Before starting to operate, please carefully read and adhere to this operation manual and safety advice.
Reading the instruction

manual and adhering to it should not appear to be inconvenient and superfluous as it is not enough to hear from others and to realise that a machine is good, to buy it and to believe that now everything 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. FarK
Identification data

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

Machine-Ident-Nr.: ZA-M
Type: Maximal 200 bar
Permissible system pressure bar: Maximal 200 bar
Year of construction:
Factory:
Power kW:
Basic weight kg:
Allowable total weight kg:

Address of manufacturer:

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

Spare parts ordering

AMAZONEN-WERKE
H. DREYER GmbH & Co. KG
Postfach 51
D-49202 Hasbergen
Tel.: +49 (0) 5405 501-290
Fax.: +49 (0) 5405 501-106
E-mail: et@amazone.de
Spare parts online catalogue: www.amazone.de
When ordering spare parts please always state the serial number of your machine.

Formal remarks to this instruction manual

Document Number: MG 1042
Date of edition: 11.04

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

Dear Customer,

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

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

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

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

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

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

User's review

Dear reader,

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

AMAZONEN-WERKE
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1 User advice

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

1.1 Purpose of the document

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

1.2 Information about directions in this instruction manual

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

1.3 Illustrations used

Operational action and react

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

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

Enumerations

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

- Item 1
- Item 2

Position figures in illustrations

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

Example (Fig. 3/6)

- Figure 3
- Item 6
2 General safety advice

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

2.1 Obligations and liability

Observe the advice given in this instruction manual

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

Obligation of the user

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

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

The owner commits himself

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

Obligation of the operator

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

- observe the basic regulations regarding the operational safety and accident prevention,
- to read and to adhere to the chapter "Safety".
- to read and to adhere to the chapter "Warning signs and other signs on the machine" (Page 15).
- In case of queries, please contact the manufacturer.
General safety advice

Danger when dealing with the machine

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

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

Only use the machine

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

Immediately remedy all failures affecting the safety.

Warranty and liability

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

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

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

---

**Danger!**

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

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

---

**Warning!**

*Possible danger to life and health of persons.*

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

---

**Caution!**

*Possible dangerous situation (slight injuries, material damage).*

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

---

**Important!**

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

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

---

**Hint!**

*Hint for use and particularly useful information.*

*These hints will help you to optimally make use of the function of the machine.*
2.3 Organising measures

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

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

Important!

The instruction manual

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

Regularly check all existing safety devices

2.4 Safety device and guards

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

Defective safety devices

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

2.5 Informal safety measures

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

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

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

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

<table>
<thead>
<tr>
<th>Action</th>
<th>Personnel</th>
<th>Particularly trained persons</th>
<th>Instructed operator</th>
<th>Persons with specialist training (authorised workshop)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loading/Transport</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Putting into operation</td>
<td></td>
<td>--</td>
<td>X</td>
<td>--</td>
</tr>
<tr>
<td>Installation, setting up</td>
<td></td>
<td>--</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Operation</td>
<td></td>
<td>--</td>
<td>X</td>
<td>--</td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
<td>--</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Searching for faults and remedy</td>
<td></td>
<td>X</td>
<td>--</td>
<td>X</td>
</tr>
<tr>
<td>Disposal</td>
<td></td>
<td>X</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Legend: X.. allowed --. not allowed

2.7 Safety measures and normal operation

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

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

2.8 Danger from residual power

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

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

2.9 Maintenance and repair, remedy of faults

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

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

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

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

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

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

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

Important!
Prohibited on principle is
- boring on the frame or the chassis.
- reboring existing holes on the frame or the chassis.
- welding on bearing parts.

2.10.1 Spare parts and wearing parts and auxiliary parts

Immediately exchange defective machine parts.

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

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

2.11 Cleaning and disposal

Utilise agents and materials and dispose them in the appropriate manner particularly
- when working with greasing systems and devices and
- when cleaning with solvent agents.

2.12 Workplace of the operator

The machine may only be operated by one single person from the seat in the tractor cab.
2.13 Safety symbols and other identifications on the machine

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

Warning signs - composition

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

The warning sign consists of 2 fields:

Field 1
Gives a vivid description of the danger and is surrounded by a triangle safety symbol.

Field 2
Gives the vivid instruction to avoid these dangers.

Warning sign - Explanation

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

1. Description of danger.
   For example: Danger from cutting or cutting off!

2. Consequences when not adhering to the given advice how to avoid dangers.
   For example: will cause severe injury on finger or hand.

3. The advice to avoid danger.
   For example: Touch machine parts only then when they have come to a full standstill.
### General Safety Advice

<table>
<thead>
<tr>
<th>Picture No. and Explanation</th>
<th>Safety Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MD 095</strong>&lt;br&gt;Before commencing operation read thoroughly operators manual and safety advice!</td>
<td><img src="image" alt="Safety Symbol" /></td>
</tr>
<tr>
<td><strong>911 888</strong>&lt;br&gt;The CE-sign on the machine indicates the compliance with the valid EC guidelines!</td>
<td><img src="image" alt="Safety Symbol" /></td>
</tr>
<tr>
<td><strong>MD 075</strong>&lt;br&gt;Danger from cutting or cutting off!&lt;br&gt;Will cause severe injury on finger or hand.&lt;br&gt;Touch machine parts only then when they have come to a full standstill.</td>
<td><img src="image" alt="Safety Symbol" /></td>
</tr>
<tr>
<td><strong>MD 078</strong>&lt;br&gt;Danger of squeezing!&lt;br&gt;Will cause severe injury on finger or hand.&lt;br&gt;Never reach into this zone as long as parts are still moving.</td>
<td><img src="image" alt="Safety Symbol" /></td>
</tr>
<tr>
<td><strong>MD 079</strong>&lt;br&gt;Danger from flinging particles!&lt;br&gt;Will cause severe injury on the entire body.&lt;br&gt;Observe sufficient clearance to the machine as long as the tractor engine is running.</td>
<td><img src="image" alt="Safety Symbol" /></td>
</tr>
<tr>
<td><strong>MD 089</strong>&lt;br&gt;Danger!&lt;br&gt;Danger of squeezing!&lt;br&gt;Will cause severe injury to the whole body or fatal injury.&lt;br&gt;Observe sufficient clearance to lifted, unsecured machines.</td>
<td><img src="image" alt="Safety Symbol" /></td>
</tr>
</tbody>
</table>
MD 093

Danger from being caught or winding up!
Will cause severe injury to the whole body or fatal injury.

- Observe sufficient clearance to the PTO shaft as long as the tractor engine is running with engaged PTO shaft.
- Never open or remove guards on drive shafts as long as the tractor engine is running with the PTO shaft engaged / hydraulic drive coupled.
1. Vorde rachsentlastung des Schleppers beachten.
2. Rührfinger, Auslauföffnungen und Streuschaufeln sauber und funktionsfä-
hig halten.

1. Veiller à la bonne adh érence de l'essieu avant.
2. Maintenir propres et opérationnels les agitateurs, les orifices d'alimentation et les aubes.

1. Bear in mind front axle weight reduction.
2. Always keep agitator fingers, outlets and vanes clean and replace when worn or damaged.

1. Op de vooras ontlasting van de traktor letten.
2. Roerdervingers, uitloop-openingen en strooischoepen schoon en bedrijfsgereed houden.
2.13.1 Positioning of warning decals and other identifications

Warning decals

The following illustrations show the arrangement of the warning decals.

Fig. 1

Fig. 2

Fig. 3
### 2.14 Danger when not adhering to the safety advice

Not adhering to the safety advice
- may result in endangering persons, also the environment and also the machine itself.
- may result in the rejection of any claim for damage.

Not paying attention to the safety advice may cause the following risks:
- Danger to persons not excluded from operational areas.
- Failure of important functions within the machine.
- Failure of carrying out prescribed measures of maintenance and repair.
- Danger to persons through physical or chemical contact.
- Danger to persons, or the environment by leaking hydraulic oil.

