

# Operator's manual

## **AMAZONE**

### **Citan**

### **8000**

### **9000**

### **12000**

### **Seed Drill**



---

MG2904  
BAG0014.4 09.14  
Printed in Germany

**Before starting operation  
carefully read and adhere to  
this operator's manual.  
Keep it for other users.**

**en**



---

## READING THE INSTRUCTION

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

---

*Leipzig-Plagwitz 1872. Rud. Sack.*

---

**Identification data**

---

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

Machine Serial-No.:

Type: Citan

Permissible system pressure bar: Max. 210 bar

Year of construction :

Factory:

Power kW:

Basic weight kg:

Allowable total weight kg:

---

**Address of manufacturer**

---

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

---

**Spare parts ordering**

---

Spare parts lists are freely accessible in the spare parts portal at [www.amazone.de](http://www.amazone.de).

Please send orders to your AMAZONE dealer.

---

**Formal remarks to this operator's manual**

---

Document Number: MG2904

Date of edition 09.14

Copyright AMAZONEN-WERKE H. DREYER GmbH & Co. KG, 2014

All rights reserved.

Reprint – even in extracts – requires the approval of  
AMAZONEN-WERKE H. DREYER GmbH & Co. KG.

Dear Customer,

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

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

Before the first operation, please read and adhere to this operator's manual and the safety advice. 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 operator's manual is made available to any operator before he or she starts to operate the machine.

Should you have any questions or problems, please consult this operating manual or contact your local service partner.

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

---

## User's review

Dear reader,

Our 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.

AMAZONEN-WERKE

H. DREYER GmbH & Co. KG

P. O. Box 51

D-49202 Hasbergen

Tel.: + 49 (0) 5405 50 1-0

Fax.: + 49 (0) 5405 501-234

E-mail: [amazone@amazone.de](mailto:amazone@amazone.de)



<b>1</b>	<b>User advice.....</b>	<b>9</b>
1.1	Purpose of the document.....	9
1.2	Information about directions in this operator's manual .....	9
1.3	Illustrations used .....	9
<b>2</b>	<b>General safety advice .....</b>	<b>10</b>
2.1	Obligations and liability .....	10
2.2	Illustration of safety advice.....	12
2.3	Organising measures.....	13
2.4	Safety device and guards .....	13
2.5	Informal safety measures.....	13
2.6	Training of the staff .....	14
2.7	Safety measures and normal operation .....	14
2.8	Danger from residual power.....	15
2.9	Maintenance and repair, remedy of faults .....	15
2.10	Constructional changes .....	15
2.10.1	Spare parts and wearing parts and auxiliary parts .....	15
2.11	Cleaning and disposal.....	16
2.12	Workplace of the operator.....	16
2.13	Safety symbols and other identifications on the machine.....	17
2.14	Danger when not adhering to the safety advice .....	24
2.15	Safety conscious operation.....	24
2.16	Safety advice for the operator.....	25
2.16.1	General safety and accident prevention advice.....	25
2.16.2	Hydraulic system.....	28
2.16.3	Electrical system .....	29
2.16.4	Attached machines .....	30
2.16.5	Brake system .....	30
2.16.6	Tyres .....	31
2.16.7	Sowing machine operation.....	31
2.16.8	Maintenance, repair- and care-work .....	32
<b>3</b>	<b>Loading and unloading .....</b>	<b>33</b>
<b>4</b>	<b>Description of product .....</b>	<b>34</b>
4.1	Overview – Component groups .....	34
4.2	Safety and protection equipment .....	36
4.3	Supply lines between the tractor and the machine .....	36
4.4	Road traffic safety equipment .....	36
4.5	Designated use of the machine .....	37
4.6	Danger zones.....	37
4.7	Type plate and CE declaration.....	38
4.8	Technical data.....	39
4.9	Required tractor equipment .....	40
4.10	Details about noise level .....	41
<b>5</b>	<b>Assembly and function .....</b>	<b>42</b>
5.1	Hydraulic connections.....	43
5.1.1	Coupling the hydraulic hose lines .....	45
5.1.2	Hydraulic hose lines – detaching .....	45
5.2	Running gear with braked axle .....	46
5.3	Twin circuit air brake system.....	46
5.3.1	Coupling the brake and supply lines.....	47
5.3.2	Decoupling the brake and supply lines .....	48

## Table of contents

5.4	Hydraulic operating brake system.....	49
5.4.1	Coupling the hydraulic operating brake system .....	49
5.4.2	Decoupling the hydraulic operating brake system .....	49
5.4.3	Parking brake .....	50
5.4.4	Emergency brake .....	50
5.5	Safety chain for implements without brake system.....	51
5.6	Frame with machine wing .....	52
5.7	Metering rollers.....	52
5.8	Star wheel .....	53
5.9	Vario gearbox .....	53
5.10	Full electric metering system.....	53
5.11	Seed collecting trays .....	54
5.12	Fan .....	54
5.13	RoTeC <sup>+</sup> -Schar .....	54
5.14	Roller harrow (optional).....	55
5.15	Exact harrow .....	56
5.16	Track markers .....	57
5.17	Wheel mark eradicator (option).....	58
5.18	Operator terminal AMATRON 3 .....	58
5.19	Operator terminal <b>AMALOG<sup>+</sup></b> .....	59
5.20	On-board hydraulics .....	59
5.21	Distributor head and tramline system.....	60
5.22	Tramline rhythm .....	61
5.22.1	Example for creating tramlines.....	62
5.22.2	Half-sided switching off (part width) .....	64
5.23	Pre emergence marker (Option) .....	65
5.24	Hydraulic unit.....	66
<b>6</b>	<b>Putting into operation .....</b>	<b>67</b>
6.1	Initial operation .....	68
6.1.1	Determining the actual values for the tractor total weight, tractor axle loads, tyre carrying capacity as well as the required minimum ballast weights.....	68
<b>7</b>	<b>Coupling and uncoupling the machine .....</b>	<b>71</b>
7.1	Coupling of the machine .....	72
7.2	Decoupling the machine.....	73
7.2.1	Marshalling the decoupled machine.....	74
<b>8</b>	<b>Adjustments.....</b>	<b>75</b>
8.1	Selection of metering wheels .....	75
8.1.1	Table – kind of seed – metering wheels .....	76
8.1.2	Exchanging metering wheels .....	78
8.2	Setting the seed level sensor .....	79
8.3	Adjusting the output volume on the gearbox.....	79
8.4	Setting the application rate with AMATRON 3 .....	80
8.5	Calibration test .....	80
8.5.1	Calibration test with Vario gearbox .....	81
8.5.2	Calibration test on Citan with Vario gearbox and <b>AMATRON 3</b> .....	85
8.5.3	Calibration test of the Citan with full electric metering .....	87
8.6	Blower fan speed.....	88
8.6.1	Blower fan speed table.....	88
8.6.2	Setting the fan speed on the oil flow control valve of the tractor .....	89
8.6.3	Setting the fan speed on the pressure relief valve of the machine .....	89
8.7	Setting the placement depth of the seed .....	90
8.7.1	Setting the placement depth of the seed with the aid of a hydraulic ram .....	90

8.8	Seed drills with RoTeC <sup>+</sup> coulters.....	91
8.8.1	Setting the placement depth of the seed by resetting the RoTeC <sup>+</sup> -depth limiting discs (special option).....	92
8.8.2	Fitting and setting the RoTeC <sup>+</sup> depth limiting discs.....	92
8.9	Roller harrow.....	94
8.9.1	Adjusting working depth and arrangement angle of harrow tines.....	94
8.9.2	Adjusting roller pressure .....	95
8.10	Exact harrow .....	96
8.10.1	Exact harrow – spring tine position.....	96
8.10.2	Exact harrow pressure .....	96
8.11	Setting the length of the track markers (in the field) .....	98
8.11.1	Track marker length dimensions.....	98
8.12	Setting the working intensity of the track markers .....	98
8.13	Setting the tramline rhythm / - counter.....	99
8.13.1	Half side shut off .....	100
8.14	Setting the wheel mark eradicator .....	100
8.15	Pre-emergence marker (option).....	101
<b>9</b>	<b>Transport on public roads .....</b>	<b>102</b>
<b>10</b>	<b>Operation.....</b>	<b>104</b>
10.1	Folding the machine down and in .....	104
10.1.1	Folding down the machine .....	105
10.1.2	Folding in machine .....	106
10.2	Filling the seed hopper.....	107
10.3	Starting operation.....	108
10.3.1	Setting the hydraulic hand lever.....	108
10.4	During operation .....	109
10.4.1	Setting for light soils.....	110
10.4.2	Setting the track marker folding .....	110
10.5	Turning at the headlands .....	111
10.6	Finishing operation in the field .....	111
10.7	Emptying the seed hopper and/or seed dosing unit .....	112
10.7.1	Emptying the seed hopper.....	112
10.7.2	Emptying seed dosing unit.....	112
<b>11</b>	<b>Faults .....</b>	<b>114</b>
11.1	Indication of low seed hopper contents .....	114
11.2	Failure of AMATRON 3 during operation.....	114
11.3	Deviations between the adjusted and the actual seed rate .....	115
11.4	The motor for the electric full metering unit does not turn .....	116
11.5	Table of faults .....	117
<b>12</b>	<b>Maintenance, repair and care .....</b>	<b>118</b>
12.1	Reinigung.....	118
12.1.1	Cleaning the machine .....	119
12.1.2	Cleaning the distributor head (authorised workshop).....	119
12.2	Lubrication regulations.....	120
12.2.1	Lubrication point review .....	121
12.3	Maintenance and care - Review .....	123
12.3.1	Remedy of function faults and repair work .....	123
12.4	Hydraulic system.....	124
12.4.1	Mounting and dismounting hydraulic hoses.....	126
12.5	Axle and brake .....	127
12.5.1	Maintenance work.....	128
12.6	Parking brake .....	132



## Table of contents

---

12.7	Tyres / wheels .....	133
12.7.1	Tyre air pressure .....	133
12.7.2	Fitting wheels .....	133
12.8	Setting the tramline bout according to the tractor track width (Authorised workshop).....	134
12.9	Setting the track width (activation and deactivation of shutters).....	135
12.10	Seat shaft bearings .....	136
12.11	Check the oil level inside the Vario gearbox .....	136
12.12	Hydraulic diagram .....	137
12.13	Bolt torques .....	139

---

# 1 User advice

---

The chapter "User advice" provides 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.
- should be kept 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 react

---

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

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

---

### Enumerations

---

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

- Item 1
- Item 2

---

### Position figures in illustrations

---

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

Example (Fig. 3/6)

- Figure 3
- Item 6

## 2 General safety advice

---

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

### 2.1 Obligations and liability

---

#### Observe the advice given in this 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 operator's manual.

The owner commits himself

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

#### Obligation of the operator

---

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

- observe the basic regulations regarding the operational safety and accident prevention.
- to read and to adhere to the chapter "Safety".
- to read and to adhere to the chapter "Warning signs and other signs on the machine" (Page 19).
- 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 maintenance of the machine.
- operating the machine with defect safety facilities or not properly fitted or not functioning safety devices and guards.
- not adhering to the operator's 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 is identified by a symbol and a warning. The warning describes the seriousness of the threatened danger. The individual symbols have the following meaning:

**Danger!**

Direct 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!**

Possible danger for life and health of persons.

Not adhering to these hints may cause severe adverse health effects up to life threatening injuries.

**Caution!**

Possible 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 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 operator's manual**

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

**Regularly check all existing safety devices!**

## 2.4 Safety device and guards

---

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

### **Defective safety devices**

---

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

## 2.5 Informal safety measures

---

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

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

## 2.6 Training of the staff

Only those people who have been trained and instructed may work with/on the machine. The operator must clearly specify the responsibilities of the people charged with operation and maintenance work.

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

Activity \ Person	Person specially trained for the activity <sup>1)</sup>	Trained operator <sup>2)</sup>	Persons with specialist training (specialist workshop*) <sup>3)</sup>
Loading/Transport	X	X	X
Commissioning	--	X	--
Set-up, tool installation	--	--	X
Operation	--	X	--
Maintenance	--	--	X
Troubleshooting and fault elimination	X	--	X
Disposal	X	--	--

Legend:

X..permitted --..not permitted

- 1) A person who can assume a specific task and who can carry out this task for an appropriately qualified company.
- 2) Instructed persons are those who have been instructed in their assigned tasks and in the possible risks in the case of improper behaviour, have been trained if necessary, and have been informed about the necessary protective equipment and measures.
- 3) People with specialist technical training shall be considered as a specialist. Due to their specialist training and their knowledge of the appropriate regulations, they can evaluate the work with which they have been charged and detect possible dangers.

Comment:

A qualification equivalent to specialist training can be obtained from several years' experience in the relevant field.



If maintenance and repair work on the machine is additionally marked "Workshop work", only a specialist workshop may carry out such work. The personnel of a specialist workshop shall possess the appropriate knowledge and suitable aids (tools, lifting and support equipment) for carrying out the maintenance and repair work on the machine in a way which is both appropriate and safe.

## 2.7 Safety measures and normal operation

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

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

## 2.8 Danger from residual power

---

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

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

## 2.9 Maintenance and repair, remedy of faults

---

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

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

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

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

## 2.10 Constructional changes

---

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

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

Vehicles and devices plus 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.



**Important!**

**Prohibited on principle is**

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

### 2.10.1 Spare parts and wearing parts and auxiliary parts

---

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

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



## 2.11 Cleaning and disposal

---

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

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

## 2.12 Workplace of the operator

---

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

## 2.13 Safety symbols and other identifications on the machine



### Important!

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

### Positioning of warning decals and other identifications

The following illustrations show the arrangement of the warning decals.

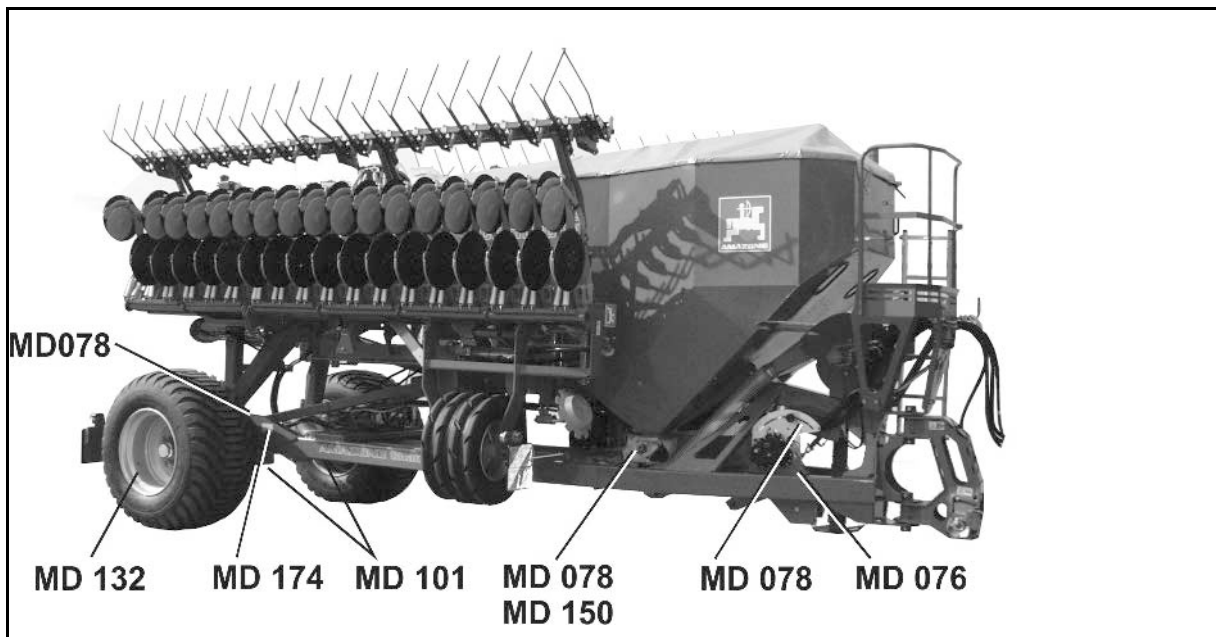


Fig. 1

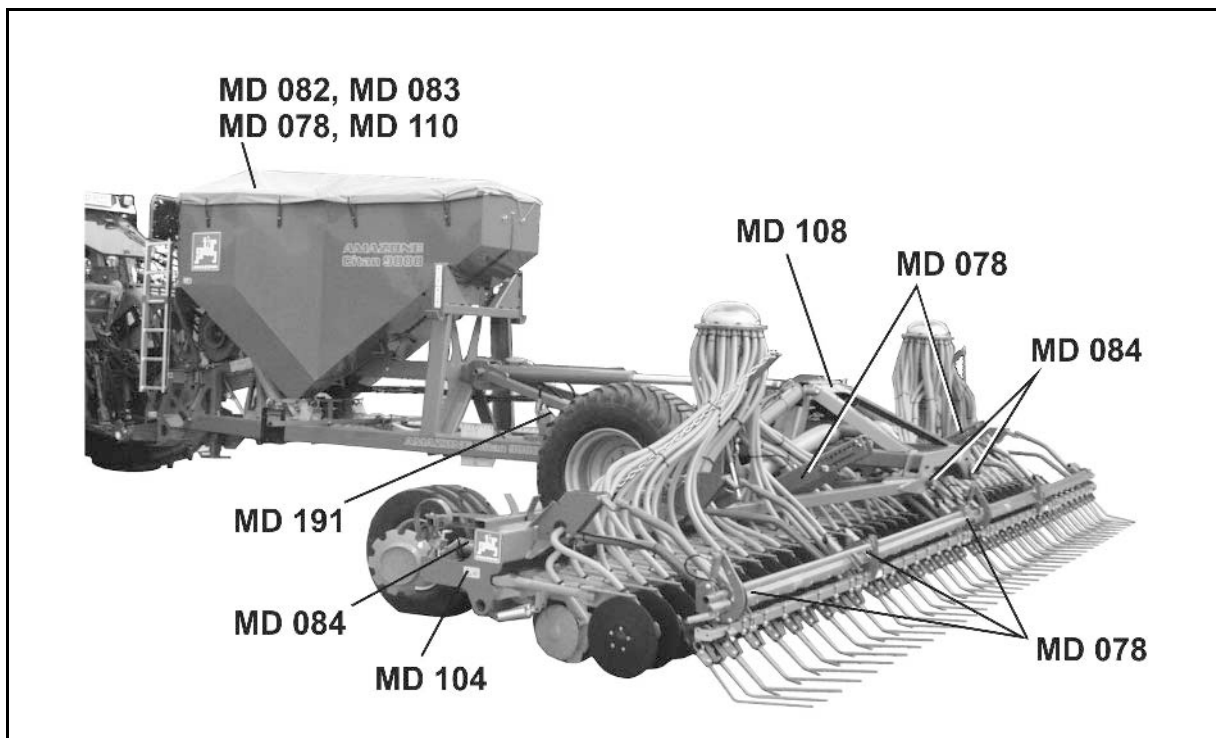


Fig. 2

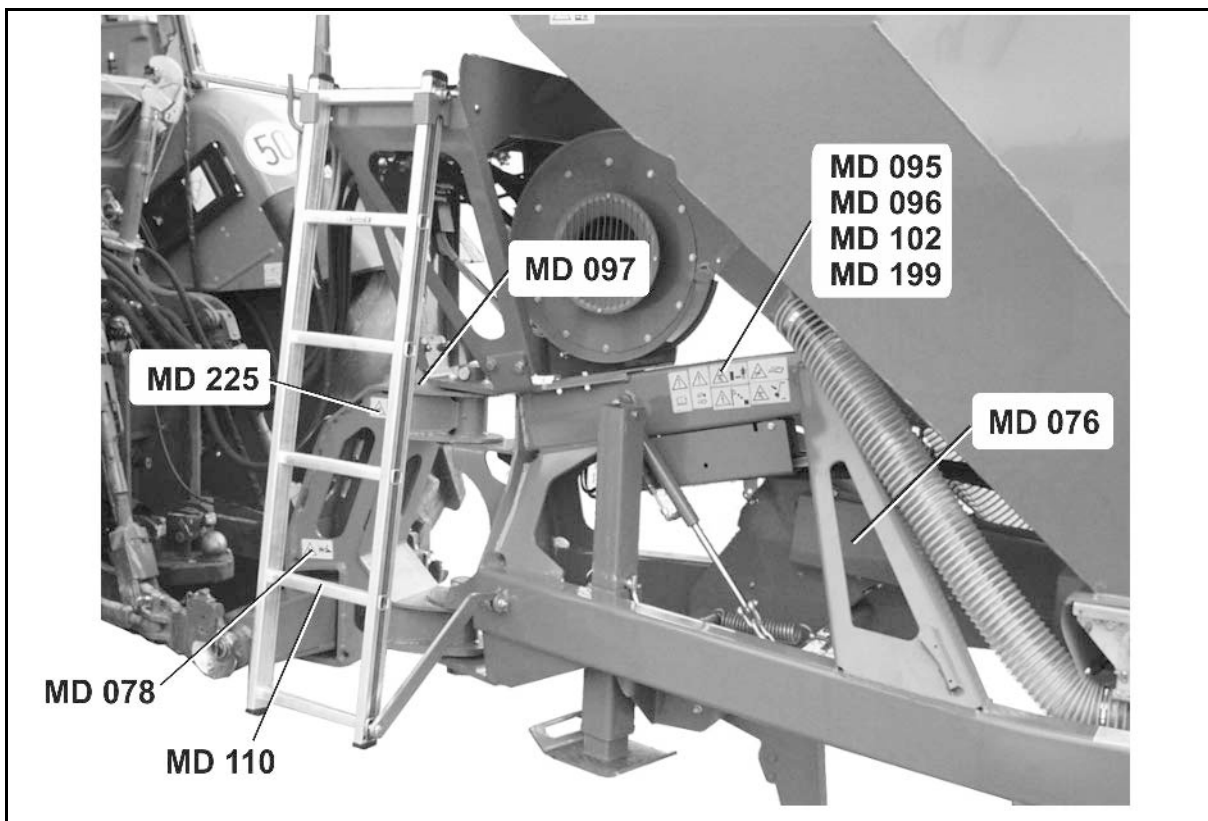


Fig. 3

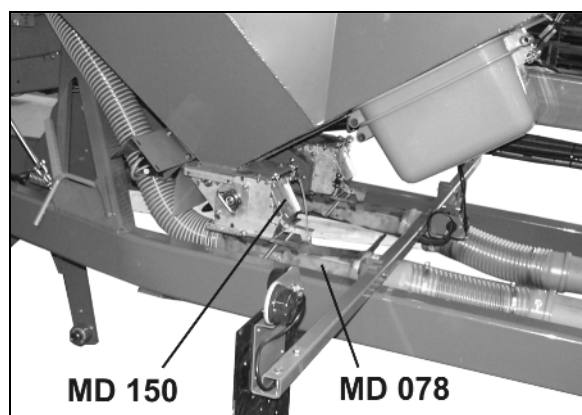


Fig. 4

## Warning signs - composition

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

The warning sign consists of 2 fields:



### Field 1

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

### Field 2

Gives the vivid instruction to avoid these dangers.

## Warning sign - Explanation

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

1. Description of danger.

For example: Danger from cutting or cutting off!

2. Consequences when not adhering to the given advice how to avoid dangers.

For example: will cause severe injury on finger or hand.

3. The advice to avoid danger.

For example: Touch machine parts only then when they have come to a full standstill.

## General safety advice

### Order number and explanation

### Warning pictogram

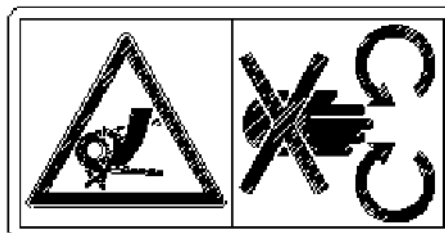
#### MD 076

Danger from pulling in or catching!

Will cause severe injury to finger or hand.

Never ever open or remove guards from chain- or belt drives,

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

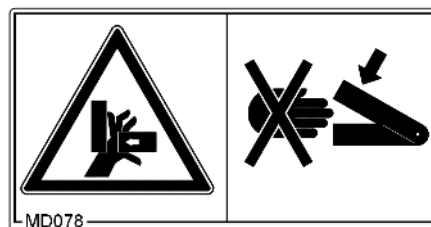


#### MD 078

Danger of squeezing!

Will cause severe injury for finger or hand.

Never reach into the squeezing danger zone. There is danger of squeezing as long as parts are still moving.



#### MD 082

Danger of falling for persons.

Will cause severe injury for the entire body.

Riding on the machine during transport travel and/or climbing up running machines is prohibited. This applies also to machines with boards or platforms.



#### MD 083

Danger from being trapped or caught.

Will cause severe injury on the arm or upper part of the body.

Never ever open or remove guards from conveying worm augers as long as the tractor engine with the PTO shaft engaged and the hydraulic drive coupled is still running.





### MD 084

Danger of squeezing!

Will cause severe injury on the whole body or even fatal injury.

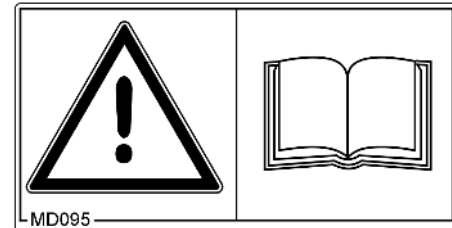
Staying of persons within the swivel range of machine parts is prohibited.



MD 084

### MD 095

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



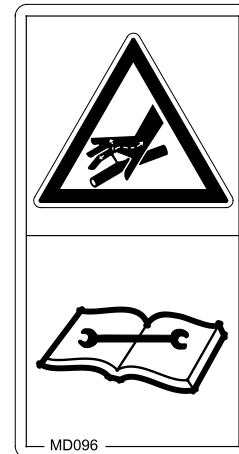
MD095

### MD 096

Danger in case of leaking high pressure liquid (hydraulic oil)!

Will cause severe injury to the body in case liquids leaking under high pressure will penetrate the skin and thus the body.

Before carrying out any maintenance and repair work, read and adhere to the hints in the technical manual.



MD096

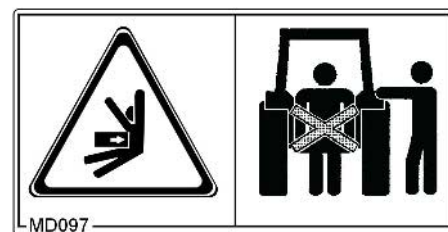
### MD 097

Danger of squeezing.

Will cause severe injury for the entire body or fatal injury.

When the power is actuated keep away from the lifting area of the three point linkage.

Staying of persons within the lifting area of the three point linkage whilst the three point power lift is actuated is prohibited.

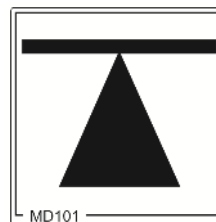


MD097

## General safety advice

### MD101

Positioning of jack in case of repair.



### MD 102

Danger from unintended starting the machine.

Causes severe injury on the body or fatal injury.

- Prior to any maintenance and repair work stop the tractor engine and remove the ignition key.
- Read and adhere the hints in the technical manual before carrying out maintenance and repair work.

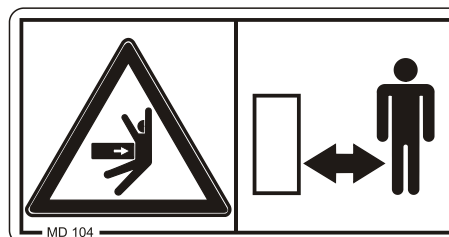


### MD 104

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

These dangers can cause extremely serious and potentially fatal injuries.

- Maintain an adequate safety distance from moving machine parts while the tractor engine is running.
- Please ensure that all personnel maintain a sufficient safety distance from moving machine parts..

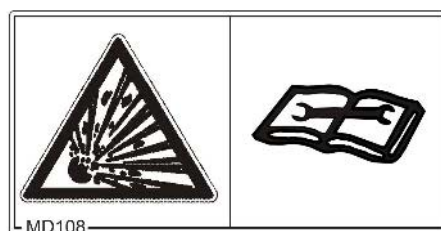


### MD 108

Danger from gas- or oil pressurised pressure reservoirs.

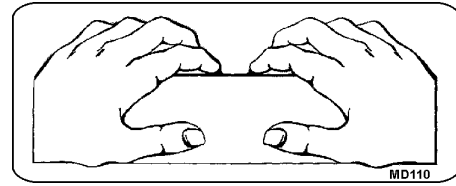
Will cause severe injury on the whole body or even fatal injury.

Before carrying out any maintenance and repair work, please read the technical manual and adhere to it.



**MD 110**

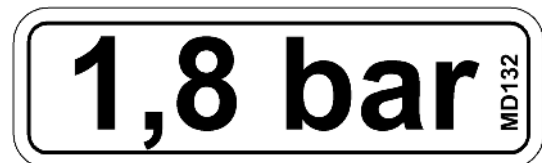
Grasping space

**MD 114**

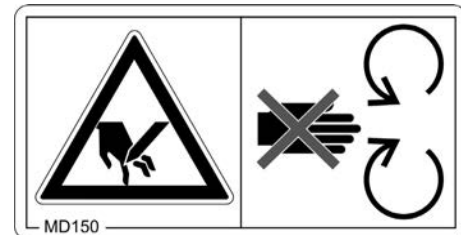
Greasing point!

**MD 132**

Max. air pressure 1,8 bar.

**MD 150**

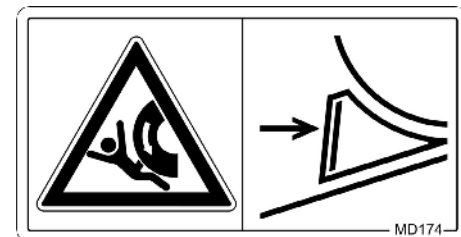
Do not open or remove the guards.

**MD 174**

Danger from unintended moving of the machine.

Will cause severe injury on the whole body or even fatal injury.

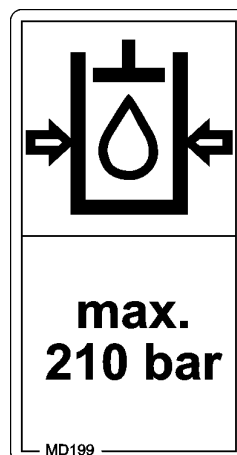
Prior to uncoupling the machine from the tractor secure the machine against unintended by using of the parking brake and/or the chock(s).



## General safety advice

### MD 199

The permissible max. hydraulic pressure is 210 bar!

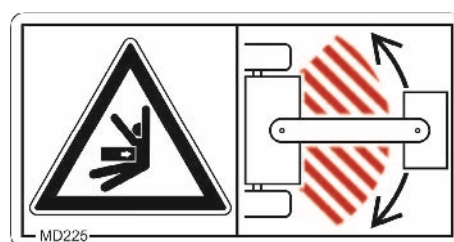


### MD 225

Danger of squeezing!

Will cause severe injury on the whole body or even fatal injury.

Never ever stay in the operational range of the drawbar between tractor and machine as long as the tractor engine is still running.



## 2.14 Danger when not adhering to the safety advice

Not adhering to the safety advice

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

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

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

## 2.15 Safety conscious operation

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

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

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

## 2.16 Safety advice for the operator



### Warning!

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

### 2.16.1 General safety and accident prevention advice

#### Coupling and uncoupling the machine

- Only connect and transport the machine with tractors suitable for the task.
- When coupling machines to the tractor's three-point linkage, the linkages of the tractor and the machine must always be the same.
- Connect the machine to the prescribed equipment in accordance with the specifications.
- When coupling machines to the front or the rear of the tractor, the following may not be exceeded:
  - The approved total tractor weight
  - The approved tractor axle loads
  - The approved load capacities of the tractor tyres
- Secure the tractor and the machine against rolling unintentionally before coupling or uncoupling the machine.
- Do not stand between the machine and tractor to be coupled while the tractor is approaching the machine.

