

# **AMAZONE**

## **Operation Manual**

### **Centrifugal Broadcaster**

#### **ZA-M Ultra**

#### **ZA-M Ultra profiS**



MG 761  
DB 561.1 (GB) 11.02  
Printed in Germany



Before starting to operate,  
please carefully read and  
adhere to this operation  
manual and safety advice





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## 1. Details about the machine



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 damage

### 1.1 Range of application

The centrifugal broadcaster **ZA-M Ultra profiS** has been designed for the application of dry, granule, prilled and crystal-line fertilisers and seeds.

### 1.2 Manufacturer

#### AMAZONEN-WERKE

H. DREYER GmbH & Co. KG

P. O. Box 51,  
D-49202 Hasbergen-Gaste / Germany

### 1.3 Conformity declaration

The centrifugal broadcaster fulfils the requirements of the EC-guide line Machine 98/37/EG and the corresponding additional guide lines (see attachment).

### 1.4 Details when making enquiries and ordering

When ordering options and spare parts indicate the spreader type and the serial number.

### 1.5 Type plate

Type plate on the machine

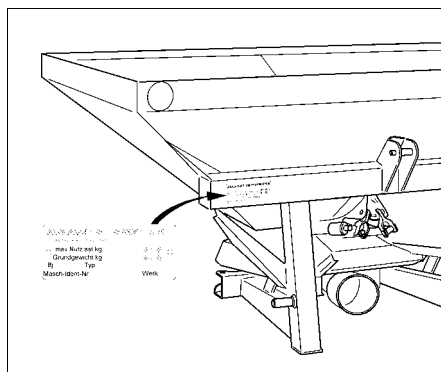


Fig. 1



The type plate is of documentary value and may not be changed or disguised



## 1.6 Technical data

Type	Hopper capacity (litres)	Payload (kg)	Weight (kg)	Filling height (m)	Filling width (m)	Total width (m)	Total length (m)
<b>ZA-M Ultra profiS</b>	2300	3500	720	1,30	2,75	3,00	1,73
<b>+S 600</b>	2900	3500	750	1,44	2,75	3,00	1,73
<b>+2x S 600</b>	3500	3500	780	1,58	2,75	3,00	1,73

### 1.6.1 Standard of the hydraulic system on the tractor

Required for **mounting the spreader** on to the hydraulic system of the tractor:

- 3 double acting spool valve

The maximum permissible pressure on the tractor hydraulic's is: **230 bar**.

### 1.6.2 Details about noise level

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

Measuring implement: OPTAC SLM 5.

The noise level depends on the type of tractor used.



## 1.7 Designated use of the machine

The **AMAZONE centrifugal broadcaster ZA-M Ultra profiS** has exclusively been designed for the usual operation in agriculture for spreading dry, granular, prilled and crystalline fertilisers and seeds.

The machine is designed to spread on slopes of up to 20 % inclination. Steeper slopes will cause an uneven spread pattern.

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

Under designated 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 change on the machine will rule out the responsibility of the manufacturer.**

Though our machines having been manufactured with great care deviations when spreading cannot totally be excluded even at a designated 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 vanes, V-belts, etc.),
- Damage by external influence,
- Wrong drive-R.P.M. and travelling speeds,
- Fitting wrong spreading discs (e.g. mixing them up),
- Wrong setting of the machine (incorrect mounting, not adhering to the spreading chart).

Claims regarding damage not having occurred on the AMAZONE centrifugal broadcaster itself will be rejected. This also applies to damage due to spreading errors.



## 2. Safety

This instruction manual contains basic advice which must be adhered to when mounting, operating and maintaining the machine. Ensure that this instruction manual has been read by the user/operator before starting to operate the implement and that it is made readily available at all times to the user.

Please strictly observe and adhere to all safety advice given in this instruction manual.

### 2.1 Dangers when not adhering to the safety advice

Not adhering to the safety advice given

- may result in endangering the user or other persons, the environment and/or the machine itself.
- may result in the loss of any claim for damages.

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

- Danger for persons by not secured operational range.
- Failure of important functions of the machine.
- Failure of prescribed measures for maintenance and repair.
- Danger for persons by mechanical or chemical affects.
- Dangers to persons or to the environment by leaking hydraulic oil.

## 2.2 Qualification of operator

The implement may only be operated, maintained and repaired by persons, who are acquainted with it and have been informed of the relevant dangers

### 2.3 Symbols in this instruction manual

#### 2.3.1 General danger symbol

Not adhering to the safety advice in this instruction manual may cause danger to health and life of persons. They are identified by the general danger symbol (safety 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

This symbol marks machine's specific points which should be observed to ensure the correct operation.