### 2.15 Conscious operation

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

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

When travelling on public roads observe the traffic regulations in force in your country.
2.16 Safety advice for the operator

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

2.16.1 General safety and accident prevention advice

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

Coupling and uncoupling the machine

- The machine should only be transported and driven by a tractor which fulfills the power requirements.
- When fitting to the three-point linkage the mounting categories at the tractor and the implement must be compatible!
- By mounting implements at the front or in the rear of a tractor, do not exceed
  - the permissible tractor total weight
  - the permissible tractor axle loads
  - the permissible tyre carrying capacity of the tractor tyres
- Secure the tractor and the machine against unintended rolling away before mounting or dismounting the machine.
- Allow nobody to stand between tractor and implement while the tractor is backing up.
  Any assistants may only stay at the side of the vehicle and help to direct it. Only when the vehicles have come to a full standstill they are allowed to step between them.
- Before mounting and dismounting the machine to the three-point linkage secure the control lever for the tractor hydraulics in such a position that an unintended lifting or lowering is impossible.
- When attaching or removing the machine bring any parking or storing devices into the corresponding position (standing safety)!
- Danger of squeezing and shearing when actuating the supporting device.
- Special care should be taken when coupling the machines on or off the tractor. There exist squeezing and shearing points at the coupling points between tractor and implement.
- Standing between tractor and implement when the three point hydraulic is actuated is prohibited.
- Attach implements as advised and couple the machine in the appropriate manner to the prescribed devices.
- The release ropes for quick coupler should hang freely and in the low position must not release the quick coupling by themselves.
- Park uncoupled machines safely.
Operation of the machine

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

- When travelling on public roads observe your legal national traffic regulations.
- Always ensure sufficient steering braking of the tractor.
  Steering and braking of the tractor are influenced by mounted or trailed machines and front or rear ballast weights.
- If necessary, use ballasts weights.
  The tractor front axle load must be at least 20% of the tractor's net weight in order to ensure a sufficient steering.
- Attach the front or rear ballast weights in the appropriate manner on the fixing points provided.
- Observe the max. payload of the mounted / trailed machine and the permissible axle and support loads of the tractor.
- The tractor must provide the prescribed brake lag for the laden combination (tractor plus mounted / trailed machine).
- Before starting to travel on public roads, check function of brakes.
- When driving round bends note the width of the mounted or trailed machine and the gyration mass of the machine.
- Before starting to travel on public roads ensure the sufficient lateral locking of the tractor lower link arms when the machine is fixed to the three point hydraulics or the lower link arms of the tractor.
- Before starting to travel get all swivelling machine parts into transport position.
- Before starting to travel secure all swivelling machine parts in transport position against dangerous movement from their position. For this use the intended transport securing devices.
- Before starting to travel secure the lever of the three point hydraulics against unintended lifting or lowering of the mounted or trailed machine.
- Before any transport travel ensure that the required transport device is correctly fitted on the machine, e.g. traffic lights, warning devices, guards.
- Adapt your travelling speed to the prevailing conditions.
- Choose a lower gear when driving down hill.
- As a matter of principle switch off the single wheel braking (lock the pedal) before starting any transport travel.
2.16.2 Hydraulic system

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

- When working on the electric system always disconnect the battery (negative pole).
- Use prescribed fuses only. When using too strong fuses the electric circuit may be damaged - danger of fire.
- Make sure the polarity is correctly fitted. First connect positive pole and then negative pole. - When disconnecting vice versa.
- Always provide plus pole with supplied cover. At accidental earth contact there is danger of explosion!
- Danger of explosion! Avoid sparks and open fire near the battery!
- The function of the implements' electronic components and parts may be affected by the electro magnetic transmittance of other devices. Such affects may endanger third parties when the following safety advice has not been adhered to:
  - When retrofitting electric and electronic devices and/or components to the implement with a connection to the tractor's on-board electric circuit, the onus is on the user to ensure that the installation will not cause any disturbance to either the tractor's electronics or other components.
  - Special attention must be paid that the retrofitted electric and electronic parts correspond to the EMV-guideline 89/336/EC in the relevant valid edition and that they bear the CE-mark.

2.16.4 Maintenance, repair- and care-work

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

- Never stay or let anyone stay within the operation area. Danger by fertiliser particles being thrown around. Before starting to operate the spreading discs make sure that nobody is staying in the spreading zone. Do not approach rotating spreading discs.

- Filling the fertiliser spreader may only be done with a stopped tractor engine, removed ignition key and closed shutters.

- Do not place any foreign objects inside the hopper!

- During the calibration test watch out for danger zones due to rotating parts of the machine!

- Never park or move the fertiliser broadcaster with filled hopper (danger of tipping over).

- If spreading on field borders, waters or roads use the border spreading device!

- Before any operation check perfect seat of fixing parts, especially for spreading disc and spreading vane fixing.
3 Loading

Loading with a hoist crane:

Danger!
When loading the machine with a hoist crane use the indicated points for fixing the lifting straps.

Danger!
The minimum tensile strength per lifting strap must be 1000 kg.

Important!
Before loading open the swivel hopper cover.

Each one fixing point is located inside the hopper in the front and at the rear (Fig. 4/1).
4 Product description

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 main components:

4.1 Overview – components

Fig. 5
(1) Omnia-Set spreading discs
(2) Hydraulic drive for spreading discs
(3) Agitator
(4) Hydraulic drive for agitator
(5) Amatron+ on-board computer
(6) Hydraulic ram for hydraulic shutter
Fig. 6
(1) Frame
(2) Hopper
(3) Weighing frame
(4) Ladder
(5) Trimmer
(6) Swivel hopper cover
(7) Splash guard
(8) Hydraulic block with oil filter
(9) Machine computer (behind the cover)

4.2 Overview – Supply lines between tractor and implement

Fig. 7
(1) Hydraulic hose pressure line (one red mark)
(2) Hydraulic hose pressure free return flow (two red marks)
(3) Implement plug AMATRON+
(4) Connection for traffic lights
4.3 Traffic safety kit

(1) 2 rear lights
(2) 2 stop lights
(3) 2 indicators (required when the tractor indicator is hidden by the machine)
(4) 1 license plate carrier with light (required in case the tractor registration number is hidden)
(5) 2 red reflectors
(6) 2 warning plates
(7) 2 warning plates rear
(8) 2 warning plate front
(8) Limiting lights right and left hand side
### 4.4 Intended use of the machine

The **AMAZONE** fertiliser spreader **ZA-M Ultra 1800 profiS Hydro** and **ZA-M Ultra 3000 profis Hydro**

- has exclusively been designed for the usual operation in agriculture for spreading dry, granular, prilled and crystalline fertilisers, slug pellets and seeds.

Operating on slopes is possible under following conditions:

- **When operating across slopes**
  - maximum angle of machine in the direction of travel to the left \(15\%\)
  - maximum angle of machine in the direction of travel to the right \(15\%\)

- **When operating up and down hill**
  - uphill \(15\%\)
  - downhill \(15\%\)

The intended 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 intended use:

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

Within these zones permanently existing danger or unexpectedly arising danger exist. Safety symbols identify these danger zones. Here particular safety advices are valid. Please refer to chapter "General safety advice", page 15.

Danger zones prevail:

- between tractor and mounted sprayer, particularly when hitching on or off and when filling the hopper,
- within the operational range of moving parts:
  - Rotating spreading discs with spreading vanes
  - Rotating agitator shaft and agitator shaft drive
  - Hydraulic actuation of the shutters
  - Electronic actuation of shutter slide
- when climbing on to the machine,
- in the swivel range of the sprayer booms,
- during spreading operation within the range of the spread fan by fertiliser granules.

Danger!
In these zones always danger prevails or unexpected danger may occur. Safety symbols mark these danger zones (see on page 15).

4.6 Safety - and guard facilities

1. Chain guard of agitator shaft drive (Fig. 10/8)
2. Guard for shaft between centre and angular gearbox (Fig. 10/9)
3. Guard tube (Fig. 10/10)
4. Guard screen in hopper
5. Safety symbols (warning signs)

4.7 Conformity

Guide lines- / Standard terms

The machine fulfills the:

- Machine guide line 98/37/EG
- EMV- guide line 89/336/EWG
4.8 Type plate and CE declaration

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

The type plate (Fig. 11) and the CE declaration (Fig. 12) are located on the frame.

On the type plate are mentioned:
- Machine-Id ent-Nr.:
- Type
- Max. payload
- Basic weight kg
- Year of construction
- Factory

4.9 Technical data

<table>
<thead>
<tr>
<th>Typ ZA-M Ultra Hydro</th>
<th>Hopper capacity (litres)</th>
<th>Payload (kg)</th>
<th>Weight (kg)</th>
<th>Filling height (m)</th>
<th>Filling width (m)</th>
<th>Total width (m)</th>
<th>Total length (m)</th>
<th>d (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800 proffS</td>
<td>1800</td>
<td>3000</td>
<td>680</td>
<td>1,23</td>
<td>2,70</td>
<td>2,95</td>
<td>1,75</td>
<td>800</td>
</tr>
<tr>
<td>+S 600</td>
<td>2400</td>
<td>3000</td>
<td>710</td>
<td>1,37</td>
<td>2,70</td>
<td>2,95</td>
<td>1,75</td>
<td>800</td>
</tr>
<tr>
<td>3000 proffS</td>
<td>3000</td>
<td>3600</td>
<td>710</td>
<td>1,49</td>
<td>2,70</td>
<td>2,95</td>
<td>1,75</td>
<td>800</td>
</tr>
<tr>
<td>+S600</td>
<td>3600</td>
<td>3600</td>
<td>740</td>
<td>1,63</td>
<td>2,70</td>
<td>2,95</td>
<td>1,75</td>
<td>800</td>
</tr>
</tbody>
</table>
4.10 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**

**ZA-M Ultra Hydro** from 60 kW

**Electrical system**

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

**Hydraulics**

- Max. service pressure: 200 bar
- Tractor pump capacity: min 55 l/min at 160 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 spool valve 1:
  - 1 single or double acting control spool valve with priority for the flow line
  - 1 pressure free return flow with large plug coupling (DN 16) for the pressure free oil return flow. In the return flow the back pressure must not exceed.

**Important!**

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

**Warning!**

It is prohibited to block the control valves 1 and 2 on the tractor. Ensure that the hydraulic function automatically stops when you let go the relevant control valve.

