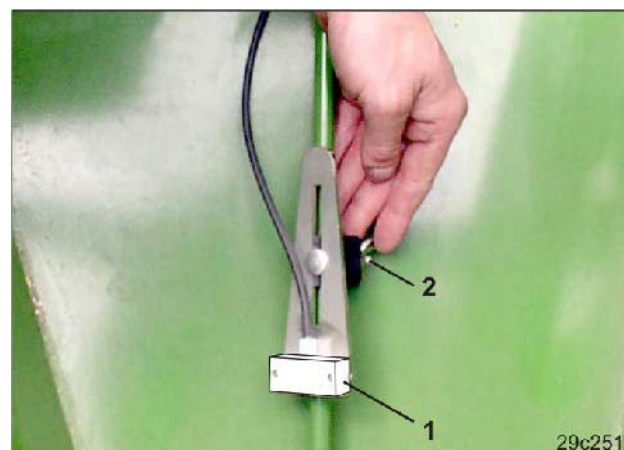


Fig. 86



Important

As a matter of principle follow the illustration (Fig. 86) to fit the filling level sensor.

The filling level sensor should not rest on the hopper housing as shown in illustration (Fig. 87).



Fig. 87



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.

5.3 Setting the seed rate in the menu "Job"

Seed rates from 2 – 400 kg/ha can be set. Adjust the seed rate in **AMATRON+** - menu "Job".

- Open the menu "Job".
- Select the job number (Fig. 88/1) by pressing key



Enter job name (if desired).



Enter job notes (if desired).



Inputs:

- Kind of seed
- 1000-grain weight (only required for grain counter)
- Seed rate indication (kg/ha or K/m²).



Enter the desired seed rate (kg/ha or K/m², see input seed rate indication).



Start job (activate).

order No.:	6	Shift	name
name:	_____		note
note:	_____		delete
req.amou.:	15.00kg/ha		start
kind of seed:	fine seeds		kg/ha
cal.gearbox pos.:	65.0		K/m ²
order:			kind
finish.ha:	15.00ha		
hours:	5.0 h		
average:	2.50ha/h		
sown rate:	225 kg		
trip data:			delete
area:	3.69ha		daily
hours:	0.5 h		data
amount	55 kg	6/20	29c018-3gb

Fig. 88

5.3.1 Proportional seed rate change during operation

Proportional seed rate change during operation:

- Page 1 (Fig. 89) open in the menu machine data.
-  Input of quantity step as % (value for the proportional seed rate change during operation with , , ).
- By pressing key  reset the seed rate change back to 100%.

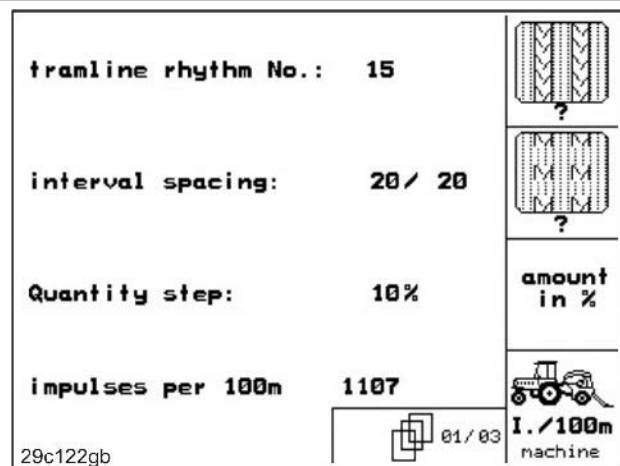


Fig. 89

5.4 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

- Stop tractor engine
- Remove ignition key

5.4.1 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:

- Fill the seed hopper up to min. 1/3 of its volume with seed (correspondingly less for fine seeds at fine seeds).
- 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. 90/1) on the rear side of the seed hopper.



Fig. 90

- Slide the seed collection tray (Fig. 91) into the bracket.

Place one seed collecting tray underneath every individual metering unit



Fig. 91

- Open the injector sluice (Fig. 92/1) on all metering units.



Warning!

Danger of squeezing when opening and closing the injector sluice (Fig. 92/1)!

Hold the injector sluice only on the strap (Fig. 92/2), danger of injury when the sprung loaded injector sluice flap shuts (Fig. 92/1).

Never ever reach with your hand between the injector sluice flap (Fig. 92/1) and the injector sluice.



Fig. 92

- Take the calibration crank (Fig. 93/1) out of its transport retainer next to the star wheel.



Fig. 93

- Put the calibration crank (Fig. 94/1) on the star wheel (Fig. 94/2).
- Turn the star wheel with the aid of the calibration crank (Fig. 94/1) 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.
- Close the injector sluice flap (Fig. 92/1) with special care (danger of squeezing, see danger advice [Fig. 92]).
- Empty the seed collecting trays and replace them underneath the metering units.
- Open the injector sluice (Fig. 92/1).
- 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. 94



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 15 kg
- Crank turns for 1/20 ha from 15,1 to 30 kg
- Crank turns for 1/40 ha from 30,1 kg.

After the calibration test

- Replace the calibration crank (Fig. 93) into its transport retainer.
- Close the injector sluice flap with special care (see danger advice Fig. 92).
- Affix the seed collecting trays (Fig. 90) in their transport retainer and secure by using a lynch pin.

5.4.2 Calibration of the Cirrus with full electric metering

Calibration test on the Cirrus with full electric metering:

- Fill the seed hopper up to min. 1/3 of its volume with seed (correspondingly less for fine seeds at fine seeds).
- 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. 95/1) on the rear side of the seed hopper.



Fig. 95

- Slide the seed collecting tray (Fig. 96) into the bracket.

Place one seed collecting tray underneath every individual metering unit.



Fig. 96

- Open the injector sluice flap (Fig. 97/1) on all metering units.



Danger!

Danger of squeezing
when opening and closing the injector
sluice flap (Fig. 97/1).

Only hold the injector sluice flap on its
strap (Fig. 97/2). Danger of injury when
the sprung loaded flap shuts (Fig. 97/1).

Never ever reach with your hand
between the injector sluice flap (Fig.
97/1) and the injector sluice.



Fig. 97

Carry out the calibration test, following the operator's manual **AMATRON⁺** (Chapter: "Calibration test on machines with full electric metering").

After the calibration test has been terminated

- Close the injector sluice flap with special care (see danger advice Fig. 97)
- Secure the seed collecting tray (Fig. 95) on the seed hopper rear wall by using a lynch pin.

5.5 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. 98).

Set the fan speed as follows

- on the oil flow control valve of the tractor (see chapter 5.5.2)
- on the pressure relief valve of the machine (see chapter 5.5.3), in case your tractor is not provided with a oil flow control valve.

AMATRON⁺ monitors the maintenance of the fan speed (see chapter 5.5.4 and chapter 5.5.4.1).

5.5.1 Fan speed table

The fan speed (1/min.) depends on

- the machine's working width (Fig. 98/1)
- the kind of seed
 - fine seeds, e.g. rape (Fig. 98/2)
 - grain and legumes (Fig. 98/3).

Example:

Cirrus 4000

grain seed

required fan speed: 3800 1/min.

Set the fan speed according to chapter 5.5.4.



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

Danger!

960489



**AD-P
FRS / FPS
Avant / Xact
Cirrus**

		
3,0 m	2800	3500
4,0 m	3000	3800
4,5 m	3000	3800
6,0 / 8,0 / 9,0 m	3200	3900
1	2	3

Fig. 98

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

The pressure relief valve (Fig. 99/2) returns oil volumes, larger than necessary, back into the oil tank (Fig. 99/2) 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. 99/1) set the fan speed on the oil flow control valve:

- close the pressure relief valve (Fig. 99/2) (turn clockwise) and then open $\frac{1}{2}$ turn (see chapter 5.5.3), so that the oil volume is as little as possible.
- set the necessary fan speed on the oil volume control valve of the tractor.
- The fan speed is shown in the menu machine data (see chapter 5.5.4) and menu operation.

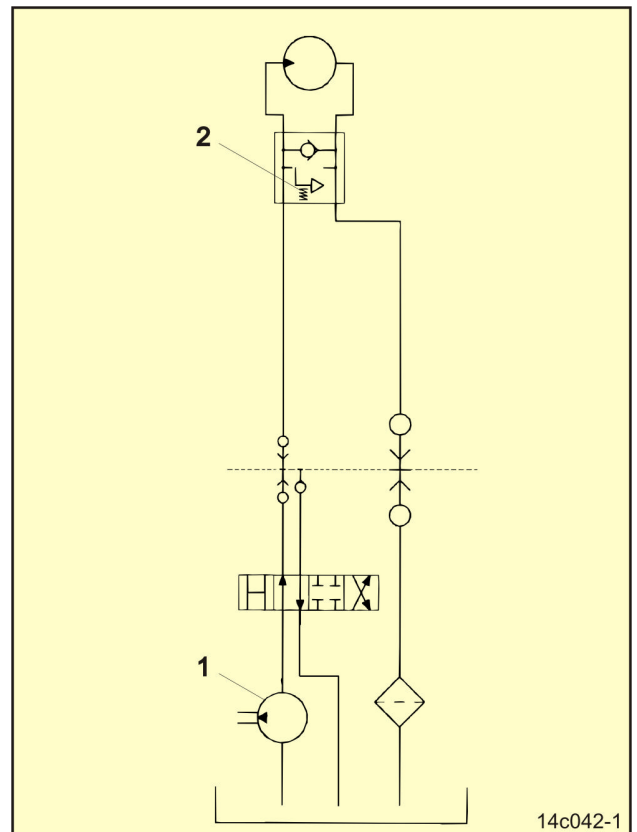


Fig. 99

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

On tractors without controllable hydraulic pump (Fig. 99/1) set the fan speed on the pressure relief valve (Fig. 99/2) of the machine:

- Remove protective cap (Fig. 100/1)
- Slacken counter nut
- 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

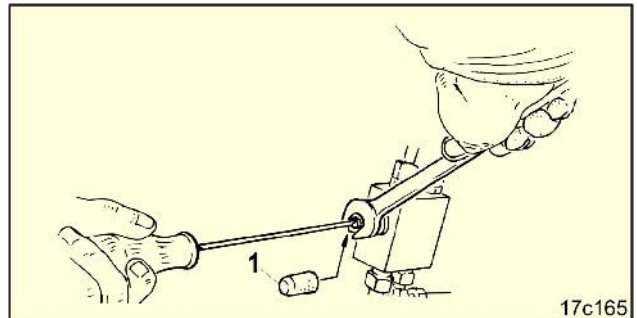


Fig. 100

After setting, secure the valve position using the counter nut and put on the protective cap (Fig. 100/1).

The fan speed is shown in the menu machine data (see chapter 5.5.4) and in the menu operation.

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

Setting the fan speed monitoring **AMATRON⁺**:

- Open page 2 (Fig. 101) in the menu machine data.



- during operation this sets the fan speed monitor (1/min.) at the level it is currently running.



- Sets the fan speed monitor (1/min.) at the desired level it is intended to be monitored at.



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

Danger!

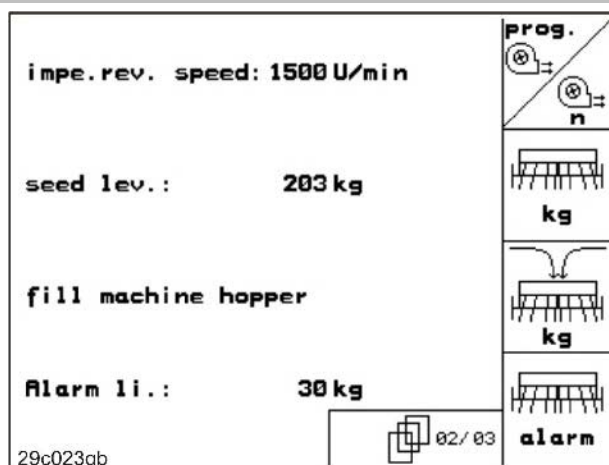


Fig. 101

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

Setting the deviation from the required fan speed value at which the alarm should be triggered:

- Open page 4 (Fig. 101) in the menu basic data (Fig. 102).



- Alarm trigger limit when the fan speed deviates from the desired value (as%).

Value to be entered: ± 10 (%).

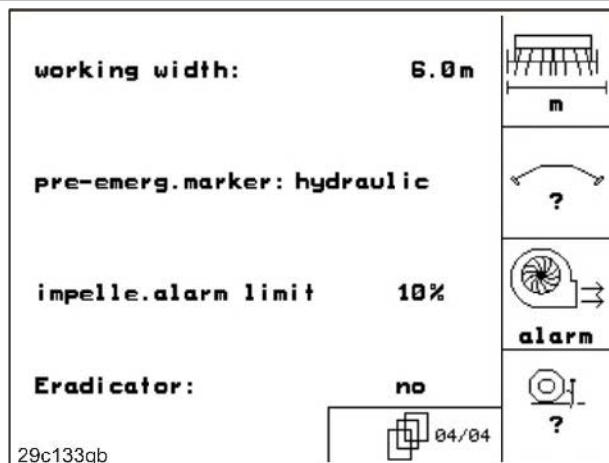


Fig. 102

5.6 Setting the seed placement depth

Setting the seed placement depth:

- Advise people to leave the danger area.
- Switch off low-lift-function in **AMATRON⁺**.

The low-lift-function is switched off when the symbol (Fig. 103/1) is not shown in the menu operation.

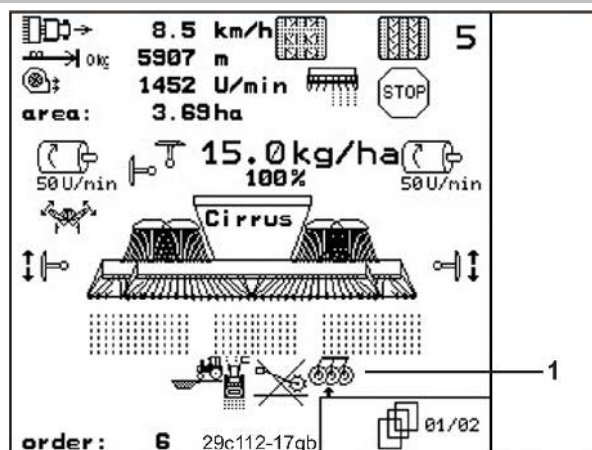


Fig. 103

- Lift the machine until the carrying arm (Fig. 104/1) gets free from the depth setting pin (Fig. 104/2).
- Stop tractor engine, apply parking brake and remove ignition key.

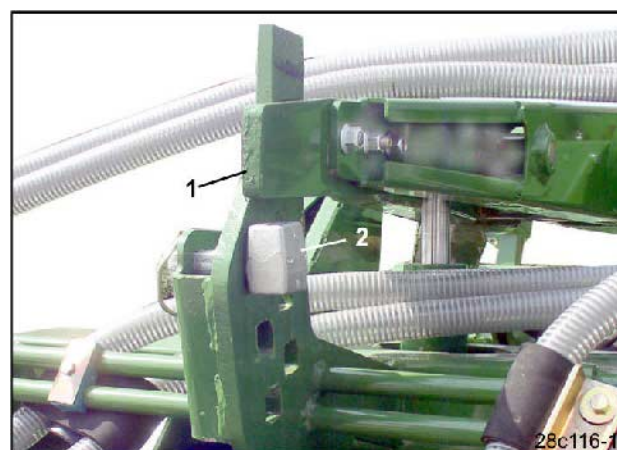


Fig. 104



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. 104/1) and the depth setting pins (Fig. 104/2) .

- Insert depth setting pins (Fig. 105/1) according to chapter 5.6.1
- in all setting segments
- in the same square hole

Number of setting segments:

Cirrus 3000: 1 setting segment

Cirrus 4000: 3 setting segments

Cirrus 6000: 3 setting segments.

- After re-inserting, use linch pins (Fig. 105/2) to secure the depth setting pins.

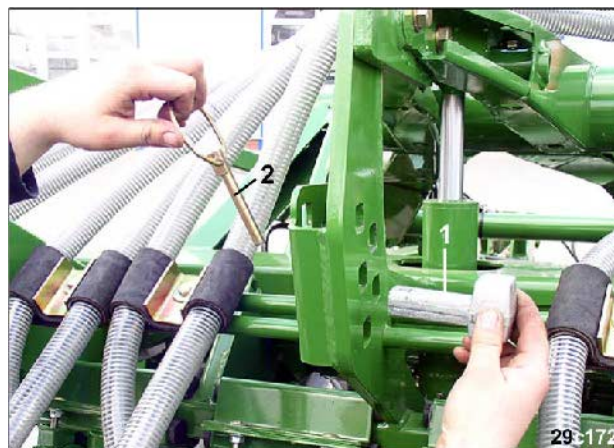


Fig. 105

- Advise people to leave the danger area.
- When the machine is lowered or when driving off in the field the carrying arms rest on the depth setting pins (Fig. 106).
- Switch on low-lift-function (if necessary) .



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

Important For this drive approx. 30 m at the later intended forward speed and check the placement depth.



Fig. 106

5.6.1 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. 107/1) for setting the seed placement depth into the desired hole in the setting segments underneath the carrying arms and secure using lynch pins (Fig. 107/3).

The depth setting pins (Fig. 107/1) are provided with a square end with different distances. The edges are marked with the figures 1 to 4 (Fig. 107/2).

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.

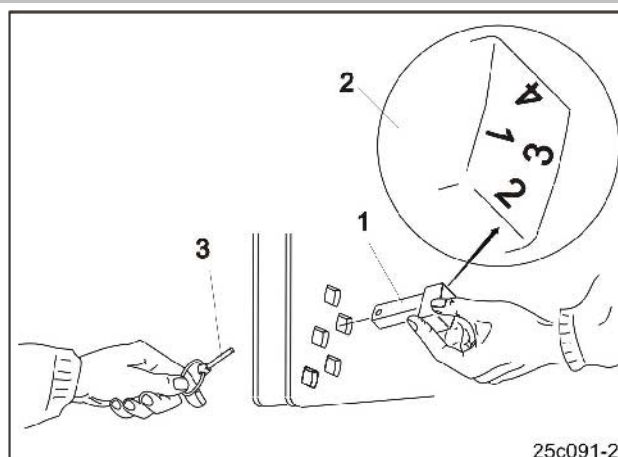


Fig. 107

The deeper the hole (Fig. 108/2) is chosen and the higher the figure is (Fig. 108/1) 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.