Any helpers may only act as guides standing next to the vehicles, and may only move between the vehicles when both are at a standstill.
- Before connecting the machine to or disconnecting the machine from the tractor's three-point linkage, secure the operating lever of the tractor hydraulic system so that unintentional raising or lowering is prevented.
- When coupling and uncoupling machines, move the support equipment (if available) to the appropriate position (stability).
- When actuating the support equipment, there is a risk of injury from crushing and cutting points.
- Be particularly careful when coupling the machine to the tractor or uncoupling it from the tractor. There are crushing and cutting points in the area of the coupling point between the tractor and the machine.
- It is forbidden to stand between the tractor and the machine when actuating the three-point linkage.
- Coupled supply lines
  - must give slightly to all movements while cornering without tensioning, kinking or rubbing.
  - must not chafe against other parts.
- The release ropes for quick couplings must hang loosely and must not release themselves when lowered.
- Also ensure that uncoupled machines are stable.

### Use of the machine

---

- Before starting work, ensure that you understand all the equipment and actuation elements of the machine and their function. There is no time for this when the machine is already in operation.
- Do not wear loose-fitting clothing. Loose clothing increases the risk of being caught by the drive shaft.
- Only start-up the machine, when all the safety equipment has been attached and is in the safety position.
- Comply with the maximum load for the connected machine and the permissible axle and drawbar loads for the tractor. If necessary, drive only with a partially filled tank.
- It is forbidden to stand in the working area of the machine.
- It is forbidden to stand in the turning and swivel range of the machine.
- There are crushing and cutting points at externally-actuated (e.g. hydraulic) machine points.
- Only actuate externally-actuated machine parts when you are sure that no-one is standing within the prescribed safety distance.
- Before leaving the tractor, secure it against unintended starting and rolling.  
To do this:
  - lower the machine onto the ground
  - apply the parking brake
  - switch off the tractor engine
  - remove the ignition key

## Machine transportation

- When using public highways, national road traffic regulations must be observed.
- Before moving off, check:
  - the correct connection of the supply lines
  - the lighting system for damage, function and cleanliness
  - the brake and hydraulic system for visible damage
  - that the parking brake is completely disengaged
  - the function of the brake system
- Ensure that the tractor has sufficient steering and braking power. Any machines and front/rear weights connected to the tractor influence the driving behaviour and the steering and braking power of the tractor.
- If necessary, use front weights.

The front tractor axle must always be loaded with at least 20% of the tractor empty weight, in order to ensure sufficient steering power.
- Always fix the front or rear weights to the intended fixing points according to regulations.
- Comply with the maximum load for the connected machine and the approved axle and drawbar loads for the tractor.
- The tractor must guarantee the prescribed brake delay for the loaded vehicle combination (tractor plus connected machine).
- Check the brake power before moving off.
- When turning corners with the machine connected, take the broad load and balance weight of the machine into account.
- If the machine is fixed to the tractor's three-point linkage or lower links, before moving off, ensure sufficient side locking of the tractor lower links.
- Before moving off, move all the swivellable machine parts to the transport position.
- Before moving off, secure all swivellable machine parts in the transport position against dangerous position changes. Use the transport safety catches intended for this.
- Before transportation, secure the operating lever of the three-point hydraulic system against unintentional raising or lowering of the connected or coupled machine.
- Check that the transport equipment, e.g. lighting, warning equipment and protective equipment, is correctly mounted on the machine.
- Before transportation, carry out a visual check that the upper and lower link pins are firmly fixed with the linchpin against unintentional release.
- Adjust your driving speed to the prevailing conditions.
- Before driving downhill, switch to a low gear.
- Before moving off, always switch off independent wheel braking (lock the pedals).

## 2.16.2 Hydraulic system

- The hydraulic system is under a high pressure.
- Ensure that the hydraulic hose lines are connected correctly.
- When connecting the hydraulic hose lines, ensure that the hydraulic system is depressurised on both the machine and tractor sides.
- It is forbidden to lock the operator controls on the tractor used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:
  - are continuous
  - are automatically controlled
  - require a floating position or pressed position to function
- Before working on the hydraulic system,
  - lower the machine
  - depressurise the hydraulic system
  - shut off the tractor engine
  - apply the parking brake
  - remove the ignition key
- Have the hydraulic hose lines checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose lines if they are damaged or worn. Only use original **AMAZONE** hydraulic hose lines.
- The hydraulic hose lines should not be used for longer than six years. This period includes any storage time of a maximum of two years. Even with proper storage and approved use, hoses and hose connections are subject to natural ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
- Never attempt to plug leaks in hydraulic hose lines with the hand or fingers.

Escaping high pressure fluid (hydraulic fluid) may pass through the skin and ingress into the body, causing serious injuries.

If you are injured by hydraulic fluid, contact a doctor immediately. Danger of infection.
- When searching for leakage points, use suitable aids, to avoid the serious risk of infection.



### 2.16.3 Electrical system

---

- When working on the electrical system, always disconnect the battery (negative terminal).
- Only use the prescribed fuses. If fuses are used that are too highly rated, the electrical system will be destroyed – risk of fire.
- Ensure that the battery is connected correctly - firstly connect the positive terminal and then connect the negative terminal. When disconnecting the battery, disconnect the negative terminal first, followed by the positive terminal.
- Always place the appropriate cover over the positive battery terminal. If there is accidental earth contact, there is a risk of explosion.
- Risk of explosion. Avoid sparking and naked flames in the area of the battery.
- The machine may be equipped with electronic components whose function is influenced by electromagnetic interference from other units. Such interference can pose risks to people, if the following safety information is not followed.
  - If retrofitting electrical units and/or components on the machine with a connection to the on-board power supply, the user is responsible for checking whether the installation might cause faults on the vehicle electronics or other components.
  - Ensure that the retrofitted electrical and electronic components comply with the EMC directive 2004/108/EC in the appropriate version and bear the CE mark.

#### 2.16.4 Attached machines

---

- Observe the permitted combination options of the attachment equipment on the tractor and the machine drawbar.  
Only couple permitted combinations of vehicles (tractor and attached machine).
- On single axle machines, observe the maximum permitted drawbar load of the tractor on the attachment equipment.
- Ensure that the tractor has sufficient steering and braking power. Machines attached or coupled to a tractor influence the driving behaviour and steering and braking power of the tractor, and in particular single axle machines with drawbar loads on the tractor.
- Only one specialist workshop can adjust the height of the drawbar if it is a straight drawbar with drawbar load.

#### 2.16.5 Brake system

---

- Only specialist workshops or recognised brake service may carry out adjustment and repair work on the brake system.
- Have the brake system checked regularly.
- If there are any functional faults in the brake system, stop the tractor immediately. Have the functional fault eliminated immediately.
- Park the machine in a safe place and lock the machine against unintentional falling and rolling (wheel chocks), before carrying out work on the brake system.
- Be particularly careful when carrying out welding, burning or drilling work in the area of the brake lines.
- After carrying out any adjusting and repair work on the brake system, always carry out a brake test.

#### Compressed air brake system

---

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

### Hydraulic braking system for export machines

---

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

### 2.16.6 Tyres

---

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

### 2.16.7 Sowing machine operation

---

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

### 2.16.8 Maintenance, repair- and care-work

---

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

### 3 Loading and unloading



#### WARNING

**Danger from crushing and / or impacts due to unintentional dropping of the raised machine!**

- It is essential to use the marked lashing points for securing load supporting devices if you are loading or unloading the machine with lifting gear.
- Use load supporting devices with a load bearing capacity of at least 1500 kg.
- Never enter the area below the raised machine.



#### WARNING

**Danger of accident if the tractor is not sufficiently dimensioned and if the brake system of the machine is not connected with the tractor!**



#### Important!

- Before loading or unloading the machine from the transport vehicle carefully couple the machine onto the tractor.
- For unloading and loading the machine only couple and transport the machine with a tractor which is designed for this task (sufficient power).

#### Air pressure brake system:

- Only start driving with the coupled machine when the pressure gauge on the tractor indicates 5,0 bar!

For loading the machine on to a transport vehicle or when unloading couple the Cirrus on to a suited tractor, as described in chapter 7. Connect all connections

- of the service brake
  - hydraulic connections
- connection with the tractor.

#### Loading:

1. Carefully push backwards from behind onto the transport vehicle.
2. Secure the machine as prescribed.
3. Uncouple the machine.

#### Unloading:

1. Couple the tractor onto the machine,
2. Remove the transport safety device.
3. Pull the machine off the transport vehicle.
4. After unloading park the Cirrus and uncouple the tractor.

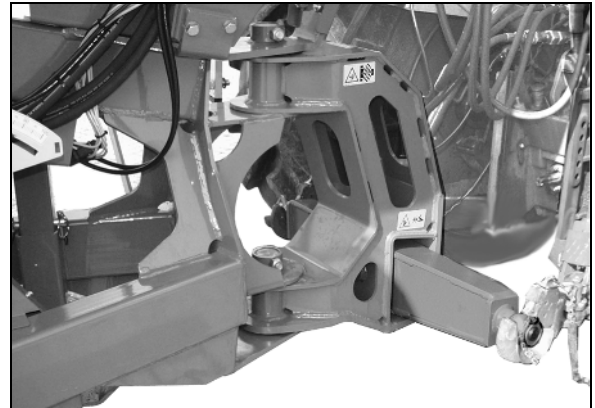


Fig. 5

## 4 Description of product

This chapter

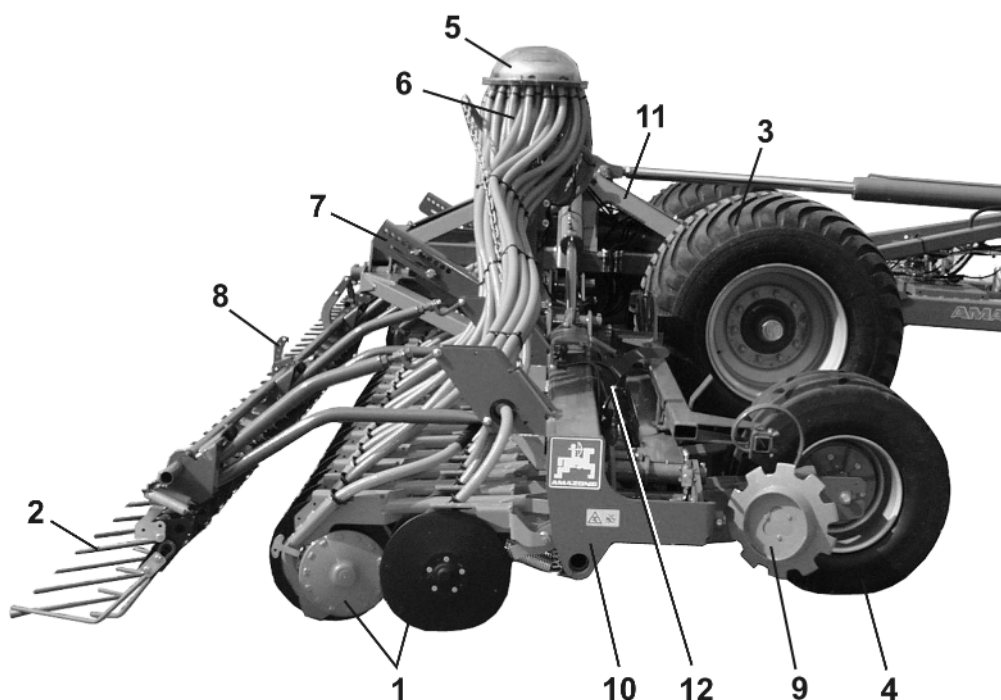
- provides you with a comprehensive survey about the design of the machine.
- provides the descriptions of the individual components and parts.

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

The machine consists of the following main modules:

- Chain bar
- Seed hopper with dosing and seed conveyor unit
- Running gear
- Sowing coulter
- Exact harrow
- Marker.

### 4.1 Overview – Component groups



**Fig. 6**

- |                                     |                                       |
|-------------------------------------|---------------------------------------|
| (1) Sowing coulter                  | (7) Coulter pressure adjustment       |
| (2) Extra coverage following harrow | (8) Harrow pressure adjustment        |
| (3) Running gear                    | (9) Track markers                     |
| (4) Support wheel                   | (10) Folding boom                     |
| (5) Distributor head                | (11) Foldable rear frame              |
| (6) Seed tubes                      | (12) Change over tap for track marker |

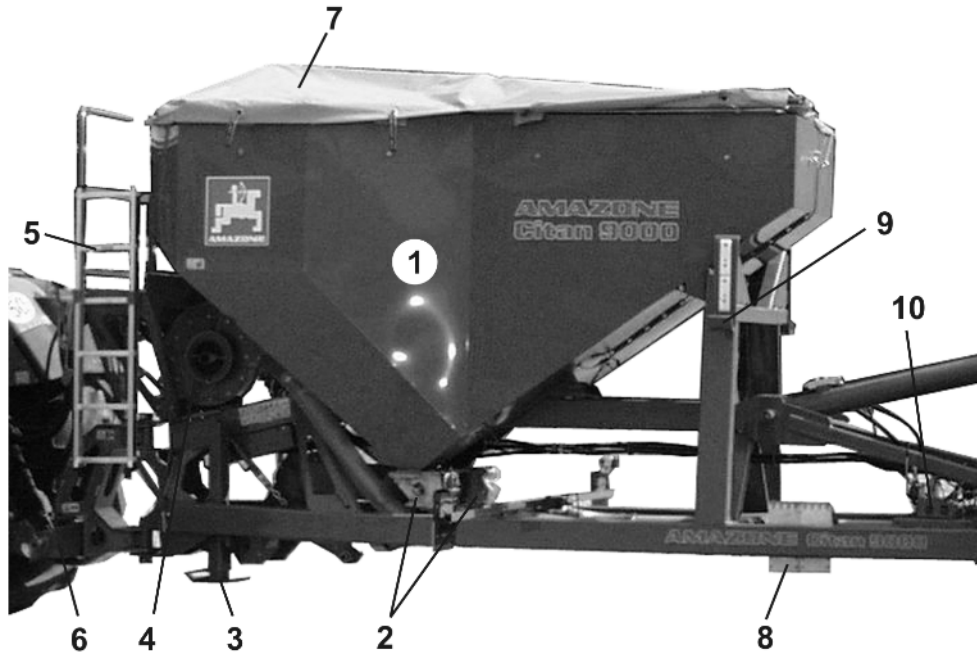


Fig. 7

- |                                      |  |
|--------------------------------------|--|
| (1) Seed hopper fill level indicator | (6) Draw bar   |
| (2) Seed – metering device           | (7) Hopper cover, swivelable   |
| (3) Jack, telescopic                 | (8) Chocks   |
| (4) Fan                              | (9) Catch hook – transport securing for machine wings                |
| (5) Swivellable ladder               | (10) Hydraulic with manual actuation at <b>AMA-LOG<sup>+</sup></b> . |

- Machine in transport position

- (1) Vario gearbox with setting scale (alternatively electric full metering (option)).
- (2) Loading board

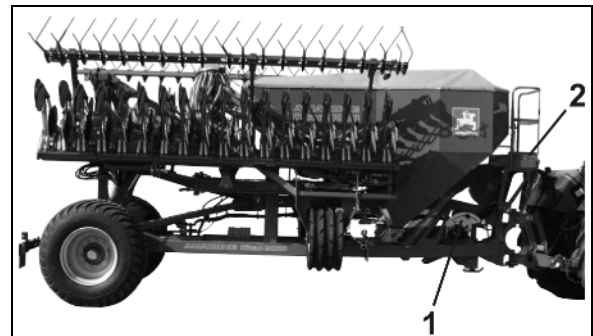


Fig. 8

- Machine in working position

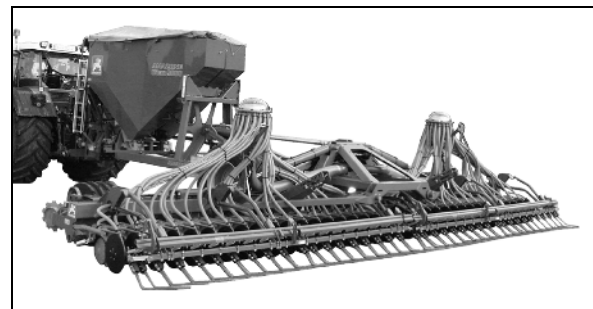


Fig. 9

## 4.2 Safety and protection equipment

- Guard screen inside the seed hopper
- Railing for loading board

## 4.3 Supply lines between the tractor and the machine

Hydraulic hose lines	<ul style="list-style-type: none"> <li>• for Tractor-spool valve <i>yellow, green</i> – double acting</li> <li>• for Tractor-spool valve <i>red</i> – single acting</li> <li>• for pressure free return flow</li> </ul>
Plug (7-plug)	<ul style="list-style-type: none"> <li>• Lighting for road traffic light kit</li> </ul>
Implement plug	<ul style="list-style-type: none"> <li>• AMATRON 3 / AMALOG<sup>+</sup></li> </ul>
Brake line yellow	<ul style="list-style-type: none"> <li>• Air pressure brake system</li> </ul>
Supply hose red	
Hydr. brake line (not allowed in Germany and some other EU countries)	<ul style="list-style-type: none"> <li>• Hydraulic brake system</li> </ul>

## 4.4 Road traffic safety equipment

Fig. 10/...

- (1) 2 rear lights  
2 brake lights  
2 indicators  
2 red reflectors  
(round, rectangular, or triangular)
- (2) 2 warning plates facing to the rear
- (3) Licence plate holder

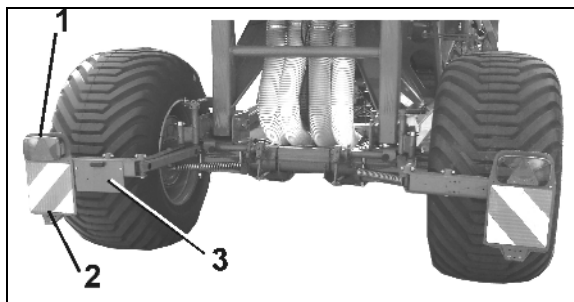


Fig. 10

Fig. 11/...

- (1) lateral 2 x 3 spotlights, yellow  
(on side at max. 3 m spacing).
- (2) 2 warning plates facing to the front.
- (3) 2 limiting lights facing to the front.

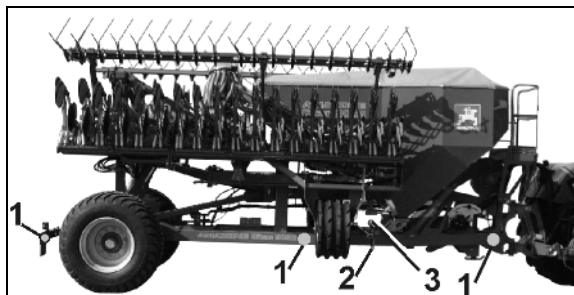


Fig. 11



## 4.5 Designated use of the machine

The Citan seed Drill

- is designed for the metering and sowing of all commercial seeds.
- is coupled onto the tractor with the aid of tractor lower links and operated by one person.

Operating on slopes is possible under following conditions

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

The declined use also includes:

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

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

For damage resulting from not designed use

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

## 4.6 Danger zones

Within these zones permanently existing danger or unexpectedly arising danger exist. Safety symbols identify these danger zones. Here particular safety advices are valid. Please refer to chapter "General safety advice", Seite 25.

Danger zones prevail:

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

## 4.7 Type plate and CE declaration

The rating plate shows:

- Vehicle- / machine ID no.:
- Type
- Basic weight kg
- Permissible support load kg
- Permissible rear axle load kg
- Permissible system pressure bar
- Permissible total weight kg
- Factory
- Model year
- Year of manufacture

<b>AMAZONE</b>			
Amazonen-Werke H. Dreyer GmbH & Co. KG Am Amazonenwerk 9-13 D-49205 Hasbergen			
Fahrz./Masch.-Ident-Nr.	<input type="text"/>		
Typ	<input type="text"/>		
Grundgewicht kg	<input type="text"/>	zul. Gesamtgewicht kg	<input type="text"/>
zul. Stützlast kg	<input type="text"/>	Werk	<input type="text"/>
zul. Achslast hinten kg	<input type="text"/>	Modelljahr	<input type="text"/>
zul. Systemdruck bar	<input type="text"/>		

<b>CE</b>	Baujahr année de fabrication year of construction Год изготовления	<input type="text"/>	
-----------	---	----------------------	---

Fig. 12

## 4.8 Technical data

		Citan 8000	Citan 9000	Citan 12000
Working width	[m]	8,0	9,0	12,0
Number of sowing coulters		64	72	96
Row spacing of coulters	[cm]	12,5		
Capacity seed tank	[l]	5000		
Operational speed	[km/h]	10 - 20		
Total length	[mm]	6985	6985	8485
Total height	[mm]	3573		
Max. support load ( (F <sub>H</sub> )	[kg]	4000	4200	5000
Brake system		air braking system or hydraulic brake system*		
Tractor-lower links		cat. 3, 4, 5		
Road transport data(only with empty seed tank):				
Permissible max. speed on all non public and public roads and ways.	[km/h]	40		
Basic weight	[kg]	6250	6600	7600
Permissible total weight	[kg]	11000	11000	12000
Max. load for road transport	[kg]	200kg		
Permissible rear axle load	[kg]	10000		
Permissible front support load	[kg]	5000		
Transport width	[m]	3		
Total weight in transport position	[mm]	3573		

\* Not allowed in some EU countries.

## 4.9 Required tractor equipment

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

### Tractor engine power

<b>Citan 8000, 9000</b>	from 130 kW (180 PS)
<b>Citan 12000</b>	from 170 kW (230 PS)

### Electrical system

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

### Hydraulics

Max. service pressure::	210 bar
Tractor pump capacity:	min. 80 l/min at 150 bar
Hydraulic oil of the machine:	Gear / hydraulic oil Utto SAE 80W API GL4 The hydraulic / gear oil of the machine is suitable for the combined hydraulic/gear oil circuits of all common tractor types.
Control valve:	<ul style="list-style-type: none"> <li>• Tractor - Control valve 1, 2 – double acting</li> <li>• Tractor - Control valve 3 – single acting</li> <li>• pressure free return flow</li> </ul>



#### Important!

**Pressure free return flow with large plug coupling (DN 16) for the pressure free oil return flow. In the return flow the back pressure must not exceed.**

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



#### Warning!

**Blocking the Tractor control valves *yellow* and *green* on the tractor is prohibited. The relevant hydraulic function must stop automatically when the relevant Tractor control valves is released.**

---

## Brake system

---

Dual circuit brake system

- 1 Coupling claw - red - to secondary hose
- 1 Coupling claw - yellow - to brake hose

Hydraulic brake system

- 1 Hydraulic connection for the hydraulic brake line



### Hint!

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

---

## 4.10 Details about noise level

---

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

Measuring implement: OPTAC SLM 5.

The noise level depends on the type of tractor used.

## 5 Assembly and function

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

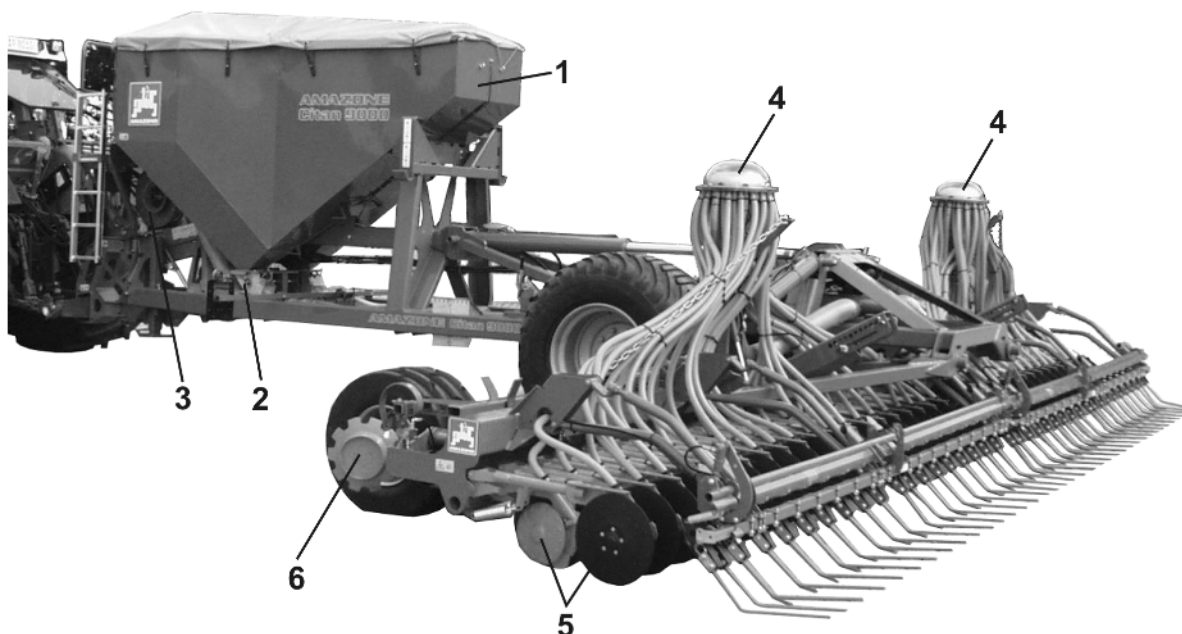


Fig. 13

Depending on the execution, the Citan seed drill is available in working widths of 8, 9 or 12 m.

Operation via the operator terminal AMATRON 3 or AMALOG<sup>+</sup>

The seed is transported in the seed hopper (Fig. 13/1).

The metering system (Fig. 13/2), driven by the star wheel or an electric motor, delivers the pre-set amount of seed into the air flow provided by the fan (Fig. 13/3).

The air flow delivers the seed to the distributor head (Fig. 13/4), that evenly distributes the seed to all sowing coulters (Fig. 13/5).

The RoTeC<sup>+</sup> -coulters are suited for sowing after the plough and for mulch sowing.

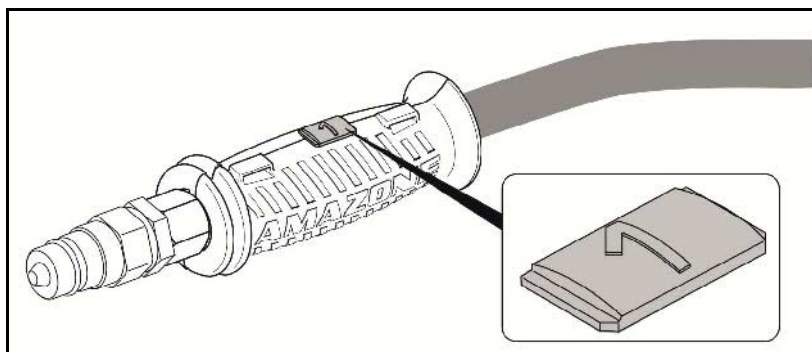
The track markers ((Fig. 13/6) mark the next bout in the tractor's centre.

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

## 5.1 Hydraulic connections




- All hydraulic hose lines are equipped with grips.

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













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
















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

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

### AMATRON 3

Marking		Function			Tractor control unit	
yellow			Rear frame / Pre-emergence marker / Star wheel / Track marker	Move into working position	Double acting	
	Move into headlands position.					
green		Pre-selection via control terminal	Implement booms	Fold out	Double acting	
	Fold in					
green			Coulter pressure / harrow pressure	Increase	Double acting	
	Decrease					
red		Blower fan drive			Single-acting	
red		Pressure-free return flow				

## AMALOG<sup>+</sup>

Marking		Function			Tractor control unit	
yellow		Pre-selection via switch tap	Rear frame / Pre-emergence marker / Star wheel	Move into working position	Double acting	
				Move into headlands position.		
yellow			Coulter pressure / harrow pressure	Increase	Double acting	
				Decrease		
green		Pre-selection via switch tap	Implement booms	Fold out	Double acting	
				Fold in		
green			Track marker	lower	Double acting	
				lifting		
red		Blower fan drive			Single-acting	
red		Pressure-free return flow				



### WARNING

#### **Danger of infection from escaping hydraulic fluid at high pressure!**

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

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



### 5.1.1 Coupling the hydraulic hose lines

---



#### WARNING

**Risk of contusions, cutting, catching, drawing in and knocks from faulty hydraulic functions when the hydraulic hose lines are connected incorrectly!**

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



- Check the compatibility of the hydraulic fluids before connecting the machine to the hydraulic system of the tractor.  
Do not mix any mineral oils with biological oils.
  - Observe the maximum approved hydraulic fluid pressure of 210 bar.
  - Only couple clean hydraulic connectors.
  - Plug the hydraulic connector(s) into the hydraulic sleeves, until the hydraulic connector(s) audibly lock.
  - Check the coupling points of the hydraulic hose lines for a correct, tight seat.
1. Move the tractor control unit to the floating position (neutral position).
  2. Clean the hydraulic plug of the hydraulic lines before coupling.
  3. Couple the hydraulic hose line(s) to the tractor control unit(s).

### 5.1.2 Hydraulic hose lines – detaching

---

1. Move the tractor control unit to the floating position (neutral position).
2. Unlock the hydraulic connectors from the hydraulic sleeves.
3. Fasten the hydraulic connectors in the parking couplings.

## 5.2 Running gear with braked axle

The brake system is

- a twin circuit air brake.  
The brake automatically secures the uncoupled machine against unintended rolling away.
- a hydraulic brake system.

## 5.3 Twin circuit air brake system



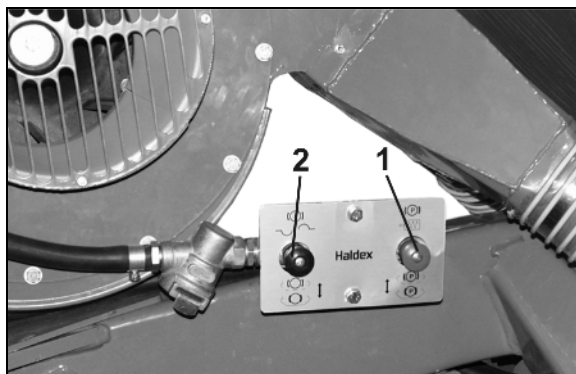
Keeping to the service interval is essential for proper functioning of the dual circuit service brake system.

To control the twin circuit air brake system, an additional twin circuit air brake system is also required on the tractor side.

- Hose coupling on brake line (yellow)
- Hose coupling on supply line (red)

**Fig. 14/...**

- (1) Actuation knob **red** for the parking brake.
  - pressing in until the stop releases the parking brake
    - for transport, operation of the coupled machine or
    - for manoeuvring the uncoupled machine.
  - pulling out until the stop actuates the parking brake to park the uncoupled machine.
- (2) Actuation knob **black** for manoeuvring.
  - pressing in until the stop releases the brake system allowing to manoeuvre the uncoupled machine.



**Fig. 14**



### DANGER

In an emergency, pull the red button (Fig. 15/1) to brake the implement.

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



**Fig. 15**

## Air tank

Fig. 16/...

- (1) Air tank
- (2) Drainage valve for condensation.

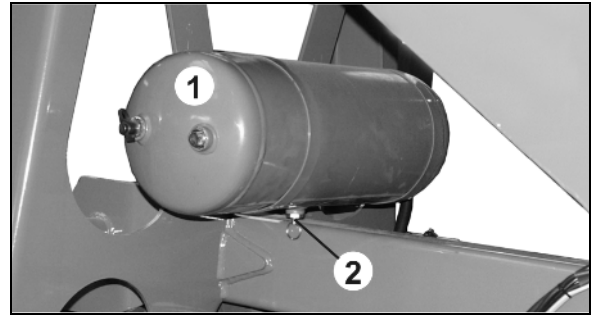


Fig. 16

### 5.3.1 Coupling the brake and supply lines



#### WARNING

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

- When coupling the brake and supply line, ensure that:
  - The sealing rings of the hose couplings are clean.
  - The sealing rings of the hose couplings form a proper seal.
- Always replace damaged seals immediately.
- Drain the air tank before the first journey each day.
- Only move off with the machine connected when the pressure gauge on the tractor shows 5.0 bar.