4.11 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.
Assembly and function

5 Assembly and function

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

5.1 Function

The fertiliser spreader **AMAZONE ZA-M Ultra Hydro** with its two hopper tips can be equipped with exchangeable spreading discs (Fig. 14/1) which are driven contrary to the operating direction rotating adverse from inside to outside. They are equipped with a short (Fig. 31/2) and a long spreading vane (Fig. 31/3).

Hydraulic spreading disc drive.

Working width depending on the spreading disc up to max. 48 m.

Up to 3600 kg fertiliser can be transported in the fertiliser hopper.
5.2 Spreading discs

The infinitely variable setting of the different working widths is achieved by swivelling the spreading vanes on the spreading discs OM (Fig. 15/1). The spreading discs OM 24-48 is available for working widths between 24 – 48m.

For these settings, please follow the data given in the setting chart. The mobile fertiliser test kit (special option) allows an easy checking of the working width.

• Spreading disc drive

On the ZA-M Ultra Hydro the spreading discs and the agitators are driven by 3 hydraulic motors.

5.3 Spiral agitators

Spiral agitators in the hopper tips (Fig. 16/1) provide an even fertiliser flow onto the spreading discs. The slowly rotating spiral shaped segments of the agitator guide the fertiliser evenly to the corresponding outlet opening.

5.4 On board computer AMATRON+

With the on board computer AMATRON+ (Fig. 17) the ZA-M Ultra Hydro can conveniently be accessed, controlled and monitored.

Actuations via AMATRON+
• setting of the spreading disc rev. speed
• the spread rate adjustment
• the actuation of the hydraulic shutters
• the calibration of fertiliser

Hint!
As the spreading properties of the fertiliser may heavily vary we recommend that you carry out a calibration test with the fertiliser you intend to spread before starting to operate.
5.5 Shutter

- **Spread rate shutter slides**
  
  Electronic spread rate control via AMATRON\textsuperscript{\textregistered}. The spread rate shutter slides (Fig. 18/2) which are actuated by the setting motors (Fig. 18/1) set various shutter opening widths (Fig. 18/4).

- **Hydraulic shutter**
  
  The opening and closing of the outlet openings is achieved by two additional shutters hydraulically (closing) (Fig. 18/5) or by a tensioning spring (opening). (Fig. 18/6).

5.6 Trimmer

The trimmer (Fig. 19/1) is moved into the front area of the spreading fan providing a permanent front limiting of the fan.

5.7 Boundary and border spreading

For boundary or border spreading the speed for the right hand and left hand spreading disc can be set individually. This speed matching is achieved according to the indications in the setting chart via AMATRON\textsuperscript{\textregistered}. The individual speed change of the spreading discs allows a spreading alongside the field’s boundary according to the draft of fertiliser application decree.
5.8 Hydraulic block with oil filter

The valves of the hydraulic block are accessed via the AMATRON® and in this way allow for all hydraulic functions.

The oil filter (Fig. 20/1) is provided with an indication for maintenance (Fig. 20/2) which should be followed for cleaning.

5.9 Guard screen inside the hopper

The foldable guard screens cover the entire hopper and serve as
- protection against touching the rotating agitator spiral.
- protection against foreign particles during the filling procedure.

Fig. 21/
(1) Guard screen
(2) Grip with guard screen locking device
(3) Lock for open guard screen
(4) Unlocking tool

For cleaning, maintenance or repair work the guard screen in the hopper can be unlocked with a tool and folded upwards.

Unlocking tool in:
- (Fig. 22/1) parking position (standard position)
- (Fig. 23/1) Unlocking position to swivel the guard screen upwards

Opening the guard screen:
1. Re-insert the unlocking tool from the parking position into the unlocking position.
2. Take hold of the grip and turn the unlocking tool in direction of the grip (Fig. 23).
   → Guard screen locking device unlocked.
3. Fold the guard screen upwards until the locking device catches.
4. Get the unlocking tool into the parking position.
WARNING

Only take the tool off the parking position in order to open the hopper.

- Prior to closing the guard screen press down the locking device (Fig. 24).
- During the closing procedure the guard screen locks automatically.

Fig. 24
5.10 Weighing technique

In addition to the proven ZA-M technology the centrifugal broadcaster ZA-M Ultra Hydro offers the possibility to achieve accurate details regarding the spread rate with the aid of the weighing technique.

Further more the ZA-M Ultra Hydro allows an accurate spread rate without any calibration test.

The ZA-M Ultra Hydro features an additional frame (Fig. 25/1), fitted in front of the spreader which retains the weigh cell (Fig. 25/2).

The weigh cell frame holds the spreader by two leaf springs (Fig. 25/3) and by two bearing flanges (Fig. 25/4) in parallel design.

**Important!**

The horizontal position of the leaf springs and the bracing straps is of great importance for the accurate weight determination.

The leaf springs (Fig. 27/1) and the bearing flanges (Fig. 27/2) take in all horizontal forces, whereby the vertical force (the weight of the spreader) is taken in by the micrometer (Fig. 26/2 and Fig. 27/2) in the weigh cell (Fig. 26/1).

Before starting to operate enter a calibration factor for the kind of fertiliser which you intend to spread. In case of an unknown fertiliser in addition a stationary calibration test can be carried out.

After having entered the calibration factor the calibration test drive may be started. For this start the calibration procedure on the on-board computer AMATRON with stationary implement in the field. After having spread at least 200 kg of fertiliser the calibration procedure is terminated on the AMATRON have now calculated a new calibration factor with which the desired fertiliser rate can be accurately spread.

Each one check is fitted on the left hand and right hand side of the frame of the fertiliser spreader ZA-M Ultra Hydro (Fig. 28/1). The check screws are set with a clearance of 2 mm towards the weighing frame. (see on page 75).

This prevents the spreader from being taken off the weighing frame in case of ground undulations.

**Hint!**

For varying fertilisers different calibration factors must be determined.

If the bolts have been set without any play the weighing result will be corrupted.
5.11 Options

5.11.1 Transport- and parking device

The detachable transport- and parking device (Fig. 29) allows a comfortable coupling to the three-point hydraulic of the tractor and an easy manoeuvring in the yard and inside buildings.

Product No.: 914 193

Warning!

Do not park or roll your broadcaster with filled hopper (danger of tipping over).

Important!

For a direct filling from a tipping trailer remove roll kit.

Fig. 29

5.12 Swivel able hopper cover (Option)

Also in wet weather conditions, the swivel able hopper cover (Fig. 30/1) guarantees dry spreading material. For filling the swivel able hopper cover is simply swiveled upward.

Fig. 30

5.13 Extension S 600 (Option)

Extension for the base hopper (Fig. 30/2) with a capacity of 600 l.

5.14 Mobile fertiliser test kit for checking the working width (Option)

Please refer to on page 57 - checking the working width with the aid of the mobile fertiliser test kit.
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 21
  - 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 "Calculation of the actual values for the tractor total weight, tractor axle loads and tyre carrying capacity as well as the necessary minimum ballast", page on page 43.
- The tractor must provide the prescribed brake lag for the laden combination according to the national legal traffic regulations.
- Tractor and machine must correspond to the local and national legal traffic regulations.
- Both, the vehicle owner and operator are responsible for adhering to the legal traffic rules.
- Observe the max. payload of the mounted or trailed machine and the axle loads of the tractor. If necessary travel with only partly filled hopper.
- Before any transport travel secure the control lever of the three point hydraulics against unintended lifting or lowering of the mounted or trailed machine.
6.1 First operation

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

6.1.1.1 Required data for the calculation

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$T_L$</td>
<td>[kg]</td>
<td>Net weight of the tractor</td>
</tr>
<tr>
<td>$T_V$</td>
<td>[kg]</td>
<td>Front axle load of the empty tractor</td>
</tr>
<tr>
<td>$T_H$</td>
<td>[kg]</td>
<td>Rear axle load of the empty tractor</td>
</tr>
<tr>
<td>$G_H$</td>
<td>[kg]</td>
<td>Total weight rear mounted implement / rear ballast</td>
</tr>
<tr>
<td>$G_V$</td>
<td>[kg]</td>
<td>Total weight front mounted implement / front ballast</td>
</tr>
<tr>
<td>$a$</td>
<td>[m]</td>
<td>Spacing between point of gravity front mounted implement / front ballast and centre front axle</td>
</tr>
<tr>
<td>$a_1$</td>
<td>[m]</td>
<td>Spacing between centre of front axle and lower tractor linking point.</td>
</tr>
<tr>
<td>$a_2$</td>
<td>[m]</td>
<td>Spacing between centre of lower tractor linking point and point of gravity front mounted implement</td>
</tr>
<tr>
<td>$b$</td>
<td>[m]</td>
<td>Wheel base of tractor</td>
</tr>
<tr>
<td>$c$</td>
<td>[m]</td>
<td>Spacing between centre of rear axle and centre of lower link ball</td>
</tr>
<tr>
<td>$d$</td>
<td>[m]</td>
<td>Spacing between lower link ball and point of gravity rear mounted implement / rear ballast</td>
</tr>
</tbody>
</table>

Fig. 31

Please see tractor instruction manual / registration papers, technical data of the machine or measure.
6.1.1.2 Calculation of the minimum ballast front $G_{V_{\text{min}}}$ to ensure the steer ability

$$G_{V_{\text{min}}} = \frac{G_H \cdot (c + d) - T_V \cdot b + 0.2 \cdot T_L \cdot b}{a + b}$$

Enter into the table the figure for the determined minimum ballast weight $G_{V_{\text{min}}}$, which is required in the front of the tractor (on page 45).