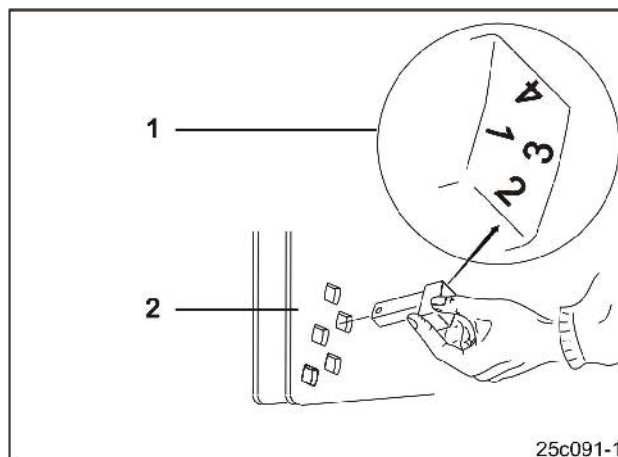


Fig. 108

5.7 Setting the length of the track markers

Setting the length of the track markers:

- Simultaneously unfold both track marker arms (see **AMATRON+** operator's manual), if sufficient space is available.
- Stop tractor engine, apply the parking brake and remove the ignition key.
- Slacken tapered screw (Fig. 109/1).
- Set the track marker length to distance "A" (see chapter 5.7.1).
- Retighten the tapered screw (Fig. 109/1) firmly.
- Repeat this procedure on the other track marker.



Fig. 109



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.

5.7.1 Track marker length dimensions

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

Measured is distance "A" (Fig. 110)

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

Set both track markers to the same length.

Row spacing	Cirrus 3000	Cirrus 4000	Cirrus 6000
	Distance "A" (Fig. 110)		
12,5 cm	3,0 m	4,0 m	6,0 m

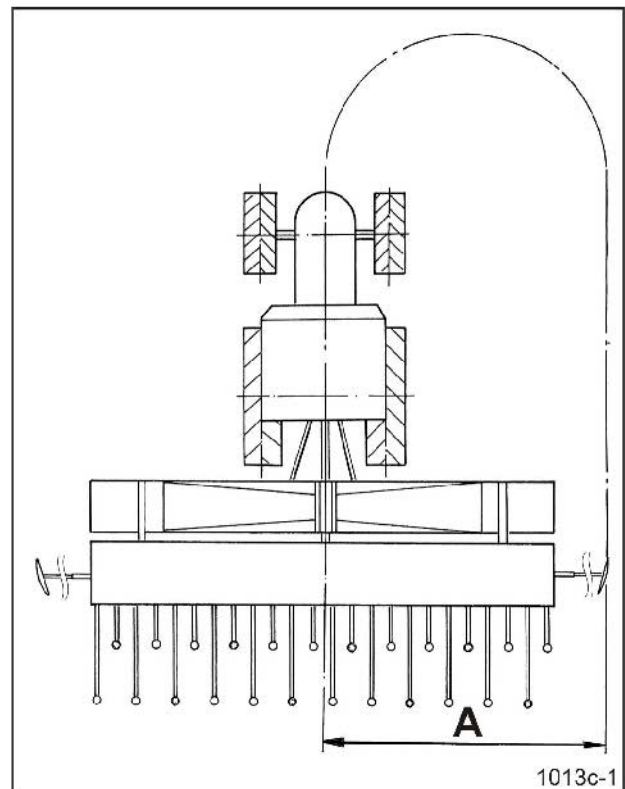


Fig. 110

5.7.2 Setting the working intensity of the track markers

Setting the working intensity of both track markers

- Slacken the two bolts (Fig. 111/2)
- 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.
- Retighten bolts (Fig. 111/2) firmly.
- Repeat this procedure on the other track marker.



Fig. 111

5.8 Disc harrow

5.8.1 Setting the working intensity

The working intensity of the disc harrow depends on the working depth of the discs. Set the working depth of the discs in the field as follows:

- Select the disc harrow actuation  in **AMATRON+** (see operator's manual for **AMATRON+**).
- Actuate control valve 1 and set the desired disc working depth on the scale (Fig. 112/1).

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.

Drive approx. 30 m and check the working intensity of the discs. If necessary, re-adjust the disc working depth.

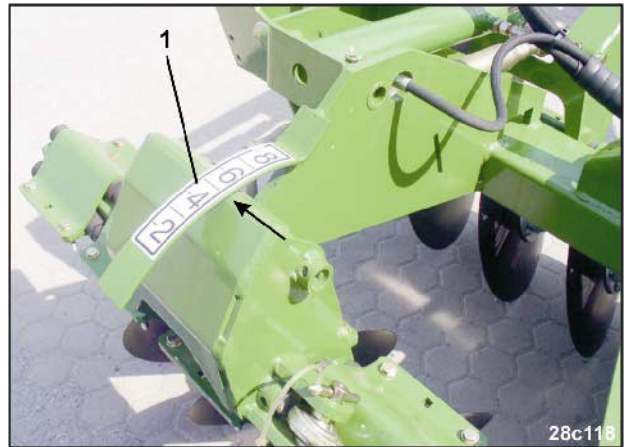


Fig. 112

5.8.2 Setting the length of the outer disc legs

In every disc row the length of the two outer disc legs can be adjusted (Fig. 113/1).

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. 113

5.8.3 Setting the side discs

Setting the side discs (Fig. 114/1) :

- Lift the disc harrow.
- Stop the tractor engine, apply the parking brake and remove the ignition key.
- Set the side discs (Fig. 114/1) by using pins (Fig. 114/2) in longitudinal and diagonal direction in such a way that the worked soil cannot escape to the sides preventing lateral ridges of earth.
- After any setting secure the pins by using lynch pins.
- Start to operate.
- After having driven approx. 30 m check whether lateral ridges have been formed. If so, re-adjust the side disc setting if necessary.

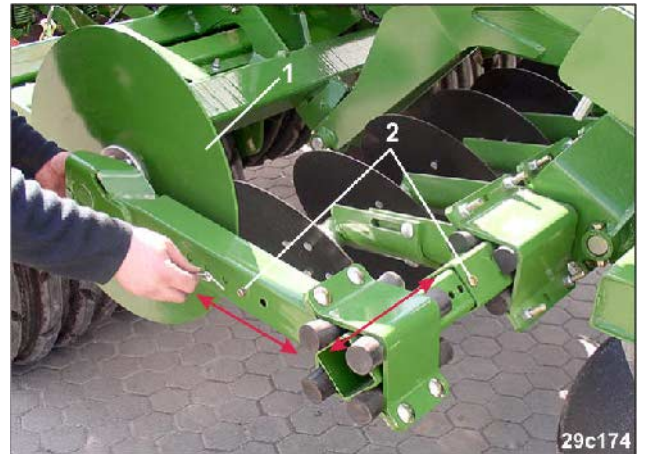


Fig. 114



Hint!

In the transport position the side discs of the Cirrus 3000 are placed in the transport retainer (see Fig. 206).

5.9 Extra coverage following harrow

5.9.1 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. 115).

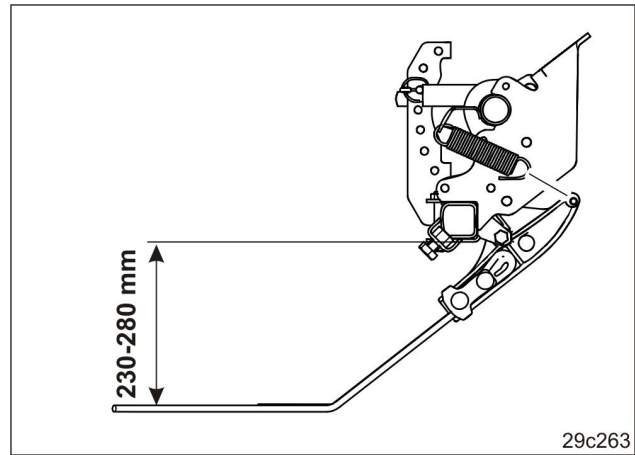


Fig. 115

The setting is achieved by lengthening or shortening the carrying tubes (Fig. 116/1) on the packer coulter frame:

- Putting the machine into operation in the field.
- Stop tractor engine, apply parking brake, remove ignition key.
- Slacken the counter nut (Fig. 116/2).
- Set all carrying tubes (Fig. 116/1) to an equal measure of length. For this turn all bolts (Fig. 116/3) equally.
- After setting, retighten the counter nut (Fig. 116/2) firmly.
- Check the operational performance of the extra coverage following harrow after approx. 30 m.



Fig. 116

5.9.2 Extra coverage following harrow pressure

The pressure of the extra coverage following harrow depends on the kind of soil. On lighter soils, operate with less extra coverage following harrow pressure than on heavier soils.

The two pins (Fig. 117/2) in the setting segment function as a stop for the lever (Fig. 117/1) and limit the swivelling range of the lever.

The higher you insert a pin in the hole segment, the higher the harrow pressure will get.

The normal harrow pressure is adjusted via the lower pin.

The increased harrow pressure is adjusted via the upper pin.

Carry out equal adjustments on

- 1 Setting segment (Cirrus 3000)
- 3 Setting segments (Cirrus 4000)
- 3 Setting segments (Cirrus 6000).



Fig. 117

5.9.2.1 Setting the normal harrow pressure

Setting the normal harrow pressure:

- Select harrow pressure key  in **AMATRON+** and by actuating the control valve 1 pressurise the hydraulic ram.
- Stop the tractor engine, apply the parking brake and remove the ignition key.
- Insert the pin into a hole in the setting segment below the lever and secure using a linch pin.
- Actuate the harrow pressure key  in **AMATRON+** and switch the control valve 1 into its floating position.

5.9.2.2 Setting the increased extra coverage following harrow pressure

Setting the increased harrow pressure:

- Select harrow pressure key  in **AMATRON+** and switch control valve 1 into the floating position (hydraulic ram without pressure).
- Stop the tractor engine, apply the parking brake and remove the ignition key.
- Insert the pin in a hole in the setting segment above the lever and secure using a linch pin.



Hint!

Drive approx. 30 m and recheck the operational performance of the normal and increased extra coverage following harrow. Readjust if necessary.

5.10 Tramline system

5.10.1 Tramline rhythm

The tramline system allows the creation of tramlines in the field. Tramlines are marks in which no seed is sown (Fig. 118/A) for the later operation of fertilising and crop protection machines.

The tramline spacing (Fig. 118/b) relates to the working width of the husbandry machinery (Fig. 118/B), e.g. fertiliser spreaders and/or field sprayers, for later operation in the field.

For setting the different tramline spacing (Fig. 118/b) enter the relevant tramline rhythms into **AMATRON⁺**.

The necessary tramline rhythm (see table Fig. 119) results from the desired tramline distance and the working width of the seed drill.

Table (Fig. 119) 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. 118/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.

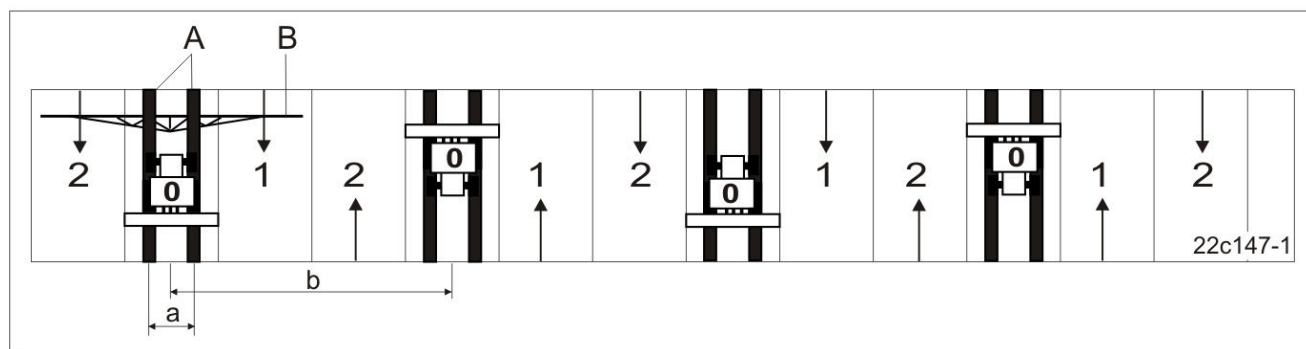


Fig. 118

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. 119





5.10.1.1 Example for creating tramlines

Some examples for the creation of tramlines are illustrated in (Fig. 120):

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+**).

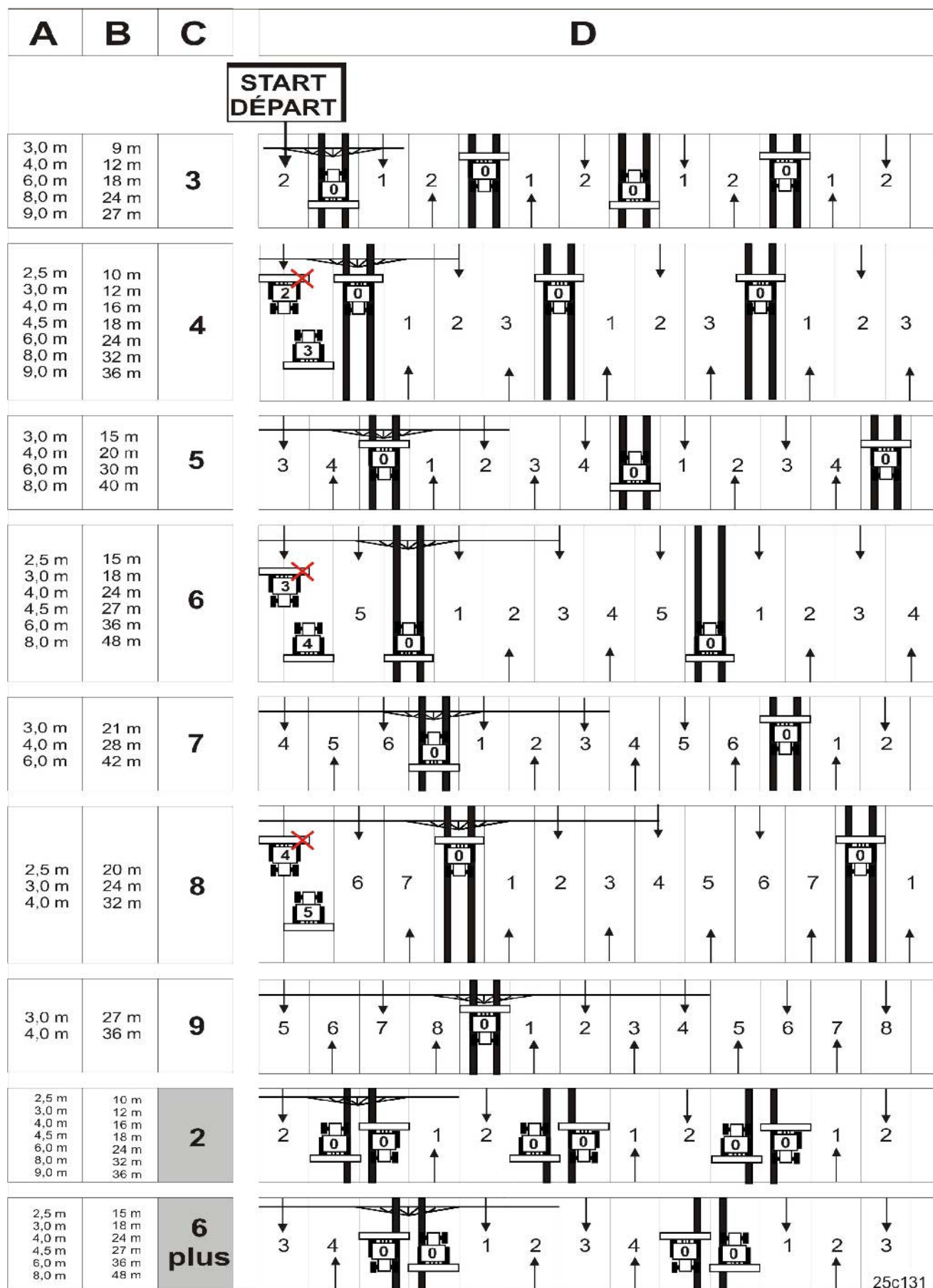
Carry out inputs and indications following the operator's manual for **AMATRON+**.

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. 120) 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.



25c131

Fig. 120



5.10.1.2 Tramline rhythm 4, 6 and 8

In illustration (Fig. 120) 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 3000.

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. 121).

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.

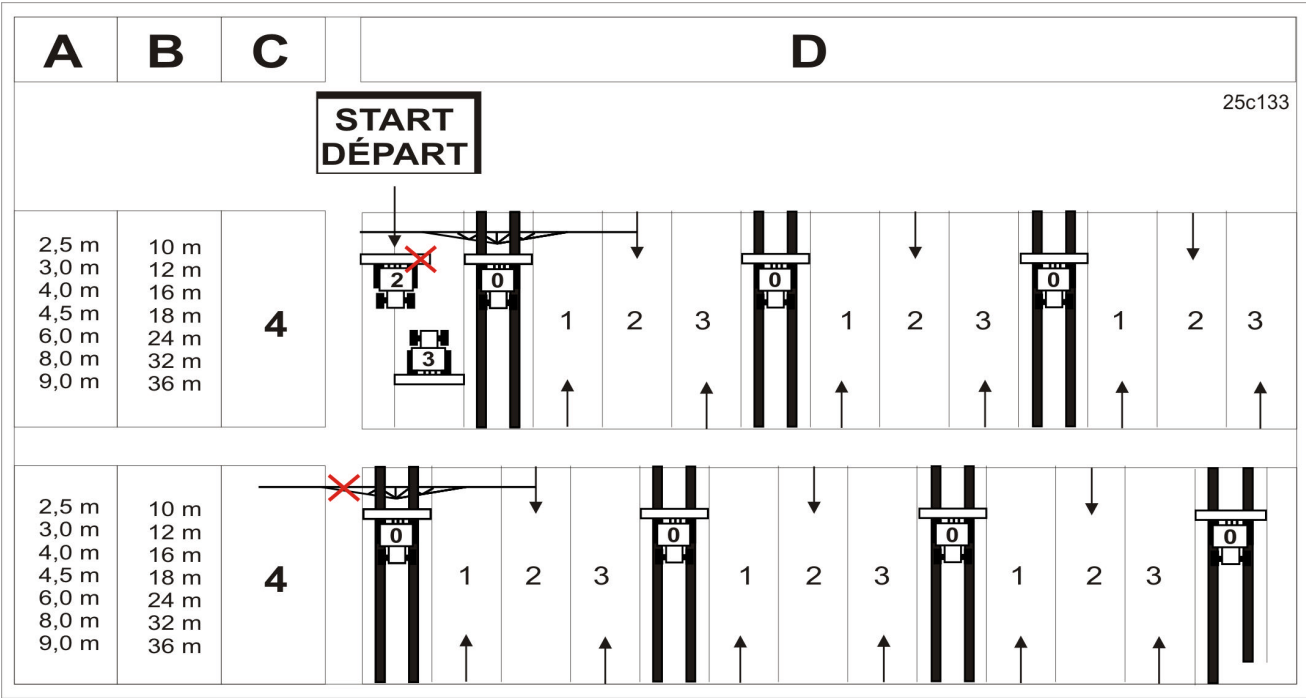


Fig. 121

5.10.1.3 Tramline rhythm 2 and 6plus

Illustration (Fig. 120) 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. 122), 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.