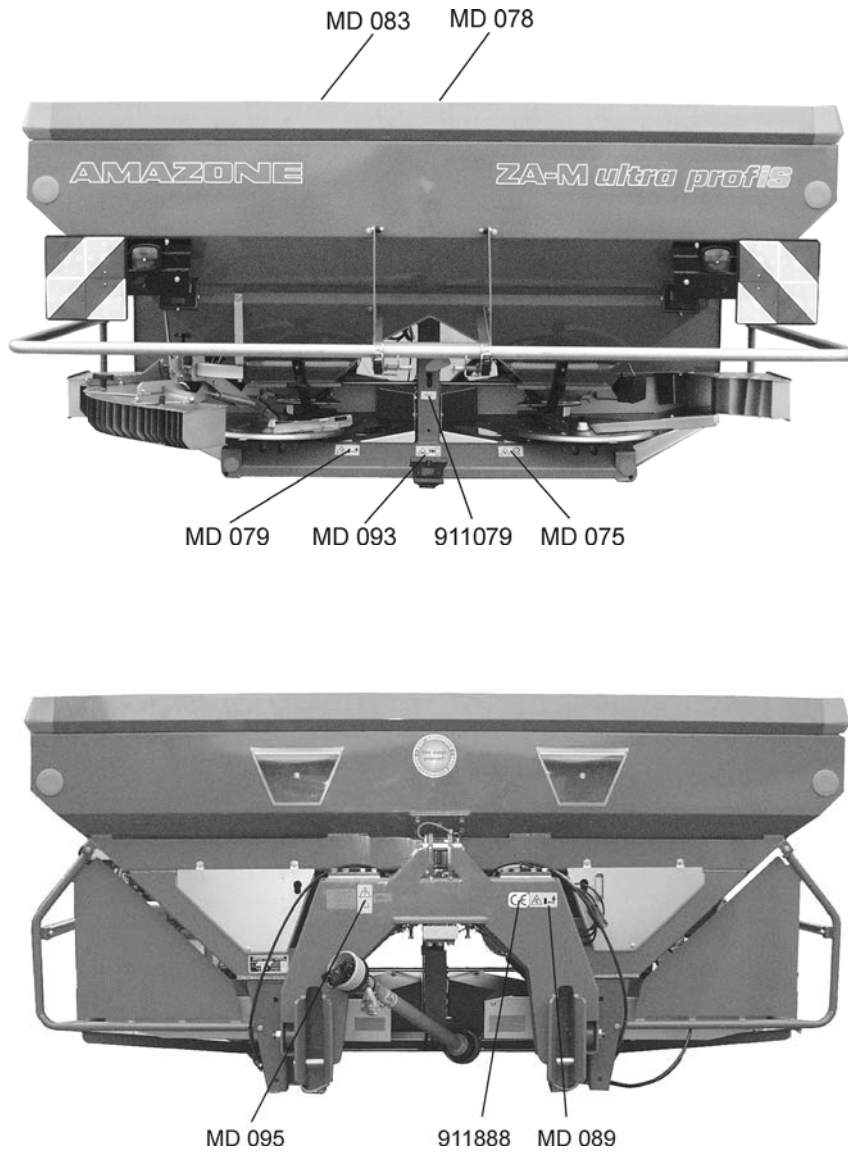
## 2.4 Safety-/warning and hint symbols

The safety/warning symbol in this instruction manual is used with all operator safety hints at which life or health of persons is in danger.

The hint symbols mark machine's specific points which should be observed to ensure the correct operation.

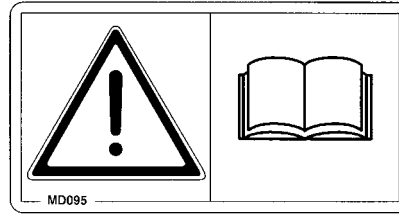
The danger and the fixing points for the safety-/warning and hint symbols are set off. Please find the explanations for the pictographs on the following pages.

1. Strictly observe all warning pictographs and hint symbols.
2. Please pass on all safety advice also to other users.
3. Please always keep all warning pictographs and hint signs clean and in well readable condition. Please ask for replacement of damaged or missing signs from your dealer and attach to relevant place (picture-No.: =orderNo




**Picture No.: MD 095**
**Explanation:**

Before commencing operation read thoroughly this operation manual and all safety advice


**Picture No.: MD 075**
**Explanation:**

Do not stay within the zone of spinning spreading discs!

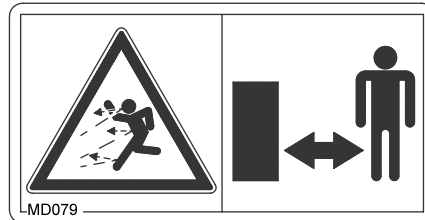
Do not touch moving implement parts. Await their absolute standstill.