6.1.1.3 Calculation of the actual front axle load $T_{V_{\text{tot}}}$

$$T_{V_{\text{tot}}} = \frac{G_V \cdot (a + b) + T_V \cdot b - G_H \cdot (c + d)}{b}$$

Enter the figure for the calculated actual total front axle load and the permissible front axle load indicated in the instruction manual for the tractor into the table (on page 45).

6.1.1.4 Calculation of the actual total weight $G_{\text{tot}}$

$$G_{\text{tot}} = G_V + T_L + G_H$$

If the minimum rear ballast ($G_{H_{\text{min}}}$) is not achieved with the rear mounted implement ($G_H$), increase the weight of the rear mounted implement up to the minimum ballast (on page 45).

6.1.1.5 Calculation of the actual rear axle load $T_{H_{\text{tot}}}$

$$T_{H_{\text{tot}}} = G_{\text{tot}} - T_{V_{\text{tot}}}$$

Enter into the table the calculated actual rear axle load and the rear axle load indicated in the instruction manual of the tractor (on page 45).

6.1.1.6 Tyre carrying capacity

Enter double the value (two tyres) of the tyre carrying capacity (please refer e.g. to the documentation of the tyre manufacturer) into the table (on page 45).
### 6.1.1.7 Table

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

**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 \( (G_{V_{min}}) \).

**Important!**

- Apply ballast weight to your tractor with the aid of a front or rear ballast weight if the tractor axle load is exceeded on only one axle.
- Special cases:
  - In addition to the front mounted machine apply additional ballast weights in case the required minimum ballast weight front \( (G_{V_{min}}) \) is not achieved by the weight of the front mounted machine \( (G_V) \)
  - In addition to the rear mounted machine apply additional ballast weights in case the required minimum ballast weight rear \( (G_{H_{min}}) \) is not achieved by the rear mounted machine \( (G_H) \).
Putting into operation

Important!
Before commencing work it is necessary to fit the following groups in order to the **ZA-M Ultra Hydro**:

- spreading discs, Fig. 32/1
- hopper cover Fig. 32/2,
- construction kit Ultra
  - trimmers right/left Fig. 32/3,
  - mud guards right/left Fig. 32/4,
  - ladder (2 pieces) Fig. 32/5,
  - guard tube Fig. 32/6,
- traffic light Fig. 32/7.

Important!
Please check the correct fitting of the spreading discs. Looking into driving direction: left hand spreading disc decal "left hand" ("L") and right hand spreading disc decal "right hand" ("R").

Check the correct fitting of the scales on the spreading discs. The scales with the figures of 5 to 28 belong to the shorter spreading vanes and the scales with the figures of 35 - 55 to the longer spreading vanes.

![Fig. 32](image_url)
6.1.2 Setting the system converting bolt on the broadcaster valve block

The setting of the converting bolt (Fig. 33/1) on the spreader valve block depends on the tractor’s hydraulic system. Depending on the hydraulic system:

- **unscrew the system converting bolt until its stop (factory setting)** on tractors with:
  - Open-Centre-hydraulic system (stabilised power supply system, gear pump hydraulic).
  - Load-Sensing-hydraulic system (pressure- and current controlled setting pump) – oil decrease via control unit

- **screw in the system converting bolt until its stop (contrary to the factory setting)** on tractors with:
  - Closed-Centre-hydraulic system (constant pressure system, pressure controlled setting pump).
  - Load-sensing-hydraulic-system (pressure- and flow controlled setting pump) with direct load-sensing pump connection. With the aid of the flow regulation valve of the tractor adjust the flow to the correct setting which is required for normal fertilizing.

- **Setting the system converting bolt:**
  - Slacken counter nut.
  - Unscrew the system converting bolt by using a screwdriver until the stop (factory setting) or screw in.
  - Retighten counter nut.
7 Coupling and uncoupling the machine

Danger!

- Only couple and transport the machine with a tractor which has been designed for this task and fulfils the power requirements.
- When fitting the machine to the tractor three point linkage the mounting categories on the tractor and the implement must coincide.
- When coupling tractor and implement, only use the prescribed tools.
- Standing of persons between the machine to be coupled and the tractor is prohibited whilst the tractor is backing up.
  ➔ Any assistants may only stay at the side of the vehicle and help to direct it. Only when the vehicles have come to a full standstill they are allowed to step between them.
- When coupling and uncoupling implements, observe the chapter "Safety advice for the operator", on page 20.

Warning!

Any maintenance work on the spreader may only be carried out with a stopped engine and a pressure free hydraulic system!

Remove ignition key. Secure the implement against unintended operation and rolling away!

Warning!

Danger of tipping over!

When mounting or dismounting park the spreader on level ground. Do not lift in the front!

Mount and dismount the spreader only with empty hopper...

Advise people to leave the danger area behind or underneath the machine.

When coupling ensure sufficient free space for the lower link arms.

Only lift the implement with fitted upper link.
7.1 Mounting

Mount the centrifugal broadcaster to the rear hydraulic three point linkage of the tractor (please see on page 20).

- Fix lower link of tractor on lower link pin (cat. II) (Fig. 34/1) and secure by using a clip pin.
- Fix upper link with link pin (cat. II) (Fig. 34/2) and secure by using a clip pin.

**Warning!**
In lifted position the lower link arms of the tractor must only have little play to the sides, so that the machine does not swing to and fro during spreading operation. Secure lower link arms of the tractor with stabilising bars of chains.

**Danger!**
Advise people to leave the danger area behind or underneath the machine, as it may swing to the rear and down if the upper link halves erroneously are twisted apart or tear off.

**Important!**
The speed of lowering a filled spreader must never be faster than 2 seconds. If available set the throttle valve accordingly.
7.2 Hydraulic connections

Warning!
Warning - The hydraulic system is under high pressure!
When connecting the hydraulic hoses to the tractor hydraulic system take care that both the tractor and broadcaster hydraulic system are pressure free!

- 1 single acting spool valve → (smaller plug)
- 1 pressure free oil return flow → (larger plug)

**Pressure free oil return flow**
To protect the hydraulic motors of the spreader from damage the back pressure in the return flow must not exceed 18 bar.
Therefore do not connect the return flow with the control spool valve but with a pressure free oil return flow with large plug coupling

**Warning!**
For the oil return flow only use hoses DN 16 and ensure short return flow.

Only pressurise the hydraulic system when the free return flow has been correctly coupled.
Install the supplied coupling sleeve on the pressure less oil return flow.

7.3 Connecting **AMATRON**

Connect the machine plug with tractor base equipment of **AMATRON**.

7.3.1 Fitting the traffic lights

Connect light cable with plug with the 12 V-tractor plug.

7.4 Dismounting

**Warning!**
Before dismounting the broadcaster ensure that the linkage points (top- and lower link) are loose.
For dismounting park the broadcaster on a level ground.
8 Settings

All settings on the centrifugal broadcaster **AMAZONE ZA-M Ultra** follow the indications of the *setting chart*.

All common fertilisers are test-spread in the **AMAZONE**-test hall and the hereby determined setting figures are entered into the setting chart. All fertilisers mentioned in the setting chart were in excellent condition when determining the setting values.

Due to varying fertiliser characteristics because of

- weather influence and/or unfavourable storing conditions,
- deviations of the physical properties of the fertiliser – also within the same kind and brand –,
- the spreading behaviour of the fertiliser,

may change and thus deviations from the figures for setting the desired spread rate or working width in the setting chart may become necessary.

No guarantee can be given that your fertiliser – even with the same name and from the same manufacturer – has the same spreading behaviour as the fertiliser tested by us.

**Hint!**

*We strictly point out that no compensation will be accepted for damage resulting from spreading errors.*

**Important!**

Carry out all settings with great care. Deviations from the optimum setting may change the spread pattern in a negative way.

The figures in the setting chart can only be taken as standard data as the spreading properties of the fertiliser may change and thus require other settings.

The indicated setting recommendations for the lateral distribution (working width) only correspond to the weight distribution and not to the nutritious distribution.

**Danger!**

Settings or other work on the centrifugal broadcaster must only be carried out with the motor switched off and pressure less hydraulic system. Remove the ignition key. Secure the vehicle against unintended putting to operation and rolling away!

Before carrying out any settings or other work on the implement, wait until all moving machine parts have come to a full stand still!

**Hint!**

With unknown kinds of fertiliser or for a checking of the working width set, a working width check can easily be carried out with the mobile test kit (option).

If the fertiliser cannot distinctly be associated with a certain kind in the *setting chart*, the **AMAZONE**-fertiliser service will give you *recommendations* for the setting, either immediately on the phone or after sending a small fertiliser sample (3 kg).

**AMAZONE**-fertiliser service:

- Germany: 0049 5405 - 501 111 or 501 164 Fax: 5405/501134
  Monday – Friday ☺ 8.00 till 13.00 o’clock.
8.1 Setting the mounting height

Danger!

Ask people to leave the danger zone behind or underneath the machine, as it may swing to the rear and down if the upper link halves erroneously are twisted apart resp. tear off.

Set the mounting height of the filled broadcaster in the field exactly according to the figures given in the setting chart. Measure the distance between soil surface and the spreading disc front- and rear side (Fig. 35).

