Centrifugal Broadcaster

# AMAZONE ZA-M HYDRO

## Operation Manual


MG 618
DB 557.1 (GB) 09.01
Printed in Germany

GB IRL

CE

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

# Preface

Dear Customer,

The centrifugal broadcasters ZA-M HYDRO are machines from the comprehensive range of agricultural machinery of AMAZONEN-WERKE H. Dreyer GmbH & Co. KG.

To make full use of your newly purchased centrifugal broadcaster, please carefully read and adhere to this operation manual before starting to operate with your machine.

Please ensure that all operators read this operation manual before they start to operate with the machine.

This operation manual is valid for all centrifugal broadcasters of the type ZA-M HYDRO.

AMAZONEN-WERKE
H. DREYER GmbH & Co. KG

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# 1.0 Details about the machine

## 1.1 Range of application

The centrifugal broadcaster ZA-M HYDRO has been designed for spreading dry, granular, prilled and crystalline fertilisers as well as for seeds and slug pellets.

## 1.2 Manfacturer

**AMAZONEN-WERKE**
H. DREYER GmbH & Co. KG
Postfach 51**,**
D-49202 Hasbergen-Gaste / F. R. Germany

## 1.3 Conformity declaration

The centrifugal broadcaster fulfills the requirements of the EC-guide line Machine 89/392/EC and the corresponding additional guide lines.

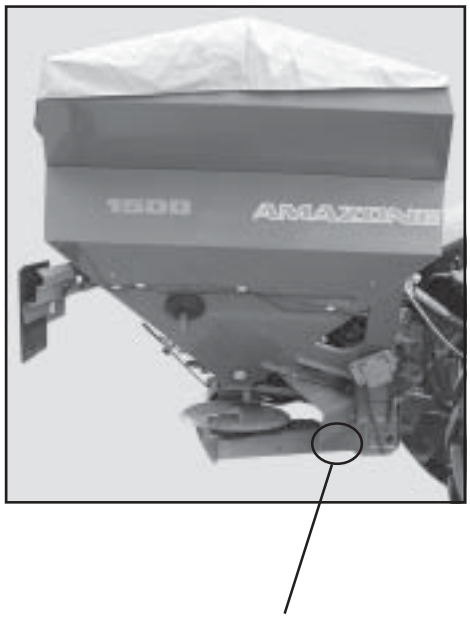
## 1.4 Details when making enquiries and ordering

When ordering options or spare parts the machine type and the serial number of the spreader have to be included.

**The safety requirements are only fulfilled when in the event of repair original AMAZONE spare parts are used. Using other parts may rule out the liability for resulting damages.**

## 1.5 Identification

Type plate on the machine.



Typ: ZA-M _____

Masch.-Nr.: _____

**The entire identification is of documentary value and may not be changed or disguised!**

## 1.6. Technical data

| Type HYDRO | Hopper capacity [liter] | Payload [kg] | Net weight [kg] | Filling height [m] | Filling width [m] | Total width [m] | Total length [m] |
|---|---|---|---|---|---|---|---|
| **ZA-M max*iS*** | 1500 | 2500 | 295 | 1,12 | 2,15 | 2,30 | 1,35 |
| + S 500 | 2000 | 2500 | 323 | 1,26 | 2,06 | 2,30 | 1,35 |
| + 2 x S 500 | 2500 | 2500 | 351 | 1,40 | 2,06 | 2,30 | 1,35 |
| + L 1000 | 2500 | 2500 | 351 | 1,39 | 2,75 | 2,89 | 1,35 |
| + S 500 + L 1000 | 3000 | 3000 | 379 | 1,53 | 2,75 | 2,89 | 1,35 |
| **ZA-M prof*iS*** | 1500 | 2800 | 465 | 1,12 | 2,15 | 2,30 | 1,35 |
| + S 500 | 2000 | 2800 | 493 | 1,26 | 2,06 | 2,30 | 1,35 |
| + 2 x S 500 | 2500 | 2800 | 521 | 1,40 | 2,06 | 2,30 | 1,35 |
| + L 1000 | 2500 | 2800 | 521 | 1,39 | 2,75 | 2,89 | 1,35 |
| Standard execution | Hydraulic single shutter control, filling sieve against foreign particles, collecting bucket for spread rate control, instruction manual, setting chart and disc rule | | | | | | |

### 1.6.1 Operating data

Maximum permissible hydraulic pressure of the tractor hydraulic system: **230 bar**.

### 1.6.2 Demand on the tractor's hydraulic system

- Operating pressure **60 - 140 bar**.

**With large working widths and high spread rates an operating pressure of up to 170 bar may be required.**

- The hydraulic system of the tractor must supply a minimum volume flow **45 l/min**.
- The hydraulic system of the tractor must be equipped with an **oil filter**.

**Ensure that the oil filter is properly maintained and observe the prescribed filter change intervals.**

**Requirements for** connecting the spreader **to the hydraulic system of the tractor:**

- **1 single acting spool valve.**
- **1 pressure free oil return flow.**
- **1 control cable (only on tractors with a load-sensing hydraulic system and direct pump connection).**

**The pressure free return flow must go through the provided female coupling sleeve.**

**The back pressure inside the pressure free oil return flow must not exceed 7 bar.**

**<u>Do not allow the hydraulic oil to heat up excessively during operation</u>!**

**Large volume flows in conjunction with a small oil reservoir will lead to hydraulic oil heating. The capacity of the oil tank should at least be double as much as the volume flow. In case of excessive oil temperatures an oil cooler may need to be installed from a competent source.**

### 1.6.3 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 instrument: OPTAC SLM 5.

The noise level mainly depends on the vehicle used

## 1.7 Declined use of the machine

The centrifugal broadcaster **ZA-M HYDRO** has exclusively been designed for the usual operation in agriculture for spreading dry, granular, prilled and crystalline fertilisers as well as for designated seeds and slug pallets.

Slopes up to **20%** inclination can be spread, on steeper slopes the spread pattern is too uneven.

Any use beyond the one stipulated above is no longer considered as designed use. The manufacturer does not accept any responsibility for damage resulting from this; therefore the operator himself carries the full risk.

Under "designed use" also the adhering to the manufacturer's prescribed operation maintenance and repair conditions as well as the exclusive use of **original AMAZONE spare parts** is to be understood.

**Any damage resulting from arbitrary changes on the machine rule out the responsibility of the manufacturer.**

Though machines having been manufactured with great care certain deviations when spreading fertiliser cannot totally be excluded even at a declined use: These deviations may be caused e.g. by:

- Varying composition of fertiliser and seed (e. g. granule size distribution, specific density, granule shape, dressing, sealing).
- Drifting.
- Blocking up or bridging (e.g. by foreign particles, bag residue, damp fertiliser etc.).
- undulated terrain.
- Wear of wearing parts (e.g. spreading blades, seed metering wheels, V-belts).
- Damage by external influence.
- Wrong drive-R.P.M. and travelling speed.
- Fitting wrong spreading discs (e.g. mixing them up).
- Wrong setting of the machine (incorrenct mounting, not adhering to the spreading chart).

Claims regarding damage not having occured on the AMAZONE centrifugal broadcaster itself will be rejected. This also applies to damages due to spreading errors. Modifications made to the AMAZONE centrifugal broadcaster by the owner/user may result in damage and therefore the manufacturer does not accept liability for such damage.

# 2.0 Safety

This operation manual contains basic hints, which have to be observed when mounting, operating and maintaining the machine.Thus, this operation manual has implicitly to be read by the operator before starting to operate and has to be made available to him.

All safety advice of this operation manual have to be observed most carefully and to be adhered to.

## 2.1 Dangers when not adhering to the safety advice

Not adhering to the safety advice

- may result in endangering persons, also the environment and on the machine itself.
- may result in the loss of any claim for damages.

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

- Danger to persons within the working width.
- Failure of important functions of the machine.
- Failure of prescribed measures for maintenance and repair.
- Danger for persons by mechanical or chemical affects.
- Danger to persons or to the environment by leaking hydraulic oil.

## 2.2 Qualification of operator

The centrifugal broadcaster **ZA-M HYDRO** may only be operated, maintained and repaired by persons, who are acquainted with it and have been informed of the relevant dangers.

## 2.3 Specification of 'hints' in the operation manual

### 2.3.1 General danger symbol

The safety advice in this operation manual, which may lead to a danger of persons when not being observed, are identified with the general danger symbol (Danger symbol according to DIN 4844-W9).

### 2.3.2 Attention symbol

Attention symbols which may cause dangers for the machine and it's function when not being adhered to, are identified with the Attention symbol:

### 2.3.3 Hint symbol

Hints regarding machine's specific particularities, which have to be adhered to for a faultless function of the machine are identified with the hint symbol:

### 2.3.4 Warning pictographs and hint symbols on the machine

- The warning pictographs indicate dangerous points on the machine. Observing these pictographs means safety for all persons using this machine. The warning pictographs always come together with safety/warning symbols.
- The hint symbols mark machine's specific points which have to be observed to ensure correct function of the machine..
- Strictly observe all warning pictographs and hint symbols.!
- Please pass on all safety advice to other users!
- Please always keep all warning pictographs and hint signs clean and in readable condition. Please ask for replacement of damaged or missing signs from your dealer and attach to relevant place (picture-No.: = Order-No.)!
- Fig. 2.1 and Fig. 2.2 show the fixing points of warning pictographs and hint signs. Please refer to the following pages for relevant explanations.

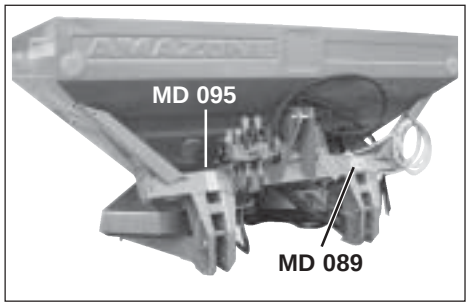



Fig. 2.1

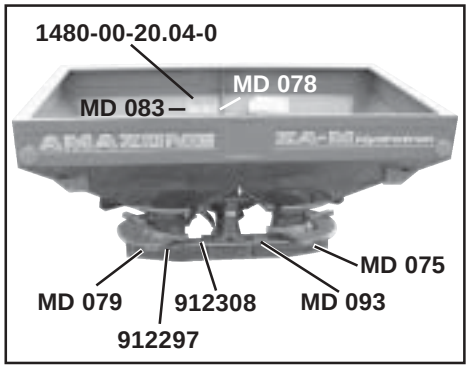
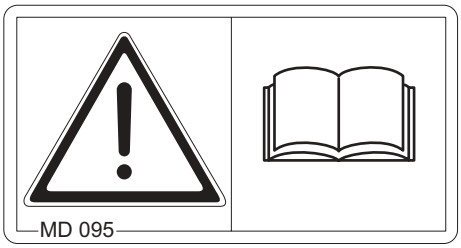



Fig. 2.2




Picture No.: **MD 095**

**Explanation:**

Before commencing work read the operation manual and safety advice thoroughly!

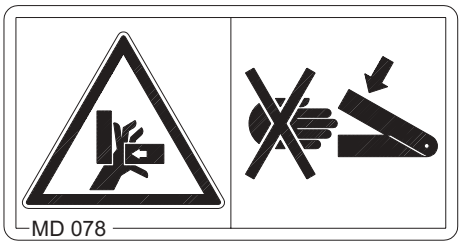

Picture No.: **MD 075**

**Explanation:**

Do not stay within the zone of spinning spreading discs!

Do not touch moving implement parts! Await their absolute standstill!

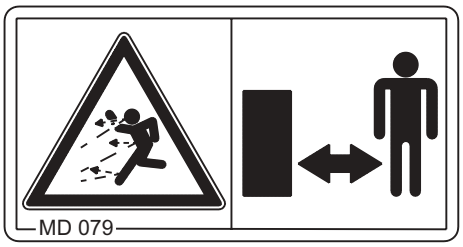
Disengage pto-shaft, stop the engine, and remove the ignition key before exchanging the spreading discs!




Picture No.: **MD 078**

**Explanation:**

Never reach into the danger zone. Risk of bruising (e.g. shutter slides and shutter openings) as long as parts can still move.

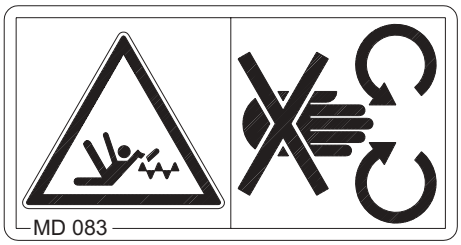



Picture No.: **MD 079**

**Explanation:**

Danger because of flung fertilizer particles!

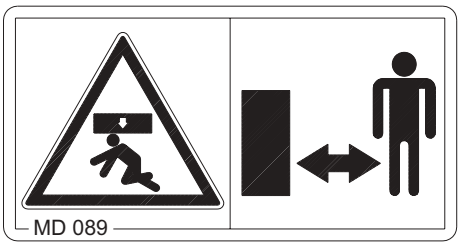
Advise people to leave the danger area.




Picture No.: **MD 083**

**Explanation:**

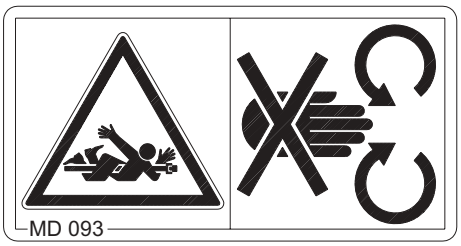
Never reach into the rotating agitator spiral!




Picture No.: **MD 089**

**Explanation:**

Never work under a lifted fertiliser spreader (unsecured load).

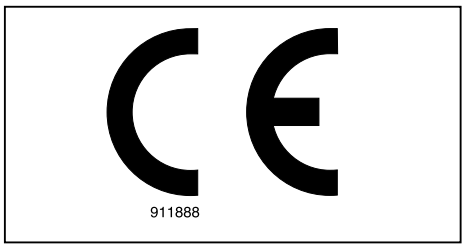



Picture No.: **MD 093**

**Explanation:**

Danger by rotating machine parts!

Never touch rotating shafts, spreading discs etc.!




Picture No.: **911 888**

**Explanation:**

The CE-mark indicates, that the machines fulfills the requirements of the EC-guide lines Machine 89/392/EWG and the corresponding additional guide lines.

Bild- Nr.: / Figure n°.: / Picture No.: / Afb.nr.: **912 297**

**(D) Beim Scheibenwechsel Scheibenloch ø 8 zur Maschinenmitte.**

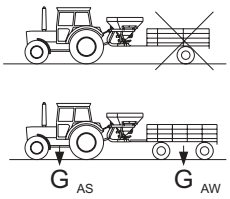
**(F) En changeant les disques, orientez le trou pré-percé vers la centre de la machine.**

**(GB) Disc change: Hole on disc must face the machine's centre line.**

**(NL) Bij omwisselen van de schijven het got naar het midden van de machine draaien.**

**912 297**

Bild- Nr.: / Figure n°.: / Picture No.: / Afb.nr.: **912 308**




**1) $V_{max}$ = 25 km/h**

**2) $G_{AW}$ = max. 1,25 x $G_{AS}$; $G_{AW\ max}$ = 5t**

**(D) Nur zulässig bei Anhängern mit Auflauf- oder Seilzugbremse.**

**(F) Autorisé seulement sur remorque disposant de son propre système de freinage.**

**(GB) Only permissible with trailers which are equipped with over-run or with Bowden cable brakes.**

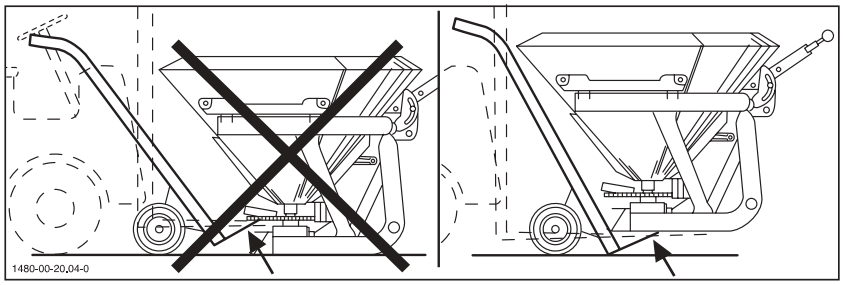
**(NL) Uitsluitend toegestaan bij aanhangers met oploop-of-kabel-trekrem.**

**912 308**

Bild-Nr.: / Figure n°.: / Picture No.: / Afb.nr.: **1480-00-20.04-0**

**Explanation:**

For transport do not lift centrifugal broadcaster from under the spreading discs.



## 2.4 Safety conscious operation

Besides the safety advice in this operation manual the national, and generally valid operation safety and accident preventive descriptions of the authorized trade association are binding, especially UVV 3.1, UVV 3.2 and UVV 3.4.

The safety advice indicated on the machine stickers must be observed.