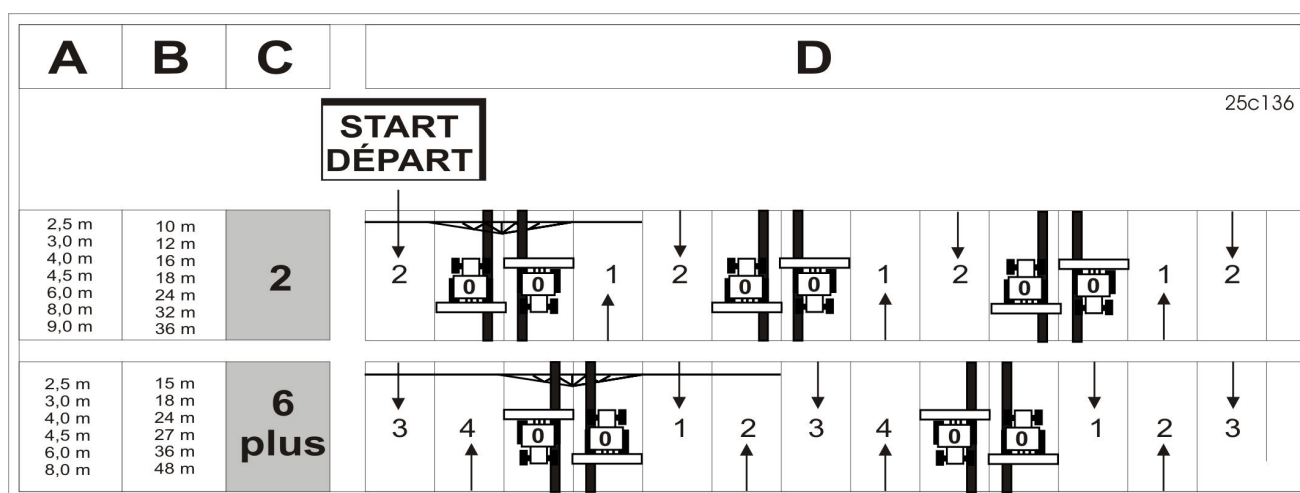


Fig. 122

5.10.2 Setting the tramline rhythm

Input of tramline rhythm in **AMATRON+**:

- Select the tramline rhythm from table (Fig. 119).
- Open page 1 (Fig. 123) in the menu machine data.



- Input of the desired tramline rhythm.
Enter the selected tramline rhythm into **AMATRON+**.

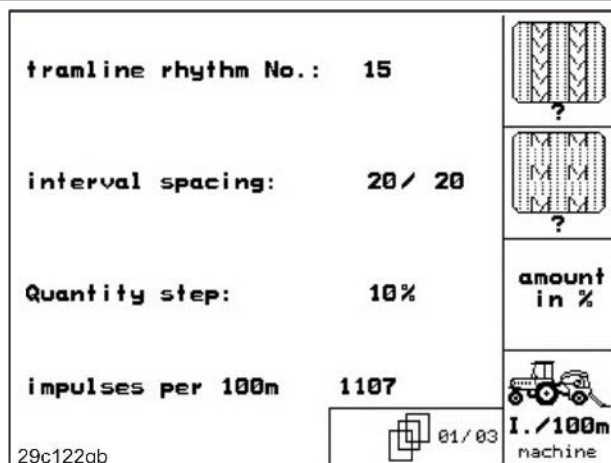


Fig. 123

5.10.3 Setting the tramline counter

At the beginning of the first run in the field enter the tramline counter of the first run in the field in the **AMATRON+** terminal.

Take the tramline counter of the first run in the field from the illustration (Fig. 120).

For setting the tramline counter

- Open the menu operation (Fig. 124) in **AMATRON+**
- Press the key  or  until the required tramline counter (Fig. 124/1) is shown.

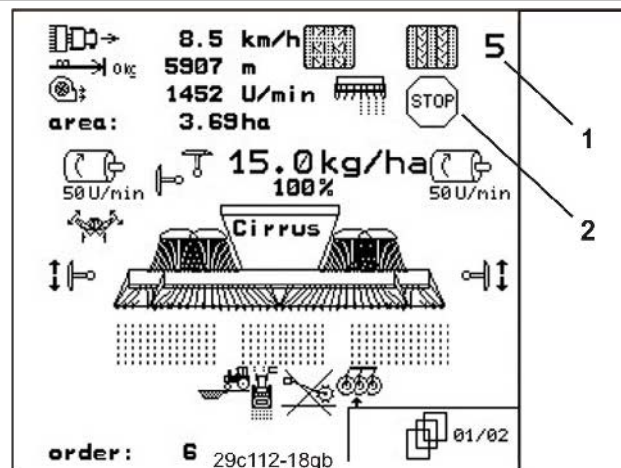


Fig. 124



Hint!

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

Every time the machine is lifted, the tramline counter advances by one digit.

In case it is intended to prevent the shifting on of the tramline counter when the machine is lifted,

- first press the STOP-key ,
- then lift the machine.

The function of the STOP key is activated when the symbol (Fig. 124/2) appears in the operation menu.

Prior to lower the folded machine

- lock the star wheel (see chapter 7.7), to prevent the unintended lowering of the star wheel and the undesired shifting on of the tramline counter.

5.10.4 Seed rate reduction when creating tramlines

Input of seed rate reduction in **AMATRON+**:

- Open page3 (Fig. 123) in the menu machine data
-  Input of the seed rate reduction (as %) when creating a tramline (for values, please refer to the operator's manual **AMATRON+**).

seed rate reduction at tramline:	25%	
		-%
29c024gb		03/03

Fig. 125

5.10.5 Switching on or off the intermittent tramline function

Enter tramline rhythm into **AMATRON+**:

- Open page 1 (Fig. 123) in the menu machine data.
-  Input of intermittent tramline switching.

tramline rhythm No.:	15	
		?
interval spacing:	20 / 20	
		?
Quantity step:	10%	amount in %
impulses per 100m	1107	
29c122gb		01/03
		1./100m machine

Fig. 126

5.11 Pre-emergence marker (option)

5.11.1 Marker disc carrier in the operational / transport position

Lowering the marker disc carrier into work:

- Hold marker disc carrier.
- Remove the pin (Fig. 127/1) which is secured with a cotter pin (Fig. 127/2).



Fig. 127

- Swivel the marker disc carrier downwards by hand.
- Lower the second marker disc carrier into work in the same way.

Before transport get both marker disc carriers into the transport position in vice versa order. Remove the marker discs before starting to travel on public roads (see chapter 9).



Fig. 128

5.11.2 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:

- Advise people to leave the danger area. Return tramline counter back to "zero" following the advice in chapter 5.10.3.
- Actuate control valve 2 and lower the marker discs.



Danger of injury.

Danger!

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

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



Fig. 129

- Slacken bolts (Fig. 130/1).
- Adjust the marker discs in such a way that they mark the tramline which has been created by the tramline coulters.
- 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.
- Firmly retighten bolts (Fig. 130/1).



Fig. 130



Hint!

When operating with tramline rhythm 2 and tramline rhythm 6plus (also see chapter 5.10.1.3) 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.

5.12 Setting the running time of the pre-charging system on the headlands

Setting the running time of the pre-charging system on the headlands **AMATRON⁺**:

- Open page 3 (Fig. 131) in the menu basic data.
-  Input of running time (seconds) for the pre-charger.



Fig. 131



6. Initial operation



Danger!

Before putting the Cirrus into operation for the first time, the operator should have read and understood the operation and maintenance instructions.

The max. permissible speed for the combination towing vehicle and Cirrus is 40 km/h.

Drive with low speed roads and ways in bad condition.

6.1 Required tractor

The capacity of the tractor should fulfil the pre-conditions to operate the machine and the tractor should be provided with the required hydraulic-, electric and air pressure systems.

6.1.1 Required tractor capacity

6.1.1.1 Tractor engine capacity

Cirrus 3000	from 112 kW (150 HP)
Cirrus 4000	from 134 kW (180 HP)
Cirrus 6000	from 171 kW (230 HP)

6.1.1.2 Tractor pump capacity, hydraulic

Tractor pump capacity, hydraulic	min. 80 l/min. at 150 bar
----------------------------------	---------------------------

6.1.1.3 Tractor connections, hydraulic (control valve)

Control valve 1:

double acting control spool valve

for the hydraulic functions:

- fold down machine wing
- adjust the disc harrow segment
- adjust the track markers (option)
- adjust the extra coverage following harrow pressure (option).

Control valve 2:

double acting control spool valve

for the hydraulic functions:

- lifting/lowering the machine
- lowering/lifting the star wheel
- lowering/lifting the track markers
- lowering/lifting the coulter frame

Control valve 3:

- 1 single or double acting control spool valve with priority function for the hydraulic hose.
- 1 pressure free return hydraulic hose with large socket (DN 16) for the pressure free oil return flow. The back pressure in the return flow must not exceed 10 bar

for the hydraulic functions:

- hydraulic fan connection



6.1.1.4 Required air pressure connections for dual circuit air brake system

1 coupling claw (red) to secondary hose.

1 coupling claw (yellow) to brake hose.

6.1.1.5 Tractor connections, electric

Required voltage of battery	12 V (Volt)
-----------------------------	-------------

Plug for traffic light kit	7-channel plug
----------------------------	----------------

6.1.1.6 Tractor hydraulic oils

The hydraulic gearbox oil supplied with the Cirrus is suited for the combined hydraulic/gearbox oil circuits of all common tractor types.

Before connecting the Cirrus to the tractor hydraulic system check the suitability of the hydraulic oils.

The hydraulic system of the Cirrus is provided with Gearbox/hydraulic oil Utto SAE 80W API GL4.

6.1.1.7 Required tractor – weights and loads

The tractor should fulfil the requirements of the machine.

For this calculate the following values and compare with the permissible values in the operator's manual for your tractor.

- Minimum front mounting weight
- Total weight
- Front axle load
- Rear axle load
- Permissible tyre load.

If the capacity of the tractor does not fulfil one or more items, it is not allowed to mount the implement.

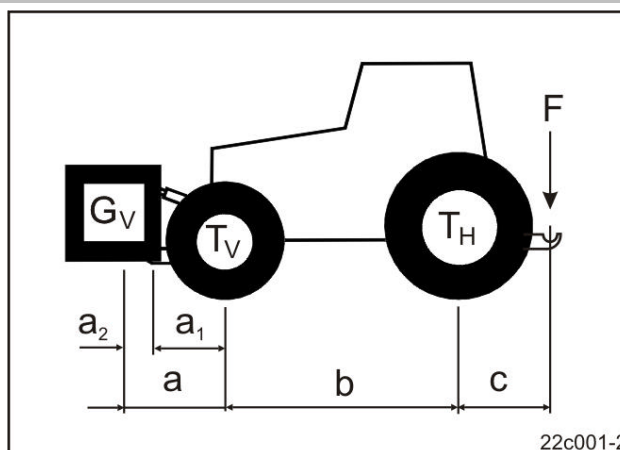


Fig. 132

6.1.1.8 Calculation data

Calculation data (see Fig. 132)

T_L [kg]	Tractor empty weight	kg	See operator's manual for the tractor
T_V [kg]	Front axle load of the empty tractor	kg	See operator's manual for the tractor
T_H [kg]	Rear axle load of the empty tractor	kg	See operator's manual for the tractor
F_M [kg]	Support load with filled seed tank	2700 kg	Cirrus 3000 Cirrus 4000 Cirrus 6000
F_S [kg]	Permissible tractor support load	kg	See operator's manual for the tractor
G_V [kg]	Front ballast weight (if existing)	kg	Weight front ballast weight
a [m]	Spacing between centre of front axle and centre of gravity front ballast	m	Measure out spacing
b [m]	Axle base tractor	m	See operator's manual for the tractor
c [m]	Spacing from centre rear axle to centre tractor lower link point	m	See operator's manual for the tractor

6.1.1.9 Calculation of the minimum ballast front ($G_{V \min}$)

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

Enter into the table (Fig. 133):

- minimum front ballast ($G_{V \min}$).

The minimum front mounting weight can be achieved by a front mounted implement or weights which are attached to the front of the tractor.

If the required minimum front mounting weight is not achieved by a front mounted implement, additional weight should be attached.

6.1.1.10 Calculation of the actual total weight (G_{tat})

$$G_{tat} = G_V + T_L + F$$

Enter into table (Fig. 133):

- actual total weight G_{tat}
- permissible total weight G_{zul}
(see operator's manual for the tractor).

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

The actual front mounting weight (G_V) is equal or bigger than the minimum front mounting weight ($G_{V \min}$) and results, for example, from the weights of the front mounted implement and the additional weight.

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

Enter into table (Fig. 133):

- actual front axle load ($T_{V \text{ tat}}$) of the tractor
- permissible front axle load ($T_{V \text{ zul}}$) of the tractor
(see operator's manual for the tractor).

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

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

Enter into table (Fig. 133):

- actual rear axle load ($T_{H \text{ tat}}$)
- permissible rear axle load ($T_{H \text{ zul}}$) (see operator's manual for the tractor).



6.1.1.13 Calculation of the tyre load capacity

The tyre load capacity of the tractor's front and rear axle tyres should be designed for the actual weights of tractor and implement.

Take the tyre load capacity of the tractor tyres from the operator's manual for the tractor or from the files of the tyre manufacturer and double (two tyres per axle).

Tyre load capacity of the front axle $RT_V =$
double the value of the front axle tyre load capacity

Tyre load capacity of the rear axle $RT_H =$
double the value of the rear axle tyre load capacity.

Enter into table (Fig. 133):

- Tyre load capacity front axle RT_V
- Tyre load capacity rear axle RT_H .

6.1.1.14 Permissible and actual values (table)

	Value (see calculation)		Permissible value (see tractor operator's manual)		Permissible tyre load capacity
Min. front mounting weights	$\text{kg } (G_{V \min})$				
Total weight	$\text{kg } (G_{\text{tat}})$	£	$\text{Kg } (G_{\text{zul}})$		
Front axle load	$\text{kg } (T_{V \text{ tat}})$	£	$\text{Kg } (T_{V \text{ zul}})$	£	$\text{kg } (RT_V)$
Rear axle load	$\text{Kg } (T_{H \text{ tat}})$	£	$\text{Kg } (T_{H \text{ zul}})$	£	$\text{Kg } (RT_H)$
Support load on tractor lower links	$2500 \text{ kg } (F_M)$	£	$\text{kg } (F_S)$		

Fig. 133



Danger

The actual weights in the table (Fig. 133) must be smaller or equal (£) the permissible values!

Otherwise the machine can not be couples onto the tractor upon which the calculation was based.



Danger

Only couple the machine on to the tractor after the calculated front ballast (see Fig. 133/ $G_{V \min}$) has been attached to the tractor!

Otherwise the machine can not be couples onto the tractor upon which the calculation was based.

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

At the pressure side the blower fan motor (Fig. 134/1) can be connected with a single or a double acting control spool valve (Fig. 134/8) with priority control.

In order to avoid any damage on the blower fan motor, the oil pressure in the return flow (Fig. 134/6) must not exceed 10 bar.

For this reason never connect the return flow with the control spool valve (Fig. 134/8) or another control spool valve, but on the pressure free return flow with large plug coupling (DN 16, Fig. 134/11)!

If it is necessary to install a new return flow tubing, use only tubes DN 16, e.g. Ø20 x 2,0 mm and ensure short return flow ways.

The hydraulic oil must be guided through an oil filter (Fig. 134/7) at any place of choice.

Ensure that the hydraulic oil never gets too hot. 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. 134/9) should at least have the double of the oil delivery amount. If the oil heats up too much, the installation of an oil cooler on the tractor by a professional workshop is necessary.

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.

6.2.1 Circuit diagram for hydraulic blower fan drive

No.	Description
A	Implement side
B	Tractor side
1	Blower fan hydrostatic motor $N_{max.} = 4000$ 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 - Inner tube diam. min. Ø16 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	Plug coupling
11	Plug coupling "large"

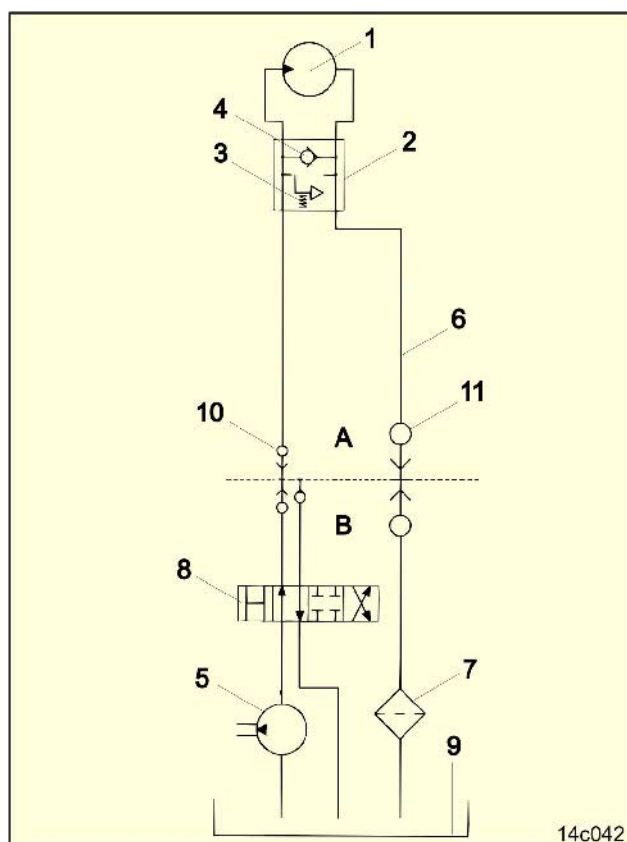


Fig. 134

6.3 Initial fitting of **AMATRON+**

Install the terminal (Fig. 135) of **AMATRON+**, in the tractor cab following the operator's manual for the **AMATRON+**.



Fig. 135

7. Putting to operation

7.1 Coupling and uncoupling the machine

The Cirrus is not provided with a parking brake.

Before uncoupling, always secure the Cirrus by applying 4 chocks (Fig. 136), each 2 chocks on both machine sides underneath the outer wheels of the wedge ring roller.

The Cirrus can be coupled or uncoupled when folded in or out (except for Cirrus 3000). In both cases the Cirrus rests on all tyres of the wedge ring roller.



Fig. 136



Danger!

When uncoupled from the tractor always secure the Cirrus with 4 chocks (Fig. 136) as the Cirrus is not provided with a parking brake.



Important!

When coupling vehicles always use the intended devices in the appropriate way.



Danger!

Allow nobody to stand between tractor and implement while the tractor backs up for coupling or uncoupling the machine.

Any assistants may only act as lookout at the side of tractor and machine.

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

Observe chapter 2.19.4 (towed implements)!



Caution!

Only create machine connections when tractor and machine are coupled, with the tractor engine switched off, the parking brake applied and the ignition key removed.