8.1.1 Normal fertilising

The indicated mounting height, normally level 80/80 cm, are valid for the normal fertilising.

For the spring spreading season, when the crop has grown up to a height of 10 – 40 cm, one half of the crop height should be added to the stated mounting heights (e.g. 80/80). Thus set a mounting height of 95/95 when the crop is 30 cm tall. If the crop stands taller follow the instructions for late top dressing. If the crop stands very dense (rape) the fertiliser broadcaster should be set with the indicated mounting height (e.g. 80/80) above the crop. If that is no longer possible due to taller crop, then please also follow the instructions for late top dressing.

8.1.2 Late top dressing

The spreading discs are supplied as standard with spreading vanes by which besides the normal spreading procedure also late top dressing in crops to growth height of 1 m may be conducted.

Set the mounting height of the spreader with the aid of the tractor’s three-point hydraulic that high that the distance between the top of the grain and the spreading discs is approx. 5 cm (Fig. 36). If necessary insert the lower link pins into the lower link pin connections.

Fig. 35

Fig. 36
8.2 Setting the spread rate

Hint!

See operation manual AMATRON+.

The shutter slide position for the desired spread rate is set with the aid of the two setting levers.

After having entered the desired spread rate on AMATRON+ [required rate in kg/ha] determine the fertiliser calibration factor (spread rate check). It determines the control behaviour of AMATRON+.

8.3 Checking the spread rate

Check the spread rate:
- with every change of fertiliser,
- alteration of the spread rate,
- alteration of the working widths.

See operation manual AMATRON+/parafertiliser calibration - Fig. 37/1.
8.3.1 Arrangements for the spread rate check

1. Swivel downwards the guard tube centre part (if guard tube installed).
2. Set the required shutter slide position for the desired spread rate on the left hand side hopper tip.
3. Remove the left hand spreading disc.
   - Unscrew the thumb nut for fixing the left hand spreading disc and pull the spreading disc off the gear box shaft.
   - Screw thumb nut again in gear box shaft (to avoid any fertiliser dropping into the threaded hole)
4. Hang the outlet chute (Fig. 38/1) on the frame
5. Hang the calibration bucket (Fig. 39/2) with its handle (Fig. 39) into the rear retainer and the front retainer on the frame.
8.4 Setting the working width

For all working widths the lateral distribution is rechecked by using the mobile fertiliser test kit.

The working width is influenced by the spreading properties of the fertiliser. The main influence factors regarding the spreading properties are:

- grain size,
- bulk density,
- surface condition,
- humidity.

Depending on the kind of fertiliser the "Omnia-Set" spreading discs (Fig. 40) allow the setting of varying working widths.

To set the various working widths (distance between the tramlines) the spreading vanes can infinitely variably be swivelled around the pivoting point (Fig. 40/1) (see below).

8.4.1 Swivelling the spreading vanes

The spreading vane position depends on

- the working width and
- the kind of fertiliser.

For the accurate tool less setting of the individual spreading vane position two different unmistakable scales (Fig. 41/2 and Fig. 41/6) are arranged on every individual spreading disc.

By swivelling the spreading vanes in direction of rotation (Fig. 40/a) of the spreading discs (on to a higher figure on the scale) the working width is increased. When swivelling them against the direction of rotation (Fig. 40/b the working width is reduced. The shorter spreading vane distributes the fertiliser mainly in the spread pattern centre, while the longer vane mainly spreads onto the outer range.
Example:
Fertiliser: CAN 27%N gran. Hydro Rostock
Spreading disc: OM 24-48
Working width: 27m

For fertiliser or trade name, please refer to the setting chart (Fig. 42).

Read off group of fertiliser (Fig. 42).

For spreading vane position please refer to the right hand side of the table (Fig. 43):

- group 1; Working width 27 m
- Short vane position: 14
- Long vane position: 47

<table>
<thead>
<tr>
<th>Fertiliser</th>
<th>Trade name / type</th>
<th>spreading see page</th>
<th>Quantity factor</th>
<th>Group of fertiliser</th>
</tr>
</thead>
<tbody>
<tr>
<td>KAS</td>
<td>KAS 27%N gran. fertiva GmbH</td>
<td>22-24</td>
<td>0.92</td>
<td>1</td>
</tr>
<tr>
<td>KAS 27%N gran. Nitramoncal Agrolinz</td>
<td>22-24</td>
<td>0.92</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>KAS 27%N gran. Hydro Rostock</td>
<td>22-24</td>
<td>0.92</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>KAS 27%N gran. Hydro Sluiskil (NL)</td>
<td>22-24</td>
<td>0.92</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Nutramon® 27%N gran. DSM (NL)</td>
<td>22-24</td>
<td>0.92</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>KAS 27%N gran. SCHZ Lovosice (CZ)</td>
<td>22-24</td>
<td>0.92</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>KAS 27%N gran. Anwil (PL)</td>
<td>22-24</td>
<td>0.92</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>KAS 27.5%N gran. ZAK (PL)</td>
<td>22-24</td>
<td>0.92</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 42

<table>
<thead>
<tr>
<th>Group of fertiliser</th>
<th>24</th>
<th>27</th>
<th>28</th>
<th>30</th>
<th>32</th>
<th>36</th>
<th>40</th>
<th>42</th>
<th>44</th>
<th>45</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1447</td>
<td>1447</td>
<td>1447</td>
<td>1648</td>
<td>1648</td>
<td>1849</td>
<td>1949</td>
<td>1952</td>
<td>1953</td>
<td>1954</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1447</td>
<td>1447</td>
<td>1447</td>
<td>1647</td>
<td>1647</td>
<td>1847</td>
<td>2049</td>
<td>2252</td>
<td>2355</td>
<td>2355</td>
<td>—</td>
</tr>
<tr>
<td>3</td>
<td>1447</td>
<td>1447</td>
<td>1447</td>
<td>1547</td>
<td>1547</td>
<td>1647</td>
<td>1649</td>
<td>1952</td>
<td>1953</td>
<td>1953</td>
<td>2055</td>
</tr>
</tbody>
</table>

Fig. 43
Set spreading vanes on spreading discs as follows:

Slacken both thumb nuts (Fig. 44/7) beneath the spreading vanes.

**Hint!**

For slackening thumb nut turn the spreading disc until the nut is located at the side and can be slackened without any problem.

- Swivel read off edge (Fig. 44/3) of the short vane (Fig. 44/1) on figure "14" of scale (Fig. 44/2 and retighten thumb nut firmly.

- Swivel read off edge (Fig. 44/5) of the long vane (Fig. 44/4) on figure "17" of scale (Fig. 44/6) and retighten thumb nut firmly.

8.4.2 Checking the working width with the mobile test kit (option)

The setting values of the setting chart have to be considered as **guide values** only, as the spreading properties of the kinds of fertiliser vary. It is recommended to check the set working widths of the fertiliser broadcaster with the mobile test kit (Fig. 45) (option).

For further details, please refer to the instruction manual "Mobile test kit".
9 Transport travel

Danger!

- Prior to any transport travel observe the chapter "Safety advice for the operator", page 23.
- When travelling on public roads and ways observe the traffic regulations in force in your country.
- The traffic light kit must correspond to your national traffic law.
- Vehicle owner as well as the operator are responsible for adhering to the legal traffic regulations.

According to the harmonised European traffic regulations traffic light units and warning plates are required on agricultural and forestry implements mounted to tractors. The regulations are (slight national differences may be possible):

- If the prescribed rear lights, the indicators or the registration number are hidden by the broadcaster they will have to be repeated on the mounted implement. If the sides of the mounted implements protrude more than 400 mm the outer edge of the light emitting source of the limiting or rear lights of the tractor, extra parking warning plates and side lights are required. If the mounted implement protrudes more than 1 m beyond the rear lights of the tractor, parking warning plates, rear light units and rear reflectors are required.
- The light units and possibly required parking warning plates and foils according to DIN 11030 can be obtained from the manufacturer of the implement or from your dealer. As always the latest edition of the national traffic regulations is valid, please verify them at your local traffic office.

Danger!

Note maximum permissible filling loads of the spreader and axle loads of the tractor; if necessary drive on public roads with only half filled hopper.

9.1 Adjustments on tractor and fertiliser spreader for transport on public road

Danger!

- When the centrifugal broadcaster is lifted for road transport, the distance between the upper edge of the rear lights and the road surface must never exceed 900 mm.
- When driving on public roads with lifted implement lock the control lever against unintended lowering!
- When lifting the fertiliser broadcaster the front axle load of the tractor is relieved by different amounts depending on the size of the tractor. Always check that the necessary front axle load of the tractor (20 % of the tractor’s net weight) is maintained!
10 Operation

Danger!
- When operating the machine observe the chapter "Safety advice for the operator", page 21.
- 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.

Danger!
- Never reach into the rotating agitator spiral!
- Under no circumstances poke about the fertiliser with any aids into the rotating agitator spiral!
- Never ever climb onto the hopper whilst the agitator spiral is spinning.

Before starting with the spreading operation:
- Job data (Fig. 46/1)
- Machine data (Fig. 46/2)

enter on **AMATRON** and recheck.

Important!
Only use well granular fertiliser s and kinds mentioned in the setting chart. In case of insufficient knowledge about the fertiliser check the fertiliser lateral distribution for the set working width by using the mobile test kit.