#### WARNING

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

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

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

1. Open the cover of the hose couplings on the tractor.
2. Remove the hose coupling of the brake line (yellow) from the empty coupling.
3. Check the sealing rings on the hose coupling for damage and cleanliness.
4. Clean soiled sealing rings and replace damaged sealing rings.
5. Fix the hose coupling of the brake line (yellow) in the yellow coupling on the tractor in accordance with the regulations.
6. Remove the hose coupling of the supply line (red) from the empty coupling.
7. Check the sealing rings on the hose coupling for damage and cleanliness.
8. Clean soiled sealing rings and replace damaged sealing rings.
9. Fix the hose coupling of the supply line (red) in the red coupling on the tractor in accordance with the regulations.
- On coupling the supply line (red), the supply pressure coming from the tractor automatically pushes out the button for the release valve on the trailer brake valve.
10. Release the parking brake and/or remove the wheel chocks.

### 5.3.2 Decoupling the brake and supply lines

---



#### **WARNING**

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

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

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

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



When decoupling or disconnecting the machine, the supply line to the trailer brake valve de-aerates. The trailer brake valve automatically switches over and actuates the operating brake system depending on the automatic, load-dependent brake power controller.

1. Secure the machine against unintentional rolling. For this, use the parking brake and/or wheel chocks.
2. Slacken the hose coupling of the supply line (red).
3. Slacken the hose coupling of the brake line (yellow).
4. Fix the coupling heads in the empty couplings.
5. Close the cover of the hose couplings on the tractor.

## 5.4 Hydraulic operating brake system

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

### 5.4.1 Coupling the hydraulic operating brake system



**Only couple clean hydraulic couplings.**

1. Close the protective caps.
2. If necessary, clean the hydraulic plugs and hydraulic socket as well.
3. Couple the machine-side hydraulic socket with the tractor-side hydraulic plug.
4. Hand tighten the hydraulic system screw union (if available).

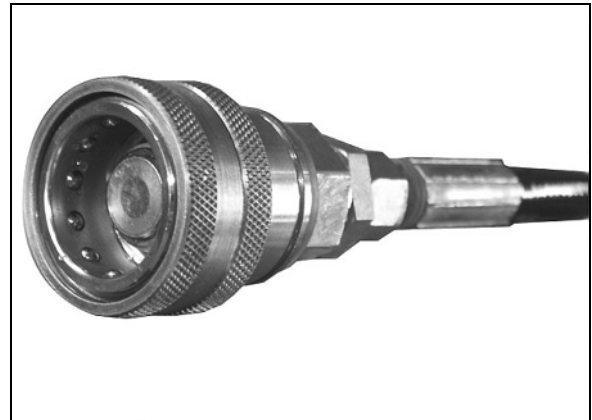


Fig. 17

### 5.4.2 Decoupling the hydraulic operating brake system

1. Release the hydraulic system screw union (if available).
2. Protect the hydraulic plug and hydraulic socket (Fig. 18/1) against soiling using the dust protection caps.
3. Lay the hydraulic system host line in the hose cabinet.



Fig. 18

### 5.4.3 Parking brake

When the parking brake is on, it secures the uncoupled machine against unintentional rolling. The parking brake is operated by turning the crank, which in turn operates the spindle and bowden cable.

- Crank position for quick releasing / applying.
  - (A) Apply the tractor parking brake.
  - (B) Release parking brake.

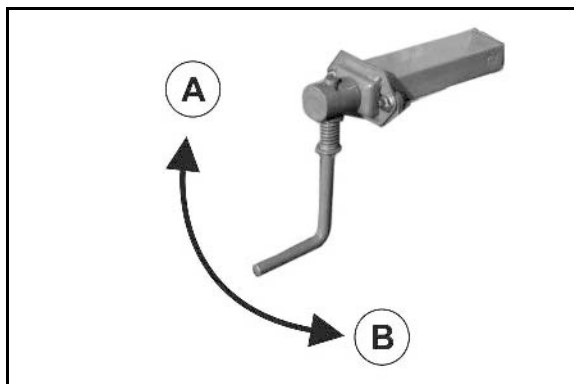


Fig. 19



- Correct the setting of the parking brake if the spindle's tension is no longer sufficient.
- Ensure that the bowden cable is not lying or rubbing against other vehicle parts.
- When the parking brake is off, the bowden cable must be slightly slack.

### 5.4.4 Emergency brake

In event of the machine being released from the tractor during travel, the emergency brake will brake the machine.

Fig. 20/...

- (1) Pulling cable
- (2) Brake valve with pressure accumulator
- (3) Hand pump to relieve the brake
- (A) Brake released
- (B) Brake applied

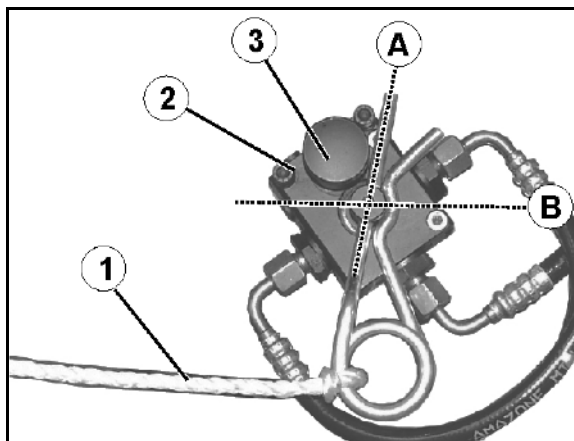


Fig. 20



#### **DANGER**

**Before travel, set the brake to the application position.**

For this purpose:

1. Secure the pulling cable to a fixed point on the tractor.
  2. Apply the tractor brake with the tractor engine running and hydraulic brake connected.
- Pressure accumulator of the emergency brake is being charged.

**DANGER****Risk of accident through brake malfunction!**

After withdrawing the safety splint (e.g. when activating the emergency brake), it is essential to insert the safety splint into the brake valve from the same side (Fig. 20). Otherwise the brake will not function.

After reinserting the safety splint, carry out a brake test for the service brake and the emergency brake.



When the implement is uncoupled, the pressure accumulator presses hydraulic oil:

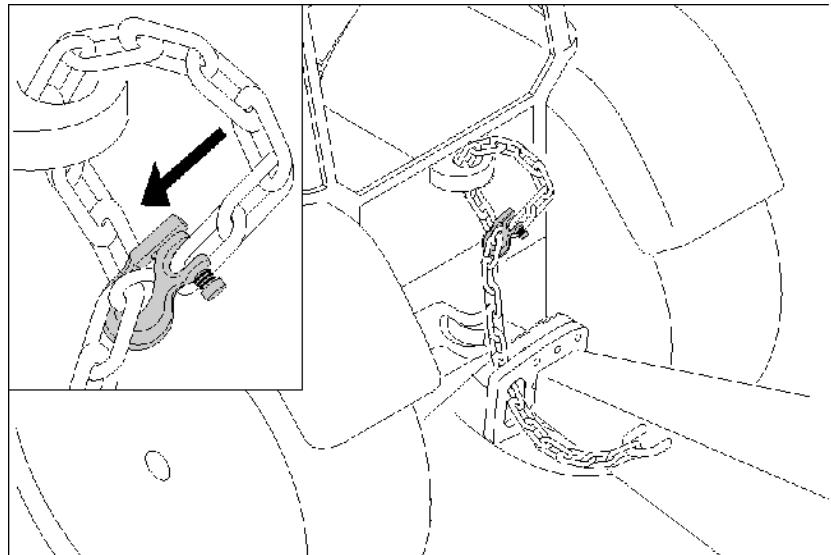
- into the brake and decelerates the implement,
- or
- into the hose line to the tractor and impedes the coupling of the brake line to the tractor.

In these cases, relieve pressure using the hand pump on the brake valve.

## 5.5 Safety chain for implements without brake system

Implements without a brake system or with a single-line brake system must be equipped with a safety chain in compliance with local country regulations.

The safety chain must be correctly fixed to a suitable position on the tractor before transporting.

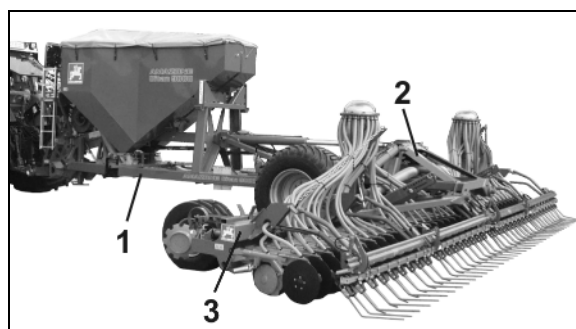


**Fig. 21**

## 5.6 Frame with machine wing

The frame of the machine consists of

- the rigid main frame (Fig. 22/1) for the seed hopper and the running gear,
- the foldable rear frame (Fig. 22/2) to lift the coulters at the headlands and for vertical folding into the transport position,
- two foldable machine wings (Fig. 22/3) for folding into the transport position.



**Fig. 22**

## 5.7 Metering rollers

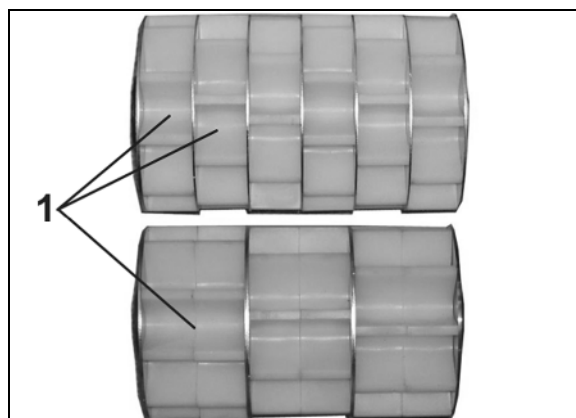
The seed metering units are equipped with exchangeable metering rollers. The type of metering roller depends on

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

The metering rollers are driven at random

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

For sowing seeds with particularly big grains, e.g. large beans, the compartments (Fig. 23/1) of the coarse metering rollers can be increased by resetting the wheels and divider plates.



**Fig. 23**



## 5.8 Star wheel

- Via the Vario gearbox the star wheel (Fig. 24/1) drives the metering rollers in the seed metering system
- Via the star wheel the travelled distance can be measured AMATRON 3 / AMALOG<sup>+</sup> 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.

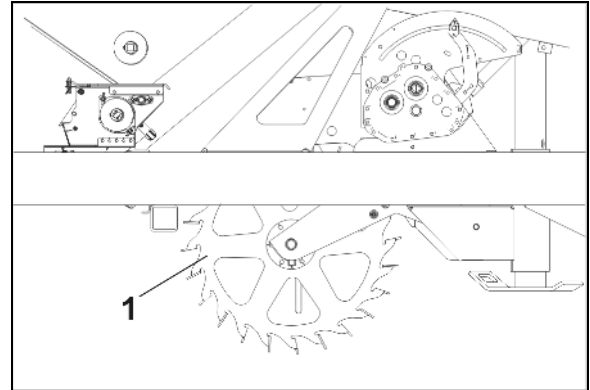


Fig. 24

## 5.9 Vario gearbox

### Not for full electric metering system!

For setting the seed rate

- the gearbox setting lever (Fig. 25/2) is manually adjusted. The higher the scale figure is, the bigger the seed rate will be.
- the setting motorstellt (Fig. 25/1) adjusts the gearbox setting lever I (Fig. 25/2) (option).



**Carry out a calibration test!**

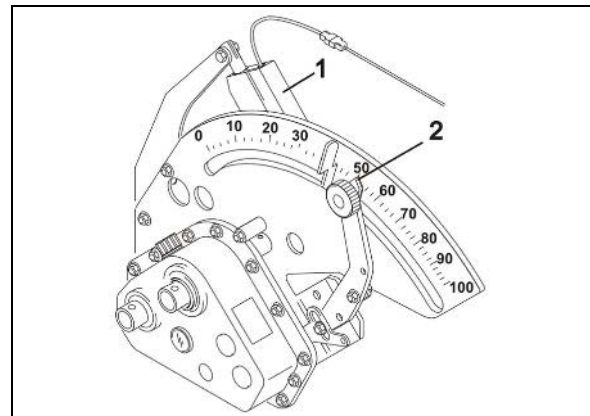


Fig. 25

## 5.10 Full electric metering system

With the full electric metering system each one electric motor (Fig. 26/1) drives a metering roller.

The drive rev. speed of the metering roller

- can infinitely be set via AMATRON 3.
- determines the seed rate. The higher the drive rev. speed of the electric motor, the bigger the relevant seed rate will be.
- automatically adapts to the changing forward speeds.

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

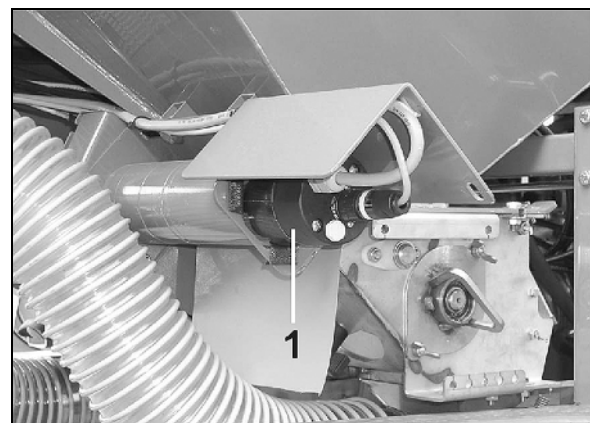


Fig. 26



**Carry out a calibration test!**

## 5.11 Seed collecting trays

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

The number of seed collecting trays (Fig. 27/1) corresponds to the number of the metering units. For transport the seed collecting trays are fitted into each other secured affixed using a lynch pin (Fig. 27/2) on the hopper rear wall.

Calibration crank in parking position (Fig. 27/3).

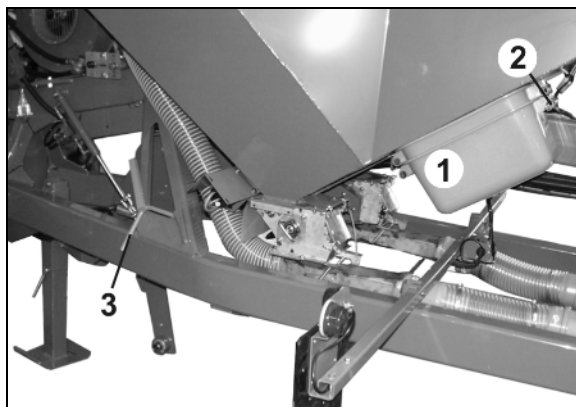


Fig. 27

## 5.12 Fan

The hydraulic motor (Fig. 28/2) drives the fan (Fig. 28/1) and creates an air flow. The air flow delivers the seed from the injector sluice to the coulters.

The blower fan rev. speed is settable

- on the power regulating valve on the tractor or (in case not available)
- on the pressure relief valve (Fig. 28/3) of the hydraulic motor.

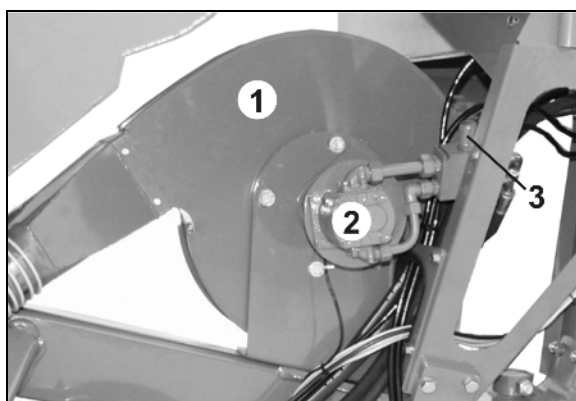


Fig. 28

## 5.13 RoTeC<sup>+</sup>-Schar

The AMAZONE RoTeC<sup>+</sup> - coulters can be safely used for both mulch and conventional drilling. Seed furrow former made from hard cast alloy. The elastic polyurethane (PU) depth limiting cleaning disc keeps the inner disc surface clean (Fig. 29/1). The naps (Fig. 29/2) provide additional drive.

The PU depth limiting disc precisely controls the depth of the seed furrow via three settings from 2 to 4 cm. For work deeper than 4 cm the depth limiting disc can be instantly removed without any tool.

The placement depth is hydraulically set via the coulters pressure.

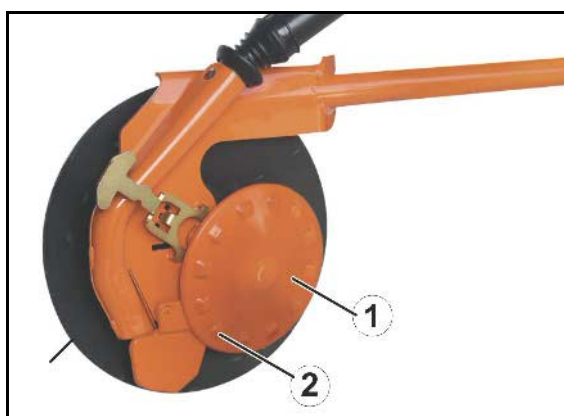


Fig. 29

## 5.14 Roller harrow (optional)

The roller harrow consists of

- harrow tines (Fig. 30/1)
- press rollers (Fig. 30/2).

The harrow tines close the seed furrows.

The press rollers press the seed into the furrows. The better soil contact means more humidity is available for germination. Voids are closed and obstruct snails' access to the seed.

The following are adjustable

- the working depth of the harrow tines
- the arrangement angle of the harrow tines
- the roller pressure

The roller harrow (Fig. 31/1) can be rapidly replaced with the exact harrow (Fig. 31/2).

The tramline marker (Fig. 31/3) can be used in combination with the two devices.

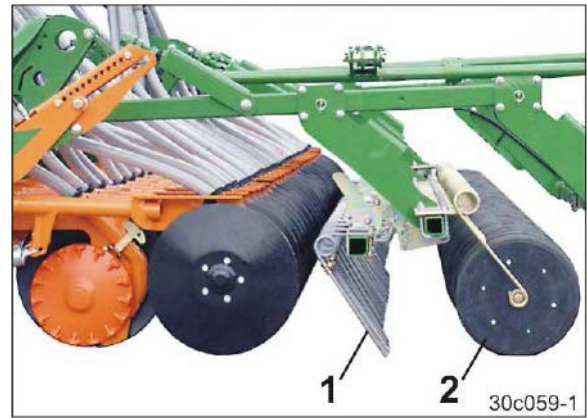


Fig. 30

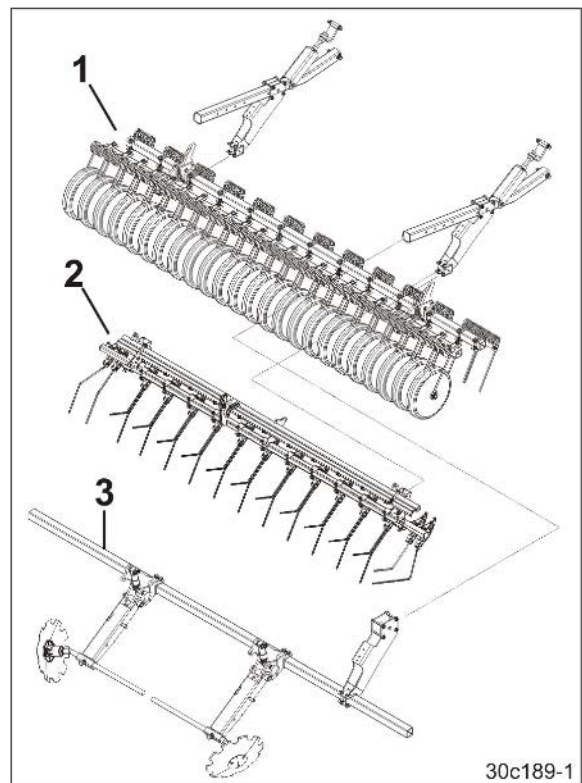


Fig. 31

## 5.15 Exact harrow

The exact harrow (Fig. 32/1) covers the seed in the seed furrows evenly with loose soil levels the soil.

Adjustable functions

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

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

The tensioning springs which provide the exact harrow pressure are pre-tensioned with the aid of a lever (Fig. 33/1).

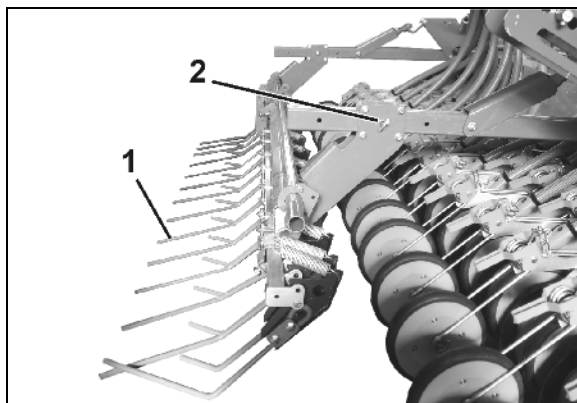
The lever (Fig. 33/1) rests on a pin (Fig. 33/2) in the setting segment.

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

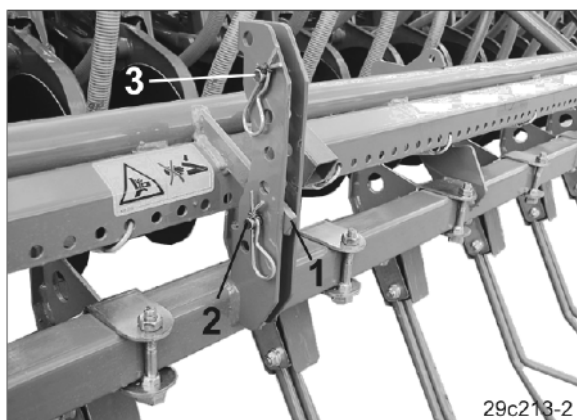
At the hydraulic exact harrow adjustment the second pin (Fig. 33/3) is inserted as a stop above the lever (Fig. 33/1) in the setting segment.

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

When installed in the correct position, the exact harrow is pinned to the holder tube in the middle hole (Fig. 32/2).



**Fig. 32**



**Fig. 33**



## 5.16 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.

AMATRON 3:

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



### Warning!

**Get the track marker arms into transport position (Fig. 35/1) before folding in the machine.**

For passing obstacles the track marker lowered into work can be folded in and out in the field. In case the track marker still hits an obstacle the shear bolt shears off protecting the track marker from damage.

- o Shear bolt (Fig. 36/1)
- o Spare shear bolts (Fig. 36/2)

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

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

can be adjusted.

AMALOG<sup>+</sup>: Change over valve to adjust the folded in track marker.

Position **A** – the track marker folds completely into the transport position (Fig. 35).

Position **B** – the track marker folds into vertical position (Fig. 34).

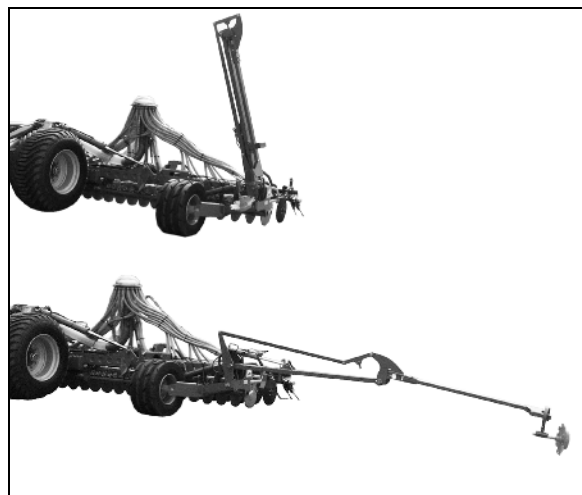


Fig. 34

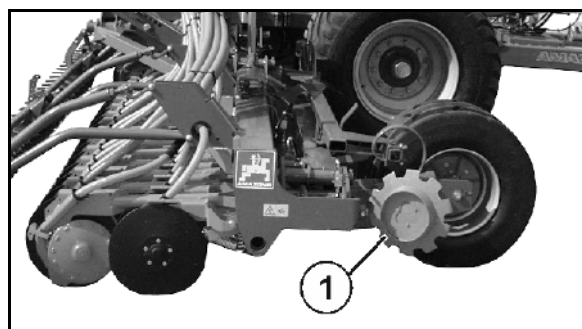


Fig. 35

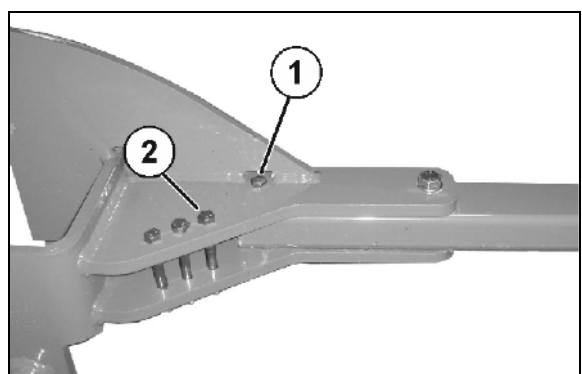


Fig. 36

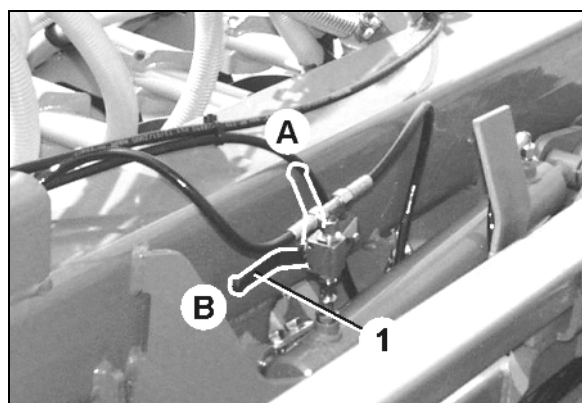


Fig. 37

## 5.17 Wheel mark eradicator (option)

Wheel mark eradicator (Fig. 38/1) to eliminate the tractor wheel marks.

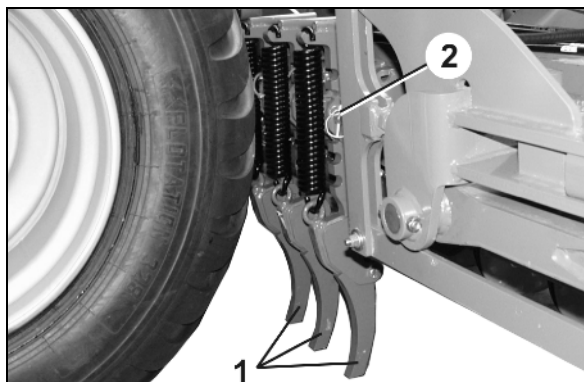


Fig. 38

## 5.18 Operator terminal AMATRON 3

AMATRON 3 consists of the terminal (Fig. 39), 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 tractor control valve.
- monitoring the seed drill during sowing operation.

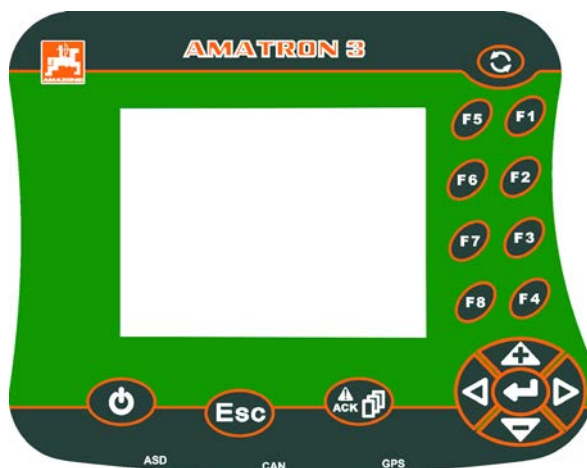


Fig. 39

AMATRON 3 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 3 stores for the started job

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

For communication AMATRON 3 contains the menu operation and the main menu with the 4 sub menus order, calibration of seed drill, machine data, and setup.

### The menu "operation"

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

### In the menu "order"

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

### In the menu "calibration of seed drill"

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

### In the menu "machine data"

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

### In the menu "Setup"

- provides the input and output of diagnosis data and the selection and input of machine basic data. These operations are exclusively left for the service staff.

## 5.19 Operator terminal **AMALOG<sup>+</sup>**

The AMALOG<sup>+</sup> consists of the control terminal (Fig. 40) and the basic equipment (cables and fastening material).

Fasten the control terminal in the tractor cab in accordance with the AMALOG<sup>+</sup> operating manual.

### AMALOG<sup>+</sup>

- Controls the driving line circuit and the pre-emergence marker.
- indicates the position of the track markers
- indicates the operational speed
- monitors the seed level in the storage hopper
- stores the worked total area
- monitors the tramlining switching inside the distributor head.
- Monitors the blower speed.

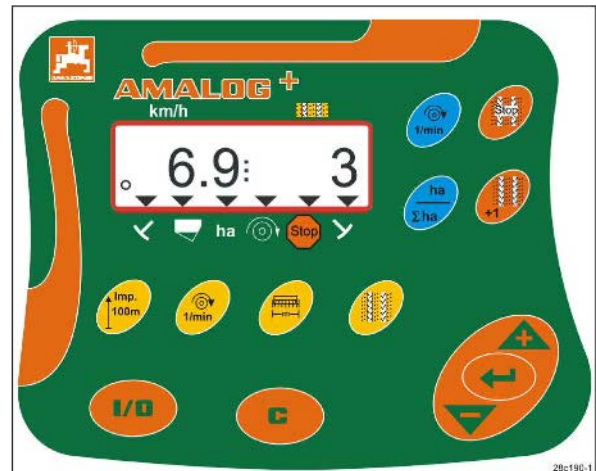


Fig. 40

## 5.20 On-board hydraulics

Optionally available:

- On-board hydraulic system K 700
- On-board hydraulic system for blower fan drive with hydraulic slide-on pump (PTO shaft speed 1000 rpm)

## 5.21 Distributor head and tramline system

In the distributor head (Fig. 41/1) 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 3 ./ AMALOG<sup>+</sup>.

When creating tramlines

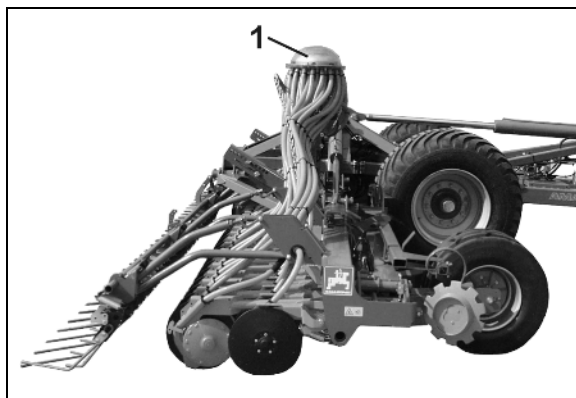
- the tramline control on the distributor head stops the seed flow to the seed tubes (Fig. 42/2) via shutter slides (Fig. 42/1).
- the tramline coulters do not sow seed into the soil.

When the electric motor (Fig. 42/3) closes the relevant seed tubes (Fig. 42/2) in the distributor head, the seed flow to the tramline coulters is stopped.

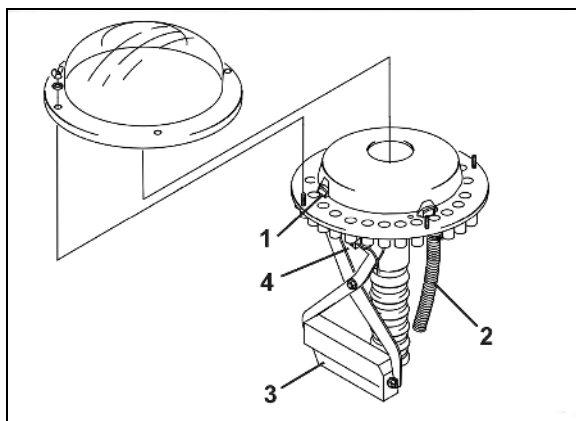
When creating tramlines the tramline counter shows the figure "0" in the AMATRON 3 / AMALOG<sup>+</sup>. The reduced seed quantity for creating a tramline can be adjusted.