Disengage PTO shaft, stop the engine, and remove the ignition key before exchanging the spreading discs.

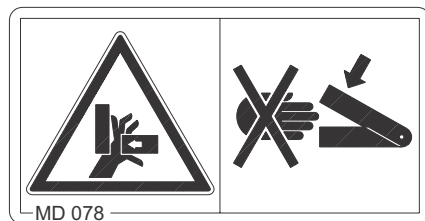

**Picture No.: MD 079**
**Explanation:**

Danger because of flinging fertiliser particles.

Advise people to leave the danger area.


**Picture No.: MD 078**
**Explanation:**

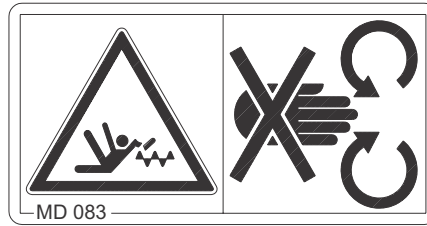
Never reach into the zone of danger of bruising (e.g. shutter slides and shutter openings) as long as parts can still move there.



**Picture No.:** MD 083

**Explanation:**

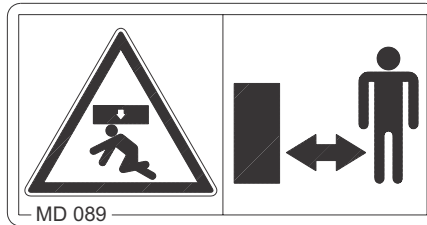
**Never reach into the rotating agitator spiral.**



**Picture No.:** MD089

**Explanation:**

**Never stay under a lifted fertiliser spreader (unsecured load).**



**Picture No.:** MD 093

**Explanation:**

**Danger from rotating machine parts.**  
**Never touch rotating shafts, spreading discs, etc.**





Picture No.: 912 297




- (D)** Beim Scheibenwechsel Scheibenloch  $\varnothing$  8 zur Maschinen-mitte
- (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

Picture No.: 9120304




- (D)** Gelenkwellenlänge beachten (sonst Getriebschaden). Siehe Betriebsanleitung.
- (F)** Veiller impérativement à la longueur de la transmission (risque d'endommagement du boîtier). Voir le manuel d'utilisation.
- (GB)** Check correct p.t.o. shaft length (otherwise gearbox damage will result). - see instruction book.
- (NL)** Geeft aandacht aan de lengte van de aftakas zoals de gebruikshandleiding aangeeft, anders kan de aandrijfkast beschadigen.

Picture No.: 9120312

	<b>(D)</b>	<ol style="list-style-type: none"><li>1. Vorderachsentslastung des Schleppers beachten.</li><li>2. Rührfinger, Auslauföffnungen und Streuschaufeln sauber und funktionsfähig halten.</li></ol>
	<b>(F)</b>	<ol style="list-style-type: none"><li>1. Veiller à la bonne adhérence de l'essieu avant.</li><li>2. Maintenir propres et opérationnels les agitateurs, les orifices d'alimentation et les aubes.</li></ol>
	<b>(GB)</b>	<ol style="list-style-type: none"><li>1. Bear in mind front axle weight reduction.</li><li>2. Always keep agitator fingers, outlets and vanes clean and replace when worn or damaged.</li></ol>
	<b>(NL)</b>	<ol style="list-style-type: none"><li>1. Op de vooras ontlasting van de traktor letten.</li><li>2. Roerdervingers, uitloop-openingen en strooischoepen schoon en bedrijfs gereed houden.</li></ol>

Picture No.: 9120336

	<b>(D)</b>	<p>Zapfwelle nur bei niedriger Motordrehzahl einkuppeln. Bei Überlastung schert die Sicherungsschraube ab. Bei häufigem Abscheren Gelenkwelle mit Reibkupplung einsetzen.</p>
	<b>(F)</b>	<p>La prise de force ne doit être enclenchée qu'à régime moteur réduit. En cas de surcharge, la vis de sécurité se casse. En cas de cisaillement fréquent, utiliser une transmission avec limiteur de couple à friction.</p>
	<b>(GB)</b>	<p>Engage pto-shaft only at low engine speed. In case of overstrain the shear bolt shears off. If shear bolt shears off too frequently we recommend the use of a pto shaft with friction clutch.</p>
	<b>(NL)</b>	<p>Aftakas alleen bij laag motortoerental inkoppelen. Bij overbelasting breekt de breekbout af. Bij dikwijls breken een aftakas met slipkoppeling toepassen.</p>



## 2.5 Safety advice for retrofitting electric and electronic devices and/or components

For cabling and installation as well as for the maximum permissible current supply in addition adhere to the fitting instructions of the implement manufacturer

The function of the implement's electronic components and parts may be affected by the electric-magnetic transmittance of other devices. Such affects may endanger people when the following safety advice will not be adhered to.