When spreading mixed fertilisers mind that
- the individual kinds may have different spreading properties.
- a demixing of the individual kinds may occur.

After every operation remove fertiliser which may still be sticking on the spreading vanes!

10.1 Filling the spreader

Important!
- Before filling ensure that there are no residue or foreign particles in the hopper.
- Before filling the spreader attach the guard screen to sort out foreign particles.
- When filling the spreader ensure that there are no foreign particles in the fertiliser
- Observe the permissible payload of the spreader (please refer to technical data) and the axle loads of the tractor!
Danger!
When filling the centrifugal broadcaster always check that the necessary front axle load of the tractor (20% of the tractor's net weight, please also refer to the instruction manual of the vehicle manufacturer) is maintained. If necessary apply front weights!

Important!
Before filling the hopper the shutters must be closed!

Danger!
Strictly follow the safety advice of the fertiliser manufacturer.

Hint!
Entering refilled fertiliser amounts on AMATRON+. Please refer to the instruction manual for the AMATRON+.

10.2 Spreading operation

- The fertiliser spreader has been coupled onto the tractor.
- The hydraulic hoses are connected.
- AMATRON+ is connected.
- All settings are made.

Hint!
See operation manual of AMATRON+.

Important!
The spreading disc rev. speed is 720 \( \text{U/min, if there is no other speed given in the spread rate table.} \)

Only open the hydraulic shutters when the prescribed spreading disc rev. speed has been reached.

Danger!
Do not approach rotating spreading discs. Danger of injury. Danger from fertiliser particles being thrown around. Advice people to leave the danger area!

Important!
If the implement is transported over longer distances with filled hopper, ensure a correct spread rate when starting the spreading operation!

Maintain a constant spreading disc rev. speed and forward speed!

The technical condition of the spreading vanes essentially influences the even lateral fertiliser distribution in the field (creation of stripes).

Hint!
In case an uneven emptying of the two hopper tips is noted in spite of an equal shutter position, check the shutter basic setting.

The life span of the spreading vanes depends on the kinds of fertiliser used, the operation times and quantities spread.
Danger!
Before commencing any operation with the fertiliser spreader ensure that all safeguards are present and fitted in the correct position (s. on page 32).

10.3 Eco-border and normal-border spreading

The boundary and side spreading with the **ZA-M Ultra Hydro** is achieved by reducing the border side spreading disc rev.

**Hint!**

See operation manual of **AMATRON**.

- Enter the spreading disc speed for boundary spreading in the menu "machine data".
- In the operating menu of **AMATRON** press key:
  - border spreading left hand on/off
  - border spreading right hand on/off

**Eco-border spreading according to fertiliser application decree (Fig. 47):**

The adjacent area is a road or a water.

According to fertiliser decree
- no fertiliser may be thrown beyond the border.
- eroding and washing off (e.g. in surface water) must be prevented.

In order to avoid an over-fertilizing inside the field, the spread rate thrown towards the boundary must be reduced. This results in only a little over-fertilizing in front the field’s boundary. Please refer to the instruction manual for **AMATRON** / machine data.

The eco-border spreading corresponds to the requirements of the fertiliser application decree.

Symbol for eco-border spreading: \(\text{[Symbol]}\) (no fertiliser may be thrown beyond the boundary).
Normal-border spreading (Fig. 48):

The adjacent area is an arable field. A small amount of fertiliser being thrown beyond the field’s border may be tolerated.

The fertiliser distribution inside the field is still near the rated quantity at the field’s border. A small amount of fertiliser will be thrown beyond the field’s border.

Symbol for normal-border spreading:
(at least 80% of the spread rate set until the field’s border).

Important! The spread patterns may deviate from the illustrated spread patterns.

10.4 Wedge shape spreading

The spreading of wedge shaped areas is carried out by switching off individual part sections on the AMATRON® in three steps by R.P.M. reduction.

See operation manual of AMATRON®:

- Switch off left hand part sections
- Switch off right hand part sections
10.5 Recommendations for broadcasting on the headlands

Precondition for an accurate broadcasting at field borders or field sides is the correct creating of tramlines. The first tramline (Fig. 49/T1) is usually always created in a distance of half the tramline spacing to the field side. In the same way, such a tramline is created on the headlands. As a check a further tramline (broken line) on the headlands is very helpful – with full spacing of one working width.

Following the advice given in page 63 drive along the field in the first tramline in clockwise direction (right hand turn).

As centrifugal broadcasters also throw the fertiliser to the rear, the following has strictly to be noted for an accurate distribution on the headlands:

Open and close shutter in different distance to the field's side when driving up (tramlines T1, T2 etc.) and down (tramline T3, etc.).

Open the shutter when "driving up" approx. on point P1 (Fig. 50), when the spreader is in line with the 2nd tramline on the headlands (broken line).

Close the shutter when "driving down" on point P2 (Fig. 50), when the spreader is in line with the 1st tramline on the headlands.

Hint!
Proceeding as described above prevents fertiliser losses, over- or under fertilising and thus is an environment friendly working method.
10.6 Advice for spreading slug pellets (e.g. Mesurol)

In standard execution the fertiliser spreader **ZA-M Ultra Hydro** can also be used for wide spreading of slug pellets. Slug pellets (e.g. Mesurol) have a granular shape or similar and is spread in relatively small rates (e.g. 3 kg/ha).

**Danger!**

When filling the centrifugal broadcaster avoid inhaling the dust and direct contact with your hands (wear protective gloves). After application clean your hands and all parts of the skin having been in contact with the dust thoroughly with water and soap.

**Hint!**

See operation manual of **AMATRON**!

For spreading slug pellets proceed in **AMATRON** menu:

**Calibration of slug pellets:**

**Danger!**

Before spreading slug pellets implicitly carry out a spread rate check for both outlet openings.

When spreading slug pellets take care that the shutter openings are always covered with spreading material and that the spreading discs are driven with a constant speed. A residue of approx. 0.7 kg per hopper tip cannot be spread as declined. For emptying the spreader open shutter and collect spreading material dropping out (e.g. on a canvas).

Slug pellets must not be mixed with fertiliser or other materials in order to possibly work with the spreader in another setting range.

In general regarding handling slug pellets, we refer to the advice of the manufacturer and to the general protective measures for handling pesticides (code of practice by the health and safety board).

10.6.1 Combination matrix

<table>
<thead>
<tr>
<th>Typ</th>
<th>AMAZONE ZA-M Ultra Hydro</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1800 ProfiS Hydro</td>
</tr>
<tr>
<td>1</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>X</td>
</tr>
</tbody>
</table>
## 11 Faults