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

## 2.5 Safety advice for the operator

### 2.5.1 General safety and accident preventive advice

**Basic principle:**

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

1. Adhere to the general rules of health- and safety precautions as well as to the hints in this instruction manual!
2. The warning- and hint signs fixed to the machine give important hints for the safe operation of the machine. Adhering to them serves your safety!
3. When making use of public roads adhere to the applicable traffic rules!
4. Become acquainted with all devices and controlling elements as well as their function **before** beginning the operation. Doing this during operation would be too late!
5. The clothing of the operator should fit tight. Avoid wearing loose clothing!
6. To avoid risk of fire keep the machine clean!
7. Before beginning to drive check your surroundings (children). Ensure sufficient visibility!
8. Sitting or standing on the implement during operation or during transport is not permissible!
9. Mount the implement only with the prescribed tools!
10. Special care should be taken when the implement is coupled to or off the tractor!
11. When mounting or dismounting bring parking supports into correct position (otherwise danger of tipping over)!
12. Affix any ballast weights always as prescribed to the correct fixing points!
13. Check maximum permissible axle loads of the tractor (see vehicle documents)!
14. Do not exceed maximum permissible transport measurements of the traffic department!
15. Check and fit equipment for road transport, e. g. traffic lights, warning plates guards!
16. The release ropes for quick coupler should hang freely and in the low position these must not release the quick coupling by themselves!
17. Never leave tractor seat during driving!
18. Moving characteristics, steering and braking ability are affected by mounted implements, trailers and ballast weights. Therefore, take account of these effects and allow sufficient steering and braking!
19. 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!

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

    To avoid sideways swing of the spreader during operation stabilize the lower link arms of the three-point-linkage!

21. Take implement only into operation when all guards are fixed in position!

22. **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 standing in the spreading zone. Do not approach rotating spinner discs.**

23. Filling the fertiliser broadcaster may only be done with the tractor engine stopped, remove ignition key and close shutters.

24. Do not stay in the rotating- and swivelling range of the implement!

25. Hydraulic folding frames may only be actuated when nobody is standing in the moving range!

26. On all hydraulically actuated pivoting parts exists danger of injury by bruising and trapping!

27. Before leaving the tractor lower the implement to the ground. Actuate the parking brakes, stop the engine and remove ignition key!

28. Nobody should stand between tractor and implement if the tractor is not secured against rolling away by the parking brake and/or by chocks!

29. **Note maximum permissible filling loads! Bear in mind the fertiliser bulk density [kg/l]. The fertiliser bulk densities can be read off the spreading table and have to be determined.**

    **Please refer to para. 1.6.**

30. If a trailer hitch is provided it must only be used for towing suitable implements or twin axle trailers if:

    - the maximum speed of **25 kph** is not exceeded,
    - the trailer has a run-on brake or a brake which can be actuated by the tractor operator,
    - the permissible total weight of the trailer is not more than **1.25 times** the permissible total weight of the tractor, however, **3 tons** is maximum.

    **Single axle trailers must not be towed by tractor mounted machinery under any circumstances.**

31. Do not place any foreign objects inside the hopper!

32. During the calibration test watch out for canger zones due to rotating parts of the machine!

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

34. If the implement is transported over longer distances with filled hopper, closed shutters and out of function (en route to the field), open the shutter slides entirely before starting the spreading operation, e. g. before engaging the drive. Then slowly engage the drive and carry our a brief stationary spreading! Only now, after having set the shutters on to the desired spreading rate, start spreading.

35. When spreading on field sides, waters or roads use the boundary spread device or reduce the spreading disc speed (hydraulic broadcaster)!

36. **Before any operation check for a perfect seat of fixing parts, especially for spreading disc- and spreading vane-fixing.**

### 2.5.2 General safety and accident preventive advice regarding the mounted implement

1. Before mounting- and dismounting implements to the three-point-linkage bring all control levers into a position that unintended lifting or lowering is impossible.
2. When fitting to the three-poing linkage the mounting categories on the tractor and the implement must coincide!
3. Within the range of the three-point linkage danger of bruising and shearing!
4. When actuating the control levers for the three-poing linkage never stand between tractor and implement!
5. In transport position always take care for sufficient lateral locking of the tractors' three-point linkage.
6. When driving on public roads with lifted implement the control lever has to be locked against unintended lowering!
7. Mount and dismount implements as described. Check braking systems for function. Mind manufacturer advice!
8. Working implements should only be transported and driven on tractors which are designed to do this!

### 2.5.3 General safety and accident preventive advice regarding the hydraulic system

1. Hydraulic system is under high pressure!
2. When connecting hydraulic rams and engines the described connection of the hydraulic hoses has to be noted!
3. When connecting the hydraulic hoses to the tractor's hydraulics take care that the hydraulics are pressureless on the tractor as well as on the implement side!
4. At hydraulic function connections between tractor and implement, the sockets and plugs should be colour coded in order to avoid incorrect operation. When mixing up connections, danger of reverse function, e. g. lifting instead of lowering. **Danger of accident!**
5. Check the hydraulic hoses prior to the first operation with the broadcaster. Then the hydraulic hoses should be checked at least once a year by an expert for their operational safe condition. Replacement hoses must correspond to the technical demands of the implement manufacturer!
6. When searching for leaks appropriate aids should be used due to danger of injury!
7. Liquids (hydraulic oil) penetrating under high pressure may penetrate the skin and cause severe injuries. In case of injuries immediately see a doctor. Danger of infection!
8. Before starting to do any repair work on the hydraulic system, lower implement, relieve system from pressure and switch off the engine!
9. The period of use of any hose circuit should not exceed six years including a possible storing period of two years in maximum. Also when stored and used properly, hoses and hose circuits age. Therefore, their longevity and period of use is limited. Deviations from the above may be accepted depending on the experience made and the danger potential. For hoses and hose circuits made of thermoplasts other guide lines may prevail.

## 2.6 General safety and accident prevention advice for maintenance, repair and cleaning

1. Repair, maintenance- and cleaning operations as well as remedy of function faults should principally be conducted with a stopped drive and engine. Remove ignition key!
2. Check nuts and bolts regularly (for the first time after 3-4 hopper fillings) for tightness and retighten if necessary!
3. When doing maintenance work on the lifted implement mnake sure that it is secured by proper supports!
4. Dispose of oil, grease and filters in the appropriate manner!
5. Before doing any repair work on the electric disconnect power supply!
6. Before conducting electric welding operations on tractor or on the mounted implement, remove cable from generator and battery.
7. Any spare parts fitted must, in minimum, meet with the implement manufacturers' fixed technical standards. This is, for example, ensured by using original **AMAZONE** spare parts.

## 3.0 Description of product

The centrifugal broadcaster **ZA-M HYDRO** has been designed for mounting to the rear three-point linkage cat II) of the tractor.

As standard, the broadcaster is equipped with:

- a hydraulic spreading disc- and agitator drive.
- an electro hydraulic single shutter control via AMASET.

**The spreading discs are not standard equipment.**

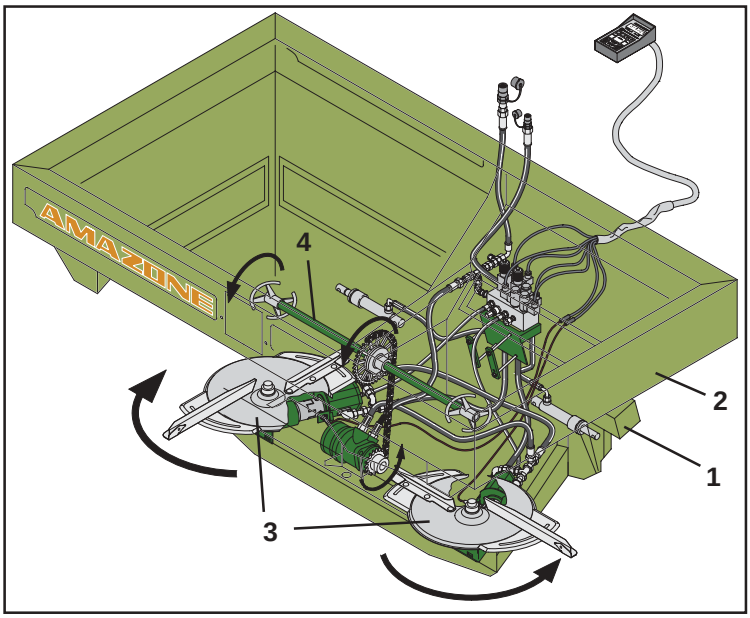



**Fig. 3.1**

The broadcaster consists of the components:

- Frame (3.1/1),
- Hopper (3.1/2), with twin hopper bottoms,
- Two dual shutter systems each with one setting lever,
- A choice of interchangeable “Omnia-Set” spreading discs (3.1/3).
- Hydraulic drive for
  - spreading discs (3.1/3) and
  - Agitator (3.1/4).

## 3.1 Function

The spreading discs (3.2/1) are driven hydraulically rotating in the direction of the arrow and are equipped with a short (3.2/2) and a long spreading vane (3.2/3).

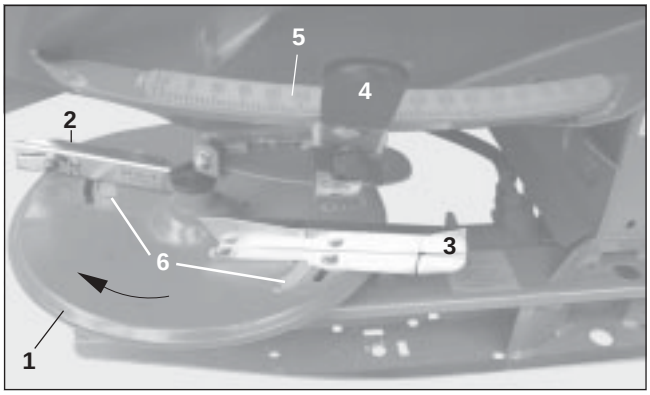



**Fig. 3.2**

The hydraulically driven spiral agitators (3.3/1) inside the hopper bottoms provide an even fertiliser flow on to the “Omnia-Set”-spreading discs. The slowly rotating, spiral shaped segments of the agitator guide the fertiliser evenly to the corresponding shutter aperture.

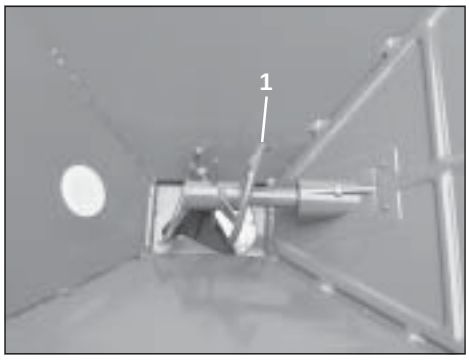



**Fig. 3.3**

The spread rate is set by the two setting levers (3.2/4) (this controls the secondary shutter slides). The required shutter position for the desired spread rate can be taken directly from the setting chart or it can be determined with the aid of the calculating disc rule. The shutter position is read off the scale (3.2/5).

The shutters are opened and closed with the aid of the electro hydraulic shutter control via AMASET. Hydraulic rams close the shutter slides and tensioning springs open them.

Setting the various working widths between 10 and 36 m is done by swivelling the spreading vanes on the spreading discs. The set working width depends on the fertiliser and spreading discs used. The different settings of the steplessly swivellable spreading vanes are compiled in the setting

chart. The actual spreading vane position is read off the scales (3.2/6).

Swivelling up the as standard supplied swivel blades allows a conversion for late top dressing without any tool.

The following pairs of "Omnia-Set" spreading discs are available to obtain the desired working widths:

- OS 10-12
- OS 10-18
- OS 20-28
- OS 30-36

**When spreading with OS 30-36 your fertiliser spreader has to be equipped with guard tube (accident prevention)!**

For boundary or field side 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 AMASET. The individual speed change of the spreading discs allows a spreading alongside the field's boundary according to the draft of fertiliser application decree.

If the ZA-M HYDRO is in addition equipped with AMADOS or AMATRON speed related spread rate control is achieved.

## 3.2 Remarks on the weighing technique

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

Further more the ZA-M ZA-M prof*iS* allows an accurate spread rate without any calibration test.

The ZA-M prof*iS* features an additional frame (Fig. 3.4/1), fitted in front of the spreader which retains the weigh cell (Fig. 3.5/1).

Due to the perfect constructive design the center of gravity of the AMAZONE ZA-M prof*iS* remains the same in spite of the additionally fitted weighing frame.

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

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 AMADOS III-D or the Job computer with stationary implement in the field. After having spread at least 200 kg of fertiliser the calibration procedure is terminated on the AMADOS III-D or the Job computer with stationary implement. AMADOS III-D or the Job computer have now calculated a new calibration factor with which the desired fertiliser rate can be accurately spread.

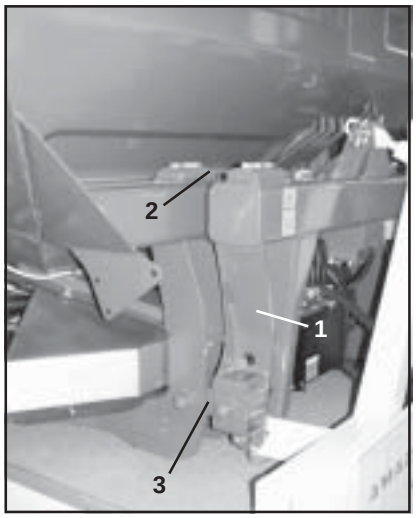



**Fig. 3.4**

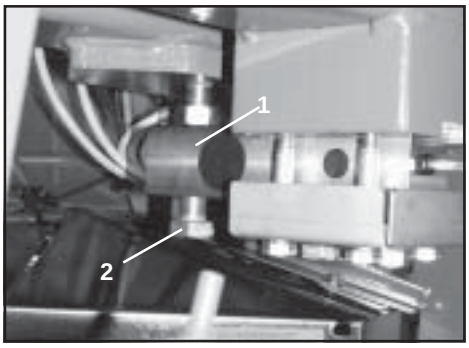



**Fig. 3.5**

**For varying fertilisers different calibration factors must be determined.**

Each one check screw (Fig. 3.6/1 and 3.6/1) is fitted on the left hand and right hand side of the frame of the fertiliser spreader ZA-M prof*iS*. The check screws are set with a clearance of 2 mm towards the weighing frame.

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

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

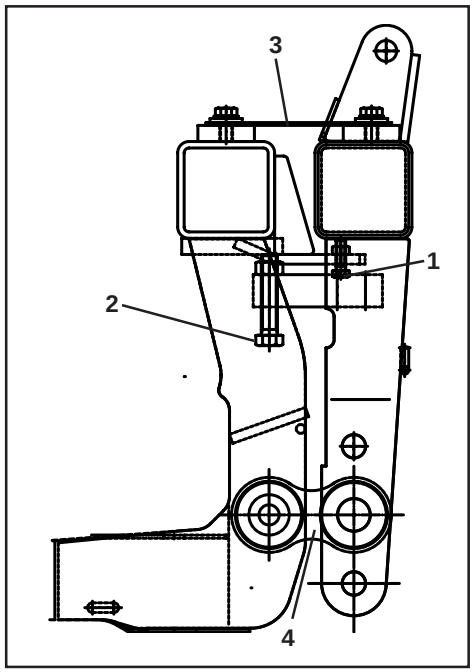



**Fig. 3.6**

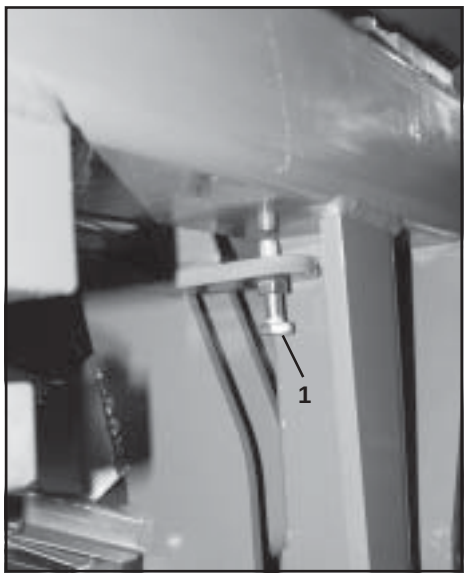



**Fig. 3.7**

## 3.3 Description of function of the electric remote control AMASET

**Fig. 3.8/...**

1 - Switching on or off AMASET.

2 - Switching on or off the spreading disc drive.

**Press switch-on key for at least 3 seconds (safety function).**

**When switching off the spreading disc drive, both shutters close automatically.**

3 - Speed of the right hand spreading disc (seen in driving direction) in $min^{-1}$.

4 - Speed of the left hand spreading disc in $min^{-1}$.

5 - Opening and closing both shutters simultaneously.

**When simultaneously closing the rotating spreading discs are briefly stopped so that the shutters safely close. After closing the spreading discs start rotating again automatically.**

6 - Open or close the right hand shutter (seen in driving direction).

7 - Open or close the left hand shutter .

8 - Normal fertilising – right hand spreading disc.

9 - Boundary- or field side spreading – right hand spreading disc.

10 - Normal spreading – left hand spreading disc.

11 - Boundary- or field side spreading – left hand spreading disc.

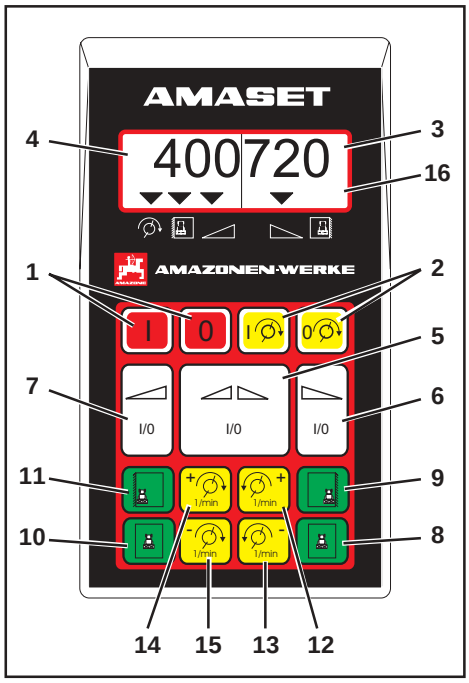



**Fig. 3.8**

12 - Display and increasing the wanted speed (3.8/3) for the right hand spreading disc.