Only couple the supply hose (red) of the brake on to the tractor when the tractor engine has been switched off, the parking brake has been applied and the ignition key has been removed.

**Warning!**

When the Cirrus has been uncoupled from the tractor and when it is parked with filled compressed air reservoir, the compressed 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.

When the compressed air reservoir is filled the brakes are immediately relieved when the supply tube (red) is connected with the tractor. For this reason the Cirrus should be connected to the tractor lower link arms and the parking brake of the tractor should be applied before connecting the supply tube (red). In addition the chocks may only be removed when the Cirrus has been connected with 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 on to the tractor:

1. Ensure that the Cirrus has been secured by 4 chocks.
2. The pins (Kat. III, Fig. 137/1) of the lower link pivoting pendulums, secured by circlips, should be provided with catching balls depending on the tractor type (see operator's manual for the tractor).
3. Open the tractor lower link safety device, i.e. it should be ready for coupling.
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. 138/1) gets free from the ground.
8. Remove locking pins (Fig. 138/2).
9. Slide jack upwards and secure by using locking pins.
10. Secure locking pins using the circlip (Fig. 138/3).



Fig. 137

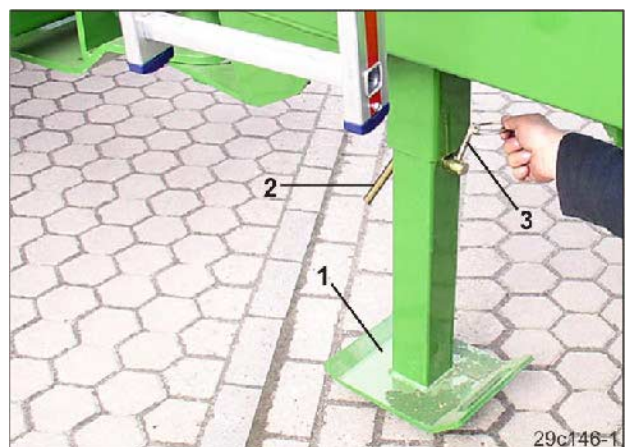


Fig. 138



The supply tubing of the machine are identified (Fig. 139/1). The plugs of the supply tubings are deposited in retainers (Fig. 139/2).

11. Create the hydraulic connections according to chapter 7.1.1.1.
12. Create the hydraulic blower fan drive according to chapter 7.1.1.2.
13. Create the electric power supply connections according to chapter 7.1.1.3.
14. Create the air pressure connection of the brake system according to chapter 7.1.1.4.



Fig. 139



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. Prior to the first operation in the field drain the compressed air reservoir (see chapter 10.4.1).
16. Check brake system and traffic light kit for proper function.
17. Deposit the chocks in the retainers and secure by using spring tensioners (Fig. 140/1).
18. Before transport carry out a brake test.



Fig. 140

7.1.1.1 Creating hydraulic connections

Creating hydraulic connections:

- (Fig. 141) and (Fig. 142) show the writing on the hydraulic hose lines, the required tractor control spool valves and the hydraulic machine functions related to every control unit.

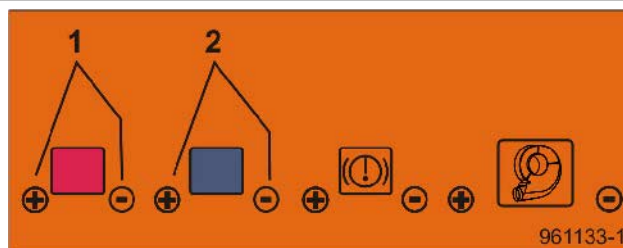


Fig. 141

Hydraulic hose (Fig. 141)	Connection on the tractor control unit	Execution of the tractor control spool valve	Hydraulic functions on the machine
1(+)	Control unit 1 flow	double acting control spool valve	- Folding down the machine wing
1(-)	Control unit 1 return flow		- Adjustment of disc gangs
2(+)	Control unit 2 flow	double acting control spool valve	- Adjustment of wheel mark eradicators
2(-)	Control unit 2 return flow		- Adjustment of extra coverage following harrow pressure.
			- Machine lifting / lowering
			- Starwheel lowering / lifting
			- Track marker lowering / lifting
			- Coulter frame lowering / lifting.

Fig. 142



Hint!

During operation the control unit 2 is actuated more than all other control units. Connect the joints of the control unit 2 to a control spool valve which can easily be reached in the tractor cab.

7.1.1.2 Connection of the hydraulic blower fan drive

Connection of the hydraulic blower fan drive:

- The machine's hydraulic hoses for the hydraulic blower fan drive are identified as shown in figure (Fig. 143) and should be connected to the tractor as described in (Fig. 144) .



Important!

Observe the fitting instructions for the connection of the hydraulic blower fan drive in chapter 6.2!

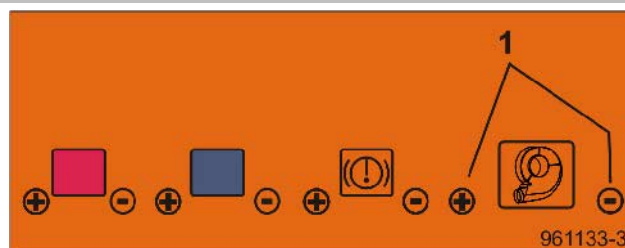


Fig. 143

Hydraulic hose (Fig. 143)	Connection on the tractor control unit	Execution of the tractor control spool valve	Hydraulic functions on the machine
1(+)	Control unit 3 Pressure hose with priority for the flow	single acting or double acting control spool valve	hydraulic blower fan connection
1(-)	Control unit 3 hose w.o. pressure for the return flow		

Fig. 144

7.1.1.3 Creating electric supply connections

Creating electric supply connections:

- As illustrated in figure (Fig. 145) the plugs of the machine's electric cables are identified and should be connected with the tractor as described in table (Fig. 146).

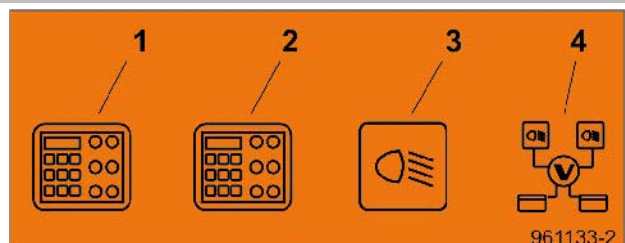


Fig. 145

Fig. 145/...	Connection / Function	Hint for mounting
1	Machine plug of AMATRON⁺	Connect the plug on the terminal as described in the operator's manual for the AMATRON⁺ .
2	-	
3	-	
4	plug (9 channel) for road traffic light kit	

Fig. 146

7.1.1.4 Connection of the brake system

Connection of the brake system:

- The air pressure hoses for the brake system are identified as illustrated in figure (Fig. 147) and should be connected with the tractor as described in table (Fig. 148).

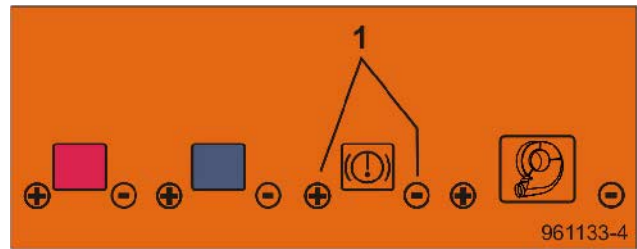


Fig. 147

Air pressure hose (Fig. 147/...)	Tractor connection	Colour of coupling heads	Connection
1 (+)	Brake line	yellow	air brake system
1 (-)	Supply line	red	

Fig. 148



Important!

First couple the yellow coupling head (brake) 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 had 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.

7.2 Uncoupling the machine

Uncoupling the machine:

1. Align tractor and implement on level ground and stop.
2. Lock the star wheel (see chapter 7.7)
3. Retract the integrated running gear. Now Cirrus rests on all tyres of the integrated wedge ring roller.
4. Press key (Fig. 149/1) (switch off **AMATRON+**).
5. Stop tractor engine, apply the parking brake and remove the ignition key.

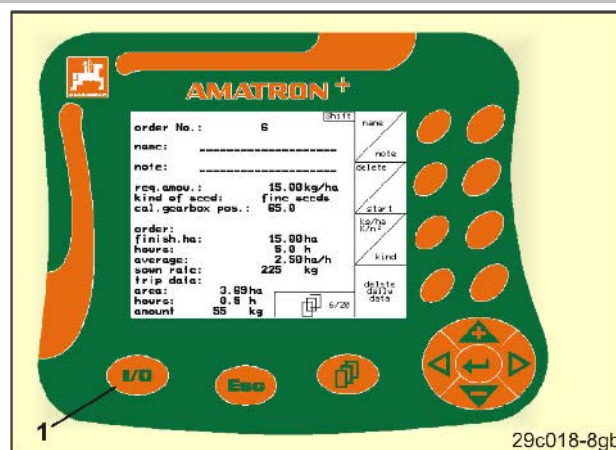


Fig. 149

6. Slacken spring pins (Fig. 150/1) and take the 4 chocks out of their retainers at the front of the machine.



Fig. 150

7. Secure the Cirrus on both sides of the machine by applying each 2 chocks (Fig. 151) 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. 151

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. Affix all supply lines according to their identification (Fig. 152/1) in the retainer (Fig. 152/2).



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. 152

11. Hold the jack (Fig. 153/1) and remove the locking pin (Fig. 153/2).
12. Lower the jack and secure with the locking pin.
13. Secure the locking pin by using the clip pin (Fig. 153/3).



Fig. 153

14. Park the Cirrus on the jack.



Only park the machine on level, firm ground.

Warning! 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. 154

15. Open the securing device (Fig. 155) 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.

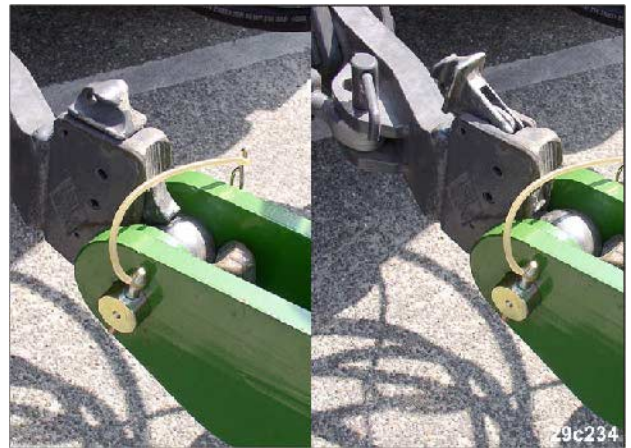


Fig. 155

7.2.1 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. 156



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.



Fig. 157

7.2.1.1 Folding down the machine wings

Folding down the machine wings:

- Release the parking brake and remove your foot from the brake pedal.
Never leave the tractor cab with the parking brake released.
- Actuate control unit 2 until the machine has been fully lifted (see Fig. 158).
Otherwise the operational tools will get damaged during the folding procedure.
- Apply parking brake.



Fig. 158

- Recall operation menu in **AMATRON+**.
- Press shift key
(key on the rear side of the **AMATRON+**)
- Press key  (Fig. 159/1) until the symbol (Fig. 159/2) appears.
- Lock the star wheel (see operator's manual for **AMATRON+**).
The function star wheel is locked when the symbol (Fig. 159/3) is shown in the operation menu.
- Switch off Low-Lift-function (see operator's manual for **AMATRON+**).
The Low-Lift-function is switched off when the symbol (Fig. 159/4) is not shown in the operation menu.

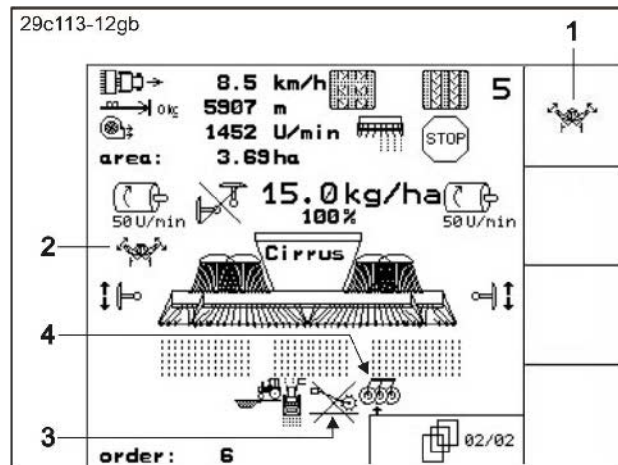


Fig. 159

- Actuate control unit 1 until the machine wings have been folded down.
- Actuate control unit 1 for another 3 sec. to fill the hydr. reservoir (Fig. 237) with hydraulic oil.



Fig. 160



Hint!

The locking hooks (Fig. 161/1) open automatically before the machine wings are folded down.

In case, the catching hooks (Fig. 161/1) do not open, briefly set the control unit 1 to "folding in" and then again to "folding down".



Fig. 161

- Actuate control unit 2 to lower the machine down into work



Fig. 162

7.2.1.2 Folding in machine wings

Folding in machine wings:

- Release the parking brake and remove your foot from the brake pedal.
Never leave the tractor cab with the parking brake is released.
- Actuate control unit 2 until the machine has been fully lifted (see Fig. 163).
Otherwise the operational tools will be damaged during the folding procedure.
- Apply the parking brake.



Fig. 163

- Recall the operation menu in **AMATRON+**.
- Press shift-Taste (key on the rear of **AMATRON+**)
- Press key  (Fig. 164/1) until the symbol (Fig. 164/2) appears.
- Lock the star wheel (see operator's manual for **AMATRON+**).
The function star wheel is locked when the symbol (Fig. 164/3) is shown in the operation menu.
- Switch off Low-Lift-function (see operator manual **AMATRON+**).
The Low-Lift-function is switched off when the symbol (Fig. 164/4) is not shown in the operation menu.

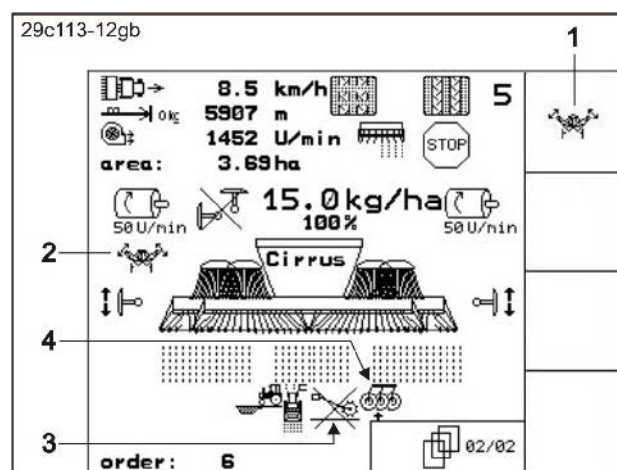


Fig. 164

- Actuate control unit 1 until the machine wings have fully been folded in.



Fig. 165

The locking hooks (Fig. 166/1) act as a mechanical transport locking and catch on the locking journals (Fig. 166/2).



Danger!

Ensure that the latches (Fig. 166/1) have caught properly after having folded in the wings.



Fig. 166

- Actuate control unit 2 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. 167

7.3 Removal of the traffic safety board

Remove the transport safety board (Fig. 168/1):

- Slacken the lynch pin (Fig. 168/2) and deposit the transport safety board at the side of the field.



Fig. 168

7.4 Filling the seed hopper

Filling the seed hopper:

- couple the Cirrus on to the tractor (see chapter 7.1).
- Determine the metering wheel(s) according to table (Fig. 78) and fit.



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.

1. Hold the stair step and remove the lynch pin (Fig. 169/1).



Caution!

Danger of squeezing when lowering the stair step.

2. Lower the stair step.



Fig. 169

3. Climb onto the stair step and slacken the rubber loops (Fig. 170/1).

The hopper cover is secured by rubber loops against unintended opening when the machine is moving.



Fig. 170

4. Take the ladder out of the catch (Fig. 171/1) and lower until the stop.



Fig. 171

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



Fig. 172

9. Fill the seed hopper from a supply vehicle.



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. 173

10. 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. 174

11. Closing the swivellable hopper cover.
12. Secure the swivellable hopper cover against unintended opening using rubber loops (Fig. 175/1).
13. Slide upwards the stair step and secure using a lynch pin (Fig. 169/1).
14. Pull up the ladder (Fig. 171) and lock.



Fig. 175



Important!

After any operation or before transport pull up the ladder (Fig. 176) and the stair step (Fig. 169) and secure. In this way you avoid damage on ladder or stair step. The draw bar could damage the lowered ladder when turning the machine.



Fig. 176

7.4.1 Input of filling quantity into the **AMATRON+**

Input of filling quantities into **AMATRON+**:

- Open page 2 (Fig. 177) in the menu machine data.

-  Input of the actual filling level (kg) in the hopper.
-  Input of the refilled quantity (kg).
-  Input of the residual amount (kg) in the seed hopper at which the filling level alarm should be triggered.

AMATRON+ triggers the alarm when

- the theoretically calculated residual amount has been reached or
- the filling level sensor is no longer covered by seed.

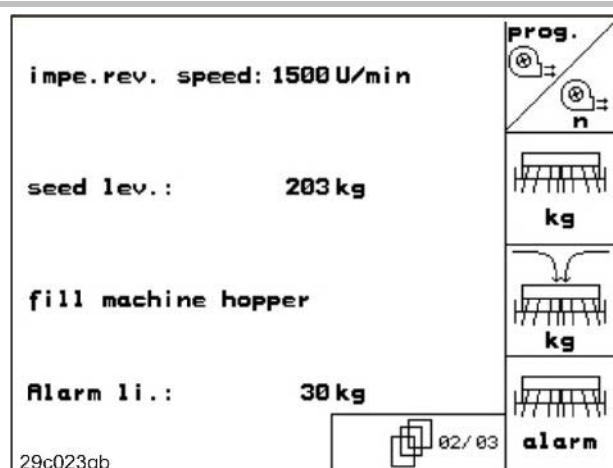


Fig. 177

7.5 Lowering the pre emergence marker into working position

For transport both track marker carriers are affixed in the retainers with the aid of pins (Fig. 175/1).



Caution

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

Lowering the pre-emergence marker into working position:

- Hold the track marker carrier.
- Slacken the split pin (Fig. 175/2) and remove the pin (Fig. 175/1).
- Manually lower the track marker carrier.
- Repeat this procedure for the second track marker carrier.



Fig. 178



Fig. 179

7.6 Starting the operation

When starting the operation

- Set the machine at the beginning of the field to its operational position.
- Actuate control unit 2
 - lowering machine
 - lowering star wheel
 - lowering track marker
 - lowering coulter frame.
- Check the tramline rhythm.
- Check the tramline counter, re-adjust if necessary.
- Check blower fan rev. speed, re-adjust if necessary.

Check after the first 30 m, re-adjust if found necessary

- working intensity of the disc harrow.
- placement depth of the seed.
- working intensity of the extra coverage following harrow.



Important!

Only actuate the tractor control units within the tractor cab.