A sensor (Fig. 42/4) checks the proper function of the shutter slides (Fig. 42/1), which open and close the seed tubes (Fig. 42/2).

AMATRON 3 / AMALOG<sup>+</sup> triggers the alarm in case of faults.



**Fig. 41**



**Fig. 42**



## 5.22 Tramline rhythm

The tramline system allows the creation of tramlines in the field. Tramlines are marks in which no seed is sown (Fig. 43/A) for the later operation of fertilising and crop protection machines.

The tramline spacing (Fig. 43/b) relates to the working width of the husbandry machinery (Fig. 43/B), e.g. fertiliser spreaders and/or field sprayers, for later operation in the field.

For setting the different tramline spacing (Fig. 43/b) enter the relevant tramline rhythms into AMATRON 3/ AMALOG<sup>+</sup>.

The necessary tramline rhythm (see table Fig. 43) results from the desired tramline distance and the working width of the seed drill.

Table (Fig. 43) 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 3/ AMALOG<sup>+</sup>.

The track width (Fig. 43/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.

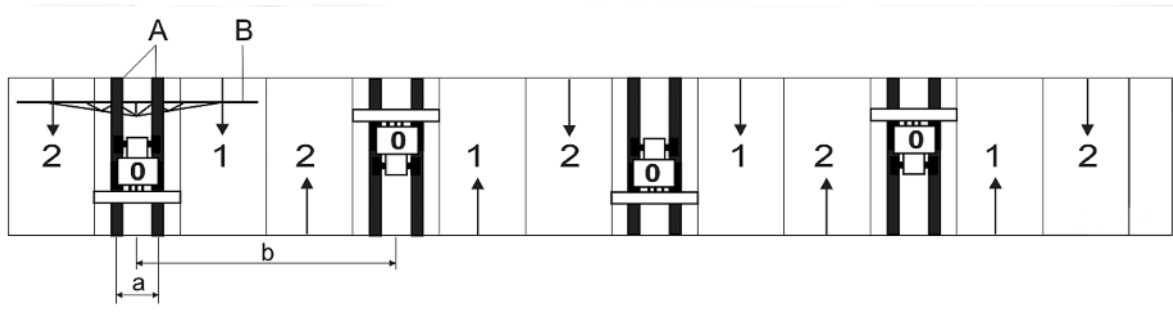


Fig. 43

	Seed drill working width		
	8m	9m	12m
Tramline rhythm	Tramline spacing (Working width of fertiliser spreader and field sprayer)		
1		18	24
3	24	27	36
4	32	36	48
5	40		
6	48		

Table 1

## 5.22.1 Example for creating tramlines

Some examples for the creation of tramlines are illustrated r (Fig. 44):

A = Working width of the seed drill

B = Tramline distance (= working width fertiliser spreader/field sprayer)

C = Tramline rhythm (Input into AMATRON 3/ AMALOG<sup>+</sup>)

D = Tramline counter (during operation, the tramline travels are numbered all the way through and displayed in AMATRON 3 / AMALOG<sup>+</sup>).

Carry out inputs and indications following the operator's manual for AMATRON 3/ AMALOG<sup>+</sup>.

### Example:

Working width seed drill: 12 m

Working width fertiliser spreader / field sprayer: 36 m = 36 m tramline distance

1. In the opposite table (Fig. 44) find:  
in column A the working width of the seed drill (12 m) and  
in column B the tramline distance (36 m).
2. In the same line in column "C" find the tramline rhythm (tramline rhythm 3) and set in AMATRON 3/ AMALOG<sup>+</sup>.
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 3/ AMALOG<sup>+</sup>. Enter this value only immediately before the first travel in the field.

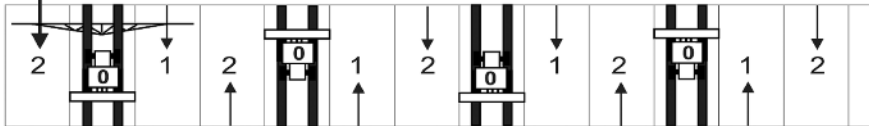
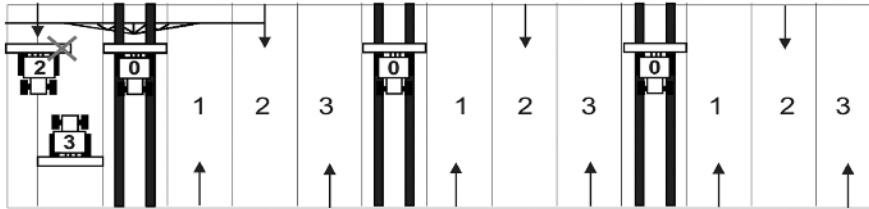
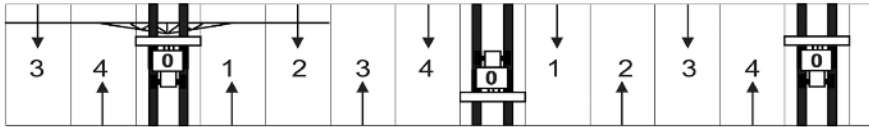
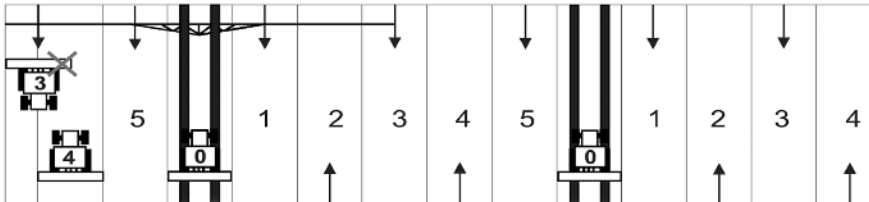
A	B	C	D
			<b>START DÉPART</b>
8,0 m 9,0 m 12,0 m	24 m 27 m 36 m	<b>3</b>	
8,0 m 9,0 m 12,0 m	32 m 36 m 48 m	<b>4</b>	
8,0 m	40 m	<b>5</b>	
8,0 m	48 m	<b>6</b>	

Fig. 44

### 5.22.1.1 Tramline rhythm 4 and 6

In illustration (Fig. 44) 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 3 / AMALOG<sup>+</sup>.

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. 45).

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.

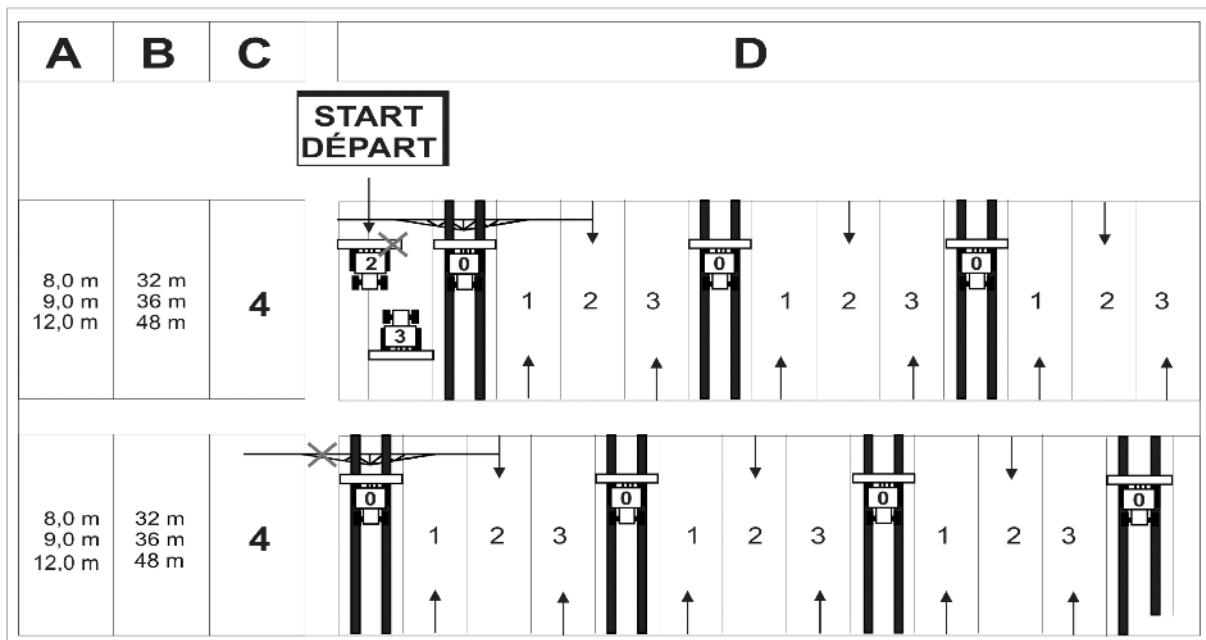


Fig. 45

### 5.22.2 Half-sided switching off (part width)

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

The seed supply to the coulters of the machines can be cut out on one side by means of two distributor heads (Fig. 46/1).

On seed drills with two distributor heads

- one distributor head supplies seed to the sowing coulters of one half of the implement.
- the seed metering can be switched off on half of the implement (part width).



**Fig. 46**

## 5.23 Pre emergence marker (Option)

When creating tramlines the pre emergence marker (Fig. 47) 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.

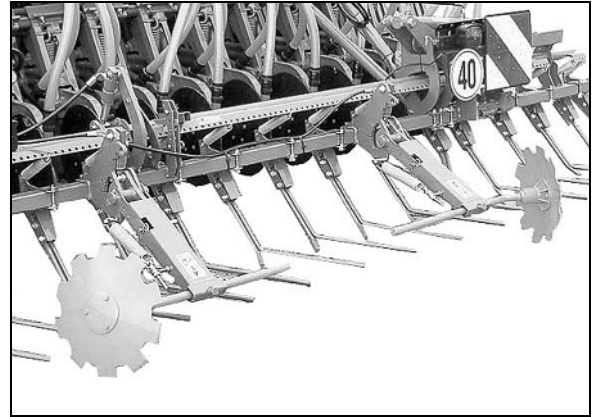


Fig. 47

The marker discs (Fig. 48) of the pre emergence marker are lifted when no tramline is created.

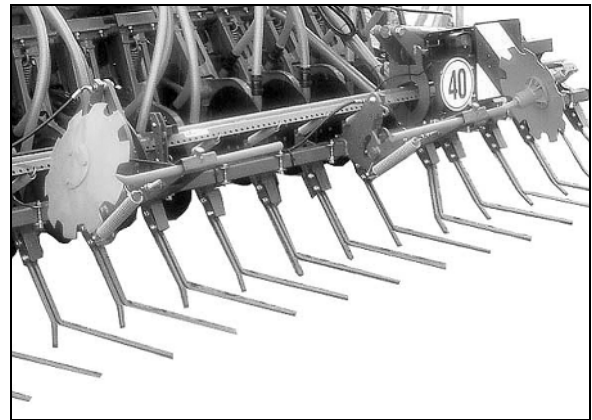


Fig. 48

### Pre emergence marker in operating- / transport position

- **Getting the pre-emergence marker into operating position:**
  1. Hold the track marker disc carrier.
  2. Remove the pin (Fig. 49/1) which is secured with the aid of a lynch pin (Fig. 49/2).
  3. Manually swivel the marker disc carrier downwards.
  4. Get the second marker disc carrier into operating position in the same way.
- **Getting the pre-emergence marker into transport position:**
  1. Swivel the pre-emergence marker upwards
  2. lock using pin (Fig. 49/1) and secure with the aid of a lynch pin (Fig. 49/2)..

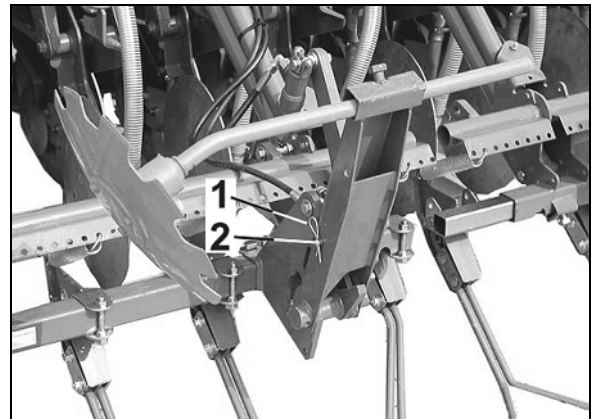


Fig. 49

## 5.24 Hydraulic unit

### AMATRON 3:

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

Initially select the desired hydraulic function in AMATRON 3 and carry out the hydraulic function via the related control valve.

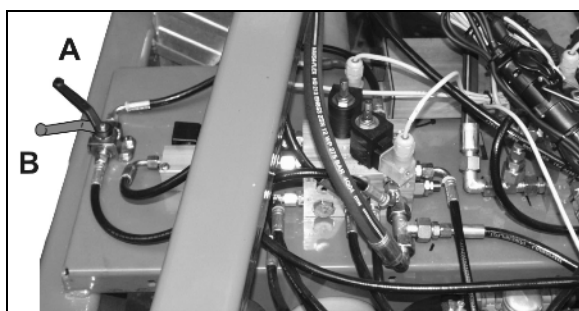


Fig. 50

### AMALOG<sup>+</sup>:

The hydraulic functions of the machine are pre-selected via 2 selector valves with the aid of the hand lever and carried out via the corresponding tractor control valve.

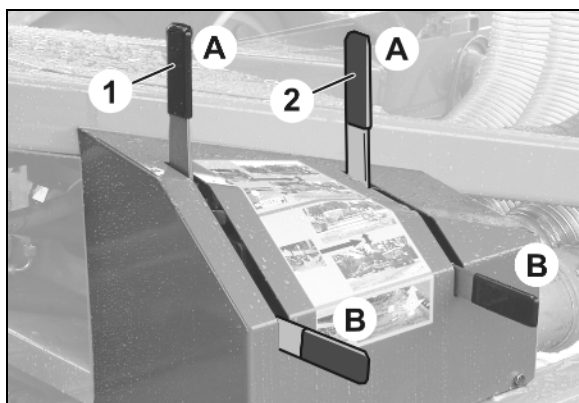


Fig. 51

## 6 Putting into operation

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



### **Danger!**

- Before putting the machine into operation ensure that the operator has read and understood the instruction manual.
- Before hitching the machine on or off read the chapter "Safety advice for the operator", page 25
  - Coupling and uncoupling the machine
  - Transport of the machine
  - Operation of the machine
- Take account to these effects and allow sufficient steering and braking of your tractor!
- If necessary use ballast weights!
- When mounting of machines at the front and/or in the rear do not exceed
  - the permissible tractor total weight
  - the permissible tractor axle loads
  - the permissible tyre carrying capacity of the tractor tyres
- Before starting to operate the combination tractor/mounted implement, carefully determine the actual values for:
  - the tractor total weight
  - the tractor axle loads
  - the tyre carrying capacity
  - the minimum ballast(by calculating or weighing the tractor-implement combination)

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

## 6.1 Initial operation

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

#### 6.1.1.1 Required data for the calculation

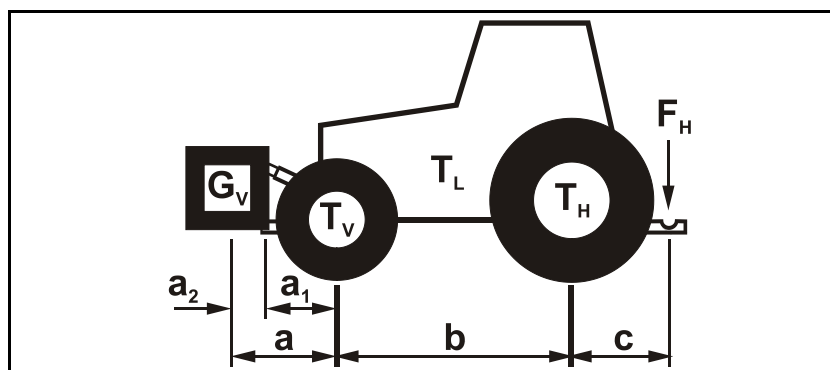


Fig. 52

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



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

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

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

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

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

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

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

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

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

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

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

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

**6.1.1.6 Tyre carrying capacity**

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

## 6.1.1.7 Table

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



### Hint!

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



### Danger!

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



- Ballast your tractor with weights at the front or rear if the tractor axle load is exceeded on only one axle.
- Special cases:
  - If you do not achieve the minimum ballast at the front ( $G_{V \min}$ ) from the weight of the front-mounted machine ( $G_V$ ), you must use ballast weights in addition to the front-mounted machine.
  - If you do not achieve the minimum ballast at the rear ( $G_{H \min}$ ) from the weight of the rear-mounted machine ( $G_H$ ), you must use ballast weights in addition to the rear-mounted machine.

## 7 Coupling and uncoupling the machine



### **Danger!**

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

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

- When coupling and uncoupling implements, observe the chapter " Safety advice for the operator ", Seite 25.



### **Danger!**

Always secure the machine with 4 chocks when it is uncoupled from the tractor.



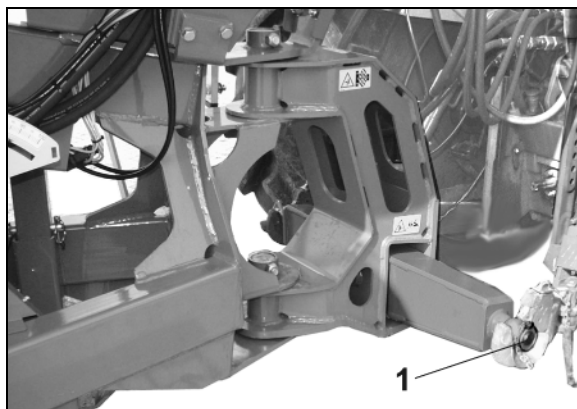
### **Danger!**

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

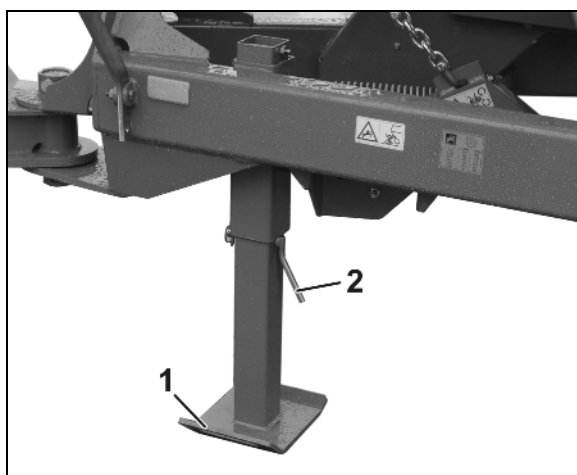
### 7.1 Coupling of the machine

1. The pins cat. III (Fig. 53/1) of the lower link pivoting pendulums, secured by lynch pins, should be provided with catching balls depending on the tractor type (see instruction manual of the tractor).
2. Open the tractor lower link safety device, i.e. it should be ready for the coupling procedure.
3. Couple the power lines before coupling the machine and the tractor.
  - 3.1 In the tractor, approach the machine in such a way that there is a space of approximately 25 cm between the tractor and the machine.
  - 3.2 Secure the tractor against unintentional start-up and rolling.
  - 3.3 Check that the power take-off shaft of the tractor is switched off.
  - 3.4 Couple the power lines to the tractor.
  - 3.5 Align the lower link hooks so that they are flush with the lower machine steering points.
4. Now, drive the tractor further backwards towards the machine so that the lower link hooks automatically accept the ball sockets at the lower steering points of the machine.
 

→ The lower link hooks lock automatically.
5. Ensure that the safety device of the tractor lower link locking is closed and secured (see operator's manual for the tractor).
6. Lift the tractor link arms until the jack (Fig. 54/1) gets free from the ground.
7. Remove locking pins (Fig. 54/2).
8. Slide upwards the support jack by using the handle (Fig. 54/1) and secure using locking pins.
9. Secure locking pins using the circlip.
10. Remove the wheel chocks, deposit in their retainers and secure.
11. Release the parking brake.
12. Check the brake and traffic light kit for proper function.



**Fig. 53**



**Fig. 54**

## 7.2 Decoupling the machine



### Danger!

- As a matter of principle unhitch and park the machine, firm ground (danger of tipping over)!
- Before unhitching machine
  - apply the parking brake
  - secure the machine against rolling away by using the chocks.

1. Hold the jack (Fig. 55/1) and remove the locking pin (Fig. 55/2).
2. Lower the jack and secure with the locking pin by using the clip pin
3. Park the machine on the jack..



### 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.**

4. Secure the machine against rolling away by using chocks and the parking brake.
5. Remove all supply line couplings between tractor and machine.
6. Uncouple the draw bar and pull the tractor forward.



### Danger!

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

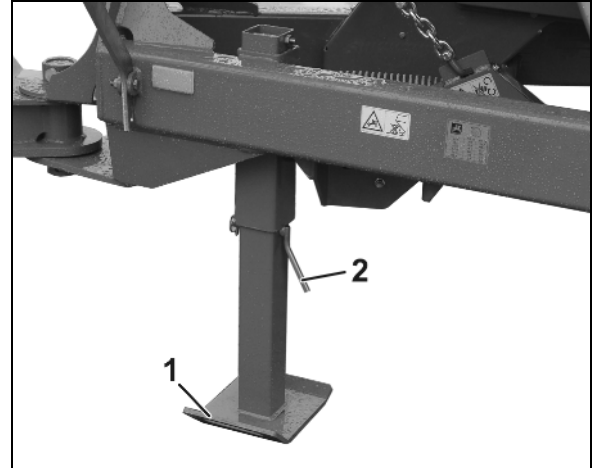


Fig. 55

### 7.2.1 Marshalling the decoupled machine

---



#### CAUTION

Extreme caution is required for marshalling work with the operating brake system released, as only the marshalling vehicle now can brake the machine.

The machine must be connected to the marshalling vehicle, before you actuate the release valve on the trailer brake valve.

The marshalling vehicle must have its brakes applied.

#### Two-line compressed air brake system

---



The operating brake system cannot be released using the release valve when the air pressure in the air tank falls below 3 bar (e.g. through repeated actuation of the release valve or through leakage in the brake system).

To release the operating brake

- Fill the air tank.
  - Completely deaerate the brake system on the drain valve of the air tank.
1. Connect the machine to the marshalling vehicle.
  2. Brake the marshalling vehicle.
  3. Remove the wheel chocks, press in the actuation knob **red** for the parking brake.
  4. Press in the actuation knob **black** for manoeuvring.
    - The operating brake system releases and the machine can be marshalled.
  5. Brake the marshalling vehicle.
  6. When the manoeuvring procedure has been finished pull out the actuation knob **red** and **black**.
  7. Decouple the machine from the marshalling vehicle.

#### Hydraulic brake system

---

1. Connect the machine to the marshalling vehicle.
2. Brake the marshalling vehicle.
3. Remove the wheel chocks.
4. Brake the marshalling vehicle again when the marshalling operation has been completed.
5. Secure the machine against rolling using wheel chocks.
6. Decouple the machine from the marshalling vehicle.

## 8 Adjustments

---



### WARNING

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

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

Secure the tractor and the machine against unintentional start-up and rolling before making any intervention in the machine

### 8.1 Selection of metering wheels

---

Select the required metering wheel depending on the kind of seed and application rate and Table 2 / Table 3.

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



Equip all metering units with the same metering roller.

### 8.1.1 Table – kind of seed – metering wheels






Citan 8000 / 9000					
Metering rollers	20 ccm	120 ccm	210 ccm	600 ccm	700 ccm
					
Seed					
Beans					X
Spelt				X	
Peas					X
Flax (dressed)	X	X	X		
Barley			X	X	
Grass seed			X	X	
Oats				X	
Millet		X	X		
Lupins		X	X		
Alfalfa	X	X	X		
Maize		X			
Poppy seed					
Oil linen (moist dressing)	X				
Fodder radish	X	X	X		
Phacelia	X	X			
Rapeseed	X				
Rye			X	X	
Red clover	X	X			
Mustard	X	X	X		
Soya				X	X
Sunflowers		X	X		
Turnips	X				
Wheat			X	X	
Vetches			X		

Table 2







Citan 12000				
Metering wheels	40 ccm	240 ccm	420 ccm	1200 ccm
				
Seed				
Spelt				X
Peas				
Flax (dressed)	X	X	X	
Barley			X	X
Grass seed			X	X
Oats				X
Millet		X	X	
Lupins		X	X	
Alfalfa	X	X	X	
Maize		X		
Poppy seed				
Oil linen (moist dressing)	X			
Fodder radish	X	X	X	
Phacelia	X	X		
Rapeseed	X			
Rye			X	X
Red clover	X	X		
Mustard	X	X	X	
Soya				X
Sunflowers		X	X	
Turnips	X			
Wheat			X	X
Vetches			X	

Table 3

## 8.1.2 Exchanging metering wheels



### Hint!

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

Exchange the metering wheel in the metering unit:

1. Remove the lynch pin (Fig. 56/2) (only required for closing the filled seed hopper with the aid of the slide (Fig. 56/1).
2. Push the shutter (Fig. 57/1) until its stop into the metering unit.
3. Just slacken the two thumb nuts (Fig. 58/1), do not remove them.
4. Twist the bearings and pull them off.
5. Pull the metering wheel off the metering unit.
6. Take the necessary metering wheel from table (Table 2 / Table 3) and assemble in vice versa order.
7. Equip all other metering units with equal metering wheels.



### Important!

Open all shutters (Fig. 56/1) and secure using lynch pins (Fig. 56/2).

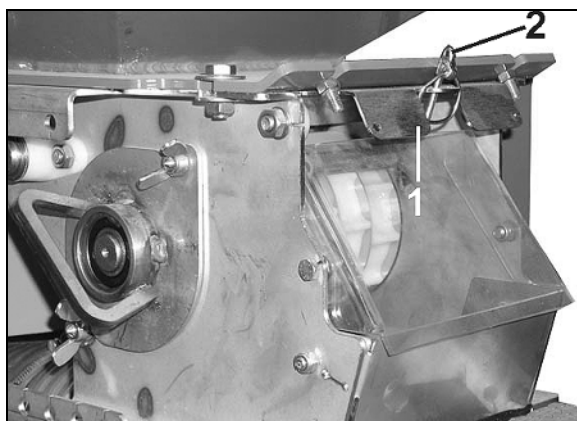


Fig. 56

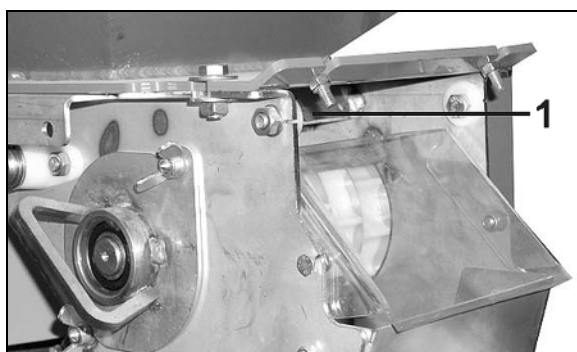


Fig. 57

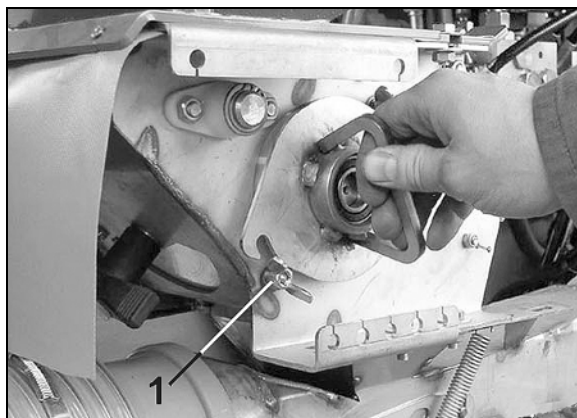


Fig. 58

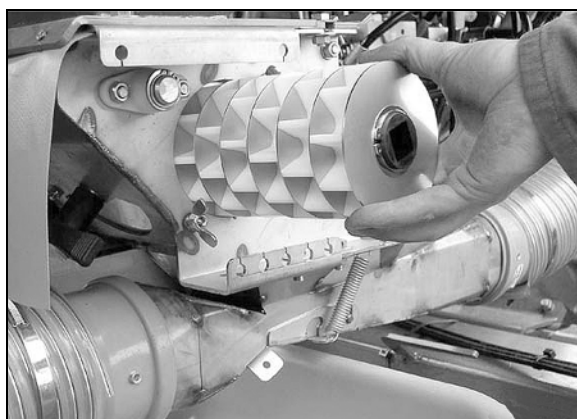


Fig. 59

## 8.2 Setting the seed level sensor

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

1. Stop tractor engine, apply parking brake and remove ignition key.
2. Use the stair steps (Fig. 60) to climb into the seed hopper.

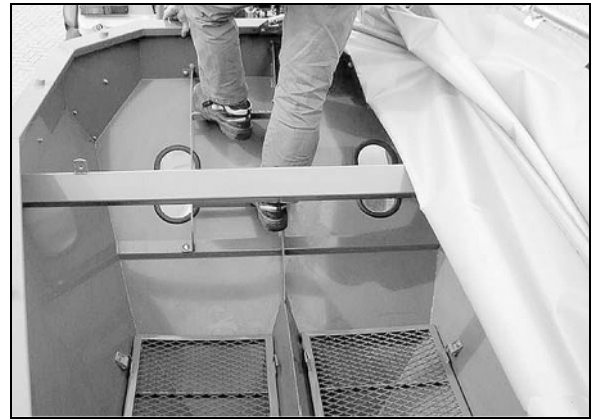


Fig. 60

3. Slacken thumb nut (Fig. 61/2).
4. Adjust the level of the filling level sensor (Fig. 61/1) according to the desired residual amount of seed.
5. Tighten thumb nut.

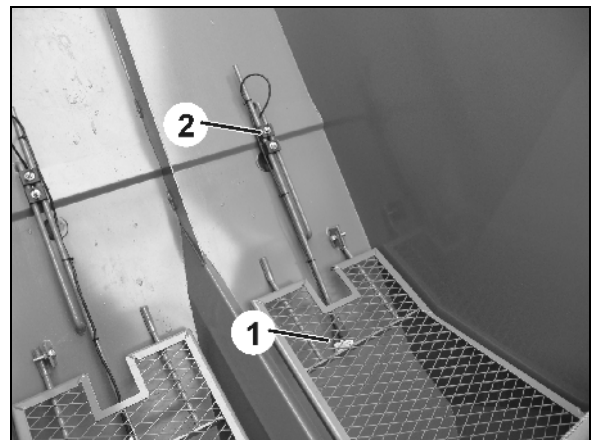


Fig. 61

**Important!**  
The filling level sensor should not rest on the hopper!

**Hint!**  
Increase the residual amount of seed which triggers the alarm

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

## 8.3 Adjusting the output volume on the gearbox

The desired seed rate is set by the gearbox setting lever (Fig. 62/1).

By the gearbox setting lever (Fig. 62/2) the speed of the metering shaft and thus the seed rate can infinitely variably be set. The higher the figure on the scale (Fig. 62/4) has been chosen by the pointer (Fig. 62/3), the higher the seed rate will get.

**Hint!**  
If your machine is equipped with the seed rate remote control, set the desired gearbox position according to **AMATRON 3!**

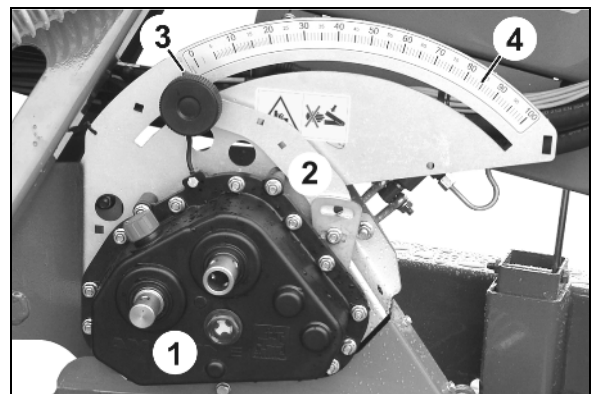


Fig. 62

## 8.4 Setting the application rate with AMATRON 3

---

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

## 8.5 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 3 and the quantity of seed applied in the field.

### Caution!

#### Before commencing the calibration test

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



The maximum application rate depends on the seed, from the dressing agent properties and the forward speed.