13 - Display and reducing the wanted speed (3.8/3) for the right hand spreading disc.

14 - Display and increasing the wanted speed (3.8/4) for the left hand spreading disc.

15 - Display and reducing the wanted speed (3.8/4) for the left hand spreading disc.

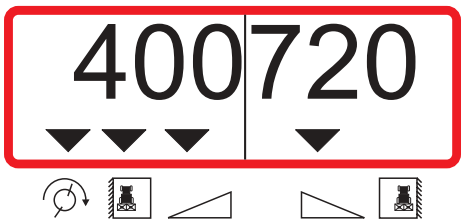
**With the 1st pressure on the keys 12 – 15 the wanted spreading disc speed for the dialled kind of fertiliser (normal- or boundary- or field side spreading) appears. By pressing these keys again the displayed speed continuously changes until the key is released.**

**The last entered speed will automatically be stored.**

16 - Status indication.

### 3.3.1 Explanations of the possible indications

Status indication




Spreading disc drive is switched on.

Boundary- or field side spreading – left hand spreading disc.

Left hand shutter opened.

Right hand shutter opened.

Boundary- or field side spreading – right hand spreading disc.

## 4.0 On receipt of the machine

Check that no damage has been caused in transit and that all parts are present! Only an immediate claim towards the carrier will lead to any recompense.

Please check the broadcaster for completeness including all ordered special options ordered.

Standard execution::

- Filling sieve,
- Calibration bucket for spread rate check,
- Instruction manual,
- Setting chart,
- Calculating disc rule,
- Remote control AMASET,
- 1 female coupling for the pressure free return flow.
- Fertiliser sample container

Before commencing work, remove all packing material, wire, etc.!

**Please check the correct fitting of the spreading discs. Looking towards the driven direction: left hand spreading disc decal “left hand” (“links”) and right hand spreading disc decal “right hand” (“rechts”).**

**Please check the correct setting of the scales on the spreading discs: On the left hand spreading disc the scales are marked with left /”links” and on the right hand spreading disc with right / ”rechts”. The scales with the numbers from 60 to 78 belong to the shorter spreading vanes and the scales with the numbers from 80 to 95 belong to the longer spreading vanes.**

## 4.1 Fitting

### 4.1.1 AMASET

- Fit the main console (4.1/1) within reach and sight on the right hand side of the tractor operator in the tractor cab. This needs to be vibration-free and earthed to the chassis (scratch colour off the fixing point).

**The spacing of AMASET and a potentially available radio transmitter and it's antenna must be at least 1 m.**

**When fitting the main console, please ensure that the optimum angle of view to the display is between 45° and 90°.**

**Definitely observe that the computer housing (4.1/2) above the console has a conducting connection to the tractor chassis. Scratch the colour off the fitting points.**

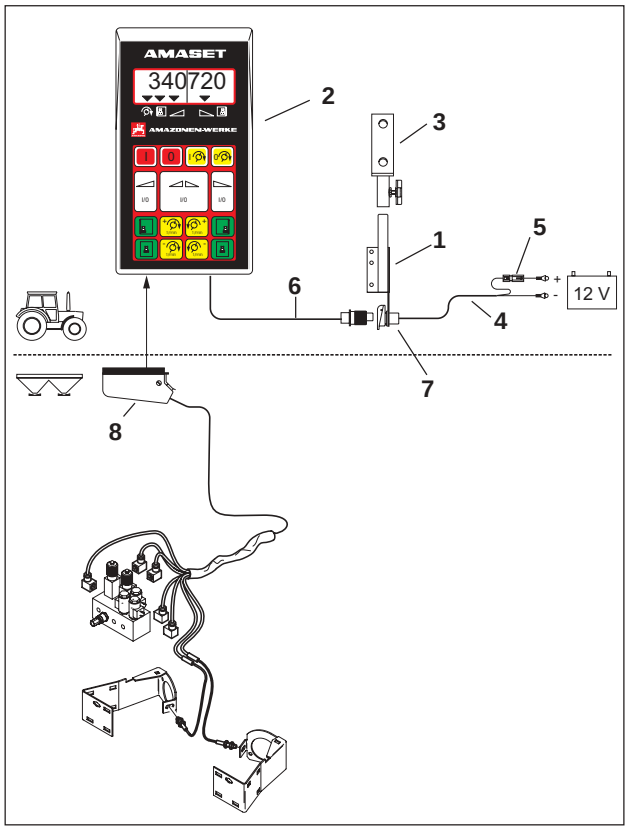



Fig. 4.1

- Clip the carrier bolted to the **AMASET** (4.1/3) on to the tube of the main console and fix with the thumb not in the desired position.

#### 4.1.1.1 Battery connecting cable

- Connect the battery cable (4.1/4) for the power supply directly with the tractor battery **(12 V)** lay cables.
  - Connect the wiring connector (4.1/5) and fuse **(16A)** with the **brown cable** and then connect with the **positive pole** of the tractor battery.
  - Connect the **blue cable** with the **negative pole** (earth.

**When pinching on the battery, first connect the plus cable with the positive pole. Then fix the earth cable on the negative pole. Pinching off the battery is done in vice versa order**

**Connect the negative pole of the battery with the frame or chassis of your tractor, especially to be noted for elder, American, Canadian or British tractor types. On tractors with a switch in the earth cable of the battery (e. gZetor 8011, 8045), connect the blue earth cable directly with the earth (frame or chassis).**

- Connect the power cable (4.1/6) of the **AMASET** with the socket (4.1/7).
- Connect the **AMASET** with the aid of the implement plug (4.1/8) with the broadcaster.

### 4.1.2 Pressure less oil return flow

To protect the hydraulic motors of the broadcaster from being damaged, the **pressure** in the return flow must **not exceed 7 bar**.

Therefore do **not connect** the oil return flow to the spool valve but to a pressure less oil return flow with a large plug coupling.

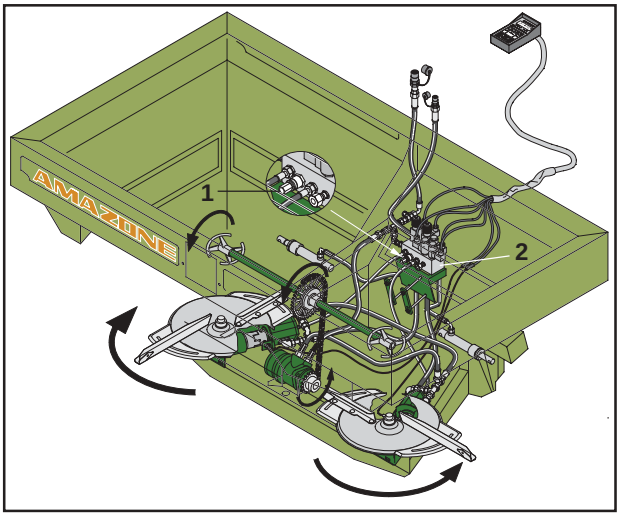
**For the oil return flow only use tubings DN 16, e.g. ø 18 x 1,0 mm and short return flow ways.**

- Install the supplied coupling sleeve on the pressure less oil return flow.

### 4.1.3 Setting the system converting bolt on the broadcaster valve block

The setting of the converting bolt (4.2/1) on the broadcaster valve block (4.2/2) 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 current controlled setting pump) with direct load-sensing pump connection.




**Setting the system converting bolt:**

- Remove the protective cap from the system converting bolt (4.2/1).
- Slacken the counter nut.
- Unscrew the system converting bolt with the aid of a screw driver until its stop (factory setting) or screw in.
- Tighten the counter nut.
- Replace the protective cap.

**Fig. 4.2**

## 5.0 Mounting and dismounting the centrifugal broadcaster

**Warning - Danger of tipping over!**

**For mounting and dismounting always place the centrifugal broadcaster on level ground and bring lower links of the tractor on one level with the lower link pins of the broadcaster.**

**Danger of tipping over!**

**Mount and dismount the centrifugal broadcaster only with an empty hopper.**

**Operations on the centrifugal broadcaster may only be carried out with the engine switched off and no pressure in the hydraulic system.**

**Remove ignition key, secure vehicle against unintended starting or rolling!**

**Danger of tipping over!**

**Advise people to leave danger zone behind or under the machine.**

**Danger of tipping over!**

**When coupling up observe sufficient space for movement of the the lower links.**

**Danger of tipping over!**

**Lift machine only with top link attached.**

## 5.1 Mounting

Mount the broadcaster to the rear hydraulic three point linkage (cat. II) of the tractor (please observe also para. 2.5.2).

- Insert the lower link pin (5.1/1) into the upper hole of the lower link bracket and secure by using a clip pin.

**The standard second lower link connection allows a 120 mm higher mounting to the tractor (e.g. for late top dressing).**

Fix the lower link of the tractor to the lower link pin (cat. II) (5.1/1) and secure by using a clip pin.
- Lock the upper link to the pin (cat. II) (5.1/2) and secure.

**Ensure that the locking pin (5.1/3) catches.**

**When carrying out adjustment of the upper link advise any person to leave the danger area behind or underneath the implement**

**In the lifted position of the broadcaster the lower link arms of the tractor should only have a little sideways play, so that the machine does not swing to and fro during spreading operation. Secure lower link arms of the tractor with stabilising bars or chains**

**The linkage drop speed of a filled broadcaster must never be faster than 2 seconds. If available set the drop speed adjusting valve accordingly.**

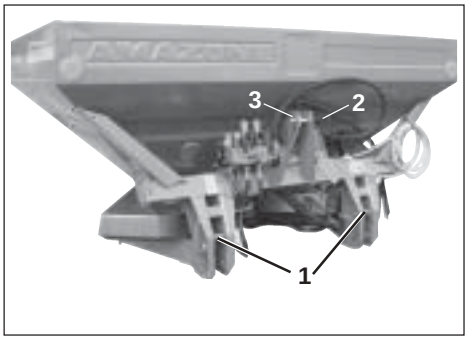



**Fig. 5.1**

### 5.1.1 Connecting the hydraulic hoses

**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!**

**Only pressurise the hydraulic system when the free return flow has correctly been connected.**

- Connect the hose with the smaller plug with the **pressure delivery connector.**
- Connect the hose with the larger plug with the **pressure** free **oil return flow.**

#### 5.1.1.1 Use of tractors with load-sensing-hydraulic system (pressure- and flow controlledsetting pump)

- With the aid of the flow regulation valve of the tractor adjust the flow to the correct setting which is required for normal fertilising.

**An unnecessarily large flow volume will cause an unnecessary hydraulic oil heating.**

## 5.2 Dismounting

**Before dismounting the broadcaster ensure that the linkage points (top- and lower link) are loose!**

- For dismounting park the broadcaster on a level ground.

# 6.0 Travelling to the field - Transport on public roads

**When moving the broadcaster mounted to a tractor on public roads, observe the traffic regulations in force in your country.**

**Vehicle owners as well as the operators are responsible for adhering to the legal traffic regulations (slight national differences may be possible).**

According to the harmonised European traffic regulations traffic lights and warning plates are required on agricultural and forestry implements mounted to tractors. These regulations read as follows:

- If the described rear lights, the direction blinkers or the registration No. of the tractor are hidden by the broadcaster (or other implement) 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 tail lights of the tractor, extra parking warning plates and limiting lights are required. If the mounted implement protrudes more than 1 m beyond the tail 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 can be obtained from your dealer directly. As always the latest edition of the national traffic regulations is valid, please verify them at your local traffic office.

**The traffic light kit has to correspond to the requirements of your national traffic law.**

**Check proper function of traffic light kit.**

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

**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!**

**Towing axle loads behind rear mounted implements is only exceptionally allowed. (See code of practice for mounted implements of the traffic law of your country).**

**Twin axle trailers may be towed if:**

- the max. speed of 25 kph is not exceeded.
- the trailer has a run-on brake or a brake which can be actuated from the tractor operator.
- the permissible total weight of the trailer is not more than **1.25 times** the permissible total weight of the tractor, however, **3 tons** in maximum.

**Single axle trailers must not be towed under any circumstances.**

## 6.1 Conversions on tractor and centrifugal broadcaster for road Transport

**The width of the vehicle has to correspond to the harmonised European traffic regulations and may not exceed 3 m, e. g. with the row spreading attachment (special option) for maize fertilising.**

**Lift the tractor mounted broadcaster only so far that the upper edge of the rear lights is at a maximum of 900 mm above the road.**

**When travelling on public roads secure implement against unintended lowering!**

## 7.0 Settings

**When setting the mounting height advise people to leave the danger area at the rear or unterneath the implement.**

**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!**

## 7.1 Setting chart

For all settings on the centrifugal broadcaster **AMAZONE ZA-M HYDRO** follow the indications of the **setting chart**.

Take all data as to **working width, kind of fertiliser and kind of spreading** (normal-, boundary- or field side spreading) for

- the spreading disc type,
- mounting height,
- spreading vane position and
- spreading disc speed for normal-, boundary- or field side spreading

from the setting chart.

Read off the setting chart the shutter position for **setting the spread rate** and observe the

- type of fertiliser to be spread.
- working width [m].
- operational speed [km/h].
- desired spread rate [kg/ha].

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

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

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.

**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.**

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

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

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**

**Tel.: Germany: 0049-5405/ 501111or 501164 - Fax: 5405/501134**

**or for the UK and Rep. of Ireland: (UK: 0044) 01302-751200**

### 7.1.1 Mounting height

Set the mounting height of the filled broadcaster in the field exactly according to the indications given in the setting chart . Measure the distance between soil surface and the spreading disc front- (a) and rear side (b) (7.1).

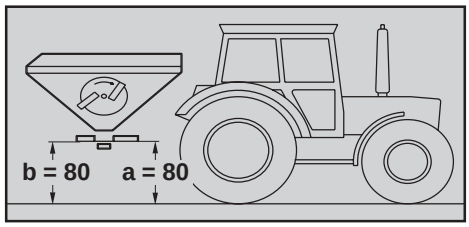



**Fig. 7.1**

#### 7.1.1.1 Normal fertilising

The indicated mounting heights, normally horizontal a = 80 / b = 80 in cm refer to normal fertilising. **For normal fertilising the swivel blades (7.2/1) of the shorter spreading vanes are normally in the lower position** (please observe hints in the setting chart).

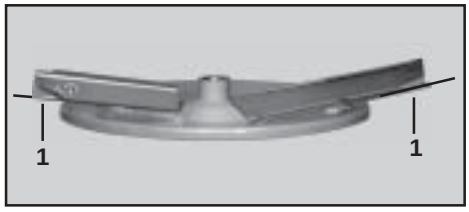



**Fig. 7.2**

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 is taller** follow the instructions for **late top dressing**. If the **crop is very dense** (rape) the fertiliser broadcaster should be set at 80/80 **above** the crop. If that is no longer possible, then please also follow the instructions for late top dressing.

#### 7.1.1.2 Late top dressing

- Swivel the swivel blades (7.3/1) of the spreading discs without slackening the nuts (without any tools) into the upper position.

**This way the fertiliser spread fan is raised. Thus, besides the normal fertilising also late top dressing in grain up to a crop height of 1 m is possible without any further option.**

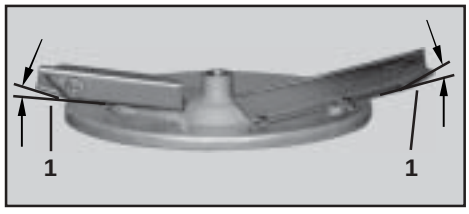



**Fig. 7.3**

- Set the mounting height of the spreader with the aid of the tractors three-point hydraulic that high that the distance between the top of the grain and the spreading discs is **approx. 5 cm**. If necessary insert the lower link pins into the lower hole of the lower link console (Fig. 7.4).

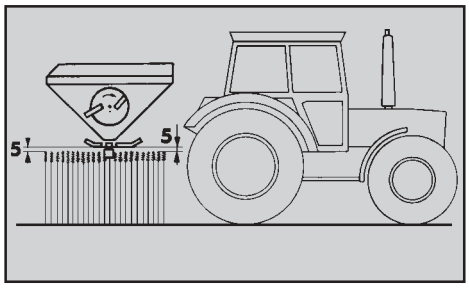



**Fig. 7.4**

### 7.1.2 Setting the working width for normal-, boundary- and field side spreading

The **working width** (distance between the tramlines) for **normal fertilising** is set with the aid of varying **spreading vane positions**.

Usually those working widths can be set which lie within the spreading range of the individual "Omnia-Set" spreading disc pairs. (When spreading urea, however, deviations may occur.)

For **boundary- or field side spreading** the individual speed-setting for the two spreading discs allow an **individual spreading width matching** of the spreading disc(s) with the distance of the first tramline [m] towards the field's boundary or to the field side. spreading

The spreading properties of the fertiliser have a great influence on the working width and the fertiliser lateral distribution. We therefore recommend to use well granulated fertilisers of renown fertiliser manufacturers and the checking of the pre-set working width with the mobile fertiliser test kit.

The main influences on the spreading behaviour of the fertiliser are:

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

### 7.1.2.1 Setting the spreading vane positions

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 (7.5/1 and 7.5/2) are arranged on every individual spreading disc.