Hint!

Prior to any operation check whether the correct tramline counter is indicated for the first bout in the field.



Hint!

Dressed seed is very poisonous for birds.

Therefore, only sow dressed seed into a fine crumbled seed bed, never into cloddy and stony soil. The seed should be completely incorporated and covered with soil. .

When lifting the coulters avoid a trickling of seed.

Immediately remove spilled seed.

7.7 Locking the star wheel and actuating the STOP-key when the operation is stopped



Hint!

When the operation is stopped and the machine lifted lock the star wheel in raised position (see below) and activate the STOP key (see operator's manual for **AMATRON⁺**), so that the tramline counter stops counting.

When actuating the control unit 2 the machine, the track markers and the coulter frame are lifted / lowered without the tramline counter continuing to count.

To lock the star wheel actuation

- recall the operation menu in **AMATRON⁺**.
- Press key  (Fig. 180/1) until the symbol (Fig. 180/2) appears.

The star wheel actuation is locked when the symbol (Fig. 180/2) is shown in the operation manual.

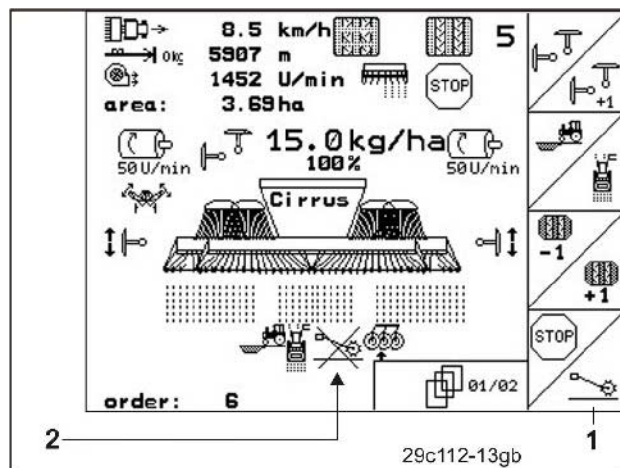


Fig. 180

7.8 Locking the track marker actuation



Hint!

When actuating the control unit 2 the machine, the star wheel, the track markers and the coulter frame are lifted / lowered.

To lock the track marker actuation

- recall the operation menu in **AMATRON⁺**.
- Press key  (Fig. 181/1) until the symbol (Fig. 181/2) appears.

The star wheel actuation is locked when the symbol (Fig. 181/2) is shown in the operation menu.

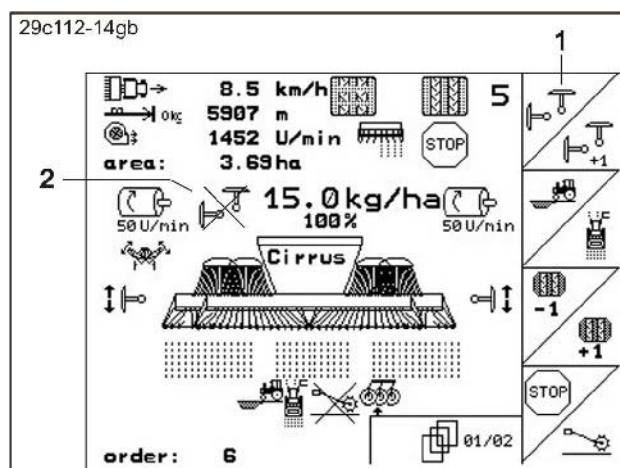


Fig. 181

7.9 Folding in track markers at obstacles

Fold in the track markers at obstacles to avoid damage on the track marker when hitting the obstacle. For this

- recall the operation menu in **AMATRON+**.
- press key  (Fig. 182/1) to prevent the machine and the star wheel from being lifted when the track marker is lifted. In this case, areas would not be sown. The symbol (Fig. 182/2) appears in the operational menu.
- set the control unit 2 to "lifting". The track marker folds in like when turning at the headlands.
- set the control unit 2 to "lowering, after having passed the obstacle. The earlier folded in track marker will fold down again.
- press key  (Fig. 182/1) to switch off the function. The symbol (Fig. 182/2) disappears in the operation menu.

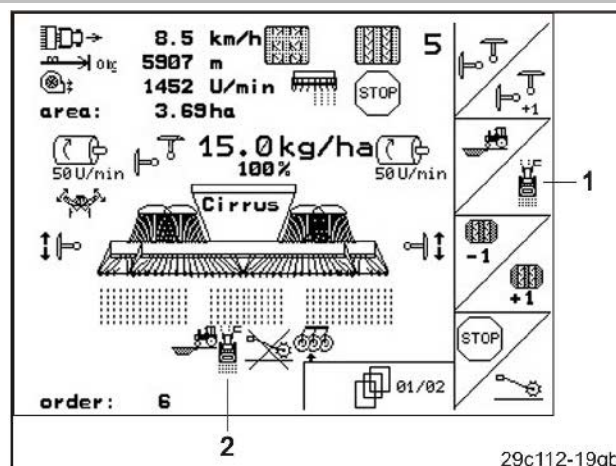


Fig. 182

7.10 Visual inspection of the distributor heads



Important!

From time to time check the distributor head(s) for pollution from the tractor seat.

Dirt and seed residue could block the distributor heads. Remove them immediately. (see chapter 10.6).

7.11 Sowing in difficult soil conditions

Mud holes can be passed and sown by lifting the machine with the aid of the integrated running gear. In this way, track markers, star wheel and coulter frame remain in the working position. For this

- recall the operation menu in **AMATRON+**.
- press key  (Fig. 183/1). The symbol (Fig. 182/2) appears in the operation menu.
- lift the machine with the aid of control unit 2 without lifting the machine out of the soil.
- set the control unit 2 to "lowering" after the mud hole has been passed. The integrated running gear is retracted.
- press key  (Fig. 183/1) to switch off the function. The symbol (Fig. 183/2) disappears in the operation menu.

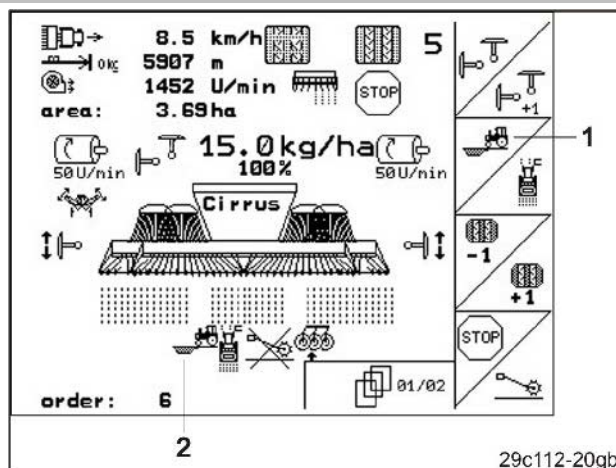


Fig. 183

7.12 Turning at the headlands

Before turning at the headlands

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



Fig. 184



Hint!

When actuating the control unit 2

- the machine is lifted with the aid of the integrated running gear.
- the lifting of the coulters frame is locked with the Low-Lift function switched on. Only activate the Low-Lift function when it is ensured that the coulters will not touch the ground when turning.
- the star wheel is lifted and the tramline control shifts on.
- the track markers are folded in.

After turning

- actuate control unit 2 and
- start driving in the field.



Hint!

When actuating control unit 2

- the machine and the coulters frame are lowered
- the opposite track marker is lowered into work
- the star wheel is set into operational position depending on the pre-selection in **AMATRON⁺**.

7.13 Emptying the metering unit or seed hopper and metering unit



Caution!

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

When emptying the metering units or the seed hopper and the metering units

- Attach the seed collecting tray underneath the metering unit(s).



Fig. 185

- Close the outlet opening between seed hopper and metering unit when it is intended to empty only the metering unit and not the seed hopper.

The outlet opening is opened when the shutter – as shown in figure (Fig. 186/1) has been pulled out of the metering unit.



Fig. 186



Hint!

The outlet opening is closed when the shutter – as shown in figure (Fig. 187) is pushed into the metering unit.

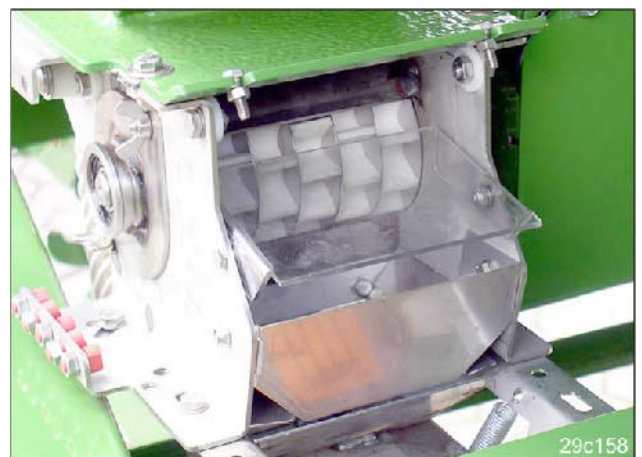


Fig. 187

- Open the injector sluice flap (Fig. 188/1) to allow the seed to flow into the seed collection trays.



Danger!

Danger of squeezing when the injector sluice flap (Fig. 188/1) is opened or closed!

Only hold the injector sluice flap on its strap (Fig. 188/1). Otherwise danger of injury when the sprung loaded flap will bang.

Never hold your hand between injector sluice flap (Fig. 188/1) and injector sluice!



Fig. 188

- Turn the handle (Fig. 189/1) to open residue emptying flap (Fig. 189/2).

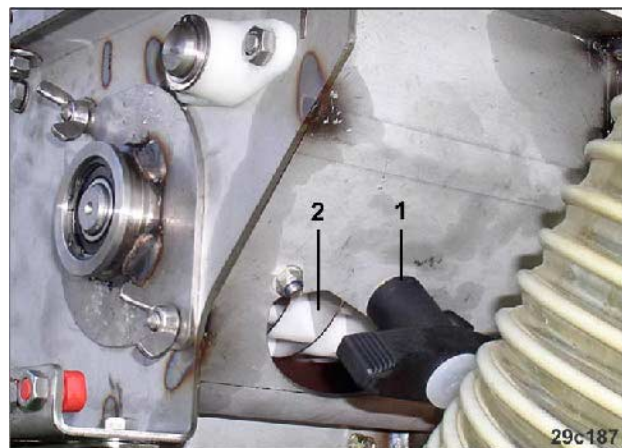


Fig. 189

- In the same way as for the calibration test, turn the star wheel (Fig. 190) to the left until the metering wheels and the metering units are completely empty.

For full metering, briefly run the electric motor.

- For the complete cleaning when changing the seed type, remove the metering wheels (see chapter 5.1.2) and clean together with the metering unit.
- Close the residue emptying flap (Fig. 189/2) and affix the empty seed collecting tray on the seed hopper.



Fig. 190



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.

7.14 Finishing operation in the field

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

- Switch off blower fan.
- Lift disc harrow.
- Empty the seed hopper according to chapter 7.13.
- If it is intended to prevent the tramline counter from shifting on when the machine is raised, first press the STOP key .
- Actuate control unit 2
- Lift the machine
 - Lift the star wheel
 - Lift the track marker
 - Lift the coulter frame (with the Low-Lift-Function switched off).
- If it is intended to lower the machine with its wings folded in, lock the star wheel (see chapter 7.7), to prevent the star wheel from an unintended lowering which would result in an undesired shifting on of the tramline counter.
- Fold in the Cirrus 4000/6000 according to chapter 7.2.1.



Important!

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

8. Malfunction

8.1 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. 191) 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
level too low		29c214gb

Fig. 191

8.2 Fault in the metering system

If the metering wheel is blocked due to foreign particles in the metering unit, a plastic bolt (Fig. 192/1) shears off and the drive is stopped to avoid any damage.

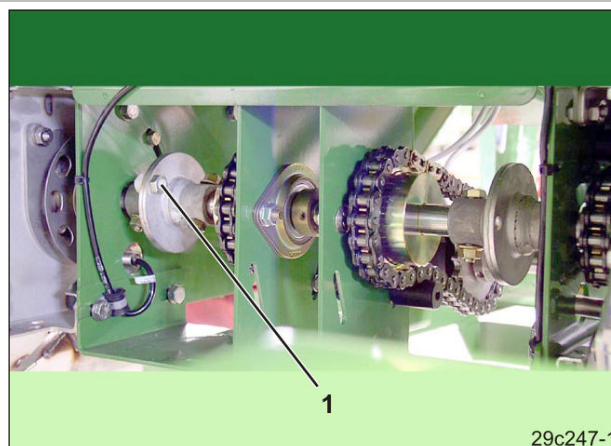


Fig. 192

When a metering wheel is stopped a warning alarm (Fig. 193) appears in the display of **AMATRON+** and an audible alarm sounds.

machine type:	Cirrus	Order
requir. impeller rev. speed cannot be maintained		drill calibr.
		machine
		Setup
confirm with enter key or page to aid		29c215gb
working menu	aid	

Fig. 193

After a malfunction has been noted:

- Stop the combination.
- Press the stop-key  to prevent the tramline counter from shifting on (see operator's manual for **AMATRON⁺**).
- Switch off the tractor engine, apply the parking brake and remove the ignition key.
- Remedy the reason for the malfunction.
- Take the spare shear bolt out of its retainer. You will find the spare shear bolts (Fig. 194/1) in the retainer on the metering unit. To ensure a proper function, only use plastic shear bolts M8 (see online spare parts list).
- Re-install the drive with the spare shear bolt.



Fig. 194

8.3 Failure of **AMATRON⁺** during operation

For all hydraulic functions, Cirrus only requires three tractor control spool valves.

For this reason, one tractor control spool valve is used for several hydraulic functions.

Prior to this select the hydraulic function in the **AMATRON⁺**.

The electric/hydraulic control block (Fig. 195) regulates and controls the teamwork of tractor- and machine hydraulics.

The electric/hydraulic control block (Fig. 195) is provided with a guard which should only be removed in case of repair. In figure (Fig. 195) the guard has been removed.

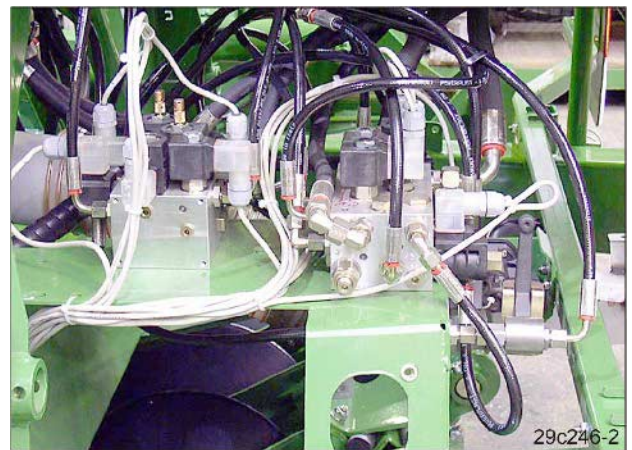


Fig. 195

In case a failure of **AMATRON⁺** is noted during operation in the field, the sowing operation can be continued without track markers and without tramline system in an emergency mode.

To get the machine into the transport position and to carry out the transport into the nearest specialist workshop proceed as follows

- remove the guards of the electric/hydraulic control block (Fig. 196)
- pull two valve rods (Fig. 196/1) out of the valves and twist by 45 degree for locking.

Before transport check whether the locking hooks (Fig. 166) properly lock the machine wings.

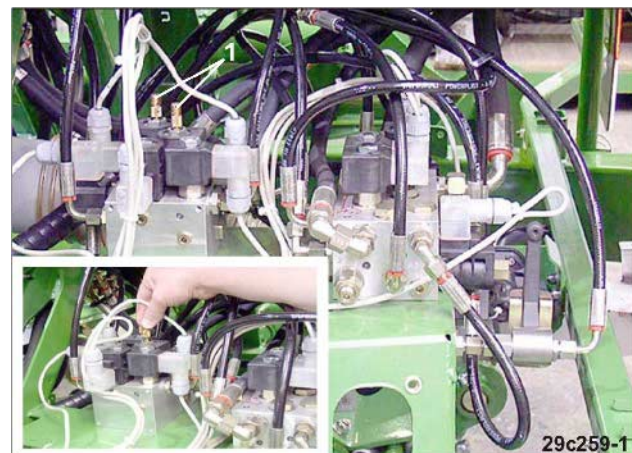


Fig. 196



Danger!

Only create the emergency mode for folding in case of a failure of **AMATRON+**!

In case of emergency mode

- immediately see the nearest specialised workshop!
- ensure before transport that the locking hooks (Fig. 166) properly lock the machine wings!
- only actuate the hydraulic control spool valves within the tractor cab. hydr.
- before actuating the hydraulic control spool valves, advise people to leave the danger area.

8.4 Deviations between the adjusted 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.

9. Transport on public roads

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 according to chapter 7.13 .



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. 197

2. Stop tractor engine, apply parking brake and remove ignition key.
3. Close the hopper cover and secure by using the rubber loops (Fig. 198/1) against unintended opening whilst travelling.



Caution!

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



Fig. 198

4. Slide stair step upwards and secure using a clip pin (Fig. 169/1).



Danger of squeezing when raising the stair step!

Caution



Important

After any use and before transport and commencing operation push up the stair step (Fig. 199) and secure. This will help to avoid any damage on the stair step.



Fig. 199

5. Raise the ladder and affix on the securing device (Fig. 200/1) .



Important!

After any use and before transport and commencing operation push up the stair step (Fig. 200) and secure. This will help to avoid any damage on the stair step



Fig. 200

6. Lock both track marker carriers (Fig. 201/1) and secure on the transport brackets (Fig. 201/2) of the pre emergence marker by using pins (Fig. 201/3) and clip pins (Fig. 201/4).
7. Pull the marker discs (Fig. 201/5) out of the marker disc carriers (Fig. 201/1) and carry them along in a suited compartment. Prior to this slacken the fixing bolts (Fig. 201/6).

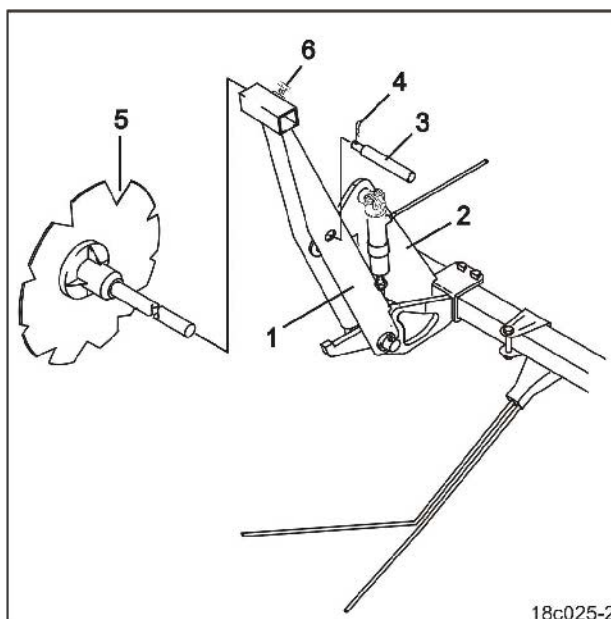


Fig. 201

8. Remove both outer harrow elements and carry them along in a suited compartment.
To do this:
- slacken the spring (Fig. 202/1)



Fig. 202

- Slacken fixing bolt (Fig. 203/1)
- Pull out the outer harrow element (Fig. 203/2).