### 8.5.1 Calibration test with Vario gearbox

1. Fill the seed hopper with seed (200 kg correspondingly less for fine seeds at fine seeds).
2. Take the seed collecting trays off the transport retainer on the rear side of the hopper.
3. Slide the seed collection tray (Fig. 63) into the bracket and place one seed collecting tray underneath every individual metering unit.

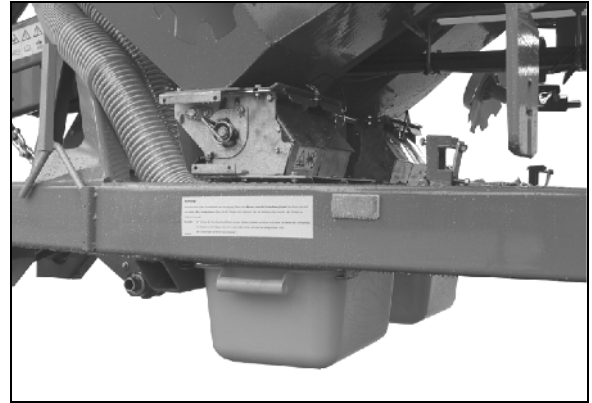


Fig. 63

4. Slacken the star knob (Fig. 64/1) of the gearbox setting lever.
5. Move the gearbox setting lever (Fig. 64/2) to one of the following gearbox settings:

Sowing with:

#### gearbox position

- Coarse metering wheel: 50
- Medium metering wheel: 50
- Fine metering wheel: 15

6. Tighten star knob (Fig. 64/1).
7. Open the injector sluice (Fig. 65/1) on all metering units.

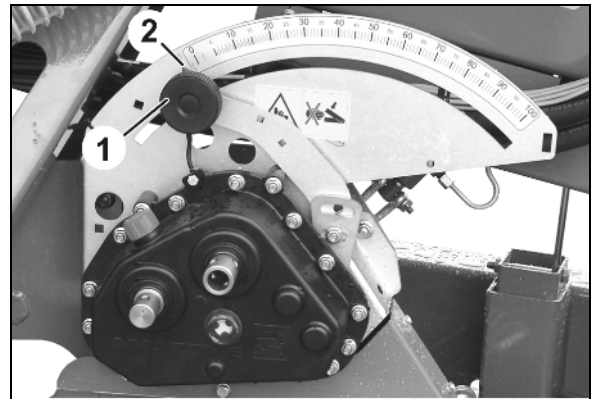


Fig. 64



#### Warning!

**Danger of squeezing when opening and closing the injector sluice (Fig. 65/1)!**

**Hold the injector sluice only on the strap (Fig. 65/2), danger of injury when the sprung loaded injector sluice flap shuts (Fig. 65/1).**

**Never ever reach with your hand between the injector sluice flap (Fig. 65/1) and the injector sluice.**

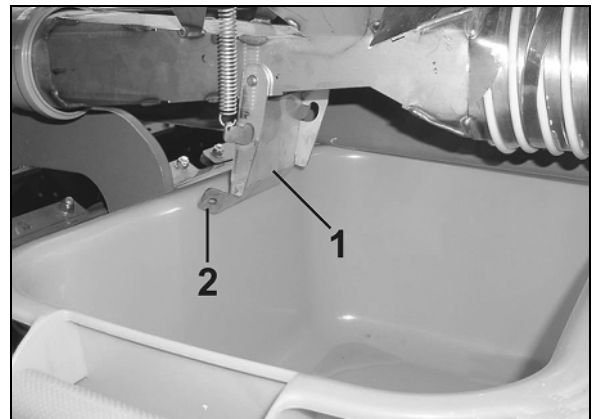
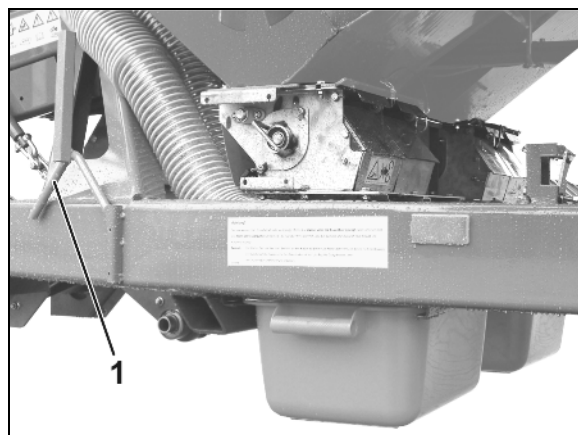


Fig. 65



## Adjustments

8. Take the calibration crank (Fig. 66/1) out of its transport retainer next to the star wheel.
9. Put the calibration crank (Fig. 67/1) on the star wheel (Fig. 67/2).
10. Turn the star wheel with the aid of the calibration crank (Fig. 67/1) in counter clock-wise direction until all compartments of the metering wheels are filled with seed and the seed evenly flows into the seed collecting trays.
11. Close the injector sluice flap (Fig. 65/1) with special care (danger of squeezing, see danger advice [Fig. 65]).
12. Empty the seed collecting trays and replace them underneath the metering units.
13. Open the injector sluice (Fig. 65/1).



**Fig. 66**



**Fig. 67**


14. Turn the crank in times taken from the table (Fig. 68).

The number of crank turns depends on the working width of the seed rail.

The number of crank turns refers to an area of 1/40 ha (250m<sup>2</sup>) or 1/10ha (1000m<sup>2</sup>).

Usually the crank turns for 1/40 ha are used. At extremely small seed rates, e.g. for rape, we recommend that you take the crank turns for 1/10 ha.

15. Weigh the seed collected in the collecting trays under consideration of the weight of the bucket and multiply either by factor "40" (for 1/40 ha) or factor "10" (for 1/10 ha).



	1/40 ha	1/10 ha
3,0 m	38,5	154,0
4,0 m	29,0	115,5
6,0 m	19,5	77,0
8,0 m	14,5	58,0
9,0 m	13,0	51,5
12,0 m	9,5	38,5

Fig. 68

#### Calibrating for 1/40 ha:

Seed rate [kg/ha] = collected seed [kg/ha] x 40

#### Calibrating for 1/10 ha:

Seed rate [kg/ha] = collected seed [kg/ha] x 10

**Example:** Calibrating for 1/40 ha collected seed 3,2 kg.

Seed rate [kg/ha] = 3,2 [kg] x 40 [1/ha] = 128 [kg/ha]

### 8.5.1.1 Determining the gearbox setting with the aid of the disc rule

The desired seed rate usually is not obtained after the first calibration test. However, with the aid of the disc rule it is possible to determine the correct gearbox setting by using the gearbox setting figure of the first calibration test at the calculated seed rate.

The disc rule consists of three scales: One outer white scale (Fig. 69/1) for all seed rates above 30 kg/ha and an inner white scale (Fig. 69/2) for all seed rates below 30 kg/ha. On the central, coloured scale (Fig. 69/3) gearbox settings from 1 to 100 are printed.

#### Example:

Wanted is a seed rate of **175 kg/ha**.

- At the first setting, the gearbox setting lever is brought to the "gearbox setting position 25" (it is possible to choose also any other gearbox setting figure). In this case a seed rate of **175 kg/ha** has been calculated.
- Align the seed rate **125 kg/ha** (Fig. 69/A) and the "gearbox setting position **50**" (Fig. 69/B) on the disc rule.
- Now read off the disc rule the gearbox setting figure for the desired seed rate of **175 kg/ha** (Fig. 69/C). In our example that is the "gearbox setting position **70**" (Fig. 69/D).
- Recheck the gearbox setting figure which you have determined by the disc rule as described under Seite 80.

#### After the calibration test:

1. Place the calibration crank back into the retainer.
2. Shut off injector sluice flap
3. Fix calibration tray to the bracket and secure with a clip pin.



#### Hint!

The desired seed rate usually is not obtained after the first calibration test. However, with the aid of the disc rule according is possible to determine the correct gearbox setting by using the gearbox setting figure of the first calibration test at the calculated seed rate.

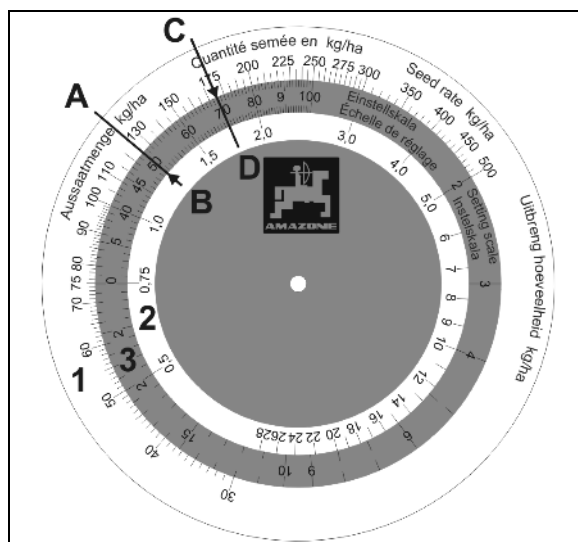


Fig. 69



### 8.5.2 Calibration test on Citan with Vario gearbox and **AMATRON 3**

Preparing the calibration test:

1. Fill the seed hopper with seed (200kg correspondingly less for fine seeds at fine seeds).
2. Take the seed collecting trays off the transport retainer on the rear side of the hopper.
3. Slide the seed collection tray (Fig. 70) into the bracket and place one seed collecting tray underneath every individual metering unit.

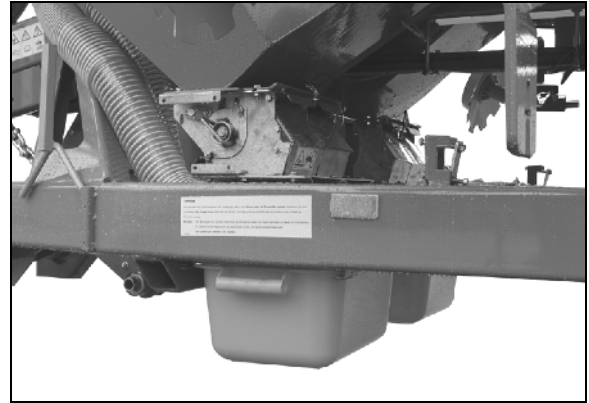


Fig. 70

4. Open the injector sluice (Fig. 71/1) on all metering units.



**Warning!**

**Danger of squeezing when opening and closing the injector sluice (Fig. 71/1)!**

**Hold the injector sluice only on the strap (Fig. 71/2), danger of injury when the sprung loaded injector sluice flap shuts (Fig. 71/1).**

**Never ever reach with your hand between the injector sluice flap (Fig. 71/1) and the injector sluice.**

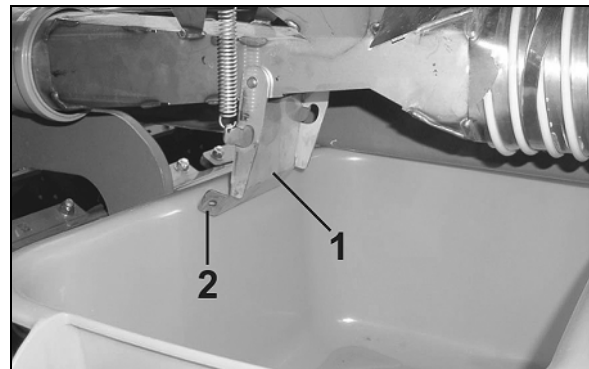


Fig. 71

5. Take the calibration crank (Fig. 71/1) out of its transport retainer next to the star wheel.
6. Put the calibration crank (Fig. 71/1) on the star wheel (Fig. 71/2).
7. Turn the star wheel with the aid of the calibration crank (Fig. 71/1) in counter clock-wise direction until all compartments of the metering wheels are filled with seed and the seed evenly flows into the seed collecting trays.
8. Close the injector sluice flap (Fig. 71/1) with special care (danger of squeezing, see danger advice [Fig. 71
9. Empty the seed collecting trays and replace them underneath the metering units.
10. Open the injector sluice (Fig. 71/1).

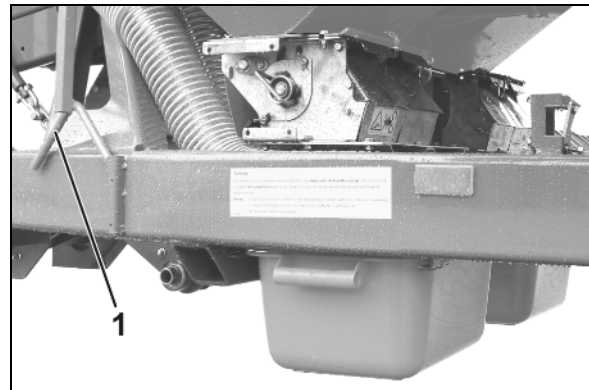


Fig. 72



**Additional details: refer to the operator's manual AMATRON 3.**

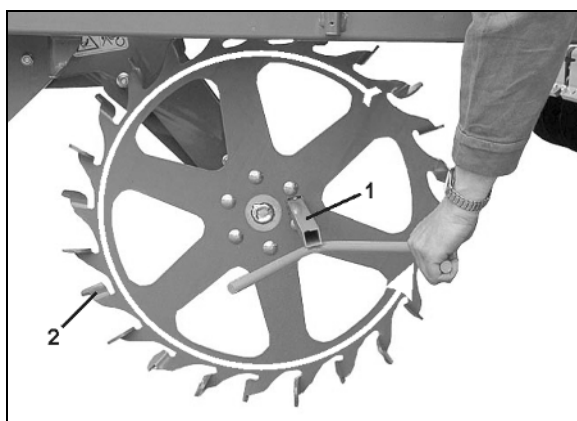


**Hint!**

**At the calibration test AMATRON 3 requires to turn the calibration crank in counter clockwise direction until a signal sounds.**

After the calibration test

1. Replace the calibration crank (Fig. 74) into its transport retainer.
2. Close the injector sluice flap with special care (see danger advice).
3. Affix the seed collecting trays (Fig. 74) in their transport retainer and secure by using a lynch pin.



**Fig. 73**

### 8.5.3 Calibration test of the Citan with full electric metering

Preparing the calibration test:

1. Fill the seed hopper with seed (200 kg, correspondingly less for fine seeds at fine seeds).
2. Take the seed collecting tray out of the transport retainer on the hopper rear wall.
3. Slide the seed collecting tray (Fig. 74) into the bracket.

Place one seed collecting tray underneath every individual metering unit.

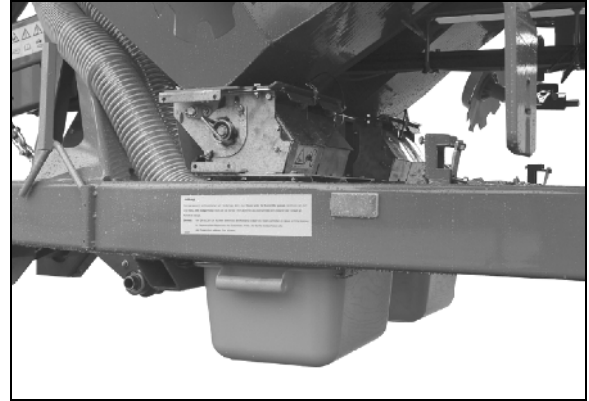


Fig. 74

4. Open the injector sluice flap (Fig. 75/1) on all metering units.



**Danger!**

**Danger of squeezing when opening and closing the injector sluice flap (Fig. 75/1).**

**Only hold the injector sluice flap on its strap (Fig. 75/2). Danger of injury when the sprung loaded flap shuts (Fig. 75/1).**

**Never ever reach with your hand between the injector sluice flap (Fig. 75/1) and the injector sluice!**

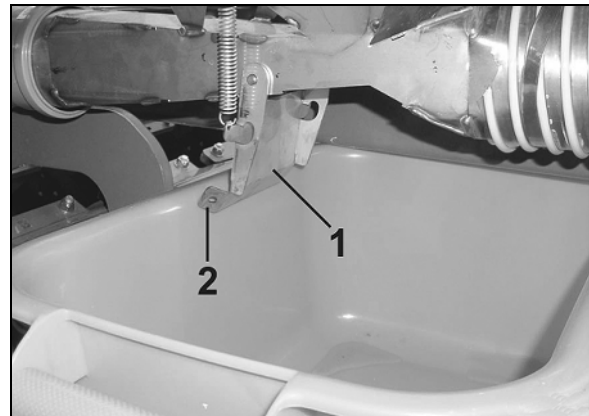


Fig. 75



**Additional details: refer to the operator's manual AMATRON 3.**

After the calibration test:

1. Close the injector sluice with special care.
2. Secure the calibration trays on the hopper rear wall with the aid of a lynch pin.

## 8.6 Blower fan speed

The blower 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.

Set the fan speed as follows

- on the oil flow control valve of the tractor
- on the pressure relief valve of the machine, in case your tractor is not provided with a oil flow control valve.

AMATRON 3 monitors the maintenance of the fan speed.

### 8.6.1 Blower fan speed table

The fan speed (1/min.) depends on

- the machine's working width (Fig. 76/1)
- the kind of seed
  - fine seeds, e.g. rape (Fig. 76/2)
  - grain and legumes (Fig. 76/3).



**Danger!**

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

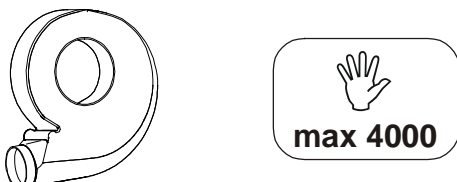

		
		
8,0m, 9,0m, 12,0m	3200	3900
Working width	Blower fan rev. speed (R.P.M.)	
	Fine seeds (rape)	Legumes (grain)

Fig. 76

### 8.6.2 Setting the fan speed on the oil flow control valve of the tractor

The pressure relief valve (Fig. 77/2) returns oil volumes, larger than necessary, back into the oil tank and unnecessarily heat up the hydraulic oil.

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

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

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

On tractors with controllable hydraulic pump (Fig. 77/1) set the fan speed on the oil flow control valve of the tractor:

1. Close the pressure relief valve (Fig. 79/2) (turn clockwise) and then open  $\frac{1}{2}$  turn (see chapter ), so that the oil volume is as little as possible.
2. Set the necessary fan speed on the oil volume control valve of the tractor.
3. The blower fan rev. speed is displayed in the menu operation.

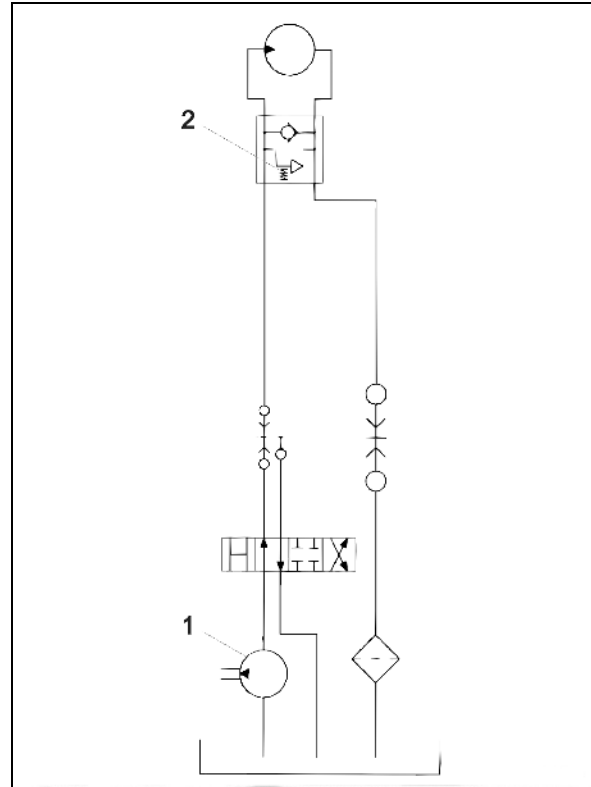


Fig. 77

### 8.6.3 Setting the fan speed on the pressure relief valve of the machine

On tractors without controllable hydraulic pump (Fig. 77/1) set the fan speed on the pressure relief valve (Fig. 77/2) of the machine:

1. Remove protective cap (Fig. 78/1)
2. Slacken counter nut
3. Use a screw driver to set the speed on the valve as follows:

Turn to the right = Increase fan speed

Turn to the left = Reduce fan speed

4. After setting, secure the valve position using the counter nut and put on the protective cap (Fig. 79/1).

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

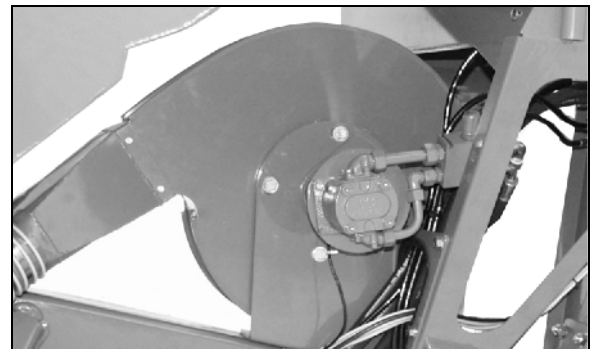


Fig. 78

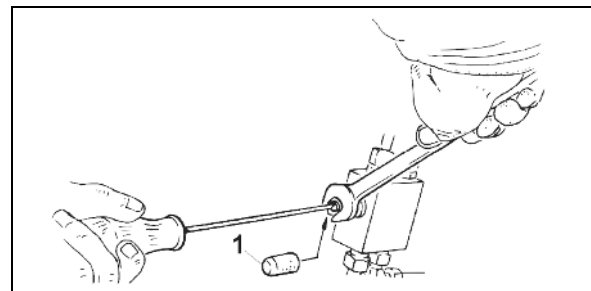


Fig. 79

## 8.7 Setting the placement depth of the seed

One of the most important preconditions for high yields is maintaining a constant placement depth of the seed.

The placement depth depends on coulter pressure, forward speed and soil condition. Your seed drill is equipped as standard with a central coulter pressure adjustment which applies an even pressure to all coulters.



**Check the seed placement depth always:**

- before starting to drill
- after every coulter pressure adjustment
- after re-adjustment of the RoTeC+ depth limiting discs
- when changing the forward speed
- in changing soil conditions.

Travel with your seed drill in the field approx. 30 m at operational speed, check the placement depth of the seed and readjust if necessary.

Die zentrale Schardruckverstellung wird von Hydraulikzylindern betätigt.

The central coulter pressure adjustment is actuated with hydraulic rams.

If the soil is changing from normal to heavy or vice versa, with the aid of the hydraulic rams the coulter pressure can be adapted to the soil during operation.



**Ensure the same coulter pressure adjustment on all hydraulic rams!**



Fig. 80

### 8.7.1 Setting the placement depth of the seed with the aid of a hydraulic ram

Getting machines with AMALOG<sup>+</sup>: hydraulic hand lever 1 into position B (see Seite 108)



**Important!**

The hydraulic coulter pressure adjustment is coupled with the hydraulic extra coverage following harrow adjustment (if existing). If the coulter pressure is increased, the extra coverage following harrow pressure will be increased automatically.



**Warning!**

Actuate the control spool valves only from the tractor cab.

When actuating the control spool valves several hydraulic rams may start actuation simultaneously, depending the switching position.

Advise people to leave the danger area.

**Danger of injury from moving parts!**



Two pins (Fig. 81/3 und Fig. 81/4) function as stroke limiters for the stroke of the hydraulic ram (Fig. 81/1) placed within the setting segment. When the hydraulic ram is without pressure the top of it rests on the pin (Fig. 81/3) and when the hydraulic ram is pressurised it rests on the pin (Fig. 81/4).

#### Setting the normal coulter pressure

Pressurise hydraulic ram (Fig. 81/1).

Insert the pin (Fig. 81/3) into one of the holes of the quadrant plate and secure by using a clip pin (Fig. 81/2).

Each hole of the quadrant plate is marked with a figure. An increasing figure indicates an increase in the coulter pressure (Fig. 83).

Increasing the coulter pressure

1. Relieve the hydraulic ram (Fig. 82/1) from pressure .
2. Insert the pin (Fig. 82/3) into one of the holes of the quadrant plate and secure by using a clip pin (Fig. 82/2).

Each hole of the quadrant plate is marked with a figure. An increasing figure indicates an increase in the coulter pressure (Fig. 83).

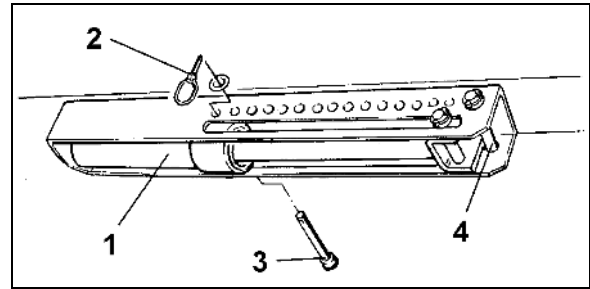


Fig. 81

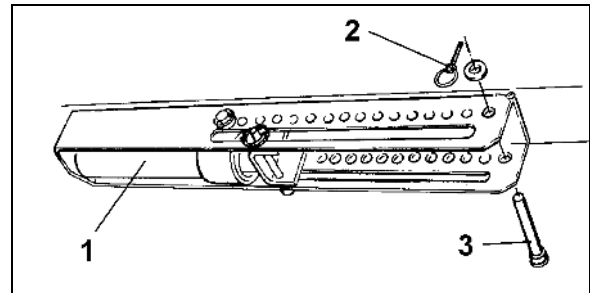


Fig. 82

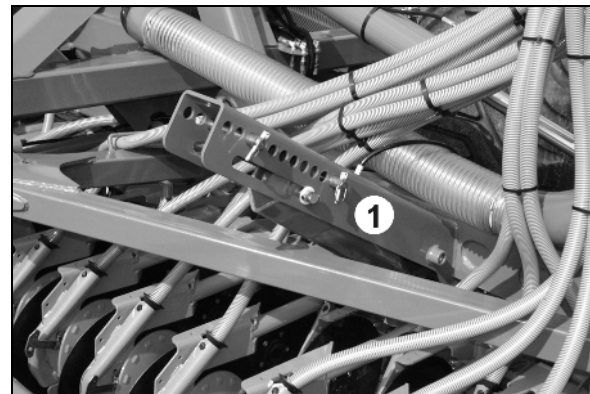


Fig. 83

## 8.8 Seed drills with RoTeC<sup>+</sup> coulters

If your seed drill is equipped with RoTeC-(roll disc) coulters and depth limiters (special option) and the desired placement depth cannot be achieved by replacing the pins, all RoTeC depth limiter discs would have to be re-adjusted evenly according to Seite 92.

The fine tuning then is again conducted by re-inserting the pins.

### 8.8.1 Setting the placement depth of the seed by resetting the RoTeC<sup>+</sup>-depth limiting discs (special option)

In order to ensure an even seed placement even in changing soil conditions the RoTeC<sup>+</sup> coulters are equipped with depth limiting discs (Fig. 84/1).

When having ordered the seed drill with depth limiting discs they have been set by the factory in position 1 (see para.9.5.3) for a placement depth of approx. 2 cm for medium heavy soils. For slightly increasing the placement depth the coulter pressure may be increased with the aid of the coulter pressure adjustment according to unterhalb. Before every operation check the correct position of the depth limiting discs and the placement depth of the seed.

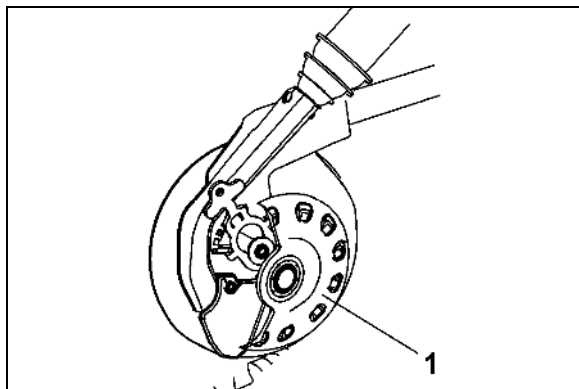


Fig. 84

### 8.8.2 Fitting and setting the RoTeC<sup>+</sup> depth limiting discs

#### • Initial fitting

1. Take the RoTeC<sup>+</sup>-depth limiting disc (Fig. 85/1) by its grip (Fig. 85/2) and press the depth limiting disc (Fig. 86/1) from below against the locking (Fig. 86/2) of the RoTeC<sup>+</sup>-coulter. The collar (Fig. 85/3) must catch into the detent slit (Fig. 86/3). Then pull the grip to the rear.
2. A slight tap on the discs centre facilitates engagement.

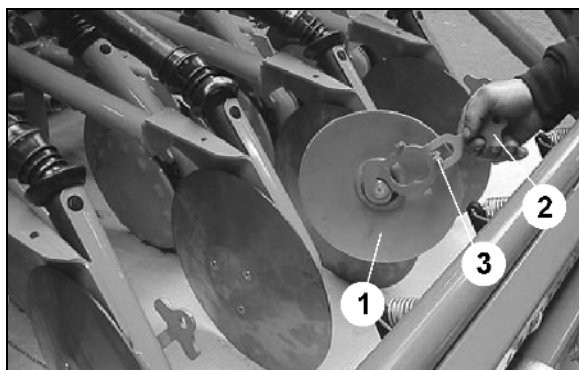


Fig. 85

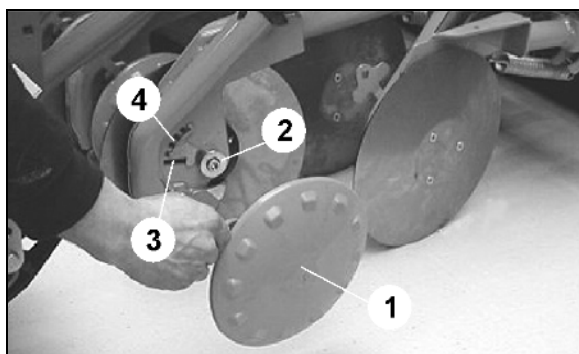


Fig. 86

3. For setting the working depth pull the grip upwards (Fig. 87/4) over the locking pawl (Fig. 87).



Fig. 87



### • Setting the depth limiters

The RoTeC<sup>+</sup>-limiting disc (Fig. 88/1) can be set in 4 positions. For medium soils the following placement depths result (see Fig. 88):

- Positions 1: Placement depth approx. 2cm
- Positions 2: Placement depth approx. 3cm
- Positions 3: Placement depth approx. 4cm
- Without depthlimiting disc:  
Placement depth > 4cm

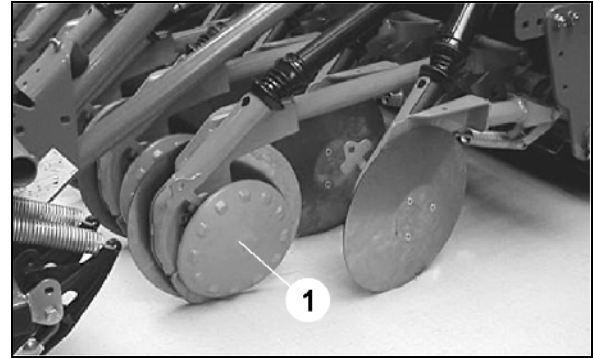


Fig. 88



**Check the placement depth of the seed after every setting.**

**Slight changes in the placement depth of the seed may then be set with the aid of the coulter pressure adjustment according to Seite 90!**



**For setting the placement depth at first adjust the depth limiters in position 1 and try to achieve the placement depth via the coulter pressure.**

→ **The higher the coulter pressure is the smoother the coulter ride will be.**

**In very light soils and at a very shallow seed placement the exchange of the depth limiter for high profile depth limiting discs is possible.**

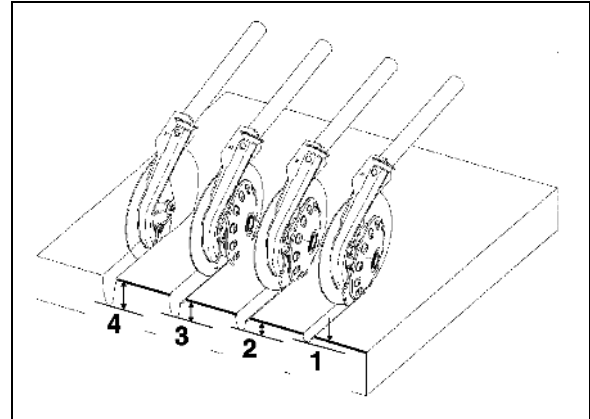


Fig. 89

## 8.9 Roller harrow



### DANGER

Make adjustments only when the tractor parking brake is applied, the engine switched off and the ignition key removed.