### 11.1 Faults, causes and remedy

<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uneven lateral fertiliser distribution</td>
<td>Fertiliser is sticking to the spreading discs and spreading vanes</td>
<td>Clean spreading discs and spreading vanes.</td>
</tr>
<tr>
<td></td>
<td>Shutter do not open entirely.</td>
<td></td>
</tr>
<tr>
<td>Too much fertiliser behind the spreader</td>
<td>Prescribed spreading disc speed is not achieved</td>
<td>Increase tractor engine speed</td>
</tr>
<tr>
<td></td>
<td>Spreading discs or outlets defect or worn.</td>
<td></td>
</tr>
</tbody>
</table>
|                                      | The spreading properties of your fertiliser deviate from the properties of the fertiliser which we have tested when creating the setting chart. | Call the AMAZONE fertiliser service department.  
☎ +49 5405-501111 or +49 5405-501164
Mondays till Fridays 8.00 until 13.00 o’clock |
| Too much fertiliser is in the overlapping area | Prescribed spreading disc speed is exceeded                           | Reduce the tractor engine speed                                         |
|                                      | The spreading properties of your fertiliser deviate from the properties of the fertiliser which we have tested when creating the setting chart. | Call the AMAZONE fertiliser service department.  
☎ +49 5405-501111 or +49 5405-501164
Mondays till Fridays 8.00 until 13.00 o’clock |
<p>| Uneven emptying of the two hopper sides at the same shutter position | Bridging of fertiliser                                                | Clean spreading discs and spreading vanes                              |
|                                      | Clip pin in the agitator spiral sheared off due to overload           | Replace the “R”-clip                                                   |
|                                      | Shutter basic position different                                      | Check the shutter basic setting                                        |
| Hydraulic arms do not open and shut  | Oil supply on the tractor has not been switched on                    | Switch on oil supply on the tractor                                    |
|                                      | Power supply for the valve block has been interrupted                | Check cable, plug and contacts                                         |
|                                      | Oil filter is dirty                                                   | Exchange/clean filter. (See on page 79).                               |
|                                      | The solenoid valves is dirty                                          | Flush the solenoid valve to clean them from pollution. (See on page 79). |</p>
<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>On a tractor with constant current system (gear pump) the hydraulic oil is getting too hot</td>
<td>System converting bolt on the spreader valve block has not been screwed out to the stop (factory setting)</td>
<td>Screw out the system converting bolt on the spreader valve block to the stop (See page. 66)</td>
</tr>
<tr>
<td></td>
<td>Defective plug couplings</td>
<td>Check plug couplings. If necessary repair or replace</td>
</tr>
<tr>
<td></td>
<td>Defective tractor control unit</td>
<td>Check tractor control unit, repair if necessary or replace</td>
</tr>
<tr>
<td>On a tractor with a constant pressure system (possibly on older John Deere tractors) the hydraulic oil is getting too hot</td>
<td>System converting bolt on the spreader valve block has not been screwed in to the stop (contrary to the factory setting)</td>
<td>Screw in the system converting bolt on the spreader valve block to the stop. (See on page 50)</td>
</tr>
<tr>
<td></td>
<td>Defective plug couplings</td>
<td>Check plug couplings. If necessary repair or replace</td>
</tr>
<tr>
<td></td>
<td>Defective tractor control unit</td>
<td>Check tractor control unit, repair if necessary or replace</td>
</tr>
<tr>
<td>On a tractor with load-sensing system and oil decrease via the tractor control unit the hydraulic oil is getting too hot</td>
<td>System converting bolt on the spreader valve block has not been screwed out to the stop (factory setting)</td>
<td>Screw out the system converting bolt on the spreader valve block to the stop. (See on page 50).</td>
</tr>
<tr>
<td></td>
<td>Oil volume on the tractor control unit has not been sufficiently reduced</td>
<td>Reduce the oil volume on the tractor control unit</td>
</tr>
<tr>
<td></td>
<td>Defective plug couplings</td>
<td>Check plug couplings. If necessary repair or replace</td>
</tr>
<tr>
<td></td>
<td>Defective tractor control unit</td>
<td>Check tractor control unit, repair if necessary or replace</td>
</tr>
<tr>
<td>On a tractor with load-sensing system and a direct oil reduction and control cable the hydraulic oil is getting too hot</td>
<td>System converting bolt on the spreader valve block has not been screwed in to the stop (contrary to the factory setting)</td>
<td>Screw in the system converting bolt on the spreader valve block to the stop. (See on page 50).</td>
</tr>
<tr>
<td></td>
<td>Defective plug couplings</td>
<td>Check plug couplings. If necessary repair or replace</td>
</tr>
<tr>
<td>On a tractor with load-sensing system and oil decrease via the tractor control unit the hydraulic oil is getting too hot</td>
<td>System converting bolt on the spreader valve block has not been screwed out to the stop (factory setting)</td>
<td>Screw out the system converting bolt on the spreader valve block to the stop. (See on page 50).</td>
</tr>
<tr>
<td><strong>AMATRON</strong> does not show any reaction.</td>
<td>Power supply failed</td>
<td>Check the current power supply for <strong>AMATRON</strong>.</td>
</tr>
<tr>
<td>Fault</td>
<td>Cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>AMATRON</strong>+ sounds a warning signal</td>
<td>The sensor sends wrong speed figures to the <strong>AMATRON</strong>+.</td>
<td>Please refer to help keys <strong>AMATRON</strong>+</td>
</tr>
<tr>
<td></td>
<td>Sensor liefert falsche Drehzahl-Informationen an den <strong>AMATRON</strong>+.</td>
<td>Check the sensor spacing (approx. 1 – 4 mm) on both hydraulic motors. For this completely turn both the spreading discs with the hydraulic system completely switched off. On each of the 4 contacts the speed sensor switched on and off. This is indicated by the luminous diode on the end of the sensor lighting up and going out.</td>
</tr>
<tr>
<td>Spreading discs do not start to spin when they are switched on via <strong>AMATRON</strong>+</td>
<td>Key for switching on the spreading disc drive had not been pressed for at least 3 seconds (safety function).</td>
<td>Press key for switching on the spreading disc drive for at least 3 seconds.</td>
</tr>
<tr>
<td></td>
<td>Oil supply on the tractor has not been switched on.</td>
<td>Switch on the oil supply on the tractor.</td>
</tr>
<tr>
<td>Spreading discs start to spin immediately after the hydraulic system has been switched on.</td>
<td>Manual emergency actuation on the valve block has not been screwed out fully.</td>
<td>Screw out emergency actuation fully.</td>
</tr>
<tr>
<td>Spreading discs continue to spin after the <strong>AMATRON</strong>+ has been switched off.</td>
<td>Manual emergency actuation on the valve block has not been screwed out fully.</td>
<td>Screw out emergency actuation fully.</td>
</tr>
</tbody>
</table>
11.2 Failure of electronics

If a failure on the electronics is noted, the hydraulic spreading disc drive can be set via emergency manual operation.

**Warning!**

For the emergency hand operation always actuate both spreading disc drives.

1. Pull of the cubical plugs of both solenoid valves (Fig. 51/1).
2. Slacken the bolts (Fig. 51/2) of the emergency hand operation and secure.

Necessary hand operation - left hand spreading disc motor (as seen in driving direction). Fig. 51/3.

Necessary hand operation - right hand spreading disc motor Fig. 51/4.

3. Necessary hand operation turn in
   → speed reduced.
3. Necessary hand operation turn out
   → speed increased.

**Caution!**

- For setting the spreading disc rev. speed implicitly use a revolution counter.
  Caution within the vicinity of the rotating spreading discs.

- When the spreading discs have been hand operated for a while check the spreading disc rev. speed as is will increase due to the heating of the hydraulic oil.

**Important!**

- After having finished the hand operation screw out the emergency hand operation actuation entirely, screw in the bolt and secure, reinset the cubical plug.
- Go and see an authorised workshop.

11.3 Operation in the event of electrical failure

In the event of electrical faults occurring on job computer or the electric servo- motors, the operation can be continued even if the fault cannot be remedied straight away (please refer to the instruction manual for job computer).
12 Maintenance, repair and care

Danger!
When carrying out any maintenance, repair and care work, observe the chapter "Safety advice for the operator", on page 25.

Greas e shutter guides after every operation.

Warning!
Also grease the threads of the T-bolts for the shutter lever locking as well as their washers, so that the clamping connection remains functioning.

12.1 Cleaning

Important!
- Monitor brake-, air and hydraulic hoses with special care.
- Never ever treat brake-, air- and hydraulic hoses with petrol, benzole, paraffin or mineral oils.
- After cleaning grease the machine, especially after cleaning with a high pressure cleaner / steam jet or fat soluble agents.
- Observe the legal prescriptions for the handling and disposal of cleaning agents.
- After use clean the machine with a normal jet of water (greased implements only on washing bays with oil traps).
- Clean outlet openings and shutters especially carefully.
- Treat dry machine with an anticorrosive agent. (Only use biologically degradable protective agents).
- Park machines with opened shutters.
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.
### 12.2 Maintenance and care - Table

#### Maintenance work in intervals

<table>
<thead>
<tr>
<th>After 50 operating hours</th>
<th>• Check the hydraulic system, on page 76</th>
</tr>
</thead>
<tbody>
<tr>
<td>After 100 operating hours</td>
<td>• Lubricate the drive chain of the agitator shaft, on page 73</td>
</tr>
</tbody>
</table>

**If necessary**

- Shear off safety agitator shaft drive, below
- Exchanging the spreading discs, on page 72
- Exchanging spreading vanes, on page 73
- Check the horizontal position of leaf springs and bearing bracket, on page 74
- Setting the clearance on the limiting bolts, on page 75
- Calibrating the Broad-caster, please refer to the instruction manual for **AMATRON**
- Counterbalancing the spreader, please refer to the instruction manual for **AMATRON**
- Check of the hydraulic oil filter, on page 79
- Cleaning the solenoid valves, on page 79
- Electric traffic light kit, on page 79

### 12.3 Shear off safety agitator shaft drive

**If necessary**

The shear off safety of the agitator is operated via the spring cotter pins (Fig. 52/1). If necessary replace the spring cotter pin.

---

**Warning!**

Beforehand stop the spreading disc drive, stop the tractor engine and remove the ignition key.

---

*Fig. 52*
12.4 Exchanging the spreading discs

- If necessary
  1. Fold upwards the guard tube (Fig. 53).
  2. Remove the thumb nut (Fig. 54/1).
  3. Turn the spreading disc until the disc hole ø 8 mm faces to the implement centre.
  4. Pull off the spreading disc from the gearbox shaft.
  5. Set up other spreading disc.
  6. Fix spreading disc by tightening the thumb nut.

Important!
When setting up spreading discs do not mix up "left hand" and "right hand". The spreading discs are labelled accordingly:
- L = left hand
- R = right hand

The right hand side gearbox shaft is provided with a shear pin: Here always set up the right hand spreading disc with the two keys.

On broadcasters with job computer control the shutter slides should be fully opened for changing the spreading discs.

Hint!
The condition of the spreading vanes essentially helps to achieve an even distribution of the fertiliser in the field. This is, why the spreading vanes have been manufactured from an especially strong, partly non corrosive material. Nevertheless, wear of the spreading vanes has to be taken into account. Exchange the spreading vanes or the spreading discs as soon as holes are noted in the spreading vanes.

Remove fertiliser deposits on spreading vanes and guide plates in regular intervals!

Danger!
Do not stand in the immediate vicinity of the rotating spreading discs!
Do not touch any of the machine’s moving parts! Wait until they have come to a complete standstill!

Before changing the spreading discs or adjusting the spreading vanes, switch off the spreading disc drive, turn off the tractors engine and remove the ignition key!!