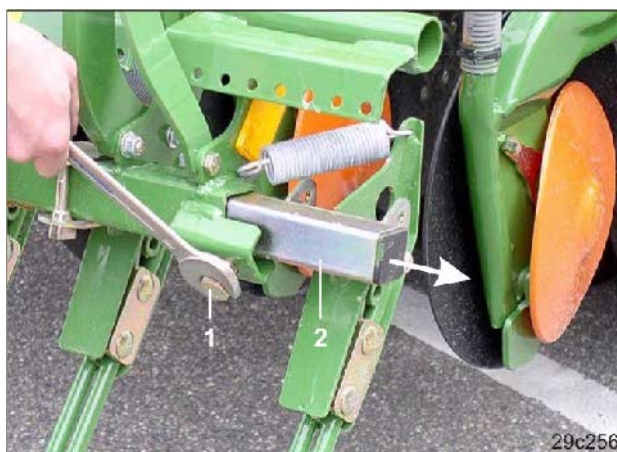


Fig. 203

9. Cover the tines of the extra coverage following harrow in facing to the rear by using the traffic safety board (Fig. 204/1).



Fig. 204

To do this:

- Slide the traffic safety board (Fig. 205/1) over the tine tips of the extra coverage following harrow.
- Hook the carrying arms into the two straps (Fig. 205/2) on the extra coverage following harrow.
- Secure the connection with the straps (Fig. 205/2) by using clip pins.



Fig. 205

Only for Cirrus 3000:

10. During transport on public roads carry along the side discs (Fig. 206/1) on the transport bracket.



Danger

Affix the side discs (Fig. 206/1) on the transport bracket.



Fig. 206

only Cirrus 3000:

- Move the side discs up to the last hole in the transport bracket, lock and secure by using (Fig. 207/1) and clip pins (Fig. 207/2).

**Fig. 207**

only Cirrus 3000:

10. Shut the two hydraulic taps (Fig. 208/2).

Hint:

The hydraulic taps are positioned on the right and left hand side of the machine (see arrow).

Every hydraulic tap features two positions:

- Hydraulic tap open (see Fig. 208/1)
- Hydraulic tap closed (see Fig. 208/2).

When the hydraulic taps are closed the oil supply for the hydraulic rams of the track markers (Fig. 208/3) is stopped.

Unintended swinging of the track markers during transport is avoided.

During transport the track markers are located close to the machine frame.



Fig. 208

all types, except for Cirrus 3000:

11. Fold in machine wing according to chapter 7.2.1 so that the permissible transport width of 3 m will not be exceeded.



Fig. 209

all types:

12. The **AMATRON⁺** remains switched on.



Important

Shut the tractor control spool valves during transport.

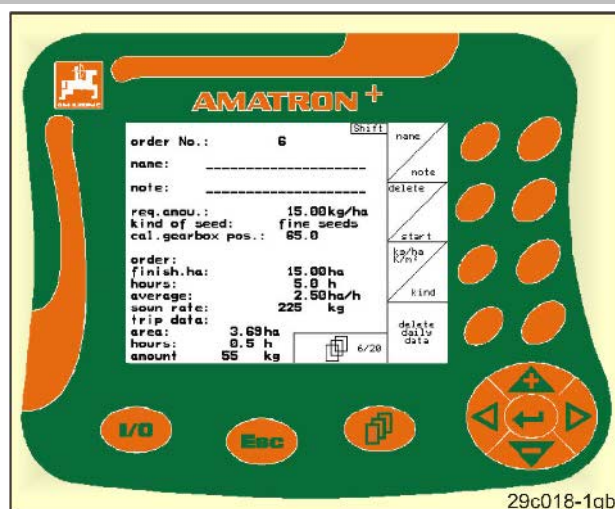


Fig. 210

The Cirrus, being a trailed implement, should be provided with

- two rear traffic lights (Fig. 211/1)
- two stop lamps (Fig. 211/2)
- two indicators (Fig. 211/3, in case the tractor's indicators are hidden)
- two red reflectors (Fig. 211/4, round, square or triangle shape)
- one license plate with light (Fig. 211/5, in case the tractor license plate is hidden)
- two warning plates facing to the rear (Fig. 211/6)



Fig. 211

- two limiting lights facing to the front (Fig. 212/1)
- two warning plates facing to the front (Fig. 212/2)
- lateral reflectors, yellow (Fig. 212/3)

Check the traffic light kit for proper function.

The warning plates should be clean and must not be damaged.



Fig. 212

The maximum spacing of the four yellow reflectors, attached to every machine side (Fig. 213/1) must not exceed 3 m.

Keep the yellow reflectors clean. They must not be damaged.

Replace damaged or missing reflectors.



Fig. 213



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 6.1).

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. Maintenance, repair and care work

10.1 Check list for maintenance and care



Important

Before carrying out any maintenance and care work, read and adhere to chapter 2.19.7!

Daily after having finished work

- Remove all seed residue according to chapter 7.13 from all metering units and clean the metering units.
- Remove all seed residue according to chapter 10.6 from all distributor heads, clean distributor heads.



Important

Remove seed residues!

Swollen or germinating seed residue inside the metering units and distributor heads would affect the seed rate or cause blockage of the metering wheels resulting in damage of the metering wheels.

If required (after the season at the latest)

- Empty and clean the seed hopper and metering unit according to chapter 7.13.
- Remove all seed residue according to chapter 10.6 from all distributor heads. Clean distributor heads.
- Clean the machine with a jet of water or by using a high pressure cleaner.



Danger

Wear a protective mask when removing dressing agent dust by using a high pressure cleaner.

Do not inhale the poisonous seed dressing dusts.

Every ½-year (after the season)

- Clean roller chain (Fig. 214/1), check for function and grease with appropriate lubricant (recommendation for lubricant on request).

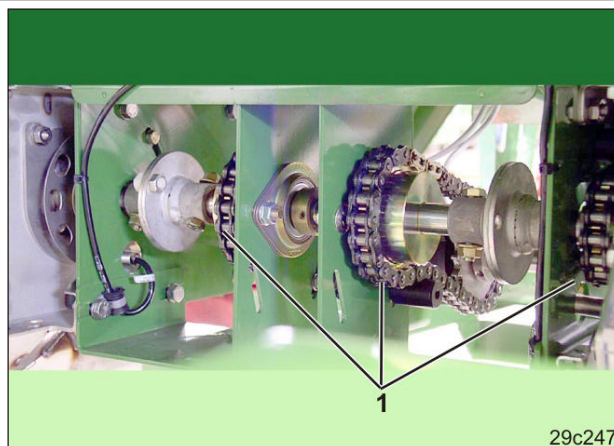


Fig. 214



after the first 10 hours of operation

- retighten bolts.
for bolt torques see table (Fig. 215).

Thread	Spanner width	Torque (Nm) in relation to the grade of bolts' / nuts		
		8.8	10.9	12.9
M 8	13	25	35	41
M 8x1	13	27	38	41
M 10	17	49	69	83
M 10x1	17	52	73	88
M 12	19	86	120	145
M 12x1,5	19	90	125	50
M 14	22	135	190	230
M 14x1,5	22	150	210	250
M 16	24	210	300	355
M 16x1,5	24	225	315	380
M 18	27	290	405	485
M 18x1,5	27	325	460	550
M 20	30	410	580	690
M 20x1,5	30	460	640	770
M 22	32	550	780	930
M 22x1,5	32	610	860	1050
M 24	36	710	1000	1200
M 24x2	36	780	1100	1300
M 27	41	050	1500	1800
M 27x2	41	1150	1600	1950
M 30	46	1450	2000	2400
M 30x2	46	1600	2250	2700

Fig. 215

after 50 hours of operation

- Check tyre pressure. The tyre pressure is 2,5 bar.
- Check the oil level inside the Vario gearbox (see Fig. 216). Oil change not necessary.
- Grease all lubrication points according to the lubrication point review (chapter 10.1.1)

Checking oil level in the Vario gearbox

- Park the machine on level ground
- The oil level must be visible in the oil gauge window (Fig. 216/1) of the Vario gearbox.

When the oil level is not visible in the oil gauge window of the Vario gearbox, check the Vario gearbox for leakage.

The leaking Vario gearbox should be repaired in a professional workshop.

Top up missing oil following table (Fig. 217).

After filling cover the filler neck with the dust cap (Fig. 216/2).

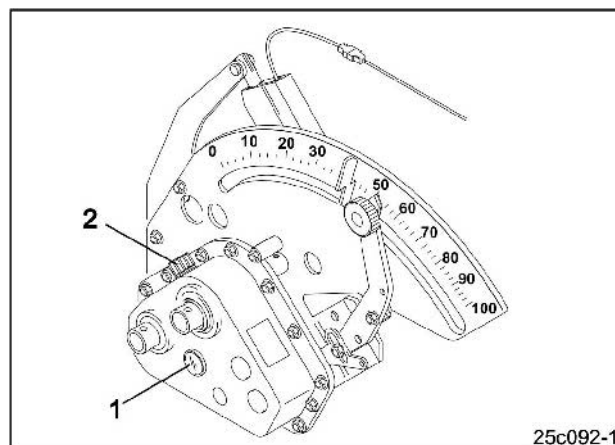


Fig. 216

Filling quantity and hydraulic oil type for the Vario gearbox

Total filling quantity	0,9 litre
Gear oil	Wintershall Wintal UG22 WTL-HM
at random:	
Gear oil	Fuchs Renolin MR5 VG22

Fig. 217

10.1.1 Overview – lubricating points

The lubrication points on the machine are identified with the foil (Fig. 218). The number of lubricating points is for

- Cirrus 3000: 36 lubricating points
- Cirrus 4000: 52 lubricating points
- Cirrus 6000: 52 lubricating points.

Only use lithium saponified multipurpose grease with EP additives (see chapter 10.1.1.1).

Prior to the greasing procedure, carefully clean grease nipples and grease gun to prevent dirt from getting into the bearings. Carefully remove the dirty grease from the bearings and replace by new grease.

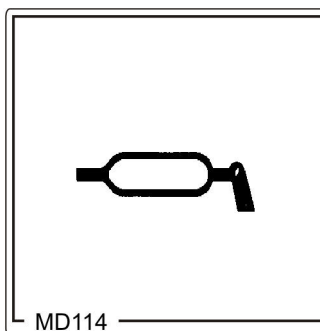


Fig. 218

10.1.1.1 Lubricants

Manufacturer	Manufacturer's term
ARAL	Aralub HL2
FINA	Marson L2
ESSO	Beacon 2
SHELL	Ratinax A

Fig. 219

Only use lithium saponified multipurpose grease with EP additives.

10.2 Hydraulic system



Danger!

Only allow qualified personnel to carry out any repair work on the hydraulic system.

The hydraulic system is under high pressure.

Use suitable tools when searching for leaks.

Before commencing work on the hydraulic system, depressurise the hydraulic system. -

Fluids (hydraulic oil) escaping under high pressure may penetrate the skin and cause severe injury.

In the event of injury call for a doctor immediately. Danger of infection.

When connecting the hydraulic hoses to the tractor hydraulic system ensure that the hydraulics on the tractor and implement side are at zero pressure.

Hydraulic hoses should be checked by a skilled person for their operational safe condition, i.e.

- prior to the initial operation of the machine
- at least once a year

Dispose of used oil as prescribed. In case of difficulties at the disposal, contact your oil supplier.

Ensure that no hydraulic oil will get into the soil or into water

Ensure a childproof storage of the hydraulic oil.



Important!

Ensure the correct connection of the hydraulic hoses.

Regularly check all hydraulic hoses and couplings for damage and pollution.

In case of damage or ageing replace the hydraulic hoses.

The hydraulic hoses used for replacement should correspond to our technical demands.

The service life of the hose assemblies should not exceed six years including a possible storage period of max. 2 years. Even during proper storage and permissible stress, hoses and hose connections are subject to natural ageing which limits their storage and service life. By way of exception, the service life may be determined according to empirical values taking into account the risk of danger. Other standard values may be applied to hoses and hose connections made of thermoplastic material.

10.2.1 Description of the hydraulic hose assemblies

Fig. 220/...	Hose description	Identification examples
1	Name of manufacturer/supplier	HANSA-FLEX
2	Hydraulic hose standard	EN853
3	Hose type	2SN
4	max. permissibly dynamic system pressure	330 bar
5	Date of manufacture - hose	4Q03 = 4. quarter 2003

Fig. 221/...	Chest description	Identification examples
1	Name of the manufacturer/supplier	A1HF
2	Date of manufacture hydraulic hose assemblies	02 04 = February, 2004
3	Maximum permissible system pressure	330 bar

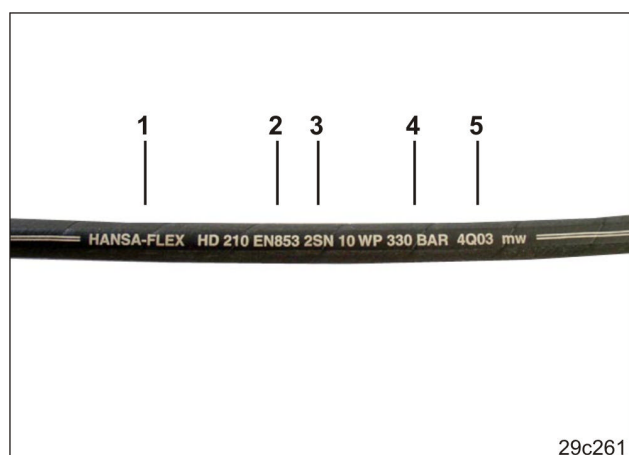


Fig. 220

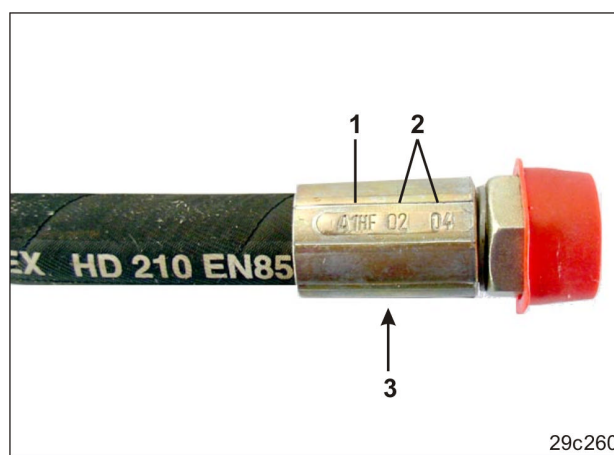


Fig. 221

10.2.2 Checking and maintenance intervals for the hydraulic hose assemblies (workshop job)

- prior to the initial operation
- after the first 10 hours of operation
- every 50 hours of operation (at least 1/2 a year)

Check the hydraulic hose assemblies, e.g.

- check all parts of the hydraulic system for leakages
- Retighten bolt connections to remedy leakages.
- Check hydraulic hoses for damage (kinks, cuts and abrasion)
- Check whether the hose casing is brittle
- Check hoses for deformation (bubbles, buckling, squeezing, separation of layers)
- Check the appropriate fitting of the hoses
- Check the hose for firm seating in the fitting
- Check connecting fitting for damage and deformation
- Check for corrosion between connecting chest and hose
- Do not exceed the permissible period of use

Replace the hydraulic hose assembly after a use of max. 6 years (including a possible storing period of 2 years maximum).



Important!

Remedy any faults immediately when noted.

The maintenance of the checking intervals should be recorded by the operator.

Also during operation check hose casings of the hydraulic hose assemblies for damage (kinks, cuts, abrasion).

Replace the hydraulic hose assembly after a use of max. 6 years (including a possible storing period of 2 years maximum).

**Replace hydraulic hoses when the following inspection criteria are noted:**

- Damage on the casing down to the lining (e.g. abrasion, cuts and kinks)
- Brittle hose casing (cuts in the hose casing)
- Deformations which do correspond to the ordinary shape of the hose or the hose assembly. Both with the hoses pressure less but also under pressure or when bended (e.g. separation of layers, bubbles, squeezing, buckling).
- Leakages
- Damage or deformation of the hose fitting (no proper tightness).
- Escaping of hose from the fitting
- Corrosion of the fitting which affect the function and strength
- The requirements on the installation have not been adhered to
- The period of use of 6 years is exceeded

Decisive is the date of manufacture on the fitting (see chapter 10.2.1) for the hydraulic hose assembly plus 6 years. When the date of manufacture on the fitting is indicated with "02.02" the period of use will end in February, 2008.

**Hint!****Observe when mounting or dismounting hydraulic hoses:**

- Affix the hydraulic hoses only on the fixing points given by the manufacturer
- Always ensure that the hydraulic parts and connections are clean
- Fit the hoses in such a way that their natural placement and movement are not hindered
- During operation the hoses should not be under tension, twisted or strained by external forces.
- The permissible bending radius must be observed.
- Never paint the hoses.

**Hint!****Installation of hose fittings with O-ring sealing and clamping nut**

First tighten the clamping nut by hand. Then tighten the clamping nut more tightly by using a spanner by min. $\frac{1}{4}$ to max. $\frac{1}{2}$ turn .

When the clamping nut is tightened more firmly than stated, the conical bolted joint may burst (especially on the welded journal of the hydraulic rams).

The bolted connections with O-ring sealings must not be tightened as firmly as the former cutting ring sealings.

10.2.3 Flushing and calibrating the balancing system (professional workshop job)

Every tyre of the wedge ring roller rests on two hydraulic rams (Fig. 222/1).

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

The two closed hydraulic systems are described as balancers.

After the repair of the balancer which must only be carried out by a professional workshop, the balancer should be

- flushed (flushing with hydraulic oil).
- calibrated.



Fig. 222

10.2.3.1 Emptying the balancer (professional workshop job)

- Before carrying out any repair work, empty the balancer. For this
- couple the Cirrus on to the tractor (see chapter 7.1)
- create all hydraulic connections (see chapter 7.1.1.1)
- connect the **AMATRON+** (see chapter 7.1.1.3)
- lift the disc harrow from its operational position until the stop
- align the Cirrus on level ground
- fold down the Cirrus (except for Cirrus 3000) (see chapter 7.2.1)
- retract the integrated running gear, i.e. the machine now rests on all tyres of the roller
- switch off the Low-Lift function
- ensure that the coulter do not touch the ground.

For this proceed as described in chapter 5.6

- insert the depth setting pins (Fig. 223/1) with the figure "1" facing upwards in all segments into the upper most hole of the setting segments and secure.
- retract the integrated running gear, i.e. the machine now rests on all tyres of the roller.
- in case the coulter still touch the ground, lower the tractor low link arms accordingly.