### 8.9.1 Adjusting working depth and arrangement angle of harrow tines

1. Raise the implement by the integrated running gear just so that the harrow tines are immediately above the ground but not touching it.
2. Apply the tractor parking brake, switch off the tractor engine and remove the ignition key.

3. Hold the harrow tine bar by the carrier arm (Fig. 90/3).
4. Adjust the working depth of the harrow tines by securing the carrier arm with the pin (Fig. 90/1).
  - o in all segments
  - o in the same hole.



The deeper the pin is inserted in the adjusting segment, the greater the work depth.

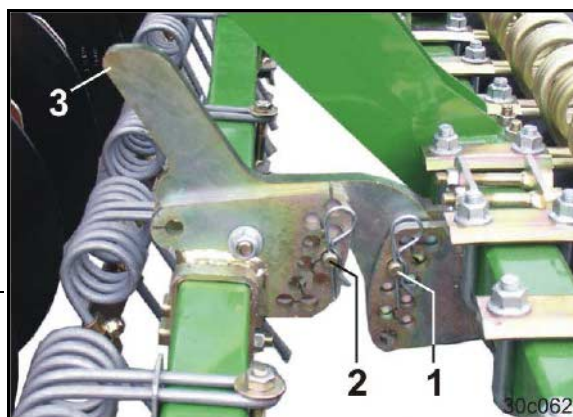


Fig. 90

5. After each repositioning, secure the pin with a safety splint.
6. Alter the arrangement angle of the tines to the ground by securing the pin (Fig. 90/2)
  - o in all segments
  - o in the same hole.

Ensure that the pin (Fig. 90/2) is positioned below the carrier arm (Fig. 90/3) in the adjuster segment.



The deeper the pin (Fig. 90/2) is inserted in the adjuster segment, the flatter the angle.

7. After each repositioning, secure the pin (Fig. 90/2) with a safety splint.
8. Move in the integrated running gear, i.e. lower the machine fully.

### 8.9.2 Adjusting roller pressure

The roller pressure is adjusted by changing the distance "X" (Fig. 91) on all segments by means of the screw (Fig. 91/1).

1. Move the machine on the field to the working position.
2. Apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
3. Release two lock nuts (Fig. 91/2).

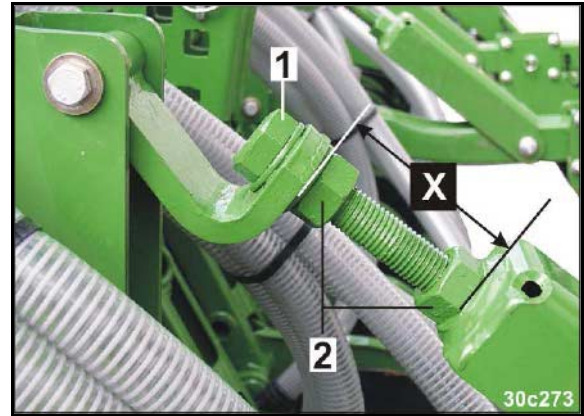


Fig. 91

4. Set the desired distance „X“.

Raise roller pressure:	Increase distance „X“
Lower roller pressure:	Reduce distance „X“.

5. Firmly tighten the lock nuts (Fig. 91/2).
6. Make the same settings at all segments.
7. Check the work results



The maximum roller pressure of 35 kg per roller in operational position must not be exceeded.

### 8.10 Exact harrow

#### 8.10.1 Exact harrow – spring tine position

Set the spring tines of the exact harrow in such a way, that they

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

The distance between the exact harrow and the soil is then from 230 to 280 mm (Fig. 92).

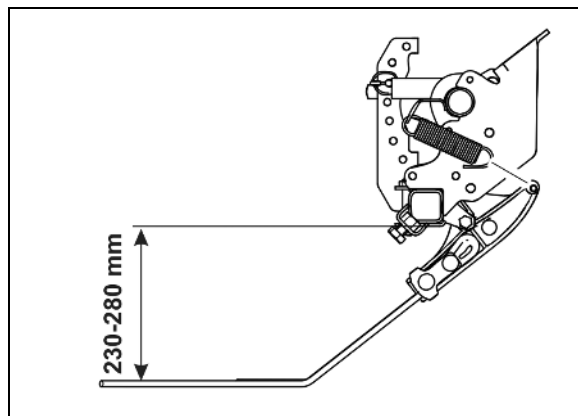


Fig. 92

The setting is achieved by lengthening or shortening the upper harrow suspension (Fig. 93/1):

1. Putting the machine into operation in the field.
2. Stop tractor engine, apply parking brake, remove ignition key.
3. Slacken the counter nut (Fig. 93/2).
4. Adjust the upper harrow suspension on all fixing points (Fig. 93/1) to an equal measure of length. For this turn all bolts (Fig. 93/3) equally.
5. After setting, retighten the counter nut (Fig. 93/2) firmly.
6. Check the working result of the exact harrow.

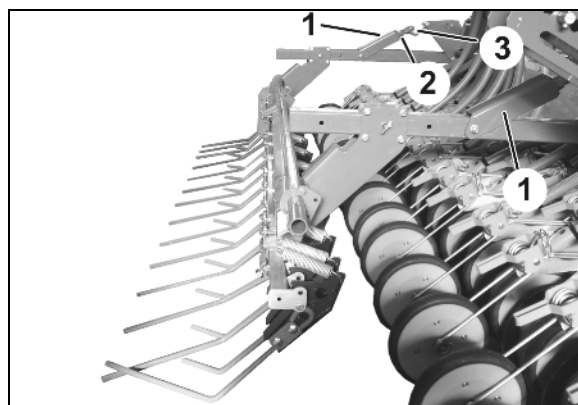


Fig. 93

#### 8.10.2 Exact harrow pressure



##### Warning!

**Actuate the control valves only from inside the tractor cab!**

**When actuating the control valves several hydraulic rams may start functioning, depending on the switching position!**

**Advise people to leave the danger area!**

**Danger of injury from moving parts!**

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

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

Carry out the same setting on all setting segments.

### 8.10.2.1 Setting the exact harrow

Setting the harrow pressure:

1. Apply the parking brake, stop the tractor engine and remove the ignition key.
2. Tension the lever (Fig. 94/1) with the aid of the calibration crank.
3. Insert the pin (Fig. 94/2) into a hole underneath the lever.
4. Slacken the lever.
5. Secure the pin using a lynch pin.

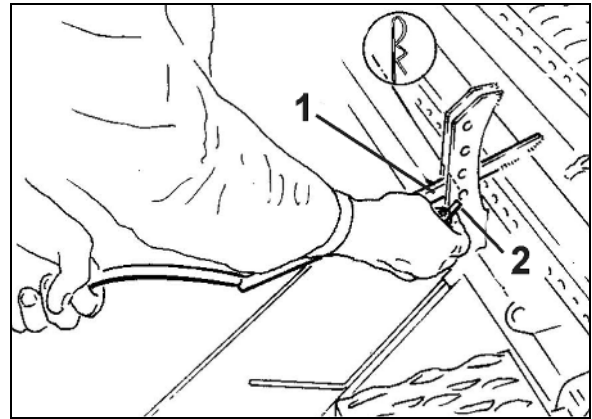


Fig. 94

### 8.10.2.2 Setting the exact following harrow pressure



#### Important!

The hydraulic coultter pressure adjustment is coupled with the hydraulic exact harrow pressure adjustment (if existent). If more coultter pressure is applied, the exact harrow pressure is automatically increased.

Setting the exact harrow pressure:

AMALOG+: Set the hydraulic hand lever 1 to B (Fig. 95).

AMATRON 3: "Machine folding" must not be switched on.

1. By actuating the tractor control valve the hydraulic ram is
  - o pressurised or.
  - o set in the float position.
2. Apply the parking brake, stop the tractor engine and remove the ignition key..
3. Insert each one pin (Fig. 96/2) into the setting segment above and below the lever and secure using clip pins.

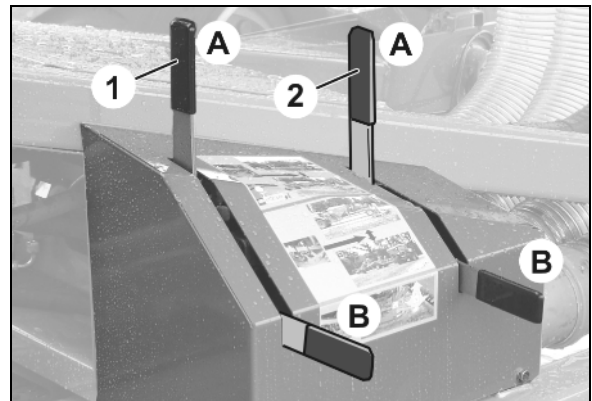


Fig. 95

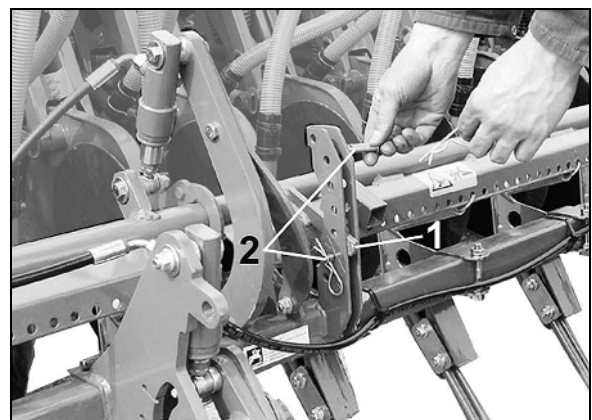


Fig. 96

## 8.11 Setting the length of the track markers (in the field)

On the positions Fig. 97/1,2 the track marker length can be slightly adjusted.



**Danger!**

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

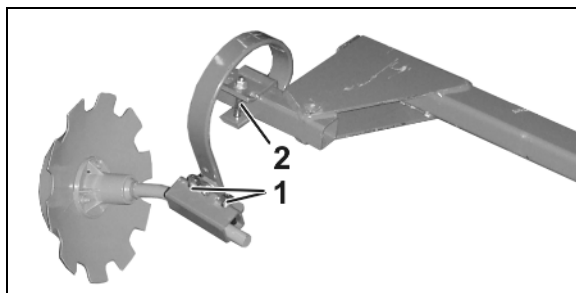


Fig. 97

### 8.11.1 Track marker length dimensions

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

Measured is distance "A" (Fig. 98)

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

Set both track markers to the same length.

	Distance "A"
<b>Citan 8000</b>	8,0m
<b>Citan 9000</b>	9,0m
<b>Citan 12000</b>	12,0m

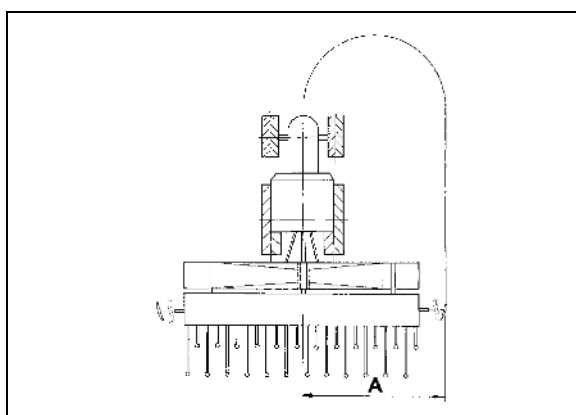


Fig. 98

## 8.12 Setting the working intensity of the track markers

Setting the working intensity of the track markers:

1. Slacken the two bolts (Fig. 99/2)
2. Set the working intensity of the track marker by twisting the track marker discs in such a way that they run about parallel to the forward direction on lighter soils and more on grip on heavier soils.
3. Retighten bolts (Fig. 99/2) firmly.
4. Repeat this procedure on the other track marker.

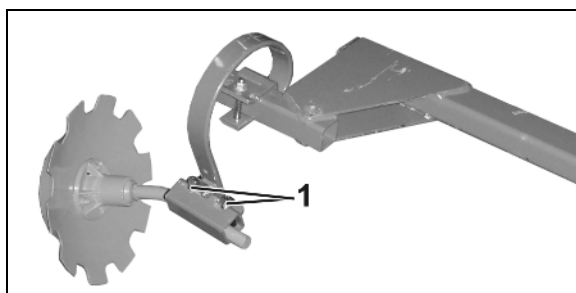


Fig. 99

## 8.13 Setting the tramline rhythm / - counter



**Hint!**

**See operator's manual for AMATRON 3 / AMALOG<sup>+</sup>!**



**Hint!**

**The tramline bout counter is coupled with the operational position sensor on the star wheel of on the track marker shuttle valve.**

**At every lifting of the machine / track marker the tramline bout counter shifts on by one figure.**

1. Selecting the tramline rhythm (see Seite 61).
  2. Take the tramline bout counter for the first circuit of the field (Fig. 44).
- If it is intended to prevent the tramline bout counter from shifting on when lifting the machine, first press the STOP key and then lift the machine.

**AMATRON 3:**

- Setting the tramline rhythm in the menu machine data.
- Entering the tramline bout counter of the first run in the field into the menu operation.
- Setting the seed rate reduction (%) necessary during tramline creation in the menu machine data.
- Switching on/off the intermittent tramline function in the menu operation.
- Is lifted in folded condition, to prevent the star wheel from an unintended lowering and the tramline bout counter from going on counting.



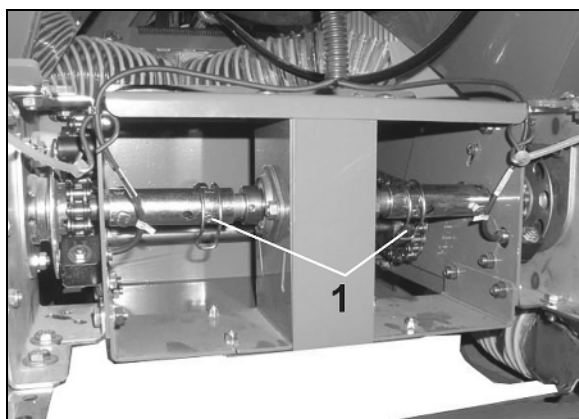
### 8.13.1 Half side shut off

Half side shutting off on machines with two metering units:

1. Fold down the machine.
2. Apply the parking brake, stop the tractor engine and remove the ignition key.
3. Remove one of the two lynch pins (Fig. 100/1).

In order to shut off the right machine side remove the right hand lynch pin seen in driving direction. The drive of the right hand metering roller is interrupted.

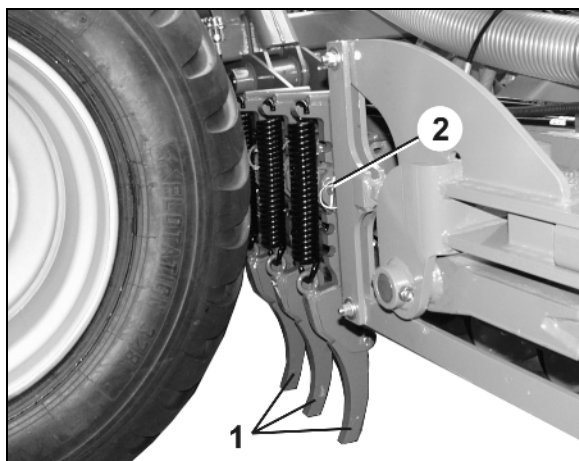
For the half side shut off on machines with full electric metering, please see the operator's manual for AMATRON 3.



**Fig. 100**

### 8.14 Setting the wheel mark eradicator

1. For setting the wheel mark eradicator tines slightly lift the rear frame with the aid of the tractor hydraulics and apply appropriate supports.
2. Set the wheel mark eradicator tines to the correct position (tractor track) and bolt on.
3. Set the working depth by re-inserting the pin (Fig. 101/2) in the toothings of the eradicators (Fig. 101/1) and secure using a lynch pin.



**Fig. 101**



## 8.15 Pre-emergence marker (option)

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

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

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

#### **Danger!**

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



4. Apply parking brake, stop the tractor engine and remove the ignition key.
5. Slacken bolts (Fig. 102/1).
6. Adjust the marker discs in such a way that they mark the tramline which has been created by the tramline coulter.
7. Turn the discs (on light soils the discs should be placed about parallel seen in driving direction and more on grip on heavy soils) to adapt the working intensity to the prevailing soil contour.
8. Firmly retighten bolts (Fig. 102/1).

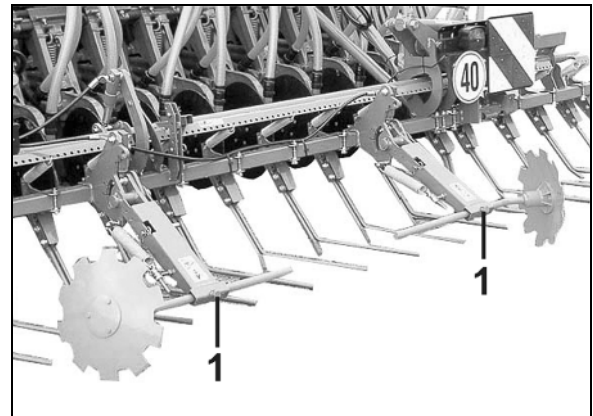


Fig. 102

#### **Hint!**



**When operating with tramline rhythm 2 and tramline rhythm 6plus only fit one of the two marker discs.**

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

## 9 Transport on public roads



### Danger!

**Prior any transport travel observe the chapter " Safety advice for the operator ", Seite 25.27.**

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

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

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

1. Empty the seed hopper (see Seite 112).



### Danger!

**Empty the seed hopper in the field (max. residual amount 200kg).**

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

2. Stop tractor engine, apply parking brake and remove ignition key.
3. Close the hopper cover and secure by using the rubber loops (Fig. 103/1) against unintended opening whilst travelling. Use the hopper cover hook (Fig. 103/2).

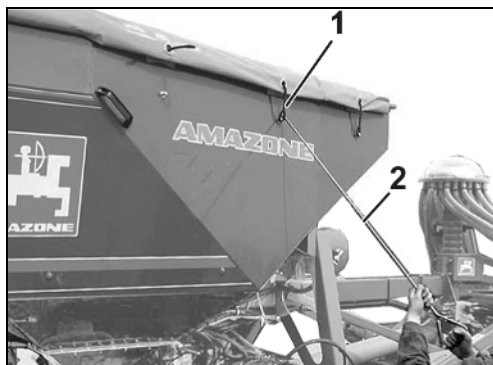


Fig. 103



### Caution!

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

When not in use, the hopper cover hook (Fig. 104/1) is located in the transport retainer (Fig. 104/2) on the bar for the traffic light kit.

4. Slide stair step upwards and secure using a clip pin (Fig. 105/1).

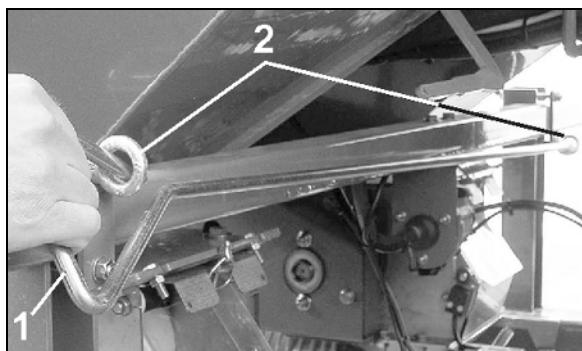


Fig. 104



### Caution!

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

### Important!



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

5. Get the pre-emergence marker into transport position.
6. Fold the track markers into transport position.



Fig. 105

**Caution!**

**Fold the pre-emergence marker and the track markers into transport position to prevent damage on the machine at the folding procedure.**

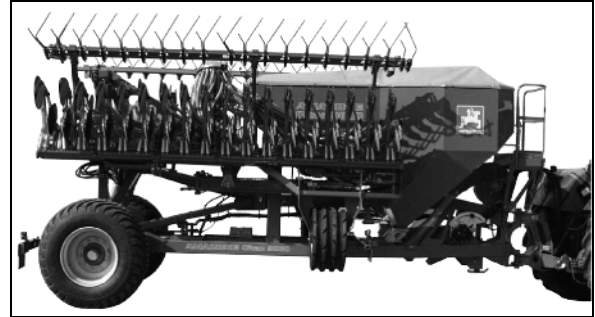
7. Fold in machine, see Seite 106.
8. Switch off AMATRON 3.

**Important!**

**Shut the tractor spool valves during transport.**

The traffic safety kit, see Seite 36, is prescribed.

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



**Fig. 106**

**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 Seite 68).**

**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.**

**CAUTION**

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

**It is forbidden to ride on the implement or use it as a means of transport.**

## 10 Operation

---

**Danger!**

- When operating the machine observe the chapter Safety advice for the operator on page 25.
- Observe the warning signs on the machine. The warning signs provide you with important hints for the safe operation of the machine. Adhering to these hints serves your safety!

### 10.1 Folding the machine down and in

---

**Danger!**


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



During the folding procedure a slight angling of the tractor in front of the machine is recommended to improve the view on the catching pockets.

## 10.1.1 Folding down the machine

### Machine with AMATRON 3

1. Press shift key  .
- Symbol appears in the operating menu.
2. Briefly actuate control valve *yellow*.
- The machine wings (Fig. 108/1) lift out of the transport locking (Fig. 108/2).
3. Actuate control valve *green*.
- Fold down the machine wing completely, fold out the distributor (Fig. 109).
4. Actuate control valve *yellow*
- Lower the rear frame into operational position

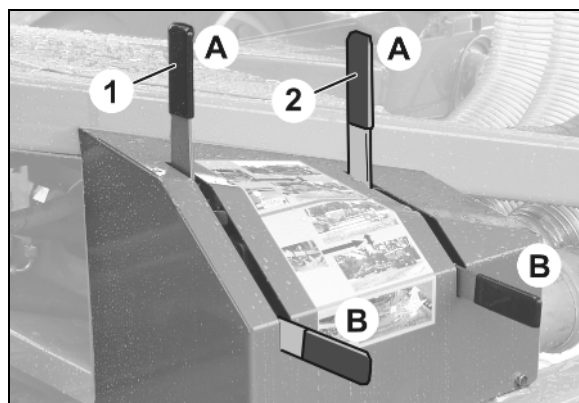


Fig. 107

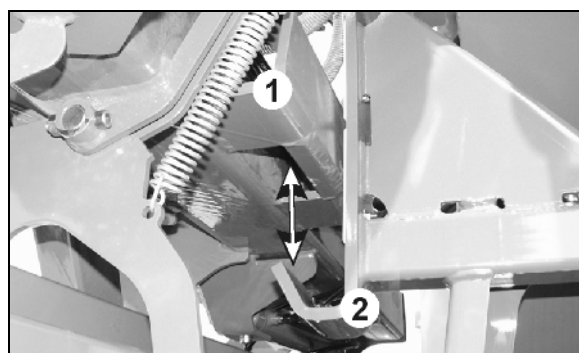


Fig. 108

### Machine with AMALOG+

1. Adjustment of the hydraulic hand lever (Fig. 107)
  - 1.1 Lever 1 in position A
  - 1.2 Lever 2 in position B
2. Briefly actuate control valve *yellow*.
- The machine wings (Fig. 108/1) lift out of the transport locking (Fig. 108/2).
3. Actuate control valve *green*.
- Fold down machine wing completely, fold out the distributor (Fig. 109).
4. Actuate control valve *yellow*.
- Fold down the rear frame completely, fold the traffic light in operational position.



Fig. 109

## 10.1.2 Folding in machine




### Warning!

Prior to folding the machine:

- Fold the pre-emergence marker into transport position.
- Fold the track markers into transport position.

### Machine with AMATRON 3

1. Press shift key  .
- Symbol appears in the operating menu.
2. Actuate control valve *yellow*.
- Fold the rear frame until an inclination of approx. 80° (Fig. 111).
3. Actuate control valve *green*
- Fold the wings (Fig. 112/1) until the slide skids of the transport locking.



### Warning!

During the folding procedure observe the possible collision of the wings with the machine. If necessary re-adjust the inclination of the rear frame!

4. Actuate control valve *yellow*
- The machine wings (Fig. 112/1) lower into the transport locking (Fig. 112/2).

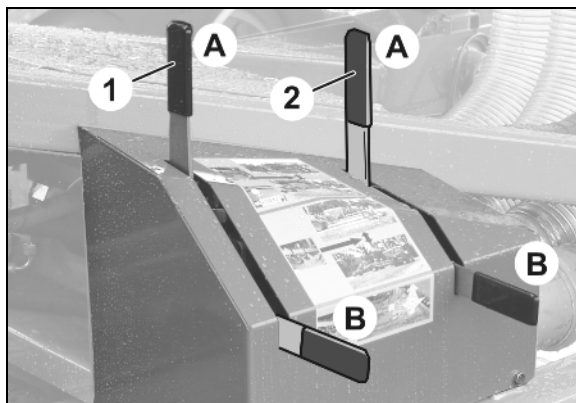


Fig. 110

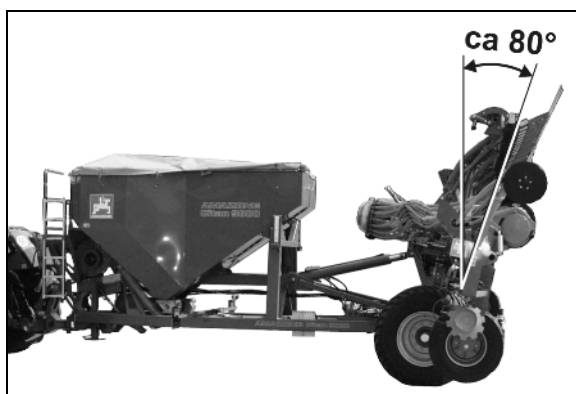


Fig. 111

### Machine with AMALOG<sup>+</sup>

1. Setting the hydraulic hand lever (Fig. 110)
  - 1.1 Lever 1 in position A
  - 1.2 Lever 2 in position B
2. Actuate control valve *yellow*
- Fold the rear frame until an inclination of approx. 80° (Fig. 111).
3. Actuate control valve *green*.
- Fold the wings until the slide skids of the transport locking.

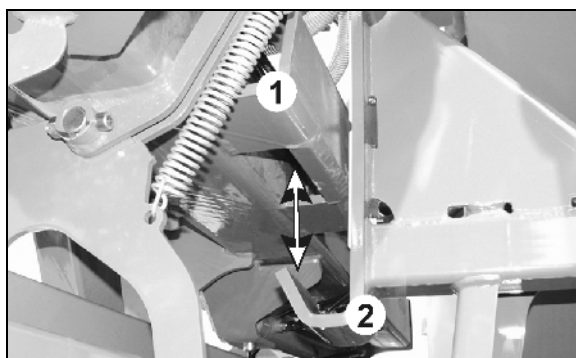


Fig. 112



### Warning!

During the folding procedure observe the possible collision of the wings with the machine. If necessary re-adjust the inclination of the rear frame!



4. Actuate control valve *yellow*.

→ The wings (Fig. 112/1) lower into the transport locking (Fig. 112/2).



**Danger!**

**At transport travels:**

- Ensure the correct position of the catching hooks.
- Switch off AMATRON 3!

## 10.2 Filling the seed hopper

1. Couple the machine on to the tractor (Seite 72).
2. Apply the parking brake, stop the tractor engine and remove the ignition key.



**Danger!**

**Transport travels with filled hopper are prohibited!**

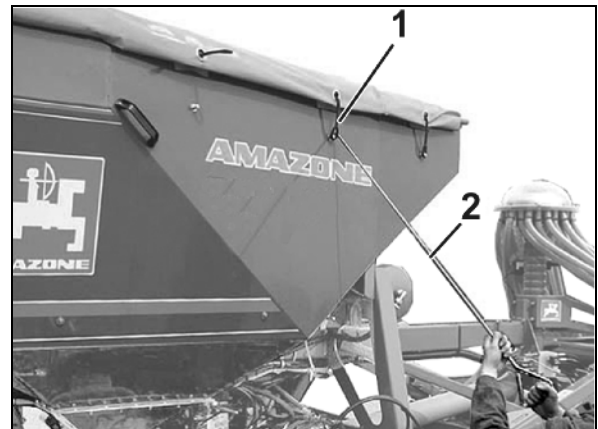
3. Slacken the rubber loops (Fig. 113/1) with the hopper cover hook (Fig. 113/1).
4. Take the ladder out of the catch and lower until the stop.



**Caution**

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

5. Climb onto the platform using the ladder.
6. Slacken the rubber loops.



**Fig. 113**

7. Open the hopper cover.
8. If necessary, remove foreign parts from the seed hopper.
9. Filling the seed hopper, e.g.
  - with the aid of a filling auger from a supply vehicle.
  - From big-bags.



**Danger!**

- **Never stand between supply vehicle and machine.**
  - **Never stand underneath a lifted implement (unsecured load).**
  - **Observe the permissible filling quantities and total weights!**
10. Close the swivel hopper cover and secure using rubber loops.
  11. Pull up the ladder and lock.

## 10.3 Starting operation

When starting operation:

1. Advise persons to leave the danger area.
2. Get the machine into operational position at the beginning of the field.
3. Checking the tramline rhythm..
4. Checking the tramline bout counter, re-adjust if necessary.
5. Checking blower fan rev. speed, re-adjust if necessary.
6. Machines equipped with AMATRON 3: operate the tractor control valve *green* in float position.
7. Start driving
8. After 100 m check and re-adjust if necessary:
  - o Placement depth of the seed
  - o Working intensity of the exact following harrow.



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

- **Vor Arbeitsbeginn kontrollieren, ob der richtige Fahrgassenzähler für die erste Feldfahrt angezeigt wird!**
- **Dressed seed is very poisonous to birds.**
- **The seed should be incorporated carefully and should be covered with soil.**
- **When lifting up the coulters avoid the trickling of seed.**
- **Remove spilled seed immediately!**

### 10.3.1 Setting the hydraulic hand lever

Only AMALOG+:

**Lever 1 (Tractor-control valve *yellow*)**

- **Position A (working position )**  
Rear frame, lifting and lowering the star wheel.
- **Position B**  
Coulter pressure / setting the coulter pressure.

**Lever 2 (Tractor-control valve *green*)**

- **Position A (operating position)**  
Actuation track marker
- **Position B**  
Folding machine wing

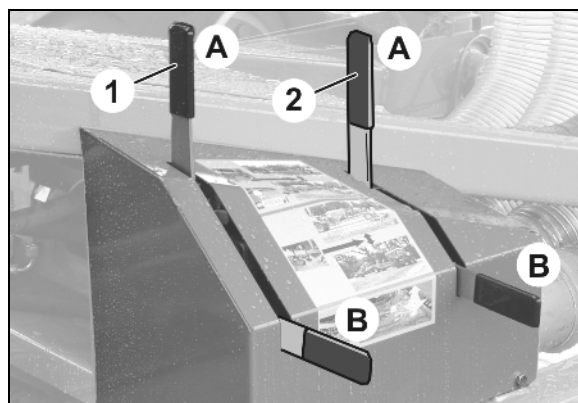


Fig. 114



---

## 10.4 During operation

---

### Machine with **AMATRON 3**:

---



#### Hint!

See operator's manual **AMATRON 3**!