Keep clear of flying fertiliser! Risk of injury!
12.5 Exchanging spreading vanes

- If necessary
  1. Slacken self-locking nut (Fig. 55/1).
  2. Remove washer and flat mushroom head bolt (Fig. 55/2, 3).
  3. Slacken thumb nut (Fig. 55/4) and exchange spreading vanes.

Fitting the spreading vanes is done in vice versa order.

- Tighten the self locking nut (Fig. 55/1) in such a way, that the spreading vane can be swivelled by hand.

![Important!](image)

Important!

Note the correct fitting of the spreading vanes. The open side of the U-shaped spreading vane shows into sense of rotation.

![Warning!](image)

Warning!

Change out the spreading vanes, if there is wear and tear recognizable (e.g. gap).

Risk of injury about hurling things of the spreading vane!

12.6 Drive chain of agitator shaft

- Workshop job: after 100 operating hours

Cleaning and greasing the drive chain (Fig. 56/1).
12.7 Input and angular gearbox

Under normal conditions input- and angular gearbox are maintenance-free. The gearboxes are supplied with sufficient gear oil by the manufacturer. A refilling of oil usually is not necessary. External symptoms, e.g. fresh oil spots on the parking place or on machine parts and/or loud noise development, however, indicate an oil leakage of the gearbox housing. Search for reason, care for remedy and fill in oil.

Oil quantity:
Input gearbox: 0.4 l SAE 90 gear oil
Angular gearbox: each 0.15 l SAE 90 Getriebeöl

Hint!
The bolts (Fig. 57/1) on the angular gearbox are safeguarded with Loc-tite.

12.8 Setting and maintenance of the weighing technique

12.8.1 Check the horizontal position of leaf springs and bearing bracket

- Workshop job: If necessary
The leaf springs (Fig. 58/1) and bearing brackets (Fig. 58/2) should be in horizontal position as otherwise the measuring result would be distorted.

In the factory the leaf springs and bearing brackets have been installed in horizontal position.

After a spread fertiliser quantity of approx. 10 000 kg the micrometer gauge (Fig. 58/4) might have set or worked into the rest block (Fig. 58/3). This may cause the leaf springs to dislocate from the horizontal position.

In this case readjust the micrometer gauge until the leaf springs and bearing brackets are in an horizontal alignment again.

Important!
Align leaf springs and bearing brackets only when the hopper is empty!
You will find the micrometer gauge (Fig. 59/1) in the centre underneath the frame of the spreader in the weigh cell.

For this:
1. Slacken counter nut (Fig. 59/2)
2. Readjust micrometer gauge (Fig. 59/1).
3. Retighten counter nut (Fig. 59/2).

**Hint!**
After settings on the micrometer gauge of the weigh cell calibrate the spreader again (please refer to instruction manual of AMATRON*).

**Hint!**
Then setting the clearance on the limiting bolts

### 12.8.2 Setting the clearance on the limiting bolts

- **Workshop job: If necessary**

Set the limiting bolts (Fig. 60/1) with a clearance of 2 mm according to illustration

They are located on the left and right hand side of the spreader frame.
1. Slacken counter nut (Fig. 60/2).
2. Set the limiting bolts (Fig. 60/1).
3. Retighten counter nut.

This setting should be carried out when the spreader is empty.

### 12.8.3 Calibrating the Broadcaster

- **If necessary**

When the broadcaster is empty and AMATRON* does not show 0 kg (+/- 5 kg) filling weight, the broadcaster must be calibrated again (please refer to instruction manual for AMATRON*).

This might, for example, be the case when options have been fitted to the broadcaster.

### 12.8.4 Counterbalancing the spreader

- **If necessary**

In case that after filling with fertiliser the freshly counterbalanced spreader will not indicate the correct filling weight, carry out a new calibration test (please refer to the instruction manual for AMATRON*).
12.9 Hydraulic system

Danger!

- Only an authorised workshop is allowed to carry out repair work on the hydraulic system.
- The hydraulic system is under high pressure.
- When searching for leaks, appropriate aids should be used.
- Before starting and work on the hydraulic system, relief the system from pressure.
- Under high pressure any fluids (such as hydraulic oil) may penetrate the skin and cause serious injury. Immediately call for a doctor. There is danger of infection.
- When connecting hydraulic hoses to the tractor hydraulic system ensure that the hydraulic system on the tractor and on the trailed implement is at zero pressure.
- Dispose of old oil as prescribed. In case of problems contact your oil supplier.
- Store hydraulic oil out of reach of children.
- Hydraulic oil must not get into the earth or water.
- When carrying out maintenance and repair work on the hydraulic system, observe chapter “Safety advice for the operator”, see on page 21.

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 guidelines may prevail.
Identification of hydraulic hoses

The identification provides the following information:

Fig. 61/...

(1) Identification of the marker (A1HF)
(2) Date of production of the hydraulic hose circuit (02 04 = February, 2004)
(3) Max. permissible operating pressure (210 BAR).

Maintenance intervals

Workshop job:

- After the first 10 operating hours
- 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!

Ersetzen Sie Hydraulikschlauch-Leitungen, wenn Sie bei der Inspektion folgende Inspektions-Kriterien feststellen:

- 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.
Maintenance, repair and care

- Demands on the assembly not observed.
- The permissible period of use of 6 years is exceeded.

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

12.9.1 Mounting and dismounting hydraulic hoses

Hint!

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

- Only use original-AMAZONE hydraulic hoses!
- Always ensure cleanliness.
- As a matter of principle install the hydraulic hoses in such a way, that – in all operational conditions -
  - the hose is not under tension, except for its own weight
  - short hoses are not upset.
  - exterior mechanic affects on the hydraulic hoses are avoided.
    - the hoses are arranged and affixed properly to prevent the hoses from rubbing on components or against each other. If necessary secure the hydraulic hoses by using guard covers. Cover sharp edged components.
  - the permissible bending radius is observed.
- When connecting a hydraulic hose with moving parts, ensure that in the entire range of movement the hose length ensures that the smallest permissible bending radius is maintained and/or the hydraulic hose is not tensioned.
- Affix the hydraulic hoses on the fixing points given. Avoid hose fixings where they would hinder the natural movement and length change of the hose.
- It is forbidden to paint hydraulic hoses.
12.10 Check of the hydraulic oil filter

- **Workshop job: If necessary**

During operation the function of the hydraulic oil filter (Fig. 62/1 can be checked on the control block.

Indication in the check window (Fig. 62/2):
- Green filter functions properly
- Red exchange filter / clean

For removal of the filter twist off the filter cover and take out filter.

![Fig. 62](image)

12.11 Cleaning the solenoid valves

- **Workshop job: If necessary**

Flush the solenoid valve to clean them from pollution. This might become necessary when deposits prevent an entire opening or closing of the shutters.

1. Unscrew solenoid cap (Fig. 63/3).
2. Remove magnet coil (Fig. 63/4).
3. Screw out the valve rod (Fig. 63/5) with valve seat and clean with compressed air or hydraulic oil.

![Fig. 63](image)

12.12 Electric traffic light kit

- **If necessary**

Warning!
Replace defective bulbs immediately so that no other road users will be endangered.

**Exchange of bulbs:**

1. Remove the protecting glass.
2. Remove defective bulb.
3. Insert replacement bulb (observe the correct voltage and watt number).
4. Apply protecting glass and screw on.
### 12.13 Bolt torques

<table>
<thead>
<tr>
<th>Thread</th>
<th>Spanner size</th>
<th>8.8 Nm</th>
<th>10.9 Nm</th>
<th>12.9 Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 8</td>
<td>13</td>
<td>25</td>
<td>35</td>
<td>41</td>
</tr>
<tr>
<td>M 8x1</td>
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<td>27</td>
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</tr>
<tr>
<td>M 10</td>
<td>16 (17)</td>
<td>49</td>
<td>69</td>
<td>83</td>
</tr>
<tr>
<td>M 10x1</td>
<td></td>
<td>52</td>
<td>73</td>
<td>88</td>
</tr>
<tr>
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<td>125</td>
<td>150</td>
</tr>
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<td>M 14</td>
<td>22</td>
<td>135</td>
<td>190</td>
<td>230</td>
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<td>210</td>
<td>250</td>
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<td>355</td>
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<td>460</td>
<td>550</td>
</tr>
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<td>1050</td>
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<td>1450</td>
<td>2000</td>
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</tr>
<tr>
<td>M 30x2</td>
<td></td>
<td>1600</td>
<td>2250</td>
<td>2700</td>
</tr>
</tbody>
</table>
Fig. 64

1. Flow on control valve tractor
   a. 1 hose mark red
2. Return flow on pressure free return flow tractor
   a. 2 hose marks red
3. Oil filter
4. Hydraulic block 1
5. Hydraulic block 2
6. Pressure hose on P
7. Return flow on T
8. Leak oil hose spreading disc right hand on T2
9. Leak oil hose spreading disc left hand on T1
10. Shutter actuation right hand on Z2
11. Shutter actuation left hand on Z1
12. Pressure hose hydraulic motor spreading disc right hand on M2
13. Pressure hose hydraulic motor spreading disc left hand on M1
14. Return flow hydraulic motor spreading disc right hand
15. Return flow hydraulic motor spreading disc left hand
16. Pressure hose hydraulic motor agitator shaft on B
17. Return flow hydraulic motor agitator shaft on A
18. Inspection port for pressure gauge
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