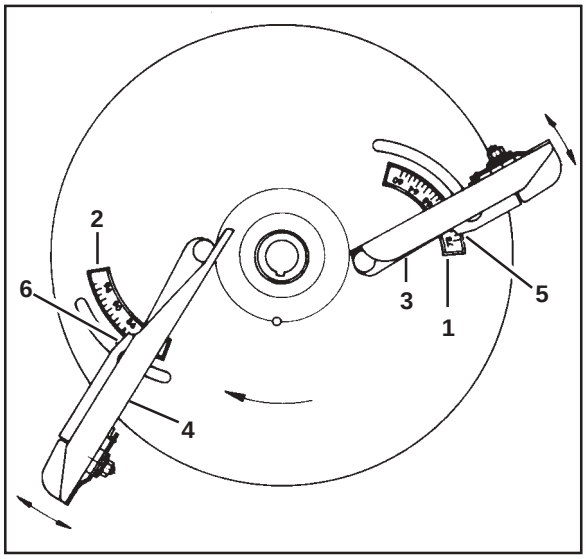



Fig. 7.5

**The scale (7.5/1) with the figures from 60 to 78 refers to the shorter spreading vane (7.5/3) and the scale (7.5/2) with the figures from 80 to 95 refers to the longer spreading vane (7.5/4).**

**Swivelling the spreading vanes to a higher figure on the scale (7.5/1 or 7.5/2) results in an increase of the working width.**

**The shorter spreading vane distributes the fertiliser mainly in the spread pattern centre, whereas the longer spreading vane mainly spreads the outer spread pattern range.**

**Set the spreading vanes on the spreading discs as follows:**

- Slacken thumb nut underneath the spreading disc.

**For slackening the thumb nut turn the spreading disc until the thumb nut can be slackened without any difficulty..**

- Read off the **setting chart** the **required spreading vane position**.
- Look for the scale figure for the position of the **short** spreading vane on scale (7.5/1).
- Swivel the read off edge (7.5/5) of the **short** vane (7.5/3) on to the scale figure and **retighten the thumb nut firmly**
- Look for the scale figure for the position of the **long** spreading vane on scale (7.5/2).
- Swivel the read off edge (7.5/6) of the **long** vane (7.5/4) on to the scale figure and **retighten the thumb nut firmly**.

#### 7.1.2.2 Boundary- or field side spreading

For **boundary- or field side spreading** read off the **setting chart** the **spreading disc speed** required for the spreading width matching and set via **AMASET**.

To determine the spreading disc speed the kinds of fertilisers for boundary- or field-side spreading are divided into 3 groups.

##### 7.1.2.2.1 Boundary spreading according to the fertiliser application decree (Fig. 7.6)

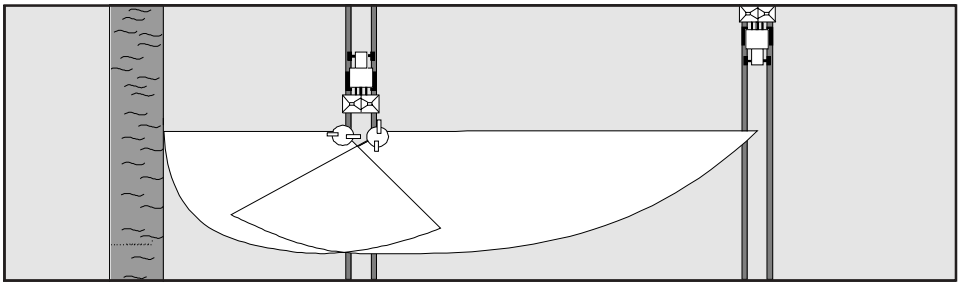


**Fig. 7.6**

**According to draft fertiliser application decree**

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

By this imposition an under fertilised side strip automatically results, depending on the distance of the first track from the field's border.

- On the field's border reduce (due to this inevitable spreading width reduction) the shutter slide position by the positions (division marks) shown in the setting chart.

**After termination the boundary spreading set the shutter in prior position again.**

#### 7.1.2.2.2 Field side spreading beside own, evenly to be treated areas (Fig. 7.7)

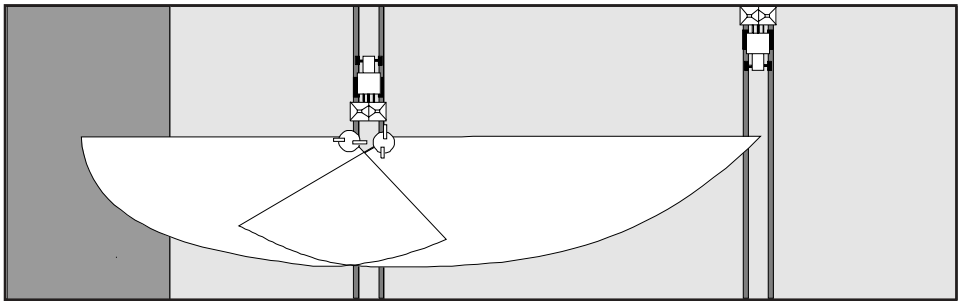


**Fig. 7.7**

In certain cases (e. g. owned, adjacent, evenly to be treated areas [except for surface water]), a nearly complete fertilising up to the field's side may be achieved by other spreading disc speeds (e. g. for a larger distance from the field's side). Thus an under fertilised side-strip is avoided. In such cases **do not reduce** the shutter position.

**The spread patterns may deviate from the illustrated spread patterns.**

### 7.1.2.3 Setting the spreading disc speeds with AMASET

For boundary- or field side spreading the spreading disc speed for the right- and left hand spreading disc can be individually set. The spreading disc speed depends on:

- the type of spreading disc,
- the kind of fertiliser and
- the distance of the first track from the field boundary or the field side.

**In general two spreading disc speeds are stored for each spreading disc:**

- the spreading disc speed required for normal fertilising.
- the spreading disc speed for boundary- or normal fertilising.

**Set the spreading disc speeds as follows (for this the spreading discs must not be driven):**

- **Switch on AMASET.**
  - Press key (7.8/1) the display (7.8/2) lights up.
- Select the **normal spreading disc speed** (rated speed) required for **normal fertilising**.

**If not otherwise stated in the setting chart, the spreading disc speed for normal fertilising is 720 min [1].**

  - Press key (7.8/3) for **normal fertilising – right hand spreading disc**.
  - Via the keys (7.8/4 or 7.8/5) select the necessary normal spreading disc speed on the **right hand half of the display** (7.8/6).

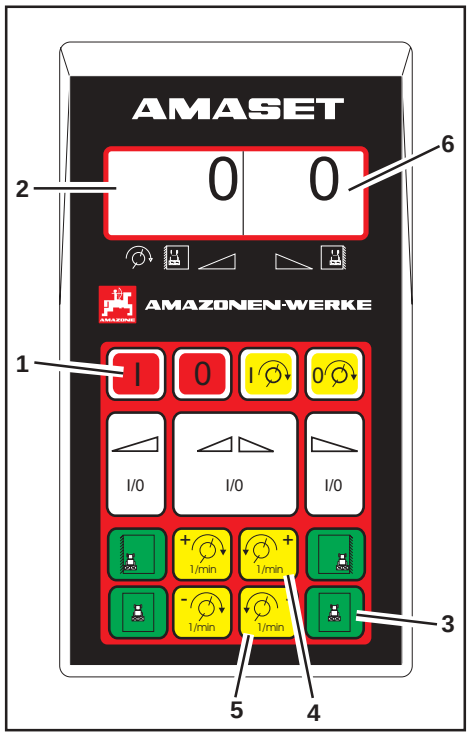
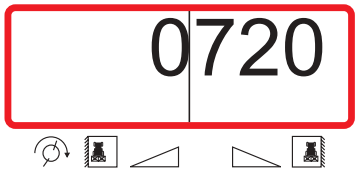


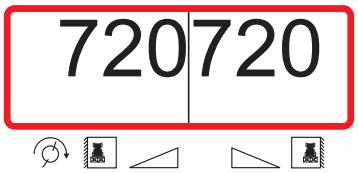

**Fig. 7.8**

Display after having dialled the normal spreading disc speed for the right hand spreading disc.



**In the same way, select the normal spreading disc speed for the left hand spreading disc via the keys (7.9/1 and 7.9/2 or 7.9/3).**

Display after having selected the normal spreading disc speed for right hand and left hand side normal fertilising.




- Select the spreading disc speed required for the **boundary- or field side spreading** according to the data in the setting chart.

**The left hand- and right hand side boundary- or field side spreading are differed. That means apart from a few exceptions, the spreading disc speed matching is achieved via one spreading disc.**

- Press key (7.9/4) for the **Boundary- or field side spreading** - left hand spreading disc.
- On the **left hand display half** preselect via the keys (7.9/2 or 7.9/3) the boundary spreading disc speed, **e.g. 400 min$^{-1}$** for the left hand spreading disc (7.9/5).

**For the right hand side boundary- or field side spreading select the required boundary spreading disc speed accordingly via the keys (7.9/6 and 7.9/7 or 7.9/8)**

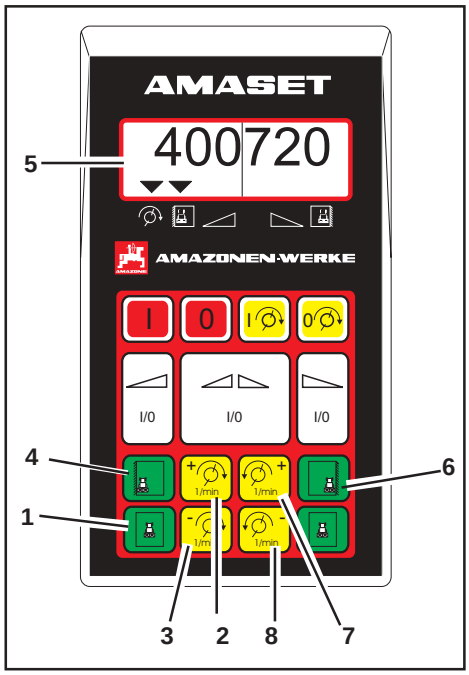



Fig. 7.9

**For a matching of the spreading width with the various operational conditions (wedge shaped areas etc.) the pre-selected spreading disc speeds can be changed during the spreading operation by pressing the relevant keys.**

**The spreading disc speed which has been set last, will automatically be stored.**

**Way of function when increasing the speed**

- **Spreading width larger.**
- **Shallower drop off at the sides.**

**Way of function when reducing the speed**

- **Spreading width smaller.**
- **Steeper drop off at the side.**

#### 7.1.2.4 Checking the set working width with the mobile test kit (special 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 may vary.

It is recommended to check the fertiliser lateral distribution for the set working width with the **mobile test kit** (Fig. 7.10) (special option).

For further details, please refer to the instruction manual **"Mobile test kit"**.

**Fig. 7.10**

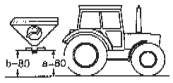
### 7.1.2.5 Determining the settings for mounting height, spreading vane position and spreading disc speed from the setting chart

**Example:**

Kind of fertiliser: **CAN 27 % N prilled BASF**
Working width: **24 m**
Distance of the first track-
from the left hand field side: **12 m**

Type of spreading disc: **?**
Mounting height: **?**
Spreading vane position: **?**
Spreading disc speed
Normal fertilising: **?**
Spreading disc speed
Boundary spreading: **?**

**4.3 Working widths 20 - 28 m**




Setting position of the vanes

Omnia-Set OS 20-28 — ZA-M
white — DS 508 (GB)
Order-No.: 110 502 — 07.98

| Kind of Fertiliser | m 20 | 21 | 24 | 27 | 28 | Spread-rates s. page |
|---|---|---|---|---|---|---|
| ICI Nitram 34,5 % N Prills<br>ICI Graze More 32 % N Prills | 66/88 | 66/88 | 69/90 | 70/91 | 70/92 | 49 |
| ICI Sulphur Gold<br>30 % N + 19 % $SO_3$ Blend | 66/88 | 66/88 | 69/90 | 70/91 | 70/92 | 52 |
| KEMIRA Nitraprill 34,5 % N | 66/88 | 66/88 | 69/90 | 70/92 | 70/93 | 49 |
| Hydro Extran 34,5 % N<br>Granular | 67/84 | 67/85 | 68/87 | 68/90 | 68/91 | 55 |
| KEMIRA Double Top<br>27 % N + 19 % $SO_3$ | 66/87 | 66/88 | 68/91 | ↗ 69/94 | ↗ 70/95 | 58 |
| CAN 27 % N Granular<br>BASF; DSM; HYDRO | 65/86 | 65/86 | 68/87 | 70/87 | 70/88 | 61 |
| ICI Turn Out<br>NP 26-13-0 Granular | 64/81 | 65/81 | 66/85 | 66/89 | 66/89 | 58 |
| ICI No. 8 Easy Cut<br>NPK 21-8-11 Granular | 61/80 | 61/80 | 63/82 | 65/85 | 66/86 | 58 |
| ICI First Cut<br>NPK 12-15-20 Granular | 62/80 | 62/80 | 64/85 | 64/87 | 64/89 | 58 |
| KEMIRA Early Bite<br>NP 27-10 0 | 62/84 | 62/85 | 66/85 | 66/89 | 66/90 | 64 |
| KEMIRA Number Four<br>NPK 15-15-20 | 66/87 | 66/87 | 70/88 | 70/91 | 70/93 | 64 |
| KEMIRA Twenty Ten Ten<br>NPK 20-10-10<br>KEMIRA Sulphur Ten<br>NPK 20-4-14 + 7 % $SO_3$ | 65/84 | 65/84 | 66/86 | 67/88 | 68/89 | 64 |
| KEMIRA Number Ten<br>NPK 20-5-15<br>KEMIRA Swardsman<br>NPK 25-5-5 | 68/85 | 68/85 | 70/86 | 70/89 | 70/91 | 64 |
| KEMIRA Premier Cut<br>NPK 20-8-12 | 62/84 | 62/85 | 66/85 | 66/88 | 66/89 | 64 |

↗ Mounting height: a=90 cm, b=96 cm.

Excerpt from setting chart



- Look in the setting chart for pages **Setting the spreading vanes** – working widths 20 – 28 m (mineral fertiliser).
- **Spreading disc type** according to table header **Omnia-Set OS 20-28.**
- **Mounting height 80/80.**
- **Spreading vane position 68/87.**
  - Find line with the desired kind of fertiliser **CAN 27 % N prilled, BASF**.
  - Find the column with the desired working width **24 m**.
  - Read off the intersecting point of line and column the required **spreading vane position 68/87**.
- **Spreading disc speed for normal fertilising 720 $min^{-1}$**, unless otherwise stated.

**For some kinds of fertiliser and additional spreading disc type or an other spreading disc speed has been indicated, as the desired working width will not be achieved with the spreading disc type shown in the table header.**

- Find in the setting chart the pages **Distance 10-14 m from the field boundary or field side**.
- Find in the lines with the desired kinds of fertiliser **CAN** the line for boundary spreading.

**5.6.3 Distance 10-14 m from field boundary or from field-side**

**Omnia-Set OS 20-28**

| Kind of fertiliser | | m 10 | 10,5 | 12 | 13,5 | 14 |
|---|---|---|---|---|---|---|
| CAN and NPK-kinds | Boundary spreading | 350 | 350 | 400 | 450 | 500 |
| DAP- and MAP-kinds | Field-side spreading | 500 | 500 | 500 | 600 | 650 |
| Urea | Boundary spreading | 400 | 450 | 30-36) 400 | 30-36) 450 | 30-36) 450 |
| | Field-side spreading | 550 | 600 | 30-36) 600 | 30-36) 720 | 30-36) 720 |
| Phosphor-, Potash and Magnesia-kinds granular | Boundary spreading | 400 | 450 | 500 | 550 | 600 |
| | Field-side spreading | 550 | 600 | 650 | 720 | 720 |

30-36) Use spreading discs OS 30-36.

Excerpt from setting chart

- Find the column with the desired **distance of the first track from the field side 12 m**.
- Read off the intersection point of line and column the required **spreading disc speed for boundary spreading 400 min$^{-1}$**.

**For 5 m and 6 m distance of the first track from the field's boundary or the field side an additional spreading disc speed is indicated. With this speed drive the spreading disc facing to the field side.**

### 7.1.3 Setting the spread rate

For ZA-M prof*iS* HYDRO please refer to the instruction manual for the AMADOS III-D or the Job computer.

**For ZA-M max*iS* HYDRO:**

The **shutter slide position** for the desired **spread rate** is set with the aid of the two setting levers (7.11/1).

Take the **required shutter slide position either directly from the setting chart or determine with the aid of the calculating disc rule**

**The setting figures of the setting chart may only be considered as standard data. The flowing properties of the fertiliser may change and thus require other settings. Therefore always carry out a spread rate check before commencing the spreading work.**

**The determination of the shutter slide position with the aid of the calculating disc rule is carried out after a spread rate check. This way the varying flowing properties of the fertiliser are already considered when determining the shutter slide position.**

#### 7.1.3.1 Setting the shutter slide position with the aid of the setting levers

- Close the shutter slides.
- Slacken the thumb nut (7.11/2).
- Find the required shutter slide position on scale (7.11/3).
- Set the read off edge (7.11/4) of the setting lever pointer (7.11/5) on to the scale figure.
- Firmly retighten the thumb nut (7.11/2).

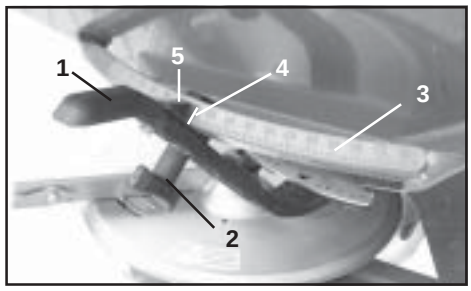



**Fig. 7.11**

**Choose the same shutter slide positions for the right hand and the left hand shutter!**

### 7.1.3.2 Take the shutter slide position from the setting chart

The shutter slide position depends on

- the kind of fertiliser to be spread.
- the working width [m].
- the speed of operation [km/h].
- the desired spread rate [kg/ha].