#### **AMATRON 3:**

- **Proportional change of seed rate during operation**

During operation the seed rate can proportionally be changes in the menu machine data.

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

If it is intended to prevent the lifting or lowering of the star wheel when the control valve *yellow* is actuated, lock the star wheel actuation in the menu operation.

If it is intended to prevent the shifting on of the tramline bout counter when the operation is interrupted, press the STOP-key in the menu operation.

- **Locking the track marker actuation**

The track marker actuation can be locked in the menu operation.

- **Folding in track markers at obstacles**

In order to avoid damage on the track marker when hitting an obstacle the track markers can be folded in.

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

---

### Visual check of the distributor heads

---



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

#### **Important!**

**Dirt and seed residues might block the distributor heads and should be removed immediately!**

### 10.4.1 Setting for light soils

As standard the machine wings are pressurised via a pressure reservoir.

For settings for light soils get the machine into operating position.

- Only with **AMATRON 3**: By changing over the lever (Fig. 115) the pressure on the wings can be switched off.
  - Reversing tap in position **A** – with wing pressure (standard).
  - Reversing tap in position **B** – no pressure on the wing.
- Reducing the wing pressure:
  1. AMALOG<sup>+</sup>: Lever 2 in position B (Fig. 114)
  2. Actuate tractor control valve *green* (folding in the machine)

→ Folding rams allow for the reduction of the wing pressure.

  3. The pressure gauge indicates the adjusted wing pressure.

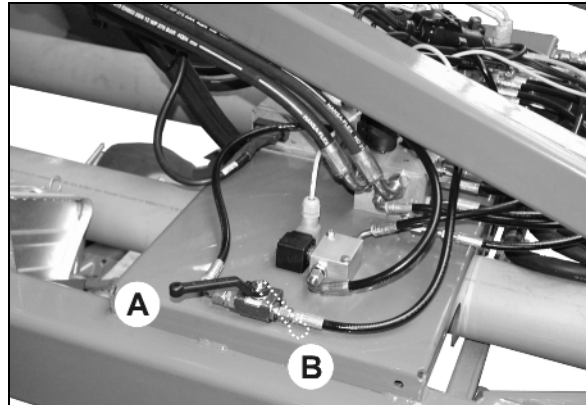


Fig. 115

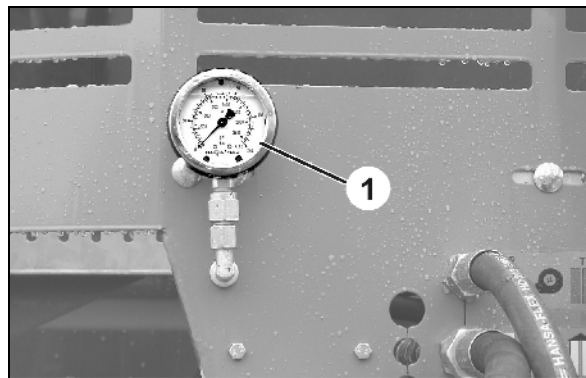


Fig. 116

### 10.4.2 Setting the track marker folding

Only with AMALOG<sup>+</sup>:

Reversing tap (Fig. 117/1) for setting the folded track marker:

- Position **A** – track marker is completely folded into the transport position..
- Position **B** – track marker is folded into vertical position.



**Warning!**

**Prior to folding the machine:**

1. Reversing tap in position **A**
2. Fold both track markers into transport position.

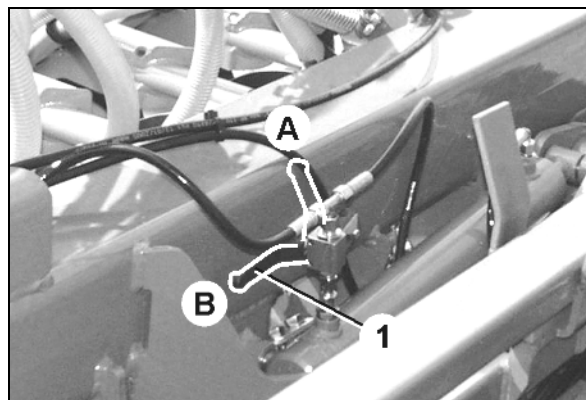


Fig. 117

## 10.5 Turning at the headlands

### Turning at the headlands

1. slow down the speed
2. do not reduce the tractor's rev. speed too much to ensure that the hydraulic functions will react properly at the headlands
3. Briefly actuate Tractor control unit *yellow*.
  - Slightly lift the rear frame so that the coulters get free.
  - Lifting the star wheel
  - AMATRON 3: Lifting the track marker.
4. AMALOG<sup>+</sup>: actuate tractor control unit *green*.
  - Lifting the track marker.
5. as soon as the rear frame is lifted, turn (if desired until full lock of the tractor steering.)



Fig. 118

### After turning:

1. Actuate Tractor control unit *yellow*.
  - Lower the rear frame completely.
  - Lowering the star wheel.
  - **AMATRON 3**: Lowering the track marker.
2. **AMALOG<sup>+</sup>**: Actuate Tractor control unit *green*.
  - Lowering the track marker.
3. Start driving in the field.

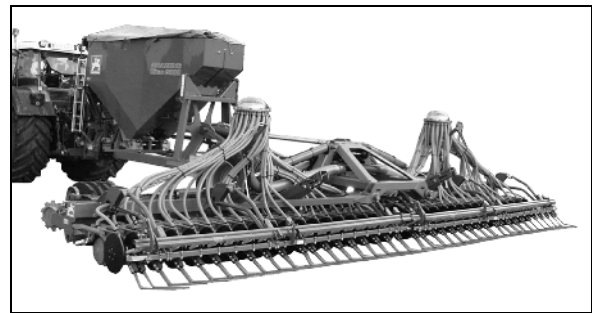


Fig. 119

## 10.6 Finishing operation in the field

1. Completely fold both track markers into transport position..
2. Switch off blower fan
3. If it is intended to prevent the tramline bout counter to shift on during lifting or lowering the machine, first press the STOP-key (see operator's manual for AMATRON 3).
4. Getting the pre-emergence marker into the transport position.

### Important!

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



## 10.7 Emptying the seed hopper and/or seed dosing unit

### 10.7.1 Emptying the seed hopper

1. Secure the tractor and the machine against unintentional start-up and rolling before any intervention in the machine.
2. Open the slider (Fig. 120) and empty the seed into the calibration trough or a suitable hopper.



A commercially available hose (DN 140) can be fitted.

3. Empty the residual seed (see also page 112).



Fig. 120

### 10.7.2 Emptying seed dosing unit

1. Secure the tractor and the machine against unintentional start-up and rolling before any intervention in the machine.
2. Secure the calibration trough(s) under the dosing unit(s).

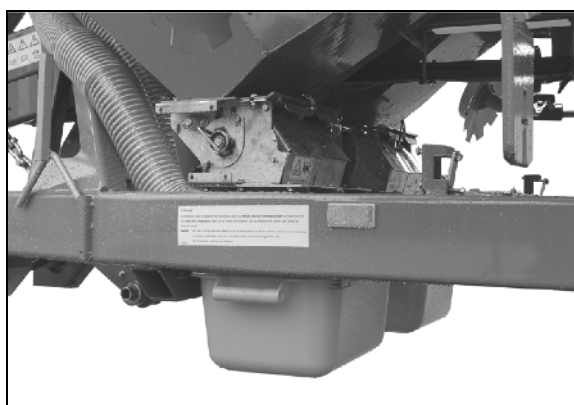


Fig. 121

3. Close the shutter (Fig. 122/1) if only the metering unit and not the seed box should be emptied (see Seite 78).

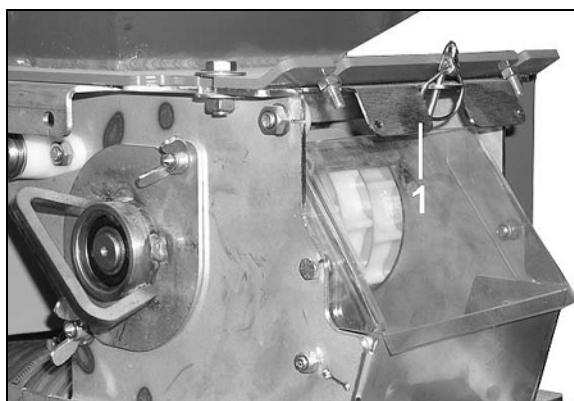


Fig. 122

4. Open the injector sluice flap (Fig. 123/1) to allow the seed to flow into the seed collection trays.



**Danger!**

**Danger of squeezing when the injector sluice flap (Fig. 123/1) is opened or closed!**

**Only hold the injector sluice flap on its strap (Fig. 123/1). Otherwise danger of injury when the sprung loaded flap will bang.**

**Never hold your hand between injector sluice flap (Fig. 123/1) and injector sluice!**

5. Turn the handle (Fig. 124/1) to open residue emptying flap.



**Hint!**

**For emptying the removal of the metering roller is possible (see Seite 78).**

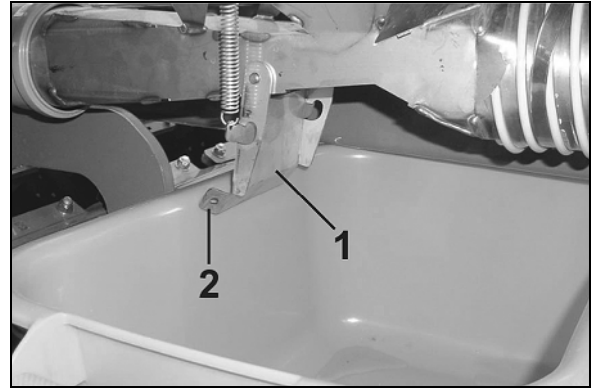


Fig. 123

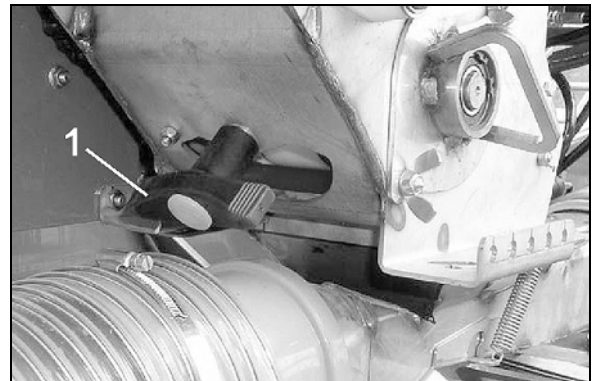


Fig. 124

6. In the same way as for the calibration test, turn the star wheel (Fig. 125) to the left until the metering wheels and the metering units are completely empty.

For full metering, briefly run the electric motor.

7. For the complete cleaning when changing the seed type, remove the metering wheels (see Seite 78) and clean together with the metering unit.
8. Close the flap for emptying residual amounts (Fig. 124) and affix the calibration tray on the transport retainer.



Fig. 125



**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.**



## 11 Faults

### 11.1 Indication of low seed hopper contents

When the seed level falls below the residual amount (with properly adjusted seed level sensor) a warning alarm ( ) appears in the AMATRON 3 / AMALOG<sup>+</sup> with an audible signal.

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

### 11.2 Failure of AMATRON 3 during operation

Getting the machine in transport position and immediately see the nearest authorised workshop.

1. Stop the tractor engine, apply the parking brake and remove the ignition key.
2. Remove the guards of the electr.-hydr. control block.
3. Release the hydraulic valve.
  - 3.1 Fold boom: Pull two valve pins (Fig. 126/1) out of the valves and rotate 45 degrees until they latch.
  - 3.2 Track marker: Unscrew and remove two valve pins (Fig. 126/2) from the valves.
4. Advise persons to leave the danger area.
5. Fold in the machine with the aid of the tractor control valves *yellow* and *green*.
6. Get the machine into road transport position (see Seite 102).
7. Immediately see the nearest authorised workshop.

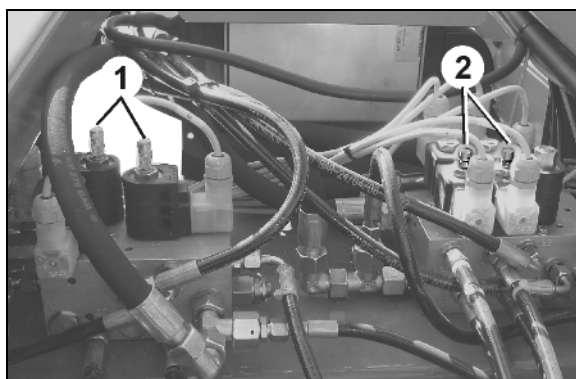


Fig. 126



#### **Danger!**

- **Only in case of a failure of AMATRON 3 fold the machine in emergency mode.**
- **Only actuate the tractor spool valves within the tractor cab.**
- **Before actuating the tractor spool valves advise persons to leave the danger area.**

#### **After repair**

Get the two valve rods (Fig. 126/1) into normal position.

### 11.3 Deviations between the adjusted and the actual seed rate

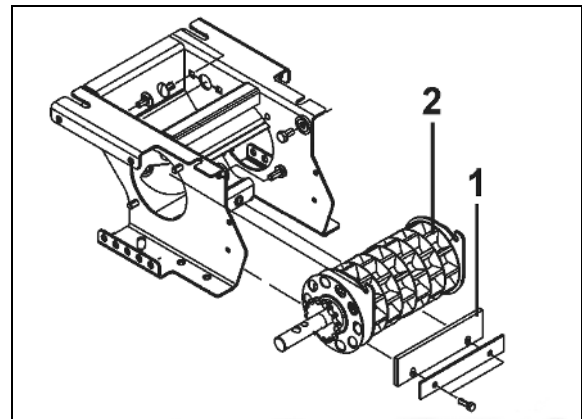
Possible reasons for the deviation between the pre-set and the actual seed rate:

- For the adjustment of seed rate, the accumulation of the worked area or an indication of forward speed AMATRON 3 / AMALOG<sup>+</sup> requires the impulses of the seed drill drive wheel over a measured distance of 100 m.

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

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

- Sowing moist dressed seeds may result in deviations between the adjusted and the actually sown seed rate, when there is a period of less than one week (recommended 2 weeks) between dressing and sowing.
- A defective or wrongly set metering lip (Fig. 127/1) will cause metering faults.  
Set the metering lip in such a way that it slightly rests on the metering roller (Fig. 127/2).



**Fig. 127**

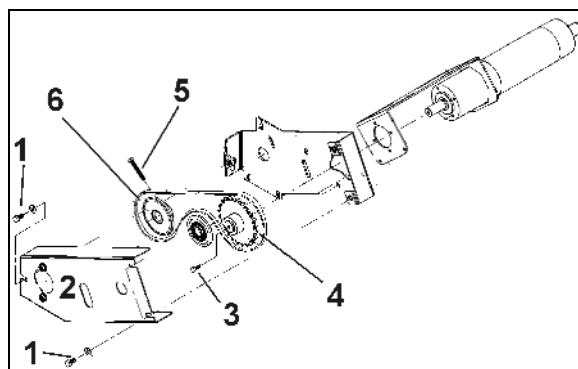
## 11.4 The motor for the electric full metering unit does not turn

With seed types such as beans or peas, the speed may be too low to drive the metering unit.

In this case, the standard chain wheels can be replaced with the replacement chain wheels provided.

To do so:

1. Unscrew the screw connections (Fig. 128/1) of the protective cover and remove the protective cover (Fig. 128/2).
2. Unscrew the screw connection (Fig. 128/3), remove chain wheel  $z=24$  (Fig. 128/4), install chain wheel  $z=18$ , and screw it in place.
3. Unscrew the screw connection (Fig. 128/5), remove chain wheel  $z=18$  (Fig. 128/6), and install chain wheel  $z=24$ .
4. Attach the chain wheel using the screw through the transverse hole in the metering unit.
5. Reinstall the protective cover.



**Fig. 128**



## 11.5 Table of faults

<b>Fault</b>	<b>Possible cause</b>	<b>Remedy</b>
Track marker does not change	Sensor operational position has been set wrongly	Adjust the sensor
	Sensor operational position is defective	Exchange sensor operational position
	Hydr. valve has got stuck	Exchange hydr. valve
Track marker shifts too early or too late	Wrong setting of sensor operational position	Adjust the sensor
Tramline bout counter does not work	AMATRON 3: Actuate the STOP key	Switch off the STOP key
	Tramline rhythm wrong	Adjust the tramline rhythm
	The sensor operational position is defective	Exchange the sensor operational position
	Wrong sensor adjustment	Adjust the sensor
AMATRON 3: Blower fan sensor triggers an alarm	Wrong setting of alarm trigger limit	Change the alarm trigger limit
	Oil volume too high or too low	Adjust the oil volume
	The sensor blower fan is defective	Exchange the sensor blower fan
Forward speed sensor (star wheel / Vario gearbox) without any function	Forward speed sensor is defective	Exchange the forward speed sensor
Shutters within the distributor head (tramline shifting) do not work	Dressing agent or dust inside the tramline shutter slide	Clean the distributor head
	Dressing agent or dust between distributor head and control disc	Clean the control disc
	Automatic safety reacts	<ul style="list-style-type: none"> <li>• Switch off AMATRON 3 and switch on again. The safety device should work properly now.</li> <li>• Clean the distributor head</li> </ul>

## 12 Maintenance, repair and care

---



### Important!

When carrying out any maintenance, repair and care work adhere to chapter "Safety advice for the operator", page 27.

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

Thoroughly clean the machine prior to prolonged operational breaks.

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

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

### 12.1 Reinigung

---



### Important!

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

#### Cleaning by using a high pressure cleaner / steam jet

---



### Important!

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

### 12.1.1 Cleaning the machine

Cleaning the machine:

1. Cleaning seed box and metering units (see Seite 112).
2. Cleaning distributor head(s) (see, unterhalb).
3. Clean the machine with water or a high pressure cleaner.

**Danger!**

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



### 12.1.2 Cleaning the distributor head (authorised workshop)

**Hint!**

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

Cleaning the distributor head:

1. Stop the.
2. Fold down the combination (see Seite 105).
3. Apply the parking brake, stop the tractor engine and remove the ignition key.

**Warning!**

**The distributor head is in the machine centre.**

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

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

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



4. Remove distributor head and tramline shutter slide, see Seite 135.
5. Remove dirt using a broom, clean out the distributor head and the plastic hood by using a dry cloth.
6. Reinstall the distributor head.



**Important!**

**Adjust the tramline shutter slides according to the tractor track, see Seite 135.**

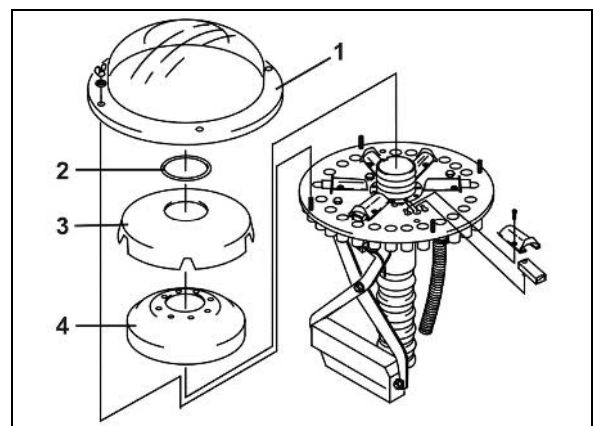


Fig. 129

## 12.2 Lubrication regulations

The greasing points on the machine are identified with a decal (Fig. 130).

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



### Warning!

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

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

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

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

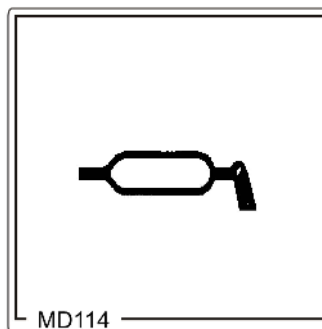


Fig. 130

## Lubricants

Only use lithium saponified multipurpose grease with EP additives.:

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



### Important!

For greasing the wheel hub bearings only use BPW special long time grease with a dropping point above 190°C.

Wrong grease or too large quantities would cause damage.

The mixing of lithium saponified and natron saponified grease may cause damage due to incompatibility.

### 12.2.1 Lubrication point review

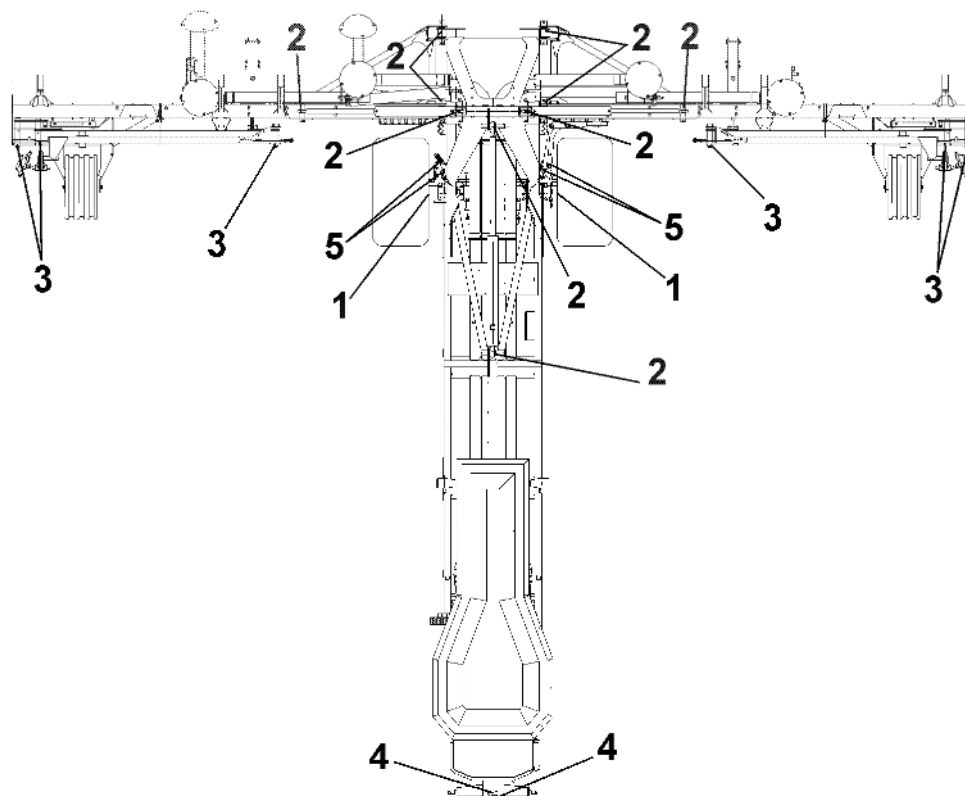


Fig. 131

Fig. 131/...	Name	Quantity	Interval [h]
1	Axle	see page 121	
2	Pivoting points, hydraulic rams of the wings	10	25
3	Track markers	6	25
4	Draw bar bearing	3	25
5	Traffic light kit on wings	4	50

#### Axle / Brake

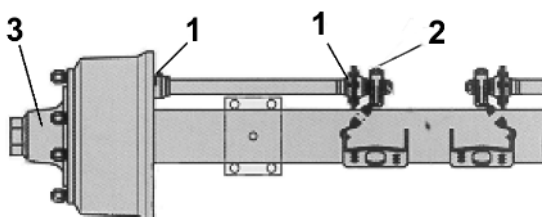


Fig. 132

Fig. 132/...	Name	Quantity	Interval [h]
1	Brake shaft bearing outer and inner	4	200
2	Automatic slack adjustment ECO-Master	2	1000
3	Exchange grease in the wheel hub bearing, Taper roller bearings when worn	2	1000

**Brake shaft bearing, outer and inner**

Caution! Ensure that no grease or oil will get into the brake. Depending on the design the cam bearing is not sealed at the brake side.

Only use lithium saponified grease with a drop point above 190° C.

**Automatic slack adjuster ECO-Master**

---

Whenever the brake lining is replaced:

1. Remove rubber seal cap.
2. Grease (80g) until fresh grease escapes from the setting screw.
3. Use the ring spanner to turn back the setting screw by approx. one turn. Manually actuate the brake lever repeatedly.
4. Ensure a smooth automatic re-adjustment. If necessary, repeat for several times.
5. Apply seal cap again. Grease once more.

**Exchanging grease of the wheel hub bearings**

---

1. Safely jack up the vehicle and release the brake.
2. Remove wheels and rod caps.
3. Remove the split pin and unscrew the axle nut.
4. Use a suited gear puller to remove the wheel hub with brake drum, the taper roller bearings and the seals from the stub axle.
5. Mark the removed wheel hubs and bearing cages to ensure that they are not mixed up then fitted again.
6. Clean the brake, check for wear, ensure that it is in ordinary condition and check for function, replace worn parts.  
Keep the interior of the brake free from grease and dirt.
7. Carefully clean the wheel hubs inside and outside. Completely remove the old grease. Carefully clean bearings and seals (diesel oil) and check for reusability.  
Before mounting the bearings slightly grease the bearing seating and assemble all parts in the opposite order. Carefully drive the parts on the force fits without tilting and damage by using tube bushings.  
Prior to fitting apply grease to the bearings, the wheel hub hollow space between the bearings and the dust cap. The grease should fill approx. one quarter to one third of the space in the fitted hub.
8. Fit the axle nut and carry out the setting of bearings and brake. Finally carry out a function check and a test travel and remedy possibly noted faults.

## 12.3 Maintenance and care - Review



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

### Maintenance before operation

<b>Maintenance before operation</b>	Workshop work	Checking the hydraulic hose lines	Seite 124
		Checking the oil level in the Vario gearbox.	Seite 136
	Workshop work	Checking whether the tramline which has been adjusted in the distributor head corresponds to the track width of the husbandry tractor.	Seite 133

### Maintenance table

<b>Daily before commencing work</b>		Drain the air pressure reservoir (Air brake system)	Seite 131
<b>When refilling the seed box of hourly</b>		Check the seed placement depth	Seite 90
		Check the metering devices for cleanliness	
		Check seed hoses for cleanliness	
<b>During operation</b>		Check distributor heads for cleanliness	Seite 119
<b>Daily after having finished work</b>		Empty metering devices and clean	Seite 112
		Clean the machine (if necessary)	Seite 118
<b>Every week, after every 50 hours of operation at the latest</b>	Workshop work	Check the hydraulic hose lines	Seite 124
<b>Every 2 weeks, after every 100 operational hours at the latest</b>		Check tyre pressure	Seite 133
		Check oil level in the Vario gearbox	Seite 136
<b>Every 3 months, after every 500 operational hours at the latest</b>		Inspection of the dual circuit air brake system	on page 131
		Feststellbremse: Bremswirkung im angezogenen Zustand kontrollieren	Seite 123
<b>Every 6 months before start of the season</b>	Workshop work	Checking and servicing the hydraulic hose lines.  The inspection should be recorded by the operator.	Seite 124
	Workshop work	Checking the brake lining thickness	Seite 129

### 12.3.1 Remedy of function faults and repair work

<b>Changing the tramline bout width</b>	Workshop work		Seite 133
<b>10 operational hours after wheel change</b>	Workshop work	Retighten wheel and hub bolts	Seite 131

## 12.4 Hydraulic system



### **Danger!**

- Only an authorised workshop is allowed to carry out repair work on the hydraulic system.
- The hydraulic system is under high pressure.
- When searching for leaks, appropriate aids should be used.
- Before starting and work on the hydraulic system, relief the system from pressure.
- Under high pressure any fluids (such as hydraulic oil) may penetrate the skin and cause serious injury. Immediately call for a doctor. There is danger of infection.
- When connecting hydraulic hoses to the tractor hydraulic system ensure that the hydraulic system on the tractor and on the trailed implement is at zero pressure.
- Dispose of old oil as prescribed. In case of problems contact your oil supplier.
- Store hydraulic oil out of reach of children.
- Hydraulic oil must not get into the earth or water.
- When carrying out maintenance and repair work on the hydraulic system, observe chapter " Safety advice for the operator ", Seite 25.



### **Important!**

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



## Identification of hydraulic hoses

The identification provides the following information:

Fig. 133/...

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

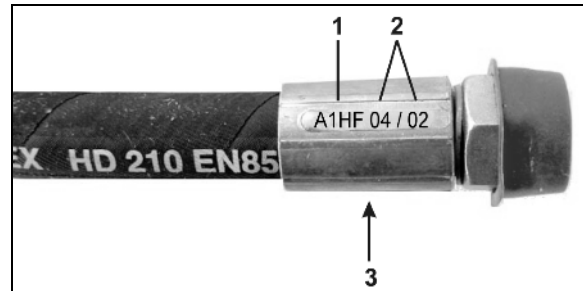


Fig. 133

## Maintenance intervals

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

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

**Prior to any putting to operation**

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

## Inspection criterion for hydraulic hose circuits



**Important!**

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

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

- Defects from the casing to the inner lining (e.g. rubbing points, cuts, tears).
- Check whether the hose casing is brittle (tears in the hose material).
- Check hose for deformation which deviate from the common shape of the hose or which do not correspond to the hose circuit. This applies both to the pressure free and the pressurised condition or when bending the hose (e.g. separation of layers, bubbles, buckling, squeezing).
- Leakages.
- Damage or deformation of the hose fitting (tightness is affected), slight surface damage is no reason for a replacement..
- Movement of the hose out of the fitting.
- Corrosion on the fitting which affects function and strength.
- Demands on the assembly not observed.
- The 6 years' period of use has been exceeded.

The permissible period of use of 6 years is exceeded.

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

### 12.4.1 Mounting and dismounting hydraulic hoses

---

**Hint!**

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

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

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

## 12.5 Axle and brake

---



### Important!

We recommend carrying out a combination check to determine the optimum brake behaviour and minimum wear on the brake pads between the tractor and the machine. Let a specialist workshop carry out this check after an appropriate run-in time of the operating brake system.

To avoid braking difficulties, adjust all the vehicles according to the EC directive 71/320 EEC.



### WARNING

- Only trained specialists may carry out repair and adjustment work on the operating brake system.
- Be particularly careful when carrying out welding, burning or drilling work in the area of the brake lines.
- After all adjustment and repair work on the brake system, always carry out a brake test.

### General visual check

---



### WARNING

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

- Pipes, hoses and hose couplings may not be damaged or corroded on the outside.
- Hinges, e.g. on fork heads, must be properly secured, easy to move, and not worn out.
- Ropes and cables
  - Must be properly run.
  - May not have any visible cracks.
  - May not be knotted.
- Check the piston stroke on the brake cylinders, and adjust as necessary.
- The air tank may
  - Not move in the tensioning belts.
  - Not be damaged.
  - Not show any outer damage.

## 12.5.1 Maintenance work

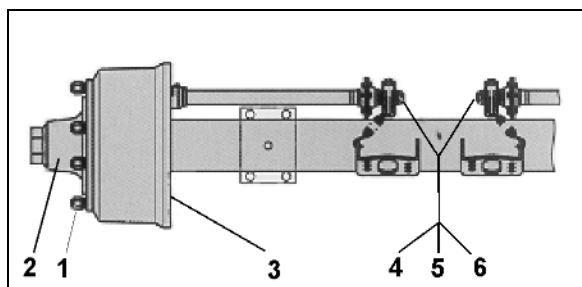


Fig. 134

**Check wheel nuts for firm seating, retighten if necessary (Fig. 134/1)**

Torque 400 Nm

**Checking the wheel hub bearing play (Fig. 134/2)**

To check the wheel hub bearing play, lift the axle until the tyres are free. Release the brake. Apply a lever between the tyre and the ground and check the play.