Fig. 223

For emptying the balancing system every hydraulic circuit is provided with a hydraulic tap (Fig. 224/1).

The hydraulic taps are provided with a twisting safety device (Fig. 224/2) against unintended opening.

Figure (Fig. 224) shows the closed hydraulic tap secured against twisting.

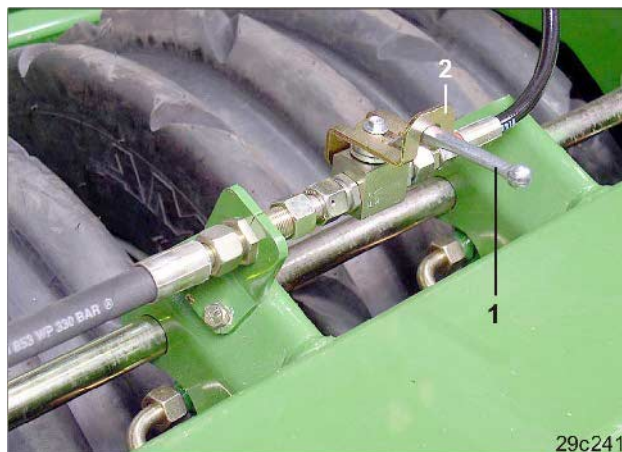


Fig. 224

- Unbolting the twisting safety device (Fig. 225/1).

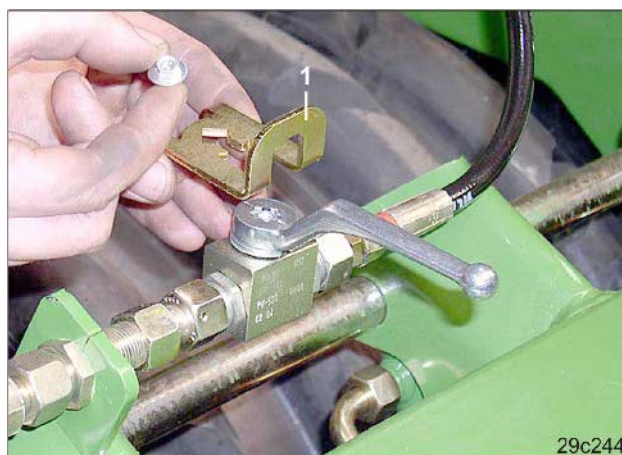


Fig. 225

- open both hydraulic taps as shown in figure (Fig. 226).
Now the hydraulic oil returns through the blower return flow tube into the tractor hydraulic oil tank.



The roller is lowering!

Warning!

- If necessary, disconnect the tractor connections and repair the balancing system.

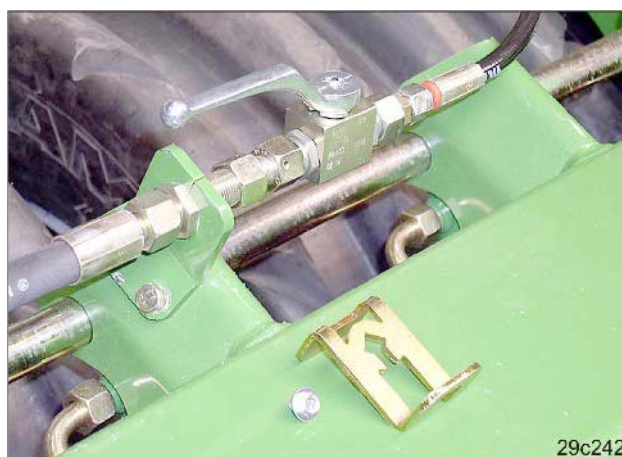


Fig. 226

10.2.3.2 Filling and calibrating the balancing system (professional workshop job)

After any repair on the balancing system, fill the balancing system. Proceed as follows:

- couple the cirrus on to the tractor (see chapter 7.1)
- create all hydraulic connections (see chapter 7.1.1.1)
- connect the **AMATRON⁺** (see chapter 7.1.1.3)
- lift the disc harrow from the operational position up to the stop
- align the Cirrus on level ground
- fold down the Cirrus (except for Cirrus 3000) (see chapter 7.2.1)
- retract the integrated running gear, i.e. the machine rests on all tyres of the roller
- switch off the Low-Lift function
- ensure that the coulters do not touch the ground. For this, proceed as described in chapter 5.6
 - insert the depth setting pins (Fig. 227/1) with the figure "1" facing upwards in all segments into the upper most hole of the setting segments and secure.
 - retract the integrated running gear, i.e. the machine now rests on all tyres of the roller.
 - in case the coulters still touch the ground, lower the tractor low link arms accordingly.
-



Fig. 227

The balancing system is filled with the aid of the supply hose for the harrow pressure.

The supply hose is closed with a hydraulic tap (Fig. 228/1). The hydraulic tap is secured by a twisting safety device (Fig. 228/2).

Figure (Fig. 228) shows the closed hydraulic tap secured against twisting.

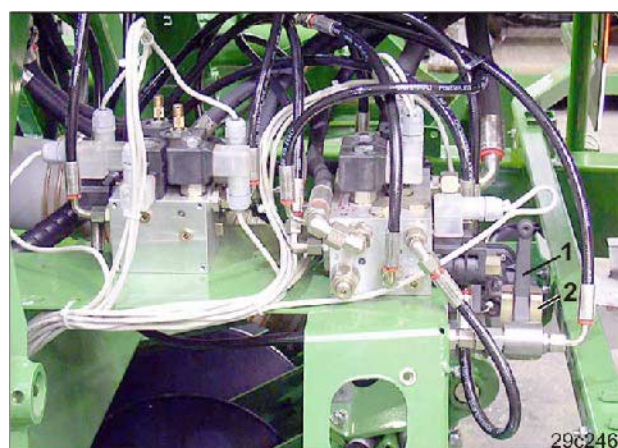


Fig. 228

Remove the twisting safety device as shown in figure (Fig. 225) and open the hydraulic tap (Fig. 229/1).

Figure (Fig. 229) shows the opened hydraulic tap.

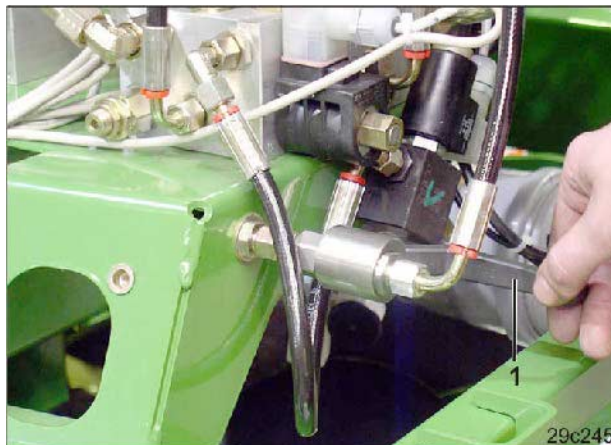


Fig. 229

- Start the tractor engine (guide exhaust fumes into the open air, at workshop job).
- Open the operation menu in **AMATRON+** (Fig. 230).

- Press key harrow adjustment  (Fig. 230).
- Pressurise control unit 1.
In this way the balancing system is flushed, i.e. especially after repair work the gathered air will be removed from the hydraulic circuits.
- After approx. 3 min. get the control unit 1 into its floating position.

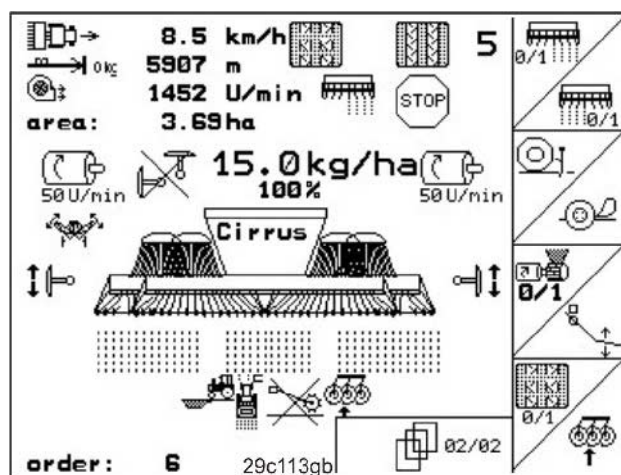


Fig. 230

- close both hydraulic taps (Fig. 231/1) of the balancing system.

Figure (Fig. 231/1) shows the closed hydraulic tap.

- Press key harrow adjustment  (Fig. 230).
- Pressurise control unit 1.
In this way the balancing system including the hydraulic taps (Fig. 222/1) is filled with hydraulic oil.

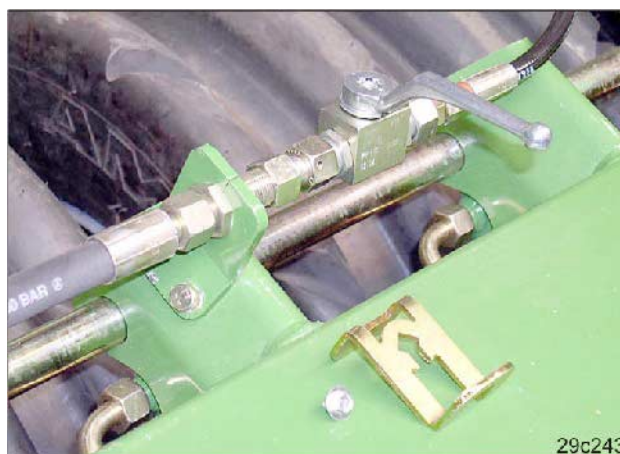


Fig. 231

- When all hydraulic taps (Fig. 222/1) have been extended completely, close the hydraulic tap as shown in figure (Fig. 232/1).
- Secure the hydraulic tap (Fig. 232/1), as shown in figure (Fig. 225) with a twisting safety device (Fig. 232/2).
- Get the control unit 1 into the floating position.
- Stop tractor engine, apply parking brake and remove ignition key.

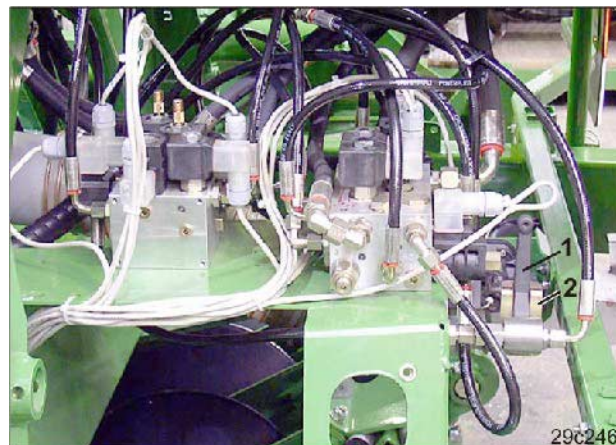


Fig. 232

Calibration of the balancing system

- Park the machine having been folded down on level ground.
- Take a measuring type and measure the frame height (see Fig. 233) from the wheel contact point
- The machine is properly calibrated when both frame halves are set to a height of 825 mm.



Fig. 233

The measuring edges of the machine are identified by stickers (Fig. 234).

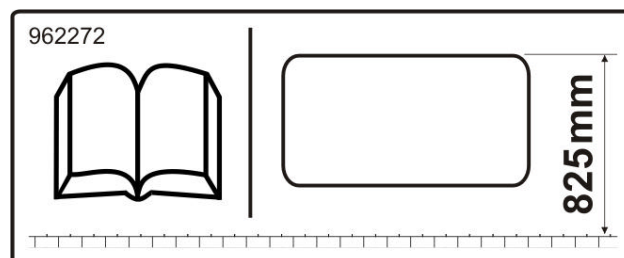


Fig. 234

- open and close the hydraulic taps (Fig. 235) alternately on the right and on the left hand side of the machine until both frames are set to a height of 825 mm.

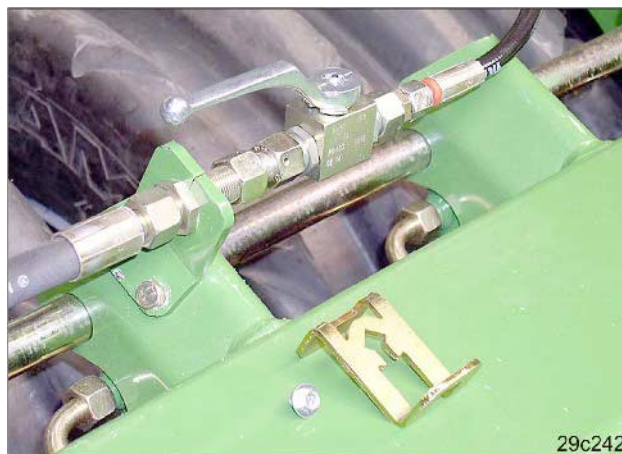


Fig. 235

- After setting close the hydraulic taps (Fig. 236/1) and secure by using the twisting safety device (Fig. 236/2).

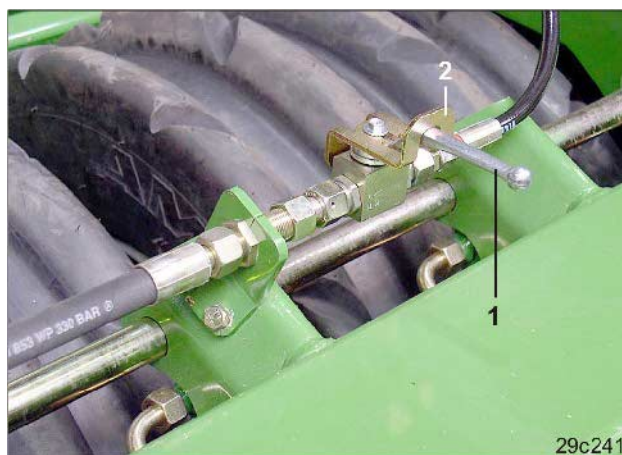


Fig. 236



Important!

Secure the hydraulic taps against unintended opening by using the twisting safety device (Fig. 236/2)!

10.2.4 Pressure reservoir (professional workshop job)

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. 237/1).

Observe in the case of repair:

The hydraulic system and the pressure reservoir (Fig. 237/1) 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.



Danger!

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



Fig. 237



10.3 Service 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!

Inspection of the service brake system

We recommend an annual check of the operational safety of the brake system as § 57 of BGV D 29 requires:

"The owner is obliged to have checked vehicles if necessary, in minimum, however, once a year, by a skilled person for their operational safe condition. "

Tubings, hoses and coupling heads must show external damage or rust.

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



Warning!

Maintenance- and repair work on the service brake system must only be carried out in professional workshops by skilled personnel.

Only use original spare parts for maintenance and repair work.

When carrying out any maintenance work, adhere to the legal prescriptions.

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.

After any setting and repair work on the braking system, conduct a brake test.

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

In case you intend to manoeuvre the Cirrus being connected to the lower links of the tractor, e.g. in the workshop, connect the supply hoses of the service brake system, as otherwise the brakes could jam.

When the supply hoses are not connected with the tractor, the jammed brakes can be released by pressing the release valve (Fig. 238/1).



Danger!

The brakes release immediately after the release valve (Fig. 238/1) has been pressed.

This procedure may only be carried out in exceptional cases, e.g. in a workshop or an absolutely level ground on machines being coupled on to the tractor lower links.



Fig. 238

10.4 Dual circuit air brake as part of the service brake system



Important!

To avoid any malfunctions on the dual circuit air brake a perfectly functioning air dryer on the tractor, especially in winter, is required.



Warning!

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

10.4.1 Air pressure reservoir



Important!

Drain the pressure air reservoir daily (see below).

Drain the air pressure reservoir

Run the tractor engine (approx. 3 min.), until the air pressure reservoir (Fig. 239/1) is filled.

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

Pull the drain valve on the ring (Fig. 239/2) to the side until no water will escape from the air pressure reservoir.

When the escaping water is dirty, deflate air, unscrew the drain valve from the air pressure reservoir and clean the air pressure reservoir.



Fig. 239

Ensure that the air pressure reservoir (Fig. 240/1)

- does not move within the tensioning tapes (Fig. 240/2)
- is not damaged
- does not show any outer damage or corrosion.

Ensure that the type plate (Fig. 240/3)

- is not rusted in
- is not loose
- is not missing.

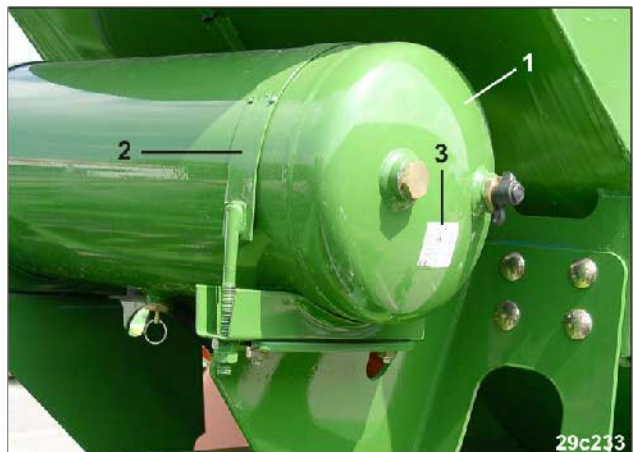


Fig. 240



Important!

Replace the air pressure reservoir (workshop job) in case one of the above items is noted.

10.4.2 Inspection advice for the dual circuit air brake system (workshop job)

10.4.2.1 Leak test – quarterly (workshop job)

- Check all connections, tube-, hose and bolted joints for leakage.
- Remedy any leakage.
- Remedy rubbing points on tubes and hoses
- Replace porous and damaged hoses
- 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.
- In case any values are not maintained, have the brake system checked in a professional workshop.
- Tighten leaking points or replace leaking valves.

10.4.2.2 Checking the pressure in the air pressure reservoir – quarterly (workshop job)

Connect the pressure gauge on the checking point of the air pressure reservoir.

Rated value: 6,0 to 8,1 +0,2 bar.

If the rated value is not maintained, have the brake system checked in a professional workshop

10.4.2.3 Cleaning the hose filters- quarterly (workshop job)

Clean the two hose filters (Fig. 241/1) every three months (in difficult operational conditions more often) . Proceed as follows

- press together the two straps (Fig. 241/2) and remove the cap with O-ring, pressure spring and filter insert.
- clean the filter insert by using petrol or diluting agent (wash out) and dry with air pressure.

Reassemble in the vice versa order and be careful that the O-ring does not get wedged in the guide slit.



Fig. 241

10.4.3 Hydraulic part of the service brake system

10.4.3.1 Checking the brake fluid – monthly or after every 50 hours of operation

Check the brake fluid level in the in the equaliser tank (Fig. 242).

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

The brake liquid should not drop below the "min."-mark.