**Example:**

| | |
|---|---|
| Kind of fertiliser: | **CAN 27 % N prilled BASF** |
| Working width: | **24 m** |
| Speed of operation: | **10 km/h** |
| Desired spread rate: | **350 kg/ha** |
| Shutter slide position: | **?** |

- Find in the setting chart the pages **Shutter slide position for the spread rates for mineral fertiliser CAN**.
- Find among the columns with the working width **24 m** the column **10 km/h**.
- Find in column **10 km/h** the spread rate **358 kg/ha**.
- In the same line read off the shutter **slide position 43** for **358 kg/ha**.
- Set the shutter slide position with the aid of the setting levers on to the scale figure **43** as described.

**We recommend to carry out a spread rate check with this shutter slide position.**

| | |
|---|---|
| KAS 27 % N | BASF; PCK; Hydro; DSM; Kemira; Agrolinz 1,02 kg/l |
| KAS 27 % N | SCHZ; NET; Landor 1,04 kg/l |
| NP- und NPK-Sorten | BASF; Agrolinz; SCHZ 1,10 kg/l |
| NPK-Sorten | Kemira 1,04 kg/l |
| NPK 15-7-11+10 / 10-8-17+3+9+0,3 | TIMAC 1,00 kg/l |
| Patador; Ceral Agroline | 1,06 kg/l |
| Nitroplus; Polyvalent | Landor 1,03 kg/l |
| Korn-Kali ® mit 6 % MgO | KAMEX 'gran.' 40/6 K+S 1,12 kg/l |

| Schieberstellung | 20 km/h | | | 21 km/h | | | 24 km/h | | | 27 km/h | | | 28 km/h | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 | 10 | 12 | 8 | 10 | 12 | 8 | 10 | 12 | 8 | 10 | 12 | 8 | 10 | 12 |
| 25 | 135 | 108 | 90 | 128 | 103 | 86 | 112 | 90 | 75 | 100 | 80 | 67 | 96 | 77 | 64 |
| 26 | 150 | 120 | 100 | 143 | 115 | 95 | 125 | 100 | 84 | 111 | 89 | 74 | 107 | 86 | 72 |
| 27 | 167 | 133 | 111 | 159 | 127 | 106 | 139 | 111 | 93 | 124 | 99 | 82 | 119 | 95 | 79 |
| 28 | 184 | 147 | 123 | 175 | 140 | 117 | 154 | 123 | 102 | 136 | 109 | 91 | 132 | 105 | 88 |
| 29 | 203 | 162 | 135 | 193 | 154 | 129 | 169 | 135 | 113 | 150 | 120 | 100 | 145 | 116 | 96 |
| 30 | 222 | 178 | 148 | 211 | 169 | 141 | 185 | 148 | 123 | 164 | 131 | 110 | 158 | 127 | 106 |
| 31 | 242 | 194 | 161 | 231 | 184 | 154 | 202 | 161 | 134 | 179 | 143 | 120 | 173 | 138 | 115 |
| 32 | 263 | 210 | 175 | 251 | 200 | 167 | 219 | 175 | 146 | 195 | 156 | 130 | 188 | 150 | 125 |
| 33 | 285 | 228 | 190 | 271 | 217 | 181 | 237 | 190 | 158 | 211 | 169 | 141 | 203 | 163 | 136 |
| 34 | 307 | 246 | 205 | 293 | 234 | 195 | 256 | 205 | 171 | 228 | 182 | 152 | 220 | 176 | 146 |
| 35 | 331 | 265 | 220 | 315 | 252 | 210 | 276 | 220 | 184 | 245 | 196 | 163 | 236 | 189 | 157 |
| 36 | 355 | 284 | 236 | 338 | 270 | 225 | 296 | 236 | 197 | 263 | 210 | 175 | 253 | 203 | 169 |
| 37 | 379 | 303 | 253 | 361 | 289 | 241 | 316 | 253 | 211 | 281 | 225 | 187 | 271 | 217 | 181 |
| 38 | 404 | 323 | 270 | 385 | 308 | 257 | 337 | 270 | 225 | 299 | 240 | 200 | 289 | 231 | 193 |
| 39 | 430 | 344 | 287 | 409 | 328 | 273 | 358 | 287 | 239 | 318 | 255 | 212 | 307 | 246 | 205 |
| 40 | 456 | 365 | 304 | 434 | 348 | 290 | 380 | 304 | 253 | 338 | 270 | 225 | 326 | 261 | 217 |
| 41 | 483 | 386 | 322 | 460 | 368 | 306 | 402 | 322 | 268 | 358 | 286 | 238 | 345 | 276 | 230 |
| 42 | 510 | 408 | 340 | 485 | 388 | 324 | 425 | 340 | 283 | 377 | 302 | 252 | 364 | 291 | 243 |
| 43 | 537 | 429 | 358 | 511 | 409 | 341 | 447 | 358 | 298 | 398 | 318 | 265 | 383 | 307 | 256 |
| 44 | 564 | 451 | 376 | 537 | 430 | 358 | 470 | 376 | 313 | 418 | 334 | 279 | 403 | 322 | 269 |
| 45 | 592 | 473 | 395 | 564 | 451 | 376 | 493 | 395 | 329 | 438 | 351 | 292 | 423 | 338 | 282 |
| 46 | 620 | 496 | 413 | 590 | 472 | 393 | 516 | 413 | 344 | 459 | 367 | 306 | 443 | 354 | 295 |
| 47 | 647 | 518 | 432 | 617 | 493 | 411 | 540 | 432 | 360 | 480 | 384 | 320 | 462 | 370 | 308 |
| 48 | 675 | 540 | 450 | 643 | 514 | 429 | 563 | 450 | 375 | 500 | 400 | 333 | 482 | 386 | 322 |
| 49 | 703 | 562 | 469 | 670 | 536 | 446 | 586 | 469 | 391 | 521 | 417 | 347 | 502 | 402 | 335 |
| 50 | 731 | 584 | 487 | 696 | 557 | 464 | 609 | 487 | 406 | 541 | 433 | 361 | 522 | 417 | 348 |
| 51 | 758 | 606 | 505 | 722 | 578 | 481 | 632 | 505 | 421 | 561 | 449 | 374 | 541 | 433 | 361 |
| 52 | 785 | 628 | 523 | 748 | 598 | 498 | 654 | 523 | 436 | 582 | 465 | 388 | 561 | 449 | 374 |
| 53 | 812 | 650 | 541 | 773 | 619 | 515 | 677 | 541 | 451 | 601 | 481 | 401 | 580 | 464 | 387 |
| 54 | 838 | 671 | 559 | 798 | 639 | 532 | 699 | 559 | 466 | 621 | 497 | 414 | 599 | 479 | 399 |

M-KAS12.xls
69

Excerpt from setting chart

### 7.1.3.3 Determine the shutter slide position with the aid of the calculating disc rule

**The calculating disc rule consists of:**

**Fig. 7.12/...**

1 - The outer white scale with the spread rates [kg/ha] (spread rate).
2 - The inner white scale for the amount of fertiliser [kg] collected during the calibration test (collected amount) .
3 - The centre coloured scale with the shutter slide positions (Position).

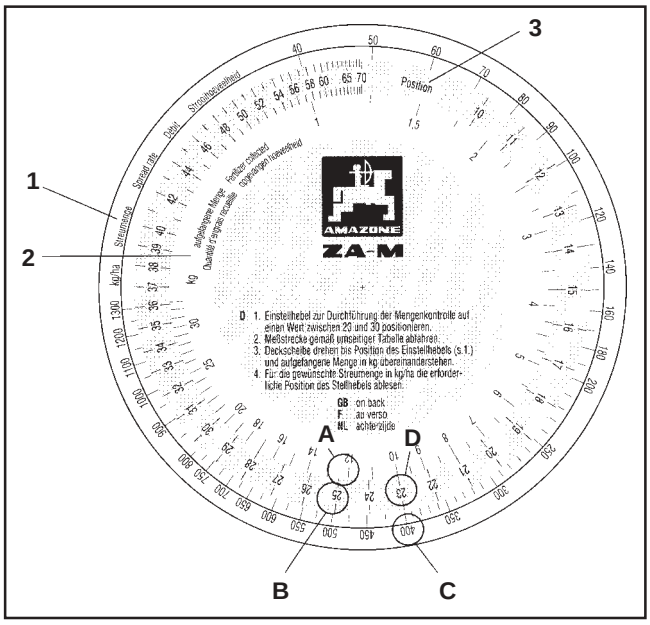



**Fig. 7.12**

**Fig. 7.13/...**

1 - The table for determining the required test distance [m].

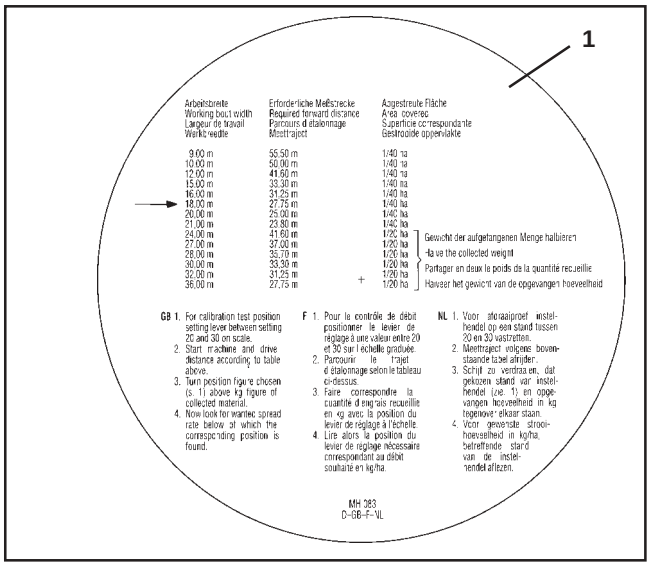



**Fig. 7.13**

| | |
|---|---|
| Working width: | **18 m** |
| Spread rate: | **400 kg/ha** |
| Speed of operation: | **10 km/h** |
| Shutter slide position: | **?** |

- Set on the left hand setting lever a mean shutter slide position, e. g. **25**.
- For the desired working width **18 m** read off table **(7.13/1)** the required test distance **27,75 m**.

**At the spread rate check the area spread is**

- **for working widths up to 21 m 1/40 ha.**
- **for working widths up to 24 m 1/20 ha.**

- Carefully measure a test distance in the field. Mark beginning and end of the test distance.
- Convert the broadcaster to the spread rate check.
- Carry out a calibration test.
  - Carefully drive test distance from beginning to end mark under field conditions, e. g. with the intended constant forward speed of **10 km/h** and a spread rate speed of **720 min$^{-1}$** (unless otherwise stated for the working width setting in the setting chart). Open the left hand shutter exactly on the beginning of the test distance and shut it at the end point.
- Weigh the collected amount of fertiliser, e. g. **12,5 kg**.

**For working widths of more than 24 m halve the collected amount of fertiliser (e.g. 25 kg = 25 kg/2 = 12,5 kg) and determine the shutter slide position with this figure.**

- Take the calculating disc rule. On scale **(7.12/2)** for collected quantity [kg] look for figure **12,5 (7.12/A)** and align with the chosen shutter slide position (Position) **25 (7.12/B)** on the coloured scale **(7.12/3)**.
- Look for desired spread rate **400 kg/ha (7.12/C)** and read off the required shutter slide position (Position) **23 (7.12/D)**.
- Set the shutter slide position (Position) **23**.

**We recommend to carry out a fresh spread rate check with this shutter slide position.**

### 7.1.4 Checking the spread rate

A spread rate check is recommended with every change of fertiliser.

The **spread rate check** (calibration test) can be carried out with switched on hydraulic drive with a **normal spreading disc speed** for both spreading discs by **driving a test distance** or **stationary**.

Driving a test distance is the more accurate method, because hereby the actual forward speed of the tractor is directly considered.

If the forward speed of the tractor in the field is exactly known, the spread rate check can also be carried out stationary.

**The multiplier for the total quantity consideres the one-sided spread rate check.**

**At high fertiliser application rates per hectare halve the test distance and double the multiplier because the capacity of the collecting bucket is limited.**

**Carry out spread rate checks with approximately half filled hopper.**

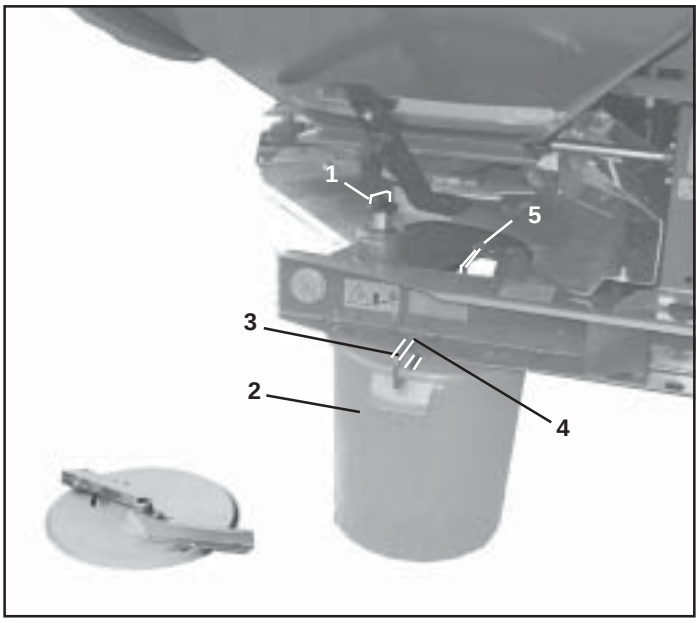



**Fig. 7.14**

#### 7.1.4.1 Arrangements for the spread rate check

- Swivel upwards the guard tube centre part (if guard tube installed).
- Set the required shutter slide position for the desired spread rate on the left hand side hopper tip.
- Remove the left hand spreading disc.
  - Unscrew the thumb nut (7.14/1) 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).
- Hang the calibration bucket (7.14/2) with its handle (7.14/3) into the rear retainer (7.14/5) and the front retainer (7.4/4) on the frame.

### 7.1.4.2 Spread rate check by driving a test distance

**Example:**

Kind of fertiliser: **CAN 27 % BASF (white)**
Working width: **24 m**
Speed of operation: **10 km/h**
Spread rate: **350 kg/ha**
Shutter slide position
according to setting chart: **43**

- From the table below you may take the required test distance **41.6 m** and the multiplier **20** for the desired working width **24 m**.

**Calculate test distances for working widths not shown in the table accordingly.**

- Carefully measure the test distance in the field. Mark beginning and end of the test distance (Fig. 7.15).
- Set shutter slide position **43**.
- Hang in collecting bucket.

| Working width [m] | Required forward distance [m] | Area covered [ha] | Multiplier for the total spread rate |
|---|---|---|---|
| 9,00 | 55,5 | 1/40 | 40 |
| 10,00 | 50,00 | 1/40 | 40 |
| 12,00 | 41,60 | 1/40 | 40 |
| 15,00 | 33,30 | 1/40 | 40 |
| 16,00 | 31,25 | 1/40 | 40 |
| 18,00 | 27,75 | 1/40 | 40 |
| 20,00 | 25,00 | 1/40 | 40 |
| 21,00 | 23,80 | 1/40 | 40 |
| 24,00 | 41,60 | 1/20 | 20 |
| 27,00 | 37,00 | 1/20 | 20 |
| 28,00 | 35,70 | 1/20 | 20 |
| 30,00 | 33,30 | 1/20 | 20 |
| 32,00 | 31,25 | 1/20 | 20 |
| 36,00 | 27,75 | 1/20 | 20 |

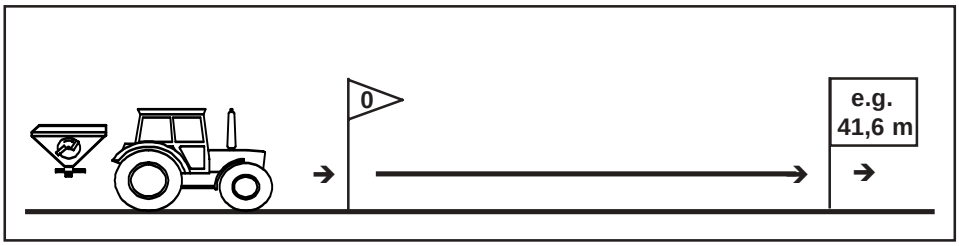



**Fig. 7.15**

- Switch on hydraulic drive and set the spreading disc speed **720 min**$^{-1}$ (unless otherwise stated for working width setting in the setting chart).
- Carefully drive test distance from beginning to end under field conditions, e. g.
  - with half filled hopper,
  - intended constant operational speed **10 km/h** and
  - the spreading disc speed required for the working width.

  Open the left hand shutter exactly on the beginning of the test distance and shut at the end point.
- Weigh the collected fertiliser [kg] **e.g. 17,5 kg**.
- From the collected amount of fertiliser [kg] the actual set spread rate [kg/ha] can be calculated.

$$\text{pread rate} = \frac{\text{collected fertiliser quantity [}\mathbf{17,5}\text{ kg] x multiplier }\mathbf{20}}{\text{ha}} = \mathbf{350}\text{ [kg/ha]}$$

**In case the actual and the desired spread rate deviate, correct the shutter slide position accordingly. If necessary, repeat the calibration test.**

- After having determined the exact shutter slide position for the left hand hopper tip, set the right hand setting lever on the same shutter position.