For tangible bearing play:

### Adjusting the bearing play

1. Remove the dust cap or hub cap.
2. Remove the splint from the axle nut.
3. Tighten the wheel nut whilst turning the wheel until the wheel hub does not turn quite as easily.
4. Turn the axle hole back to the next possible splint hole. If it covers the same area, up to the next hole (max. 30°).
5. Insert the splint and bend it lightly.
6. Fill the dust cap with some long-life grease and push it or screw it into the wheel hub.

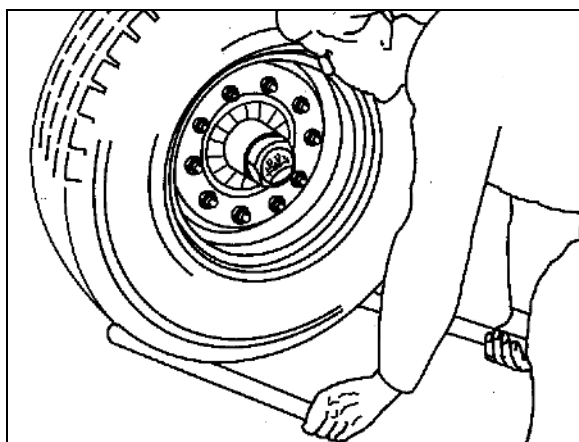


Fig. 135

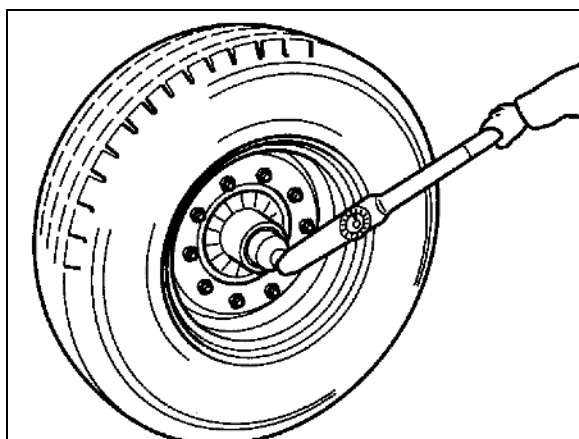


Fig. 136

### Check brake drum for dirt

1. Unscrew the two cover plates (Fig. 137/1) inside the brake drum.
2. Remove any dirt and plant residue.
3. Refit the cover plates.



#### CAUTION

**Penetrating dirt may clog the brake linings (Fig. 137/2) which considerably reduces the braking power.**

#### Risk of accident!

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

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

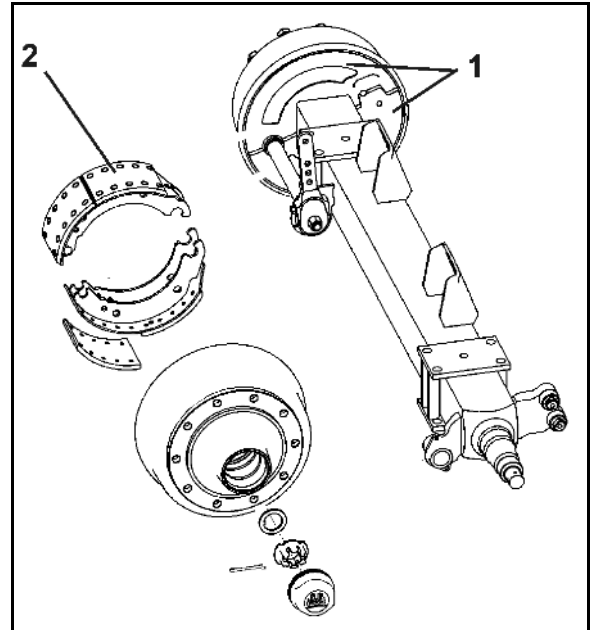


Fig. 137

### Brake pad check (Fig. 134/3)

Open the sight hole (Fig. 138/1) by pulling out the rubber bung (if available).

At a remaining pad thickness of

a:      Riveted pads    5 mm  
              (N 2504)        3 mm

b:      Stuck-on pads    2 mm

the brake pad must be replaced.

Reinsert the rubber strap.

#### Brake adjustment

Depending on the function, check the wear and function of the brakes continuously and, if necessary, carry out a readjustment. Readjustment is required when approximately 2/3 of the maximum cylinder stroke is used on an emergency brake. For this, jack up the axle and secure it against unintentional movement.

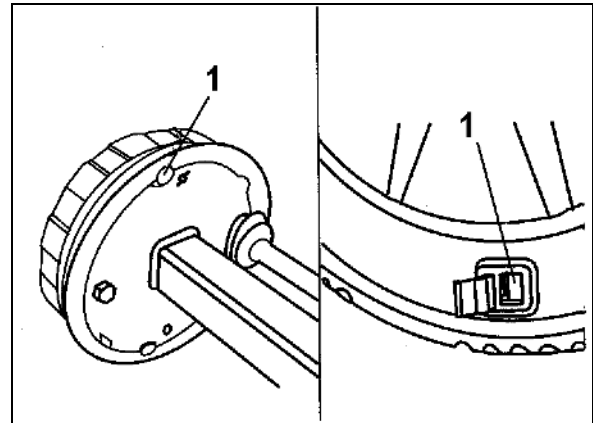


Fig. 138

### Settings on the slack adjuster (Fig. 134/4)

Manually actuate the slack adjuster in direction of pressure. Re-adjust the wheel brake if a dead range of max. 35 mm on the long stroke diaphragm cylinder pressure bar is noticeable.

The setting is carried out on the hex. adjusting screw of the slack adjuster. Set the dead range "a" to 10 – 12 % of the connected brake lever length "B",

e.g.

lever length 150 mm = dead range 15 – 18 mm.

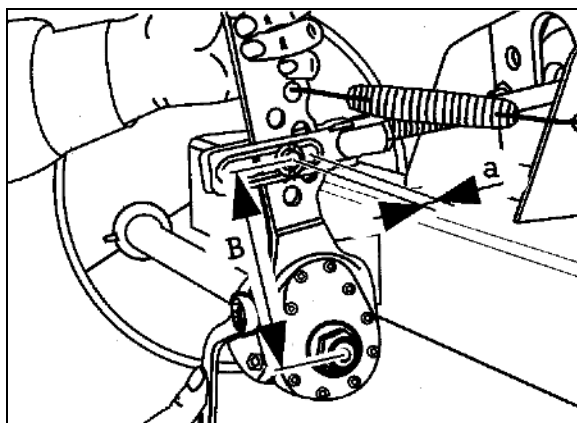


Fig. 139

### Setting on the automatic slack adjuster

The basic setting is carried out according to the instructions given for the standard slack adjuster. Automatic re-adjustment at a cam turning of approx. 15°.

The ideal lever position (cannot be influenced, due to the cylinder fixing) is approx. 15° prior to its right angling in direction of actuation.

### Function check for automatic slack adjuster (Fig. 134/6)

1. Remove the rubber seal cap.
2. Use the ring spanner to turn back the setting screw (arrow) by about  $\frac{3}{4}$  turn in counter clockwise direction. A dead range of at least 50 mm at a lever length of 150 mm is required.
3. Repeatedly actuate the brake lever by hand. Care for a smooth automatic re-adjustment with an audible catching of the denture clutch. At the return stroke the setting screw slightly turns in clockwise direction.
4. Mount the seal cap.
5. Lubricate by using BPW-special long-term ECO\_Li91.

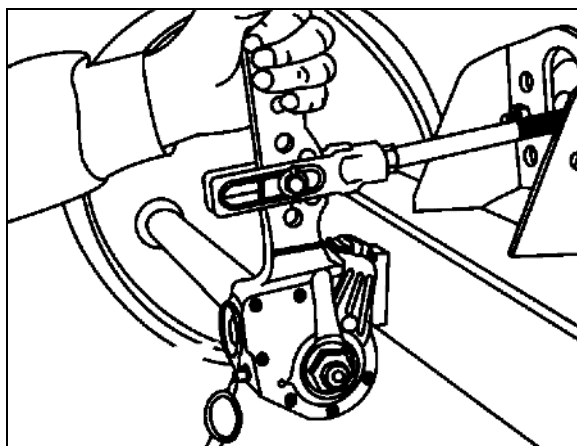


Fig. 140

## Air reservoir

**Fig. 141/...**

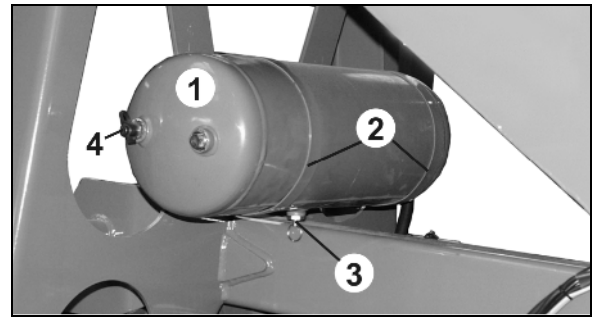
- (1) Air reservoir.
- (2) Tensioning straps.
- (3) Drain valve.
- (4) Inspection port for pressure gauge.



### **Wichtig!**

#### **Daily drain the air reservoir**

1. Pull the drain valve (Fig. 141/3) via the ring to the side until no water will run out of the air reservoir (Fig. 141/1) any more.
- Water runs out of the drain valve (Fig. 141/3).
2. Remove the drain valve (Fig. 141/3) from the air reservoir and clean the air reservoir in case dirt is noted.



**Fig. 141**

## **Inspection advice for two circuit service brake system**

### **1. Leak test**

1. Check all connections, tubes, hose and bolted connections for tightness.
2. Remedy leaks.
3. Remedy rubbing points on tubes and hoses.
4. Replace porous and defective hoses.
5. The two circuit service brake system is regarded as tight, when the pressure drop is not more than 0.15 bar within 10 minutes.
6. Tighten the leaking points or replace leaking valves.

### **2. Checking the pressure in the air reservoir**

1. Connect a pressure gauge with the inspection port of the air reservoir.
- Required value 6,0 to 8,1 + 0,2 bar

### **3. Checking the brake cylinder pressure**

1. Connect the pressure gauge with the inspection port of the brake cylinder.
- Required values: brake not applied 0,0 bar

### **4. Visual inspection of the brake cylinders**

1. Check the dust collars or the bellows for damage.
2. Replace defective parts.

### **5. Joints on brake valves, brake cylinders and brake linkages**

Ensure the smooth running of all joints on brake valves, brake cylinders and brake linkages, if necessary grease or slightly apply oil.

## 12.6 Parking brake

---



On new machines, the brake cables of the parking brake may stretch.

Readjust the parking brake,

- if three quarters of the spindle tensioning distance is required to firmly apply the parking brake.
- if you have just fitted new brake pads.

### Adjusting the parking brake

---



When the parking brake is off, the brake cable must be slightly slack. However, the brake cable must not rest or chafe against other parts of the vehicle.

1. Release the cable clamps.
2. Shorten the brake cable as appropriate and retighten the cable clamps.
3. Check for the correct braking effect from the parking brake when applied.



## 12.7 Tyres / wheels

---



- Required tyre pressure.
  - Running gear tyres: **1.8 bar**
  - Support tyres: **3,5 bar**
- Required torque of the wheel nuts / -bolts: **400 Nm**



### Important!

- **Check in regular intervals**
  - the firm seating of the wheel nuts.
  - Tyre pressure.
- **Only use tyres and rims prescribed by us.**
- **Repair work on the tyres must only be carried out by skilled persons with appropriate fitting tools!**
- **Fitting tyres requires sufficient knowledge and appropriate tools!**
- **Only apply the jack at the places indicated!**

### 12.7.1 Tyre air pressure

---



#### Hint!

- The required air pressure in the tyres depends on
  - the tyre size.
  - the tyre carrying capacity.
  - the forward speed.
- The lifespan of tyres is reduced by
  - overload.
  - too low a tyre air pressure.
  - too high a tyre air pressure.



#### Important!

- The air pressure difference in the tyres of one axle must not exceed 0.1 bar.
- The tyre pressure may increase by 1 bar after a fast travel or warm weather. By no means reduce the tyre air pressure, as it would be too low when the tyre cools down.

### 12.7.2 Fitting wheels

---



#### Important!

- **Before mounting a new / other tyre remove any corrosion on the tyre bearing surface of the rims. Corrosion may cause damage on the rims when travelling.**
- **When mounting new tyres always use new tubeless valves or tubes.**
- **Always screw valve caps with inserted sealing on to the valves.**

## 12.8 Setting the tramline bout according to the tractor track width (Authorised workshop)



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

### Warning!

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

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

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

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

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

- The seed tubes (Fig. 142/1) of the tramline coulters must be affixed to the distributor head openings which can be closed by the shutters (Fig. 142/2). If necessary exchange the seed tube among each other.
- The track width changes according to the number of coulters which do not sow seed when creating tramlines.

For creating two bouts, the following shutters in the distributor head (Fig. 142/2) are closed per bout

- on **Citan** 6001 up to 6 openings.

- Deactivation of shutters (Fig. 142/2) not in use

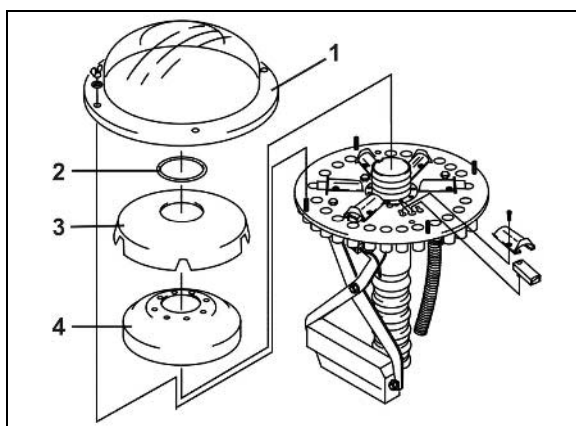


Fig. 142



### Important!

Adjust the marker discs of the pre emergence marker (if existing) to the new track width.

## 12.9 Setting the track width (activation and deactivation of shutters)

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

6 tramline coulters can be connected to one distributor head.

The shutters close the feed tubes of the tramline coulters.

Deactivate the shutters (Fig. 144/2) when not in use. Deactivated shutters do not close the feed tubes of the tramline coulters. .

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

### Warning!

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

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

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

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



Das Schieber aktivieren / deaktivieren ist einfacher bei betätigter Fahrgassenschaltung.→ Position der Schieber ist sichtbar!

### Activate or deactivate the shutters:

1. Apply the parking brake, stop the tractor engine and remove the ignition key.
2. Switch off the AMATRON 3.
3. Remove the distributor outer hood (Fig. 143/1) d.
4. Remove the ring (Fig. 143/2).
5. Remove the distributor inner hood (Fig. 143/3).
6. Remove the foam rubber insert (Fig. 143/4).
7. Slacken the bolts (Fig. 144/1) n.
8. Remove the shutter tunnel (Fig. 144/2).

### Activation of shutter:

9. The shutter (Fig. 144/3) is positioned in the guide way as illustrated.

### Deactivation of shutter:

10. Turn the shutter (Fig. 144/3) and insert into the hole (Fig. 144/4).
11. Bolt the shutter tunnel (/2) onto the base plate.

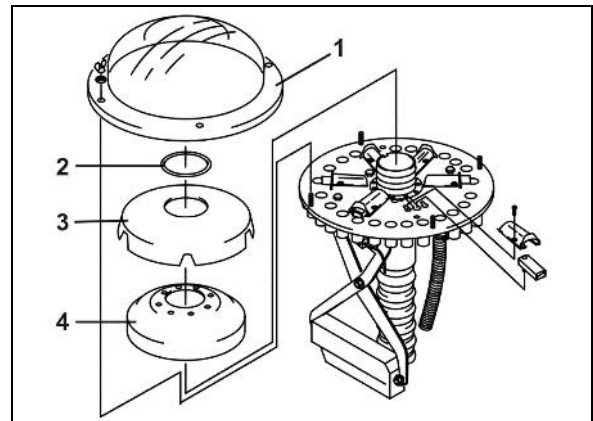


Fig. 143

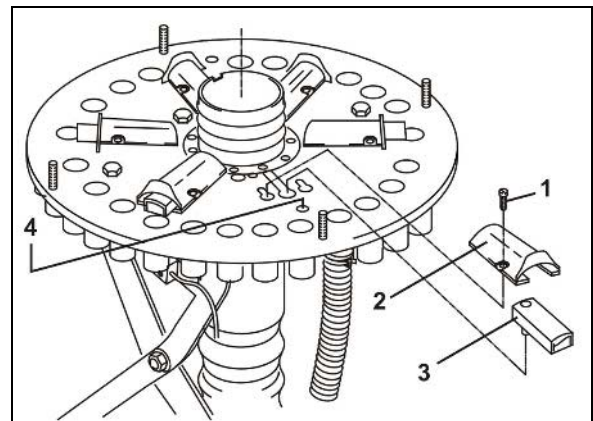


Fig. 144

## Maintenance, repair and care

12. Attach foam rubber insert (Fig. 145/1)
13. Attach distributor inner hood (Fig. 145/2)
14. Attach the ring (Fig. 145/3)
15. Attach distributor outer hood (Fig. 145/4)
16. Check the tramline control for proper function.

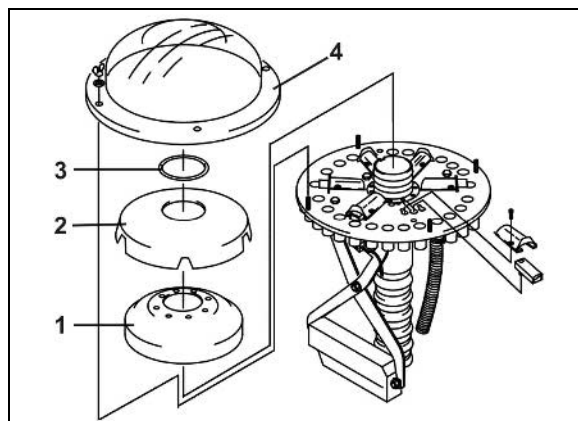


Fig. 145

### 12.10 Seat shaft bearings

Seed shaft bearings:

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

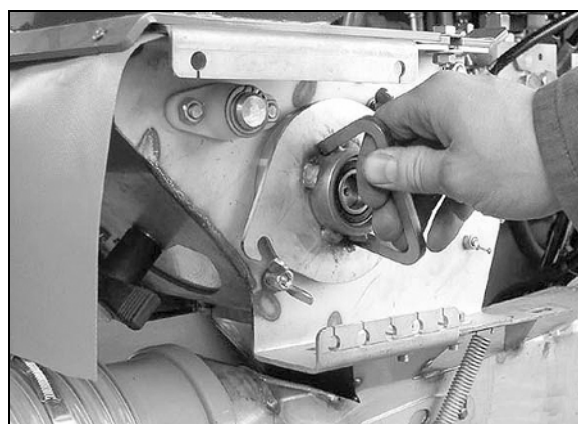


Fig. 146

### 12.11 Check the oil level inside the Vario gearbox

Oil change not necessary.

Check the oil level inside the Vario gearbox:

1. Park the machine on level ground
2. The oil level must be visible in the oil gauge window (Fig. 147/1) of the Vario gearbox.
3. Check the Vario gearbox for leakage.
4. When leaks are noticed, have the Vario gearbox repaired in an authorised workshop.
5. Take the required gearbox oil from table (Fig. 147).
6. Fill the Vario gearbox up to the oil gauge window (Fig. 147/1) via the oil filler neck (Fig. 147/2) with gear oil. .
7. After filling cover the filler neck with the dust cap (Fig. 147/2).

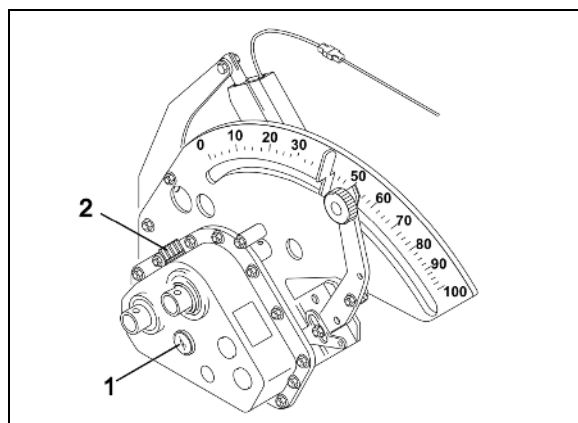


Fig. 147

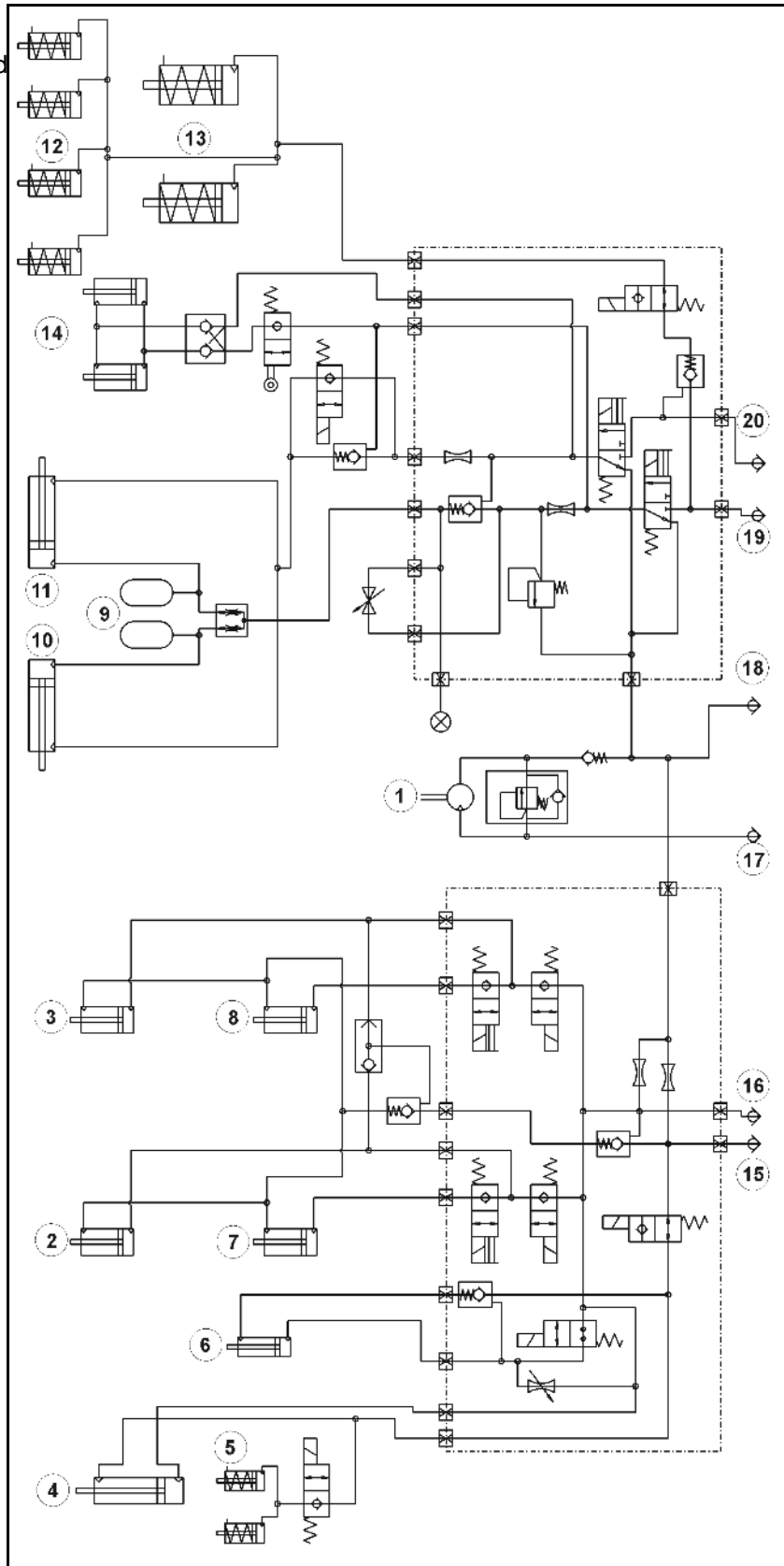
Filling quantity and hydraulic oil type for the Vario gearbox	
Total filling quantity:	0,9 litre
Gear oil (at random):	Wintershall Wintal UG22 WTL-HM (factory)
	Fuchs Renolin MR5 VG22

Table 4

## 12.12 Hydraulic diagram

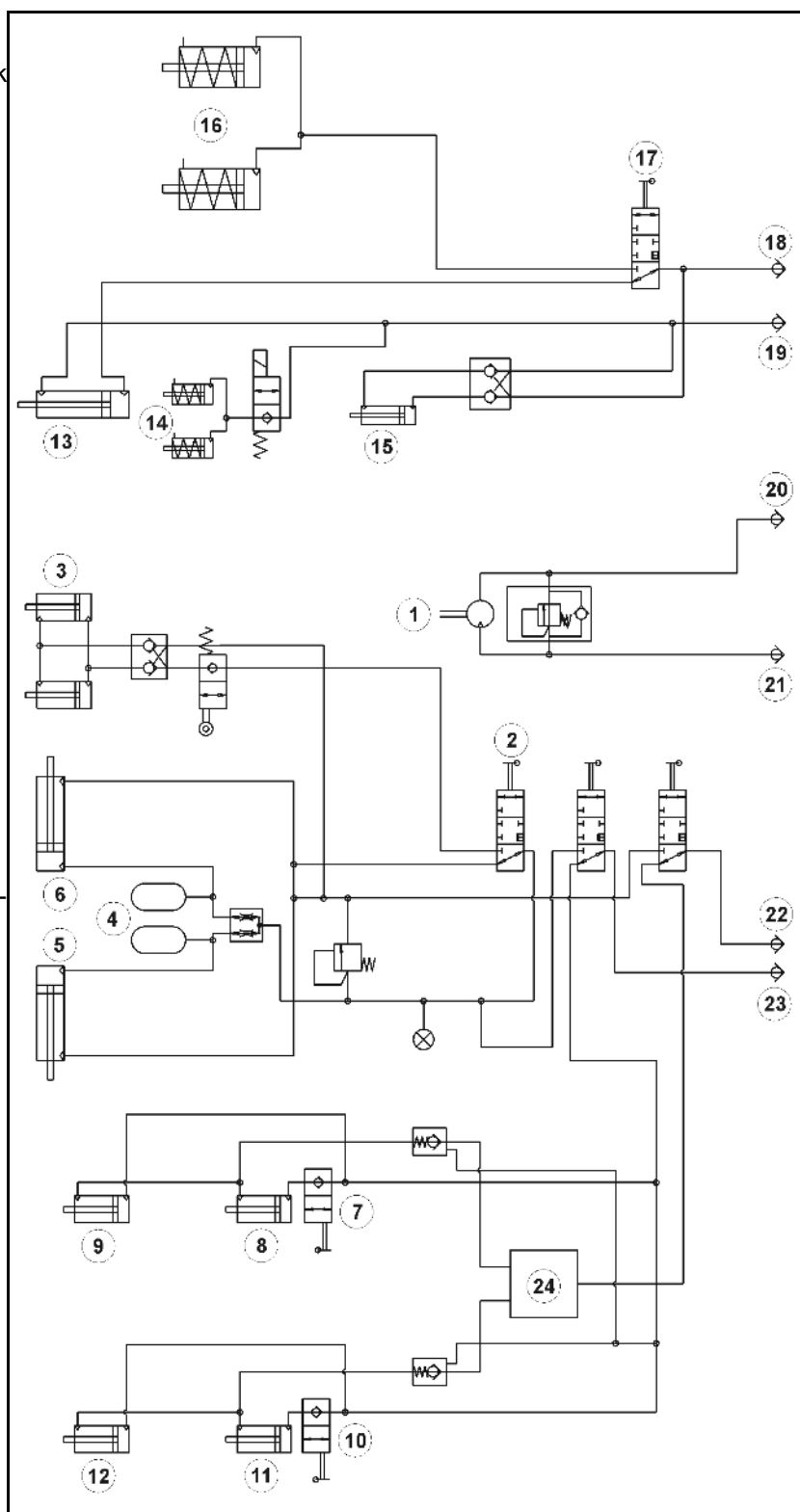
### Hydraulic diagram AMATRON 3

1. Blower fan
2. Track marker left hand side 2
3. Track marker right hand side 2
4. Lifting
5. Pre emergence marker
6. Star wheel
7. Track marker left hand side 1
8. Track marker right hand side 1
9. Reservoir
10. Folding left hand
11. Folding right hand
12. Harrow pressure
13. Coulter pressure
14. Distributor head folding
15. Connection to tractor-control valve (*yellow 2*)
16. Connection to tractor-control valve (*yellow 1*)
17. Connection to tractor-control valve (*red 1*)
18. Connection to pressure free return flow (*red 2*)
19. Connection to tractor-control valve (*green 1*)
20. Connection to tractor-control valve (*green 2*)

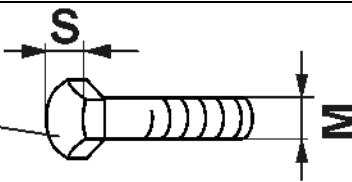


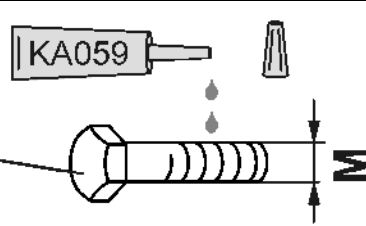
# Hydraulic diagram AMALOG<sup>+</sup>

1. Blower fan
2. Valve Changing over track marker / folding wings
3. Distributor head folding
4. Reservoir
5. Folding left hand
6. Folding right hand
7. Valve Parking track marker right hand
8. Track marker right hand 1
9. Track marker right hand 2
10. Valve Parking track marker left hand
11. Track marker left hand side 1
12. Track marker left hand side 2
13. Lifting
14. Pre emergence marker
15. Star wheel
16. Coulter pressure
17. Valve Changing over coulter pressure / lifting
18. Connection to tractor-control valve (yellow 1)
19. Connection to tractor-control valve (yellow 2)
20. Connection to tractor-control valve (Hose marking red 2)
21. Connection to pressure free return flow (hose marking red 1)
22. Connection to tractor-control valve (green 2)
23. Connection to tractor-control valve (green 1)
24. Tramline marking valve



## 12.13 Bolt torques

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> <b>8.8</b>  <b>10.9</b>  <b>12.9</b> </div>  </div>				
M	S	Nm		
		8.8	10.9	12.9
M 8	13	25	35	41
M 8x1		27	38	41
M 10	16 (17)	49	69	83
M 10x1		52	73	88
M 12	18 (19)	86	120	145
M 12x1,5		90	125	150
M 14	22	135	190	230
M 14x1,5		150	210	250
M 16	24	210	300	355
M 16x1,5		225	315	380
M 18	27	290	405	485
M 18x1,5		325	460	550
M 20	30	410	580	690
M 20x1,5		460	640	770
M 22	32	550	780	930
M 22x1,5		610	860	1050
M 24	36	710	1000	1200
M 24x2		780	1100	1300
M 27	41	1050	1500	1800
M 27x2		1150	1600	1950
M 30	46	1450	2000	2400
M 30x2		1600	2250	2700

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> <b>A2-70</b>  <b>A4-70</b> </div>  </div>												
M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
Nm	2,3	4,6	7,9	19,3	39	66	106	162	232	326	247	314



# **AMAZONEN-WERKE**

**H. DREYER GmbH & Co. KG**

P. O. Box 51	Tel.: + 49 (0) 5405 501-0
D-49202 Hasbergen-Gaste	Telefax: + 49 (0) 5405 501-193
Germany	e-mail: <a href="mailto:amazone@amazone.de">amazone@amazone.de</a>
	<a href="http://www.amazone.de">http:// www.amazone.de</a>

---

Branch factories in: D-27794 Hude • D-04249 Leipzig  
• F-57602 Forbach • Subsidiaries in England and France

Factories for mineral fertiliser spreaders, field sprayers, seed drills, soil tillage implements,  
and municipal implements

---