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

Important



Fig. 242

10.4.3.2 Maintenance of the hydraulic part of the brake system (workshop job)

- Retighten the wheel bolts after the first 10 hours of operation or after any wheel change by using a torque spanner.
 - Torque of the wheel bolts: 350 Nm
 - Torque of the hub without brake drum: 400 Nm
 - Torque of the hub with brake drum: 500 Nm
- Replace the brake fluid every 1 – 2 years.
- Annually check all flexible brake hoses for wear, all brake tubings for damage and the bolted joints for tightness. Replace worn or damaged parts.
- Every 500 hours of operation, however before starting the season, check the brake lining.
 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.

10.4.3.3 Venting the brake system (workshop job)

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:

- remove the equaliser tank screw joint
- fill the equaliser tank up to the upper edge
- install the air bleed neck on the equalising tank
- connect the filling hose
- open the stop tap of the filler
- vent the main ram
- 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 liquid.
- after the complete brake system has been vented, shut the stop tap on the filler.
- remove the remaining pressure coming from the filling device
- 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.
- remove the filler
- 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 liquid?**
- **Check all connections for tightness.**



Important

Conduct a some brake tests on a road with little traffic volume. Carry out at least one full braking.

Attention: Bear in mind the following traffic



10.4.3.4 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 liquid.
- The high requirements on the brake liquid are subject to the standard SAE J 1703 or to the American safety precaution law DOT 3 or DOT 4. Only use brake liquids according to DOT 4 .
- Brake liquid must never ever touch mineral oil. Even a little trace of mineral oil would waste the brake liquid 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.
- Exchange the brake liquid very 2 years, if possible after the cold season.



Warning!

Never ever reuse drained brake fluid.

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

10.5 Track marker setting screw

When folding in the track marker arm, the roller (Fig. 243/1) runs over the running surface (Fig. 243/2) into the retainer.

Otherwise adjust the screw (Fig. 243/3) as necessary. Retighten firmly the earlier slackened counter nut.



Fig. 243

10.6 Cleaning the distributor heads (workshop job)



Important

Dirt and seed residue will block the distributor heads and should be removed immediately (workshop job).

For cleaning the distributor head proceed as follows:

- Stop the combination.
- Stop tractor engine, apply parking brake and remove ignition key.
- Slacken the counter nuts and pull the transparent plastic hood (Fig. 244/1) off the distributor head.
- Remove dirt using a broom, clean out the distributor head and the plastic hood by using a dry cloth.
- Reinstall the plastic hood (Fig. 244/1).

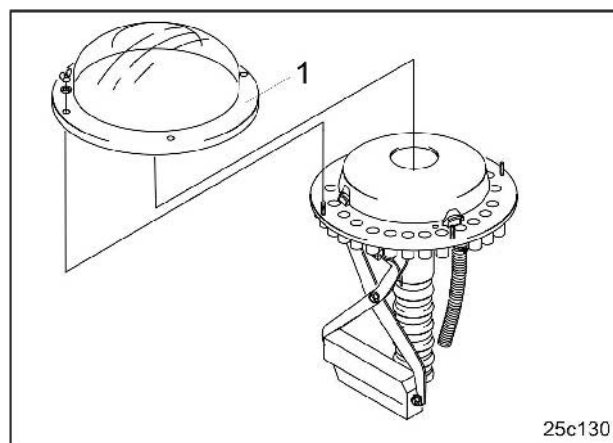


Fig. 244



Warning

For cleaning the distributor heads

- stop tractor engine, apply parking brake and remove ignition key.
- the distributor heads are located in the centre of the machine. Take appropriate safety relevant measures to reach the distributor heads.

10.7 Setting the tramline to another bout width (workshop job)

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.

The tramline control properly corresponds to the track width of the husbandry tractor when the following points have been observed:

- The seed tubes (Fig. 245/1) of the tramline coulters must be affixed to the distributor head openings which can be closed by the shutters (Fig. 245/2).
If necessary exchange the seed tube among each other.
- The track width changes with the number of coulters which do not sow seed when creating tramlines.

When creating two tracks the shutters (Fig. 245/2) in the distributor head can close per track

- on Cirrus 3000/4000 up to 3 openings
 - on Cirrus 6000 up to 6 openings.
- Deactivate not needed shutters (Fig. 245/2), as described in chapter 10.7.1.

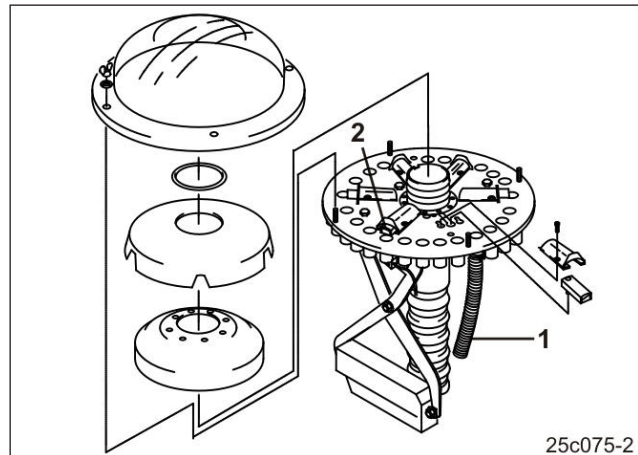


Fig. 245



Important

Adjust the marker discs of the pre emergence marker (if existing) to the new track width according to chapter 5.11.1!

10.7.1 Activate or deactivate the shutters (workshop job)

Before fitting stop the tractor engine, remove ignition key and switch off the **AMATRON⁺**.

To activate or deactivate the shutters, remove the following parts on the distributor head:

- Distributor outer hood (Fig. 246/1)
- Ring (Fig. 246/2)
- Distributor inner hood (Fig. 246/3) and
- Foam rubber insert (Fig. 246/4).

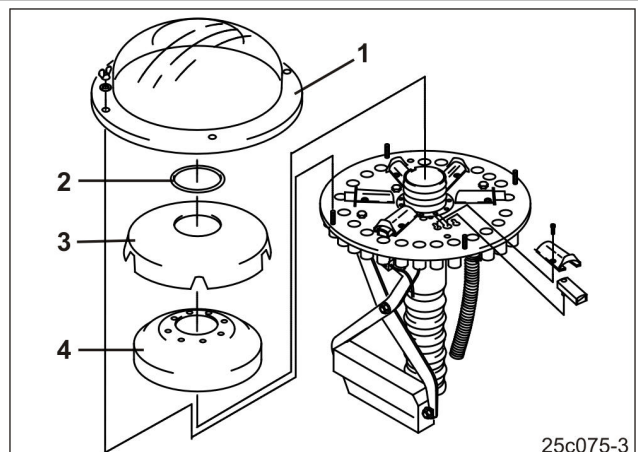


Fig. 246

Up to 6 shutters in pairs, i.e. always two opposite shutters (Fig. 247/1) can be mounted on to the base plate.

- Remove the shutter tunnel (Fig. 247/2).

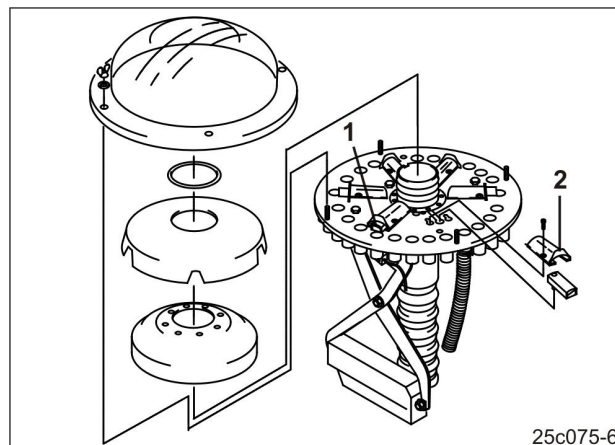


Fig. 247

- The shutter tunnels (Fig. 248/1) are bolted onto the basic plate
- Activate shutter (Fig. 248/2) by mounting the shutter as illustrated.
- For parking insert the shutters (Fig. 248/2) into the holes (Fig. 248/3) the other way round.

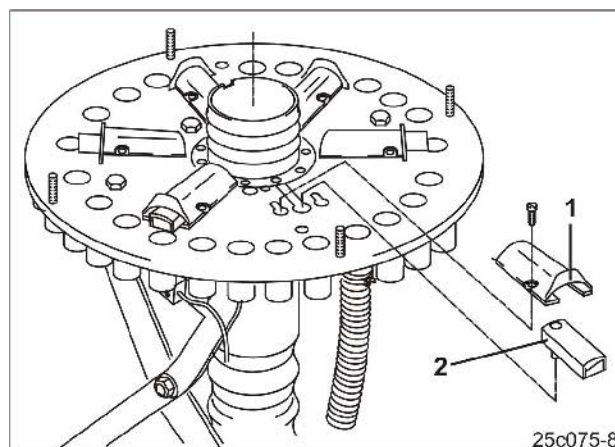


Fig. 248

Assembly of the distributor head:

Check the

- foam rubber insert (Fig. 249/1)
- distributor inner hood (Fig. 249/2)
- ring (Fig. 249/3)
- distributor outer hood (Fig. 249/4)
- tramline control

for function.

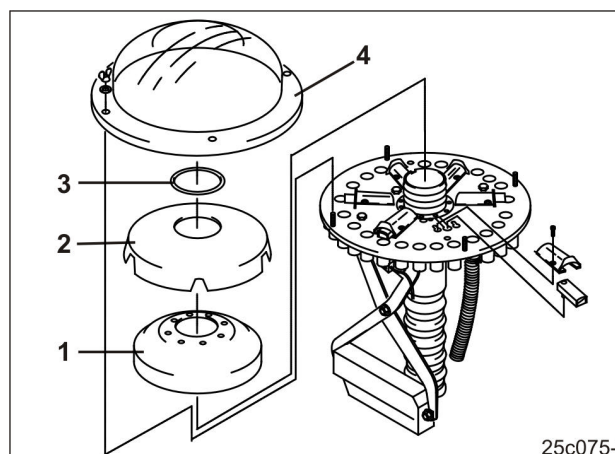
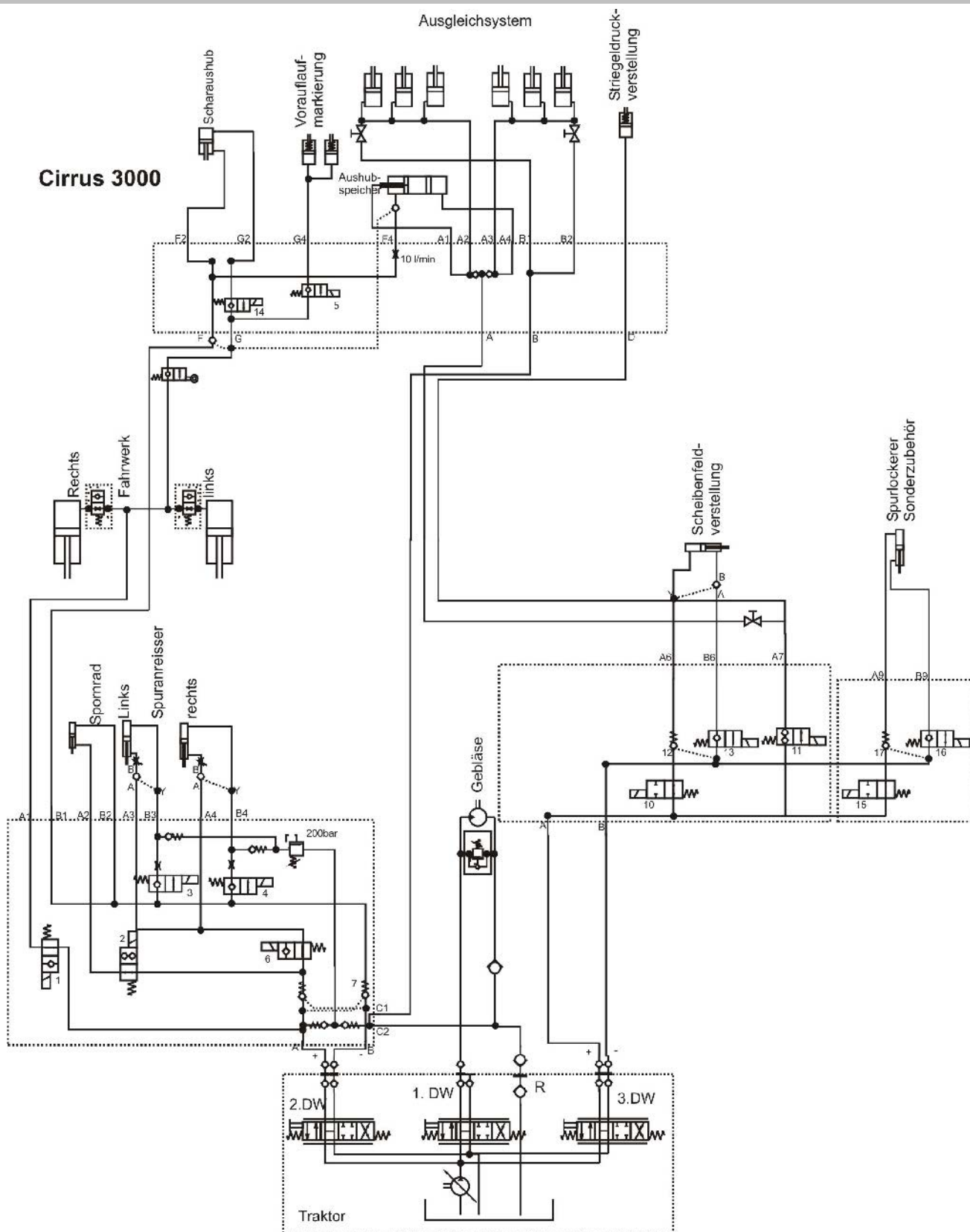


Fig. 249

11. Hydraulic diagrams

11.1 Hydraulic diagram Cirrus 3000

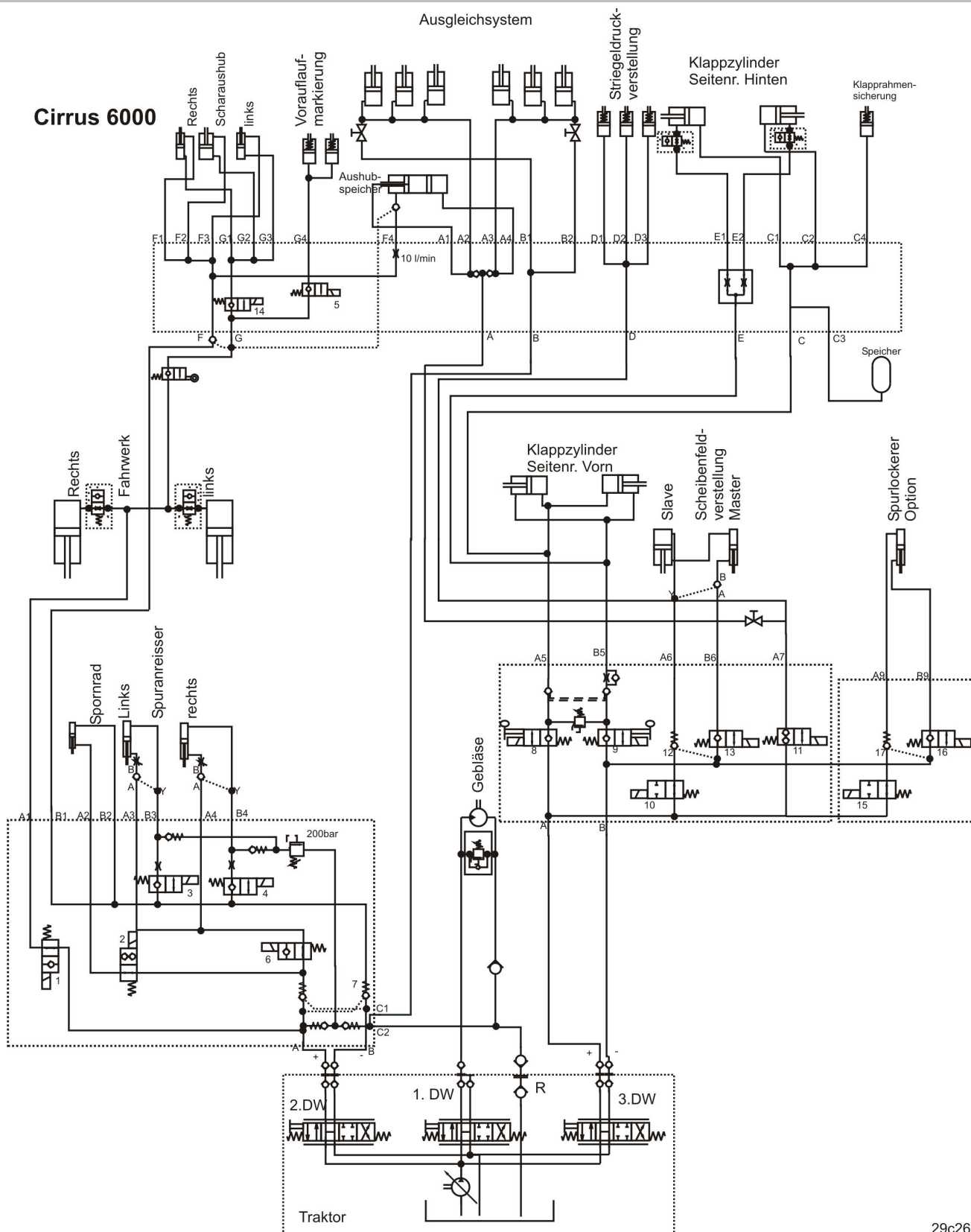


29c264

Fig. 250

Legend (see Fig. 250)	
Ausgleichsystem	Balancer
Scharaushub	Coulter lift
Vorauslaufmarkierung	Pre emergence marker
Striegeldruckverstellung	Harrow pressure adjustment
Aushubspeicher	Lifting reservoir
Rechts	Right hand
Links	Left hand
Fahrwerk	Running gear
Scheibefeldverstellung	Disc gang adjustment
Spurlockerer (Sonderzubehör)	Track marker (special option)
Spornrad	Star wheel
Spuranreißer	Track marker
Gebläse	Blower fan
Traktor	Tractor

11.2 Hydraulic diagram Cirrus 4000 und 6000



29c265

Fig. 251

Legend (see Fig. 251)	
Ausgleichsystem	Balancer
Scharaushub	Coulter lift
Vorauslaufmarkierung	Pre emergence marker
Striegeldruckverstellung	Harrow pressure adjustment
Klappzylinder Seitenr. Hinten	Folding ram side frame rear
Klapprahmensicherung	Folding frame securing
Rechts	Right hand side
Fahrwerk	Running gear
Links	Left hand side
Klappzylinder Seitenr. Vorn	Folding ram side frame front
Slave	Slave
Scheibengangverstellung	Disc gang adjustment
Master	Master
Spurlockerer Option	Track marker (special option)
Spornrad	Star wheel
Spuranreißer	Track marker
Gebläse	Blower fan
Traktor	Tractor





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