#### 7.1.4.2.1 Conversion of the required test distance for working widths not shown in the setting table

**Working widths up to 21 m - Multiplier 40**

| | |
|---|---|
| Required test distance at desired working width [m] = | $\frac{500}{\text{Working width [m]}}$ |

**Working widths from 24 m - Multiplier 20**

| | |
|---|---|
| Required test distance at desired working width [m] = | $\frac{1000}{\text{working width [m]}}$ |

#### 7.1.4.3 Stationary spread rate check

**Example:**

Kind of fertiliser: **CAN 27 % BASF (white)**
Working width: **24 m**
Speed of operation: **10 km/h**
Spread rate: **350 kg/ha**
Shutter slide position
according to setting table: **43**

- Please take from the table below the required time **14.98 sec.** which is necessary to drive the required test distance **41.6 m** for the desired working width **24 m** and the desired forward speed **10 km/h** as well as the multiplier **20** for the spread rate conversion.

**Convert times for working widths or forwqard speeds not mentioned in the table.**

- Set shutter slide position **43**.
- Hag in collecting bucket.

| Working width [m] | Required test distance [m] | Multiplier for the total spread rate | Required time [sec] to drive the test distance at working speed of [k.p.h.] | | |
|---|---|---|---|---|---|
| | | | 8 | 10 | 12 |
| 9 | 55,50 | 40 | 24,97 | 19,98 | 16,65 |
| 10 | 50,00 | 40 | 22,50 | 18,00 | 15,00 |
| 12 | 41,60 | 40 | 18,72 | 14,98 | 12,48 |
| 15 | 33,30 | 40 | 14,98 | 11,99 | 9,99 |
| 16 | 31,25 | 40 | 14,06 | 11,25 | 9,37 |
| 18 | 27,75 | 40 | 12,49 | 9,99 | 8,32 |
| 20 | 25,00 | 40 | 11,25 | 9,00 | 7,50 |
| 21 | 23,80 | 40 | 10,71 | 8,57 | 7,14 |
| 24 | 41,60 | 20 | 18,72 | 14,98 | 12,48 |
| 27 | 37,00 | 20 | 16,65 | 13,32 | 11,10 |
| 28 | 35,70 | 20 | 16,06 | 12,85 | 10,71 |
| 30 | 33,30 | 20 | 14,98 | 11,99 | 9,99 |
| 32 | 31,25 | 20 | 14,06 | 11,25 | 9,37 |
| 36 | 27,75 | 20 | 12,49 | 9,99 | 8,32 |

- Switch on hydraulic drive and set the spreading disc speed **720 min$^{-1}$** einstellen (unless otherwise stated for the working width setting in the setting table).
- Open the left hand shutter for exactly **14.98 sec**.
- Weigh the collected amount of fertiliser [kg] **e.g. 17,5 kg**.
- Calculate the actually set spread rate [kg/ha] from the collected fertiliser amount [kg].

$$\text{Spread rate} = \frac{\text{Collected fertiliser [}\mathbf{17,5}\text{ kg] x multiplier }\mathbf{20}}{\text{ha}} = \mathbf{350}\text{ kg/ha}$$

**In case the actual and the desired spread rate deviate, correct the shutter position accordingly. If necessary, repeat the calibration test.**

- After having determined the exact shutter position for the left hand hopper tip, set the righthand setting lever on the same setting figure.

#### 7.1.4.3.1 Conversion of the required measuring time for working widths (measuring distances) or speeds of operation not shown in the table

| | | | |
|---|---|---|---|
| Rrequired calibration time [sec] at desired working width | = | Test distance [m] / working speed [km/h] | x 3,6 |

### 7.1.5 Setting the shutter slide position with the aid of the calibration device (special option for ZA-M max*iS* HYDRO)

**When determining the shutter slide position with the aid of the calibration device, make use of the calculation disc rule provided with this special option (7.19)! (On the centre, coloured scale you will find position „K".)**

**Example:**

| | |
|---|---|
| Working width: | **18 m** |
| Desired spread rate: | **400 kg/ha** |
| Desired forward speed: | **10 k.p.h.** |
| Shutter slide position: | **?** |

**When determining the shutter slide position, both shutters of the opening should be closed and the pto shaft disengaged!**

- By using the handle (7.17/2) hook the collecting bucket (7.17/1) on to the outlet chute (7.17/3) Let the collecting bucket catch into the clamping device (7.17/4 a. 7.16/1).
- Entirely open the side shutters (7.17/5) of the outlet chute for approx. 5 sec. by using the rope (7.17/6) (to ensure an even fertiliser flow). Then pour the collected fertiliser back into the spreader.
- Take from table **(7.18/1)** for the desired working width **18 m** the required test distance of **27,75 m** for **1/40 ha** area to be spread.
- Carefully measure the test distance in the field. Mark beginning and end of the test distance.
- Carefully drive test distance from beginning- to end mark under field conditions,e. g. with half filled hopper, intended constant operational speed **(10 km/h)** and a pto shaft speed of **540 R.P.M.** (unless otherwise stated for the working width setting in the setting chart). When doing so, entirely open at


Fig. 7.16

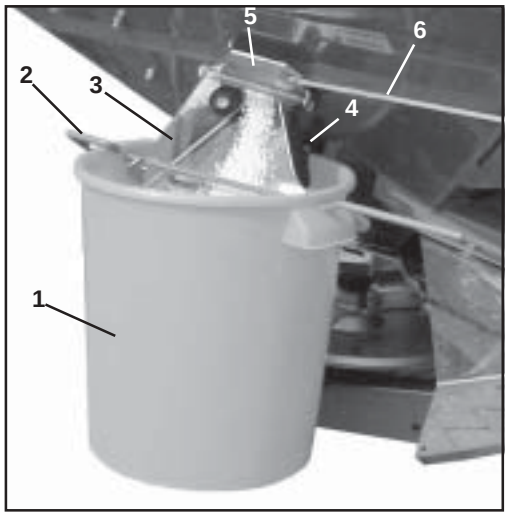



Fig. 7.17

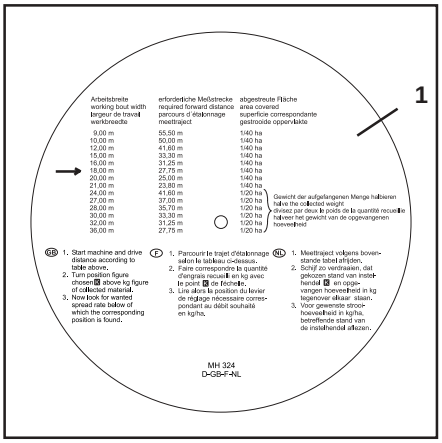



Fig. 7.18

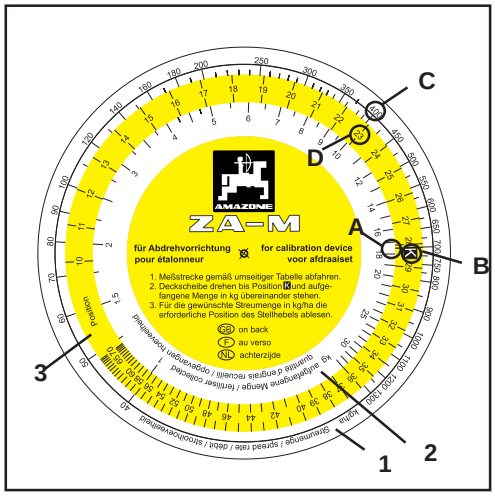



Fig. 7.19

the measure distance starting point the side shutters of the outlet chute from the tractor cab with the aid of the rope (pull until stop) and close the shutters on the measure distance end.

- Weigh collected fertiliser quantity, e. g. **17,5 kg**.

**For working widths of more than 24 m halve the collected amount of fertiliser (e.g. 25 kg: 25 kg/2 = 12,5 kg) and determine the shutter slide position with this figure.**

- Take the calculating disc rule **for the calibration device.** Find on the scale **(7.19/2)** for the collected material [kg] the figure "**17,5**" **(7.19/A)** and align with position "**K**" **(7.19/B)** on the coloured scale **(7.19/3)**.
- Look for the wanted spread rate **(400 kg/ha) (7.19/C)** on the scale for the spread rate **(7.19/1)** and read off the required shutter slide position "**23**" **(7.19/D).**
- Set shutter slide position "23".

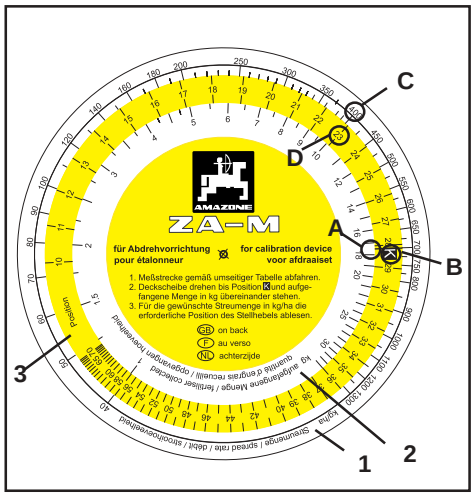



**Fig. 7.19**

## 8.0 Operation

**Never reach through the sieves into the spinning agitator spiral!**

**With a new machine after the first 3-4 hopper fills tighten all nuts and bolts to the recommended settings.**

**Only use good granulated fertilisers and kinds of fertiliser that are mentioned in the setting chart. In case of insufficient knowledge about the fertiliser carry out a working width check with the aid of the mobile fertiliser test kit.**

**When spreading mixed fertilisers remember that**

- **the individual constituents may have different spreading properties.**
- **a segregation of the individual kinds may occur.**

**After every operation remove any fertiliser that might be stuck on the spreading vanes!**

## 8.1 Filling the centrifugal broadcaster

**Before filling the hopper ensure that no residues or foreign objects are inside the hopper.**

**When operating the broadcaster use the folding charging sieve against foreign particles.**

**When filling ensure that the fertiliser is free of any foreign particles.**

**Note the max. payload of the broadcaster (please refer to technical data) and the axle loads of your tractor!**

**When lifting the fertiliser broadcaster the front axle load of the tractor is relieved by different amounts depending on the size of the tractor.**

**When filling the centrifugal broadcaster always check that the necessary front axle load of the tractor (20 % of the tractor's net weight) is maintained! If necessary, use front weights!**

**Only fill the hopper with the shutters closed!**

**Strictly observe the safety advice of the fertiliser manufacturer!**

## 8.2 Spreading

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

**If the implement is transported over longer distances with filled hopper, closed shutter slides and out of function (travelling to the field), open the shutter slides entirely before starting the spreading operation, e. g. before engaging the spreading disc drive. Then engage the spreading disc drive and carry our a brief stationary spreading! Only now, after having set the shutters on to the desired spreading rate, start spreading.**

**Engage the hydraulic drive only at a low tractor engine speed.**

**Maintain constant spreading disc speed and driving speed for best performance.**

**If in spite of an equal shutter position an uneven emptying of the two hopper tips is noted, check the main shutter position.**

**A good technical condition of the spreading vanes with their swivel blades ensures an even fertiliser lateral distribution in the field (stripes).**

**The life span of spreading vanes and swivel blades depends on the kinds of fertiliser used, the times of operation and the spread rates.**

**With some spreading materials, as Kieserite, Excello-granules and magnesium sulphate an increased wear on the spreading blades may occur (more wear resistant spreading vanes are available as an option).**

### 8.2.1 Recommendations for broadcasting on the headlands

The precondition for an accurate broadcasting to field boundaries or field sides is the correct creating of the tramlines. The first tramline (8.1/T1) (also on the headlands) is normally always created to a distance of half the tramline spacing from the field side. As a check a further tramline (broken line) on the headlands is also helpful – with full spacing of one working width.

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

- Open or close the shutter in different distance to the field side when driving to (tramline T1, T2 etc.) and when driving fro (tramline T3, etc.
- Open the shutter **when"**fro"**at approximately** on point P1 öffnen**, when the tractor passes the 2nd tramline on the headlands (broken line).**
- Close the shutter when "driving fro" on point P2**, when the broadcaster is in line with the first tramline on the headlands.**

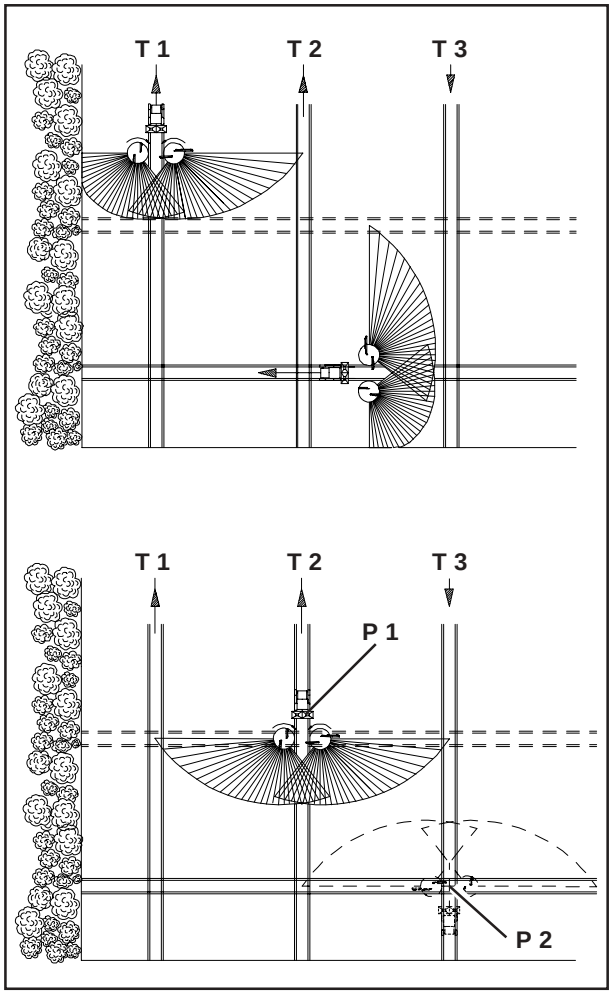



**Fig. 8.1**

**Proceeding as described prevents fertiliser losses, over- or under fertilising and thus is an environment friendly working method.**

### 8.2.2 Broadcasting in the field

The broadcaster has been mounted to the tractor, the hydraulic system and the controller **AMASET** are both connected.

**Example:**

Kind of fertiliser: **CAN 27 % N prilled BASF**
Desired working width: **24 m**
Distance of the first tram-line from the l.h. field side: **12 m**
Desired spread rate: **350 kg/ha**
Desired forward speed: **10 km/h**
Spreading disc type: **OS 20-28**
Mounting height: **80/80**
Spreading vane position: **68/87**
Spreading disc speed normal fertilising: **720 min$^{-1}$**
Spreading disc speed Boundary spreading: **400 min$^{-1}$**
Shutter position: **43**

**Settings** for

- Working height,
- Working width,
  - Spreading vane position,
  - Spreading disc speed for normal-, boundary- or field side spreading and
- Shutter position

**have been carried out.**

- Actuate the spool valve on the tractor and switch on the hydraulic drive.
- Switch on AMASET.
  - Press key (8.2/1) – the display (8.2/2) is illuminated.
- **Determine the kind of fertilising.** It is intended to start with the left hand side boundary spreading.
  - Press key (8.2/3) for the right hand side normal spreading.
  - Press key (8.2/4) for boundary spreading – left hand spreading disc.

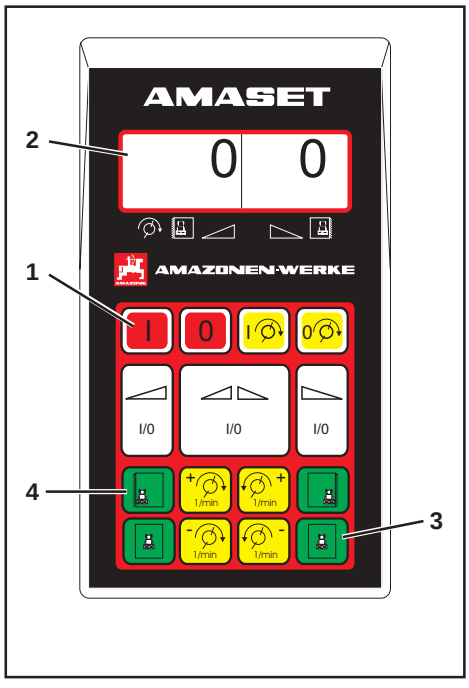
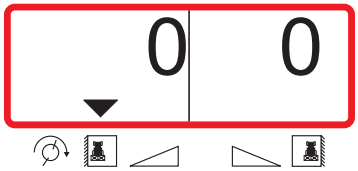



**Fig. 8.2**

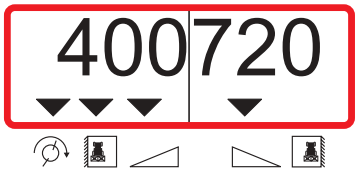
Display after pressing key “boundary spreading – left hand spreading disc “




- **Switch on spreading disc drive.**
  - Press key (8.3/1) for at least 3 seconds – the spreading discs start to spin. The display (8.3/2) shows the spreading disc desired speeds.
  - Set the tractor engine speed so that the pre-selected spreading disc speeds will be safely achieved.

- **Open the shutter.**
  - Press key (8.3/3) for the simultaneous opening or closing of the two shutters.

Display after pressing key “open shutter”




**Only open the shutter when the prescribed spreading disc speed has been reached.**

**If the pre-selected spreading disc speeds cannot be achieved with opened shutters, an audible signal sounds. At the same time the display flashes on the side of the display where the spreading disc speed has not been achieved.**

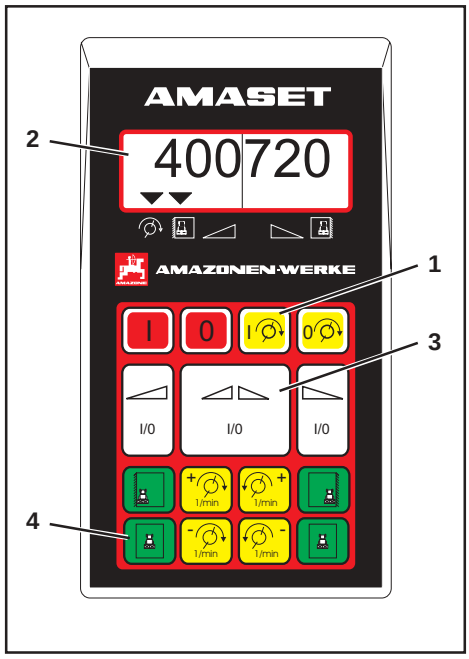
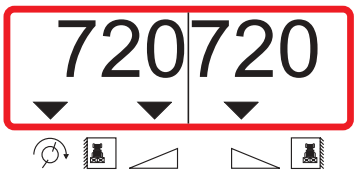



**Fig. 8.3**

- Drive along the field in the first tramline in clockwise direction with the constant required forward speed.
- After having driven around the field **change from boundary spreading –** left hand spreading disc **– to normal spreading –** left hand spreading disc.
  - Press key (8.3/4).

Display after having changed from boundary spreading to normal spreading.



### 8.2.3 Advice for spreading slug pellets (e.g. Mesurol)

1. In standard execution the centrifugal broadcater **AMAZONE ZA-M max*iS* 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).

2. **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.**

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

3. 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 the shutter and collect spreading material dropping out (e. g. on a canvass).

4. For green manure seed, grain and slug pellets (option) take the details for setting your spreader from the specific setting chart. These values may only be considered as guide values. Before starting to operate conduct a spread rate check.

**Because of the small spreading rate it is recommended to at least triple the required test distance. Hereby the multiplier reduces on a third of the indicated value (e. g. for the working width 9 m: multiplier 40 : 3 = 13.3).**

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

### 8.2.3.1 Combination matrix for centrifugal broadcasters for spreading slug pellets

**Type AMAZONE ZA-M**

| | | Spreading discs | | | | Options | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | maxiS *HYDRO* | Pair of spreading discs OS 10-12 | Pair of spreading discs OS 10-18 | Pair of spreading discs OS 20-28 | Pair of spreading discs OS 30-36 | Hopper extension S 500 | Hopper extension L 1000 | Mobile fertiliser test kit | AMADOS III-D | AMATRON II with chip card | AMATRON II without chip card |
| 20 | x | x | | | | x | x | x | x | x | x |
| 21 | x | | x | | | x | x | x | x | x | x |
| 22 | x | | | x | | x | x | x | x | x | x |
| 23 | x | | | | x | x | x | x | x | x | x |

## 8.3 Changing the spreading discs

- Remove thumb nuts (8.4/1).
- Turn the spreading disc so that the disc hole ø 8 mm (8.4/2) shows towards the machine's centre.
- Remove the spreading disc from the gear shaft.
- Fit another spreading disc.
- Affix the spreading disc by tightening the thumb nut.

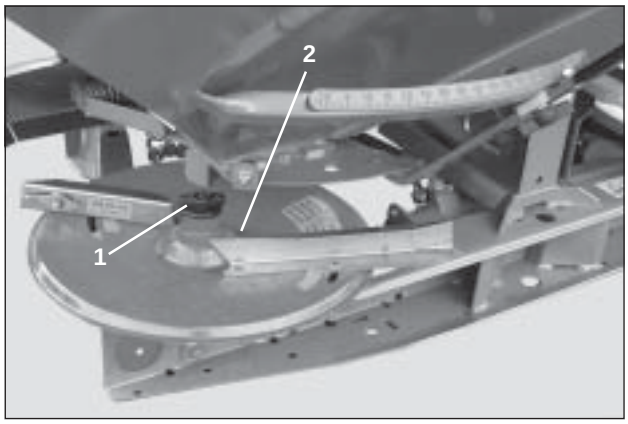



Fig. 8.4

**When setting up spreading disc do not mix up "left hand" and "right hand". The spreading discs are marked with decals accordingly.**

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

**On broadcasters equipped with AMATRON or AMADOS control the shutter slides should be fully opened for changing spreading discs.**

**When fitting the spreading discs OS 30-36 equip your broadcaster with guard tube (accident prevention)!**

## 9.0 Cleaning, maintenance and repair

**Clean and grease centrifugal broadcaster or the universal joint shaft only after the pto shaft and engine have been stopped and ignition key is removed.**

**After disengaging the pto shaft the mounted implement may still continue to run by its dynamic masses. Begin work only when the implement has come to a full standstill.**

**Grease shutter guides after every operation!**

- 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 machine with **opened** shutters.

**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.**

- Open the lid, clean and grease agitator shaft-drive chain (Fig. 9.1/1).

- Under normal conditions angular gearboxes are maintenance-free. The gearboxes are supplied with sufficient gear oil by the manufacturer. A refilling of oil normally is not necessary. External

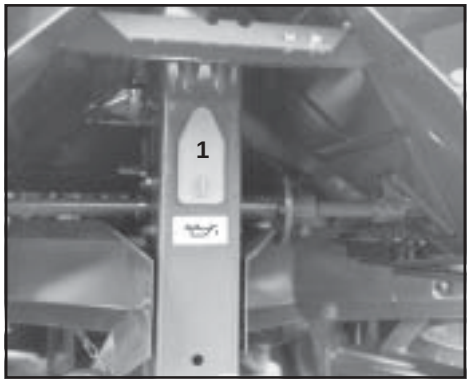



**Fig. 9.1**

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: each 0,15 l SAE 90**

## 9.1 Shear-off safety for agitator shaft drive

Die Rührspiralen-Federvorstecker (9.2/1) dienen als Abschersicherung für die Rührwelle.

## 9.2 Spreading vanes and swivel blades

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

**The spreading vanes have been manufactured from especially wear resistant and non corrosive steel. However it is indicated that the spreading vanes and their swivel blades are wearing parts.**

**Die Streuschaufeln bzw. Schwenkflügel auswechseln, sobald Durchbrüche durch Abrieb erkennbar sind.**

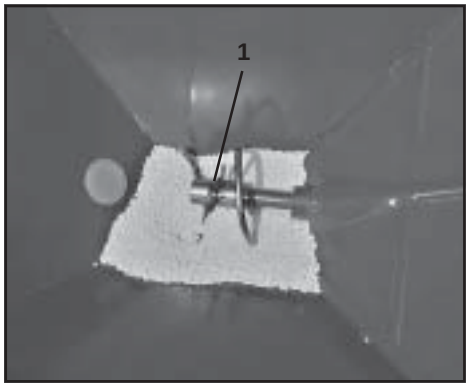



**Fig. 9.2**

### 9.2.1 Exchanging spreading vanes

- Slacken self-locking nut (9.3/1).
- Remove washer (9.3/2) and flat mushroom head bolt (9.3/3).
- Slacken thumb nut (9.3/4) and exchange spreading vanes.
- Fitting the spreading vanes is done in vice versa order.
- **Tighten the self locking nut (9.3/1) in such a way, that the spreading vane can be swivelled by hand.**

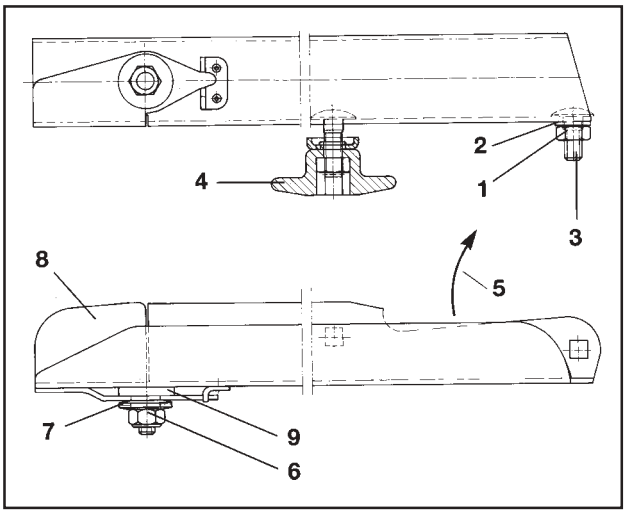



Fig. 9.3

**Note the correct fitting of the spreading vanes. The open side of the U-shaped spreading vane shows into sense of rotation (9.3/5).**

### 9.2.2 Exchange of swivel blades

- Slacken self locking nut (brass CuZn) (9.3/6) and remove together with spring washers (9.3/7).
- Exchange swivel blades (9.3/8).

**Mind plastic washer (9.3/9) between spreading vane and swivel blade.**

- **Heap up** spring washers **reciprocally** (do not stack).
- Tighten self locking nut (9.3/6) with a torque of **6 - 7 Nm**, so that the swivel blade can still be swivelled upwards by hand, however does not swivel up by itself during operation.

## 9.3 Checking the basic setting of the shutter slides

The space opened in the outlet opening (9.4/1) by the shutters in shutter position „**8**“ has been set by the factory with a dead mandril (pin Ø 12 mm) (9.4/2).

This setting represents the basic setting of the shutter.

If at equal shutter slide position an uneven emptying of the two hopper tips is noticed, check shutter slide basic position as follows:

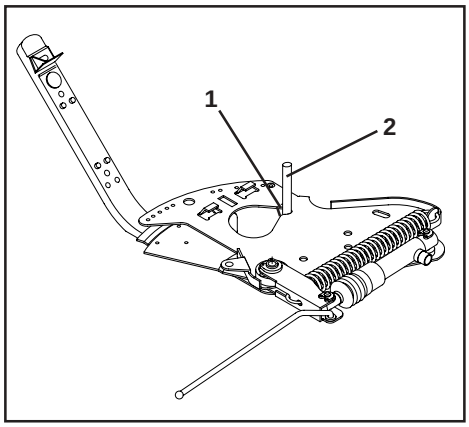



**Fig. 9.4**

**When actuating the shutters do not reach into the hopper outlet opening! Danger of bruizing!**

- Hydraulically open the shutter slide.
- Open the spread rate shutter with the aid of the setting lever (9.5/1).
- Insert a pin of **12 mm Ø** (shaft of a 12 mm drill) into the opening.
- Swivel the setting lever on the scale (9.5/2) until the stop on the pins.
- Arrest the setting lever with the star knob (9.5/3).
- Slacken the hex. bolt (9.5/4). Align the pointer (9.5/5) with the scale figure „**8**“ and fix with the hex. bolt. The read-off edge of the pointer is Fig. 9.5/6.
- Remove pin.

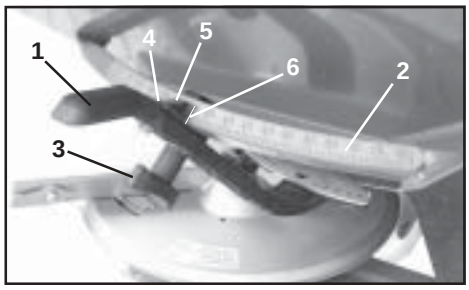



**Fig. 9.5**

## 9.4 Setting and maintenance of the weighing technique

### 9.4.1 Checking horizontal position of leaf springs and bracing straps

The leaf springs (Fig. 9.6/1) and bracing straps (Fig. 9.6/2) must be in a horizontal position as otherwise the calibration result would be faulty.

In the factory the leaf springs and bracing straps have been fitted horizontally.

After having spread about 10.000 kg of fertiliser the micrometer gauge (Fig. 9.7/1) might have sunk or penetrated into the resting block (Fig. 9.7/2). Hereby the leaf springs might be dislocated from their horizontal position.

In this case, the micrometer gauge must be re-adjusted until the leaf springs and bracing straps will be aligned horizontally again.

**Align leaf springs and bracing straps only with an empty spreader!**

You will find the micrometer gauge (Fig. 9.8/1) in the middle underneath the frame of the spreader inside the weighing cell.

For this:

- Slacken the counter nut (Fig. 9.8/2)
- Re-adjust the micrometer gauge (Fig. 9.8/1)
- Retighten the counter nut (Fig. 9.8/2)

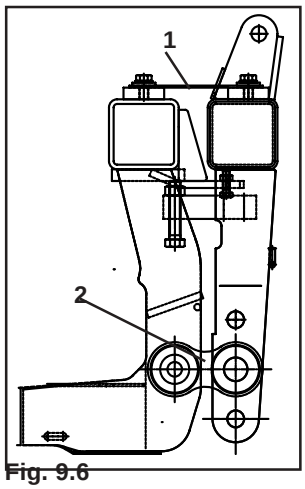



**Fig. 9.6**

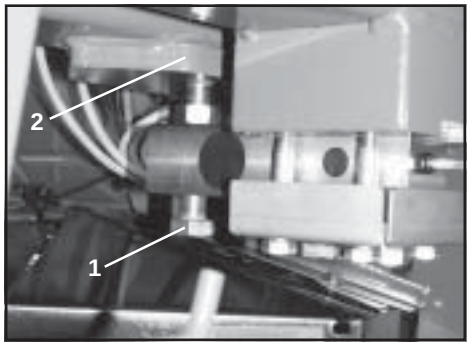



**Fig. 9.7**

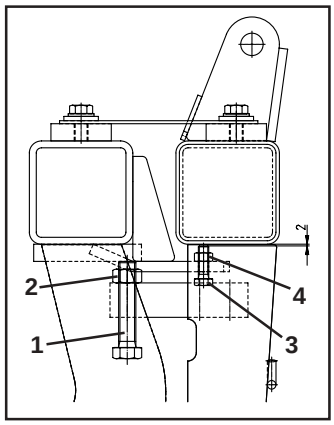



**Fig. 9.8**

**After having carried out settings on the micrometer gauge of the weighing cell the spreader must be freshly calibrated (please refer to the instruction manual AMADOS III-D or Job computer).**

**In the following please refer to para. 9.4.2.**

## 9.4.2 Setting the clearance on the locking bolts

Set the locking bolts (Fig. 9.8/3) with a tolerance of 2 mm.

You will find them on the left hand and right hand side of the spreader frame.

For this:

- Slacken the counter nut (Fig. 9.8/4)
- Adjust the locking bolts (Fig. 9.8/3)
- Retighten the counter nut (Fig. 9.8/4)

Setting only with spreader being empty.

## 9.4.3 Calibrating the Broadcaster

When the broadcaster is empty and AMADOS III-D or the job computer does not show 0 kg (+/- 5 kg) filling weight, the broadcaster must be calibrated again (please refer to instruction manual for AMADOS III-D or job computer).

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

## 9.4.4 Counterbalancing the spreader

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 AMADOS III-D or the Job computer).

## 10.0 Faults, causes and remedy

| Fault | Cause | Remedy |
|---|---|---|
| Uneven lateral fertiliser distribution | Fertiliser is sticking to the spreading discs and spreading vanes. | Clean spreading discs and spreading vanes. |
| | Shutters do not open entirely. | |
| Too much fertiliser behind the tractor | Prescribed spreading disc speed is **not** achieved . | Increase tractor engine speed. |
| | Spreading vanes or outlets defect or worn. | Check spreading vanes and outlets. Immediately replace defective or worn parts. |
| | The spreading properties of your fertiliser deviates from the properties of the fertiliser that has been tested when creating the setting chart. | Call the AMAZONE fertiliser service department.<br>☎ 05405 - 501 - 111 or 501 - 164<br>Mondays till Fridays<br>🕗 8.00 until 13.00 o'clock |
| Too much fertiliser in the overlapping area | Prescribed spreading disc speed is exceeded. | Reduce the tractor engine speed. |
| | The spreading properties of your fertiliser deviates from the properties of the fertiliser which we have tested when creating the setting chart. | Call the AMAZONE fertiliser service department.<br>☎ 05405 - 501 - 111 or 501 - 164<br>Mondays till Fridays<br>🕗 8.00 until 13.00 o'clock |
| Uneven emptying of the two hopper sides at the same shutter position | Bridging of fertiliser. | Remedy cause for bridging.. |
| | Clip pin in the agitator spiral sheared off due to overload. | Replace the "R"-clip. |
| | Shutter basic position different. | Check the shutter basic setting. |

| Fault | Cause | Remedy |
|---|---|---|
| Hydraulic rams 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. |
| On a tractor with constant current system (gear pump) the hydraulic oil becomes too hot. | System converting bolt on the broadcaster valve block has not been screwed out to the stop (factory setting). | Screw out the system converting bolt on the broadcaster valve block to the stop (for this, please refer to para. 4.1.3). |
| | Defective plug couplings | Check plug couplings. If necessary repair or replace. |
| | Defective tractor control unit | Check tractor control unit, repair if necessary or replace. |
| On a tractor with a constant pressure system (possibly on older John Deere tractors) the hydraulic oil is getting too hot. | System converting bolt on the broadcaster valve block has not been screwed in to the stop (contrary to the factory setting). | Screw in the system converting bolt on the broadcaster valve block to the stop (for this please refer to para 4.1.3). |
| | Defective plug couplings | Check plug couplings and repair if necessary or replace. |
| | Defective tractor control unit | Check tractor control unit and repair if necessary or replace. |

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| Fault | Cause | Remedy |
|---|---|---|
| On a tractor with load-sensing system and oil decrease via the tractor control unit the hydraulic oil is getting too hot. | System converting bolt on the broadcaster valve block has not been screwed out to the stop (factory setting). | Screw out the system converting bolt on the broadcaster valve block to the stop (for this, please refer to para 4.1.3). |
| | Oil volume on the tractor control unit has not been sufficiently reduced. | Reduce the oil volume on the tractor control unit. |
| | Defective plug couplings | Check plug couplings. If necessary repair or replace. |
| | Defective tractor control unit | Check tractor control unit, repair if necessary or replace. |
| On a tractor with load sensing system and a direct oil reduction and control cable the hydraulic oil is getting too hot. | System converting bolt on the broadcaster valve block has not been screwed in to the stop (contrary to the factory setting). | Screw in the system converting bolt on the broadcaster valve block to the stop (for this please refer to para 4.1.3). |
| | Defective plug couplings | Check plug couplings and repair if necessary or replace. |

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| Fault | Cause | Remedy |
|---|---|---|
| AMASET does not show any reaction. | Power supply failed | Check the current power supply for AMASET |
| The AMASET sounds a warning signal. | One of the two or both stored speeds are not achieved. The volume flow of the tractor is not sufficient to achieve the set speed. | Check volume flow. |
| | The sensor sends wrong speed figures to the AMASET. | 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. |
| Spreading discs do not start to spin when they are switched on via the AMASET. | Key for switching on the spreading disc drive had not been pressed for at least 3 seconds (safety function). | Press key for switching on the spreading disc drive for at least 3 seconds. |
| | Oil supply on the tractor has not been switched on. | Switch on the oil supply on the tractor. |
| Spreading discs start to spin immediately after the hydraulic system has been switched on. | Manual emergency actuation on the valve block has not been screwed out fully. | Screw out emergency actuation fully. |
| Spreading discs continue to spin after the AMASET has been switched off. | Manual emergency actuation on the valve block has not been screwed out fully. | Screw out emergency actuation fully. |

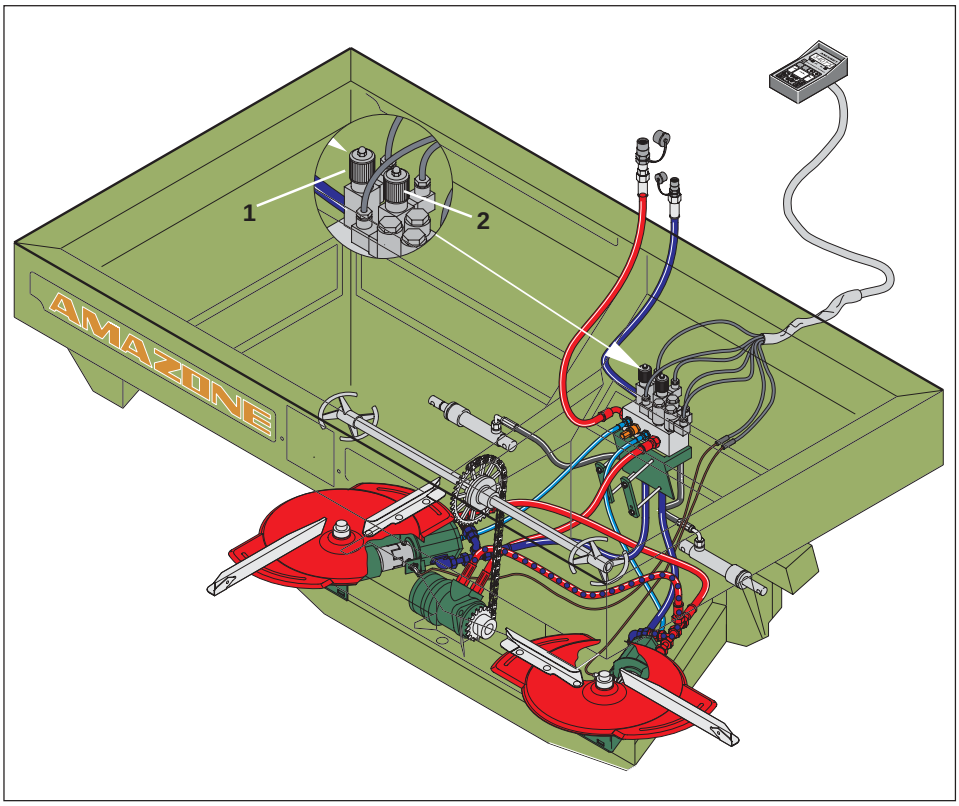


**Fig. 10.1**

Fig.10.1/...

1 - Necessary hand operation - lefthand spreading disc motor (as seen in driving direction).

Necessary hand operation - turn in – speed reduced.

Necessary hand operation - turn out – speed increased.

2 - Necessary hand operation - righthand spreading disc motor.

Necessary hand operation - turn in – speed reduced.

Necessary hand operation - turn out – speed increased.

# 11.0 Options

## 11.1 Spreading discs "Omnia-Set"

### 11.1.1 Pair of spreading discs "Omnia-Set" OS 10-12

For working widths resp. tramline spacings of 10 to 12 m.

**Product No.: 913 925**

**Fig. 11.1**

### 11.1.2 Pair of spreading discs "Omnia-Set" OS 10-18

For working widths resp. tramline spacings of 10 to 18 m (11.1).

**Product No.: 922 800**

**Fig. 11.2**

### 11.1.3 Pair of spreading discs "Omnia-Set" OS 20-28

For working widths resp. tramline spacings of 20 to 28 m (11.2).

**Product No.: 922 801**

### 11.1.4 Pair of spreading discs "Omnia-Set" OS 30-36

For working widths resp. tramline spacings of 30 to 36 m (11.3).

**Product No.: 922 802**

**Fig. 11.3**

**When using these spreading discs fit guard tube (danger of accident)!**

## 11.2 Spreading discs "Omnia-Set" OS-HSS

Increased life span of the vanes due to hard alloy coating, only for normal fertilising.

### 11.2.1 Pair of spreading disc "Omnia Set" OS-HSS 10-18

For working widths resp. tramline spacings of 10 to 18 m.

**Product No.: 922 942**

### 11.2.2 Pair of spreading discs "Omnia-Set" OS-HSS 20-28

For working widths resp. tramline spacings of 20 to 28 m.

**Product No.: 922 810**

### 11.2.3 Pair of spreading discs "Omnia-Set" OS-HSS 30-36

For working widths or tramline spacings of 30 to 36 m.

**Product No.: 922 943**

**Fig. 11.4**

## 11.3 Swivelable guard tube (Fig. 11.4)

Required as guard when using the spreading discs OS 30-36 (collision guard, prevents accidents when spreading discs are spinning, swivelable for a comfortable spreading disc exchange).

**Product No.: 921 291**

**Fig. 11.5**

## 11.4 Lateral calibration device (Fig. 11.5)

For the ZA-M max*iS* HYDRO for an easier spread rate control without spreading disc removal, right hand side.

**Product No.: 922 911**

## 11.5 Transport- and parking device (detachable)

The detachable transport- and parking device (fig. 11.6) allows a comfortable coupling to the three-point hydraulic of the tractor and an easy manoeuvring in the yard and inside buildings.

**Product No.: 922 912**

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

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

**Fig. 11.6**

## 11.6 Hopper extensions

The fertiliser broadcasters ZA-M can be provided with a narrow hopper extension with a capacity of 500 l (S 500) or a wide hopper extension with a capacity of 1000 l (L 1000). The wide hopper extension "**L**" has an upper hopper width of **2,90 m** and allows a quick and comfortable filling, e. g. with a wide industrial loading shovel. The narrow hopper extension "**S**" features an upper hopper width of **2,30 m**.

In addition the extensions according to para. 1.2 (technical data) may be combined in various versions, so that a hopper capacity of up to 2500 l (for the prof*iS)* resp. 3000 l (for the max*iS)* can be obtained.

**When increasing the hopper capacity of the ZA-M max*iS* to 3000 l an upper link reinforcement must be used (Product No.: 922 908).**

### 11.6.1 Hopper extension S 500 (Fig. 11.7)

**Product No.: 922 782**

### 11.6.2 Hopper extension L 1000 (Fig. 11.8)

**Product No.: 922 786**

### 11.7 Swivelable hopper cover (Fig. 11.9)

Also in wet weather conditions, the swivelable hopper cover guarantees dry spreading material. For filling the swivelable hopper cover is simply swivelled upward.

### 11.7.1 Swivelable hopper cover S

Suited for hopper extension S 500, as well as for all basic hoppers.

**Product No.: 922 909**

### 11.7.2 Swivelable hopper cover L

Suited for hopper extension L 1000.

**Product No.: 115 800**

## 11.8 Traffic light kit for AMAZONE-mounted implements

The traffic light kit can be retrofitted and adjusted to various implemend widths (up to 3 m).

### 11.8.1 Traffic light kit „rear“

The traffic light kit „rear“ (Fig. 11.9) is bolted onto the guard tube retainer of the hopper rear wall. It consists of: Light combination right hand and left hand; parking warning plates according to DIN standards11030; registration plate and connecting cable.

**Product No.: 916 253**

**Fig. 11.7**

**Fig. 11.8**

**Fig. 11.9**

### 11.8.2 Traffic light kit „front“

The traffic light kit „front“ is necessary for all broadcaster types with a wide hopper extension „L 1000“ and is fixed to the traffic light kit „rear“. It consists of parking warning plates according to DIN standards 11030 with limiting lights right hand and left hand and connecting cable.

**Product No.: 917 649**

## 11.9 Two-way-valve unit

The two-way-valve (Fig.11.10) is required for the hydraulic single shutter control on tractors with only **one** single acting hydraulic connection.

**Product No.: 145 600**

Fig. 11.11 Block ball taps closed
Fig. 11.12 Block ball taps opened

**Half sided spreading with two-way valve unit:**

For the independent closing resp. opening the shutters, the following actuations have to be conducted at half-sided spreading or spreading of arable fields.

**a) One-side opening of the right hand shutter, e. g. for left hand border spreading with the boundary spread deflector:**

- Close both shutters.
- Shut block ball tap for the hydraulic ram of the left hand hopper tip.

When actuated by the control valve, now only the right hand shutter is opened resp. closed, the left hand one remains closed.

**b) One-sided closing of the right hand shutter when spreading:**

- Both shutters are open.
- Shut block ball tap for the hydraulic ram of the left hand hopper tip.
- Set control valve on **„lifting“** and hereby close the right hand shutter.

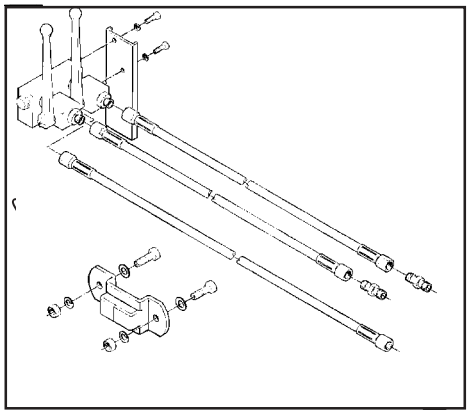

**Fig. 11.10**

**Fig. 11.11**

**Fig. 11.12**

**c) Change from one-sided spreading to spreading to both sides, e. g. additional actuation of left hand shutter:**

- Right hand shutter opened (left hand shutter closed via block ball tap).
- Open block ball tap for hydraulic ram of the left hand hopper tip.
- Set control valve on **„lowering“** and hereby open both shutters.

## 11.10 Three way valve

The three way valve (Fig.11.13) is required for the hydraulic single shutter control and use of the Limiter M on tractors with only one single acting hydraulic control valve.

**Product No.: 922 320**

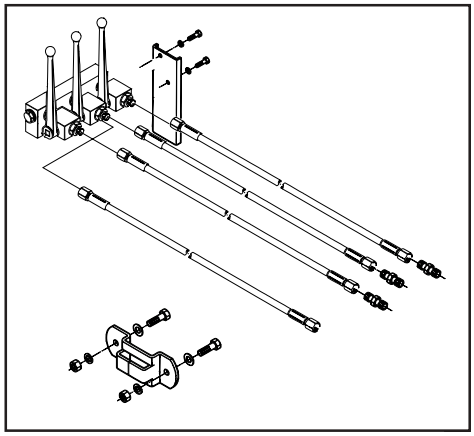

**Fig. 11.13**

## 11.11 Mobile fertiliser test kit for checing the working width

Please refer to para. 7.1.2.4.

**Product No.: 125 900**

## 11.12 Rubber mud guard

If the tractor's rear wheels throw clods of soil into the aera of the spinning spreading discs when spreading fertiliser, mud guards should be fitted to the front side of the spreader.

**Product No.: 918 844**

## 11.13 Row spreading device (Fig. 11.14)

The AMAZONE ZA-M can be retrofitted with a 4-, 6-, or 8-row spreading device for underleaf fertilising, especially for fertilising maize (however, not possible in conjunction with the mounting trailer). The row spacing can be set at variance up to 80 cm. The fertiliser metering is done via the broadcaster.

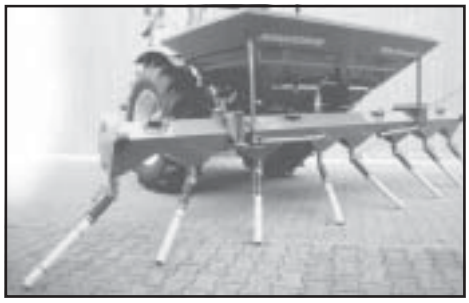

**Fig.11.14**

Special spreading discs distribute the fertiliser on the 4, 6 or 8 rows. Settable guide wings care for an even fertiliser distribution in all rows.

The guidance of the fertiliser towards the soil prevents scorching on the plants. The fertiliser is placed in rows, evenly distributed on the soil beside the plants.

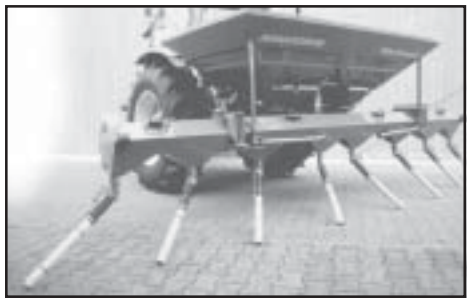

Fig.11.14

**4-row spreading device R 4, working width 3,00 m,**
**Product No.: 160 600**

**6-row spreading device R 6, working width 4,50 m,**
**Product No.: 161 600**

**8-row spreading device R 8, working width 6,00 m,**
**Product No.: 162 600**

## 11.14 Special guide plates for broadcasting on slopy terrain

For broadcasting on slopy terrain with more than 20 % inclination or declination. The special guide plates guide the normally vertically dropping flow of fertiliser also onto the pre-designed feeding points of the spreading discs even when operating in slopy terrains.

**Product No.: 916 113**

Fig. 11.15/...

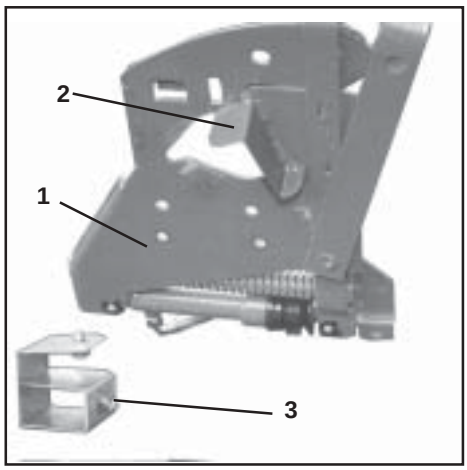


Fig. 11.15

1 -Bottom plate.
2 - Guide plate (standard)
3 - Special guide plate

**Fitting:**

- take off spreading disc.
- open shutters fully.
- hold special guide plate (Fig. 11.15/3) against standardly supplied guide plate (Fig. 11.15/2).

**Maintain the spacing of 2 mm between the special guide plate (Fig. 11.17/1) and the bottom plate (Fig. 11.17/2).**

- Mark 2 holes, drill 9 mm diam. holes and bolt the special guide plate to the standard guide plate by flat head bolts M 6 (Fig. 11.16/1).

**By the use of the special guide plates the spread rate is reduced by approx. 30 %.**

**The diference between the spread rates on horizontal areas on the one hand and up to 40 % on inclining or declining areas on the other hand is comparatively neglectible.**

**After fitting the special guide plates it is implicitly important to conduct a spread rate check.**

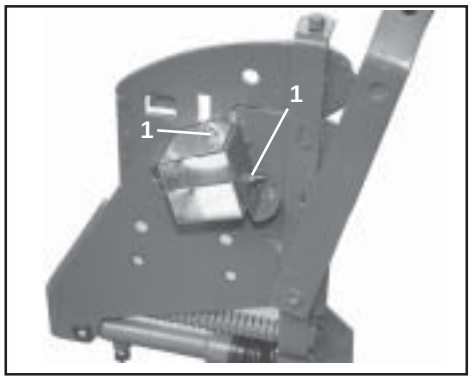


**Fig. 11.16**

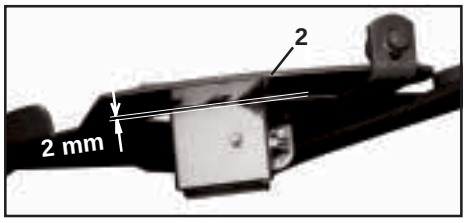


**Fig. 11.17**

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