When retrofitting electric and electronic devices and/or components to the implement with connection to the on-board-electric circuit, the user must ensure by himself that the installation will not cause any disturbance to the tractor electronic or other components.

Special attention must be paid that the retrofitted electric and electronic parts correspond to the EMV-guide 89/336/EEG in the relevant valid edition and that they bear the CE-sign.

For retrofitting mobile communication systems (e.g. radio, telephone) the following requirements must be fulfilled: Only install devices which have officially been authorised in your country.

Firmly install the device.

The use of portable or mobile devices inside the tractor cab is only permissible with a connection to a firmly installed external antenna.

Install the transmitter spaced apart from the tractor's electronic.

When installing the antenna ensure an appropriate installation with proper earth connection between antenna and tractor earth.





## **2.6 Safety conscious operation**

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



## 2.7 General safety and accident preventive advice

### Basic principle:

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

1. In conjunction with the recommendations in the operator's manual, observe any general safety and accident preventive laws in force.
2. The hazard and warning signs provide important information to ensure safe operation. They are intended for your safety.
3. Follow traffic regulations when using public roads.
4. Before starting work familiarise yourself with all the operating elements and their uses. It will be too late to do this whilst you are operating the machine.
5. The operator should wear close-fitting clothes. Avoid wearing loose-fitting clothes.
6. To avoid the risk of fire, keep the machine clean.
7. Before starting up and handling the machine check the immediate vicinity for clearance (children)! Make sure you have a clear view.
8. Carrying passengers whilst driving or operating the machine is not permitted.
9. Connect the units correctly and secure them only to the proper mounting devices.
10. –Exercise special care when coupling and uncoupling units to or from the tractor.
11. Ensure that the landing gear is in the correct position when mounting and dismounting (stability).
12. Always attach weights correctly to the mounting points provided.
13. Check maximum permissible axle loads of the tractor (see vehicle documents).
14. Do not exceed maximum transport measurements of the traffic department.
15. Check and fit equipment for road transport, e.g. traffic lights, warning plates and guards.
16. The release ropes for quick coupler should hang freely and in the low position must not release the quick coupling by themselves.!
17. Never leave the tractor seat during driving.
18. Moving characteristics, steering and braking ability are affected by mounted implements, trailers and ballast weights. Therefore, take account to these affects and allow sufficient steering and braking.
19. When lifting the fertiliser spreader 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 around corners take into account the clear radius and/or the rotating mass of the machine. To avoid sideways swing of the spreader during operation stabilise the lower link arms of the three-point-hydraulic.
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 staying**



**in the spreading zone. Do not approach rotating spreading discs.**

23. Filling the fertiliser spreader may only be done with a stopped tractor engine, removed ignition key and closed shutters.
24. Do not stay in the rotating- and swivelling range of the implement.
25. Hydraulic folding frames must only be activated after making sure no one is standing near the machine.
26. Squeeze and shear points are found on externally activated components (e.g. hydraulics).
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 stay between tractor and implement if the tractor is not secured against rolling away by the parking brake and/or by chocks.
29. Note the maximum permissible filling loads. Bear in mind the fertiliser bulk density [kg/l]. The fertiliser bulk densities can be read off the spreading table or have to be determined. Please refer to para. 1.2.
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 km/h 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, 5 tons in maximum.
31. Do not place any foreign objects inside the hopper.
32. During the calibration test watch out for danger 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 PTO shaft. Then **slowly engage the PTO shaft** and carry out a short stationary spreading. Only now, after having set the shutters on to the desired spreading rate start spreading.
35. If spreading on field borders, waters or roads use the border spreading device.
36. **Before any operation check perfect seat of fixing parts, especially for spreading disc and spreading vane fixing.**

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



## **2.8 General safety and accident preventive laws for mounted implements**

1. Before mounting- and dismounting implements to the three-point-linkage bring all control levers in such a position that an unintended lifting or lowering is impossible.
2. When fitting to the three-point-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-point linkage never step between tractor and implement.
5. In transport position always take care for a sufficient lateral locking of the tractor's three point.
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 prescribed. 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.

### 2.8.1 Safety advice for the hydraulic system

1. The hydraulic system is under high pressure.
2. When connecting hydraulic cylinders and motors make sure hydraulics hoses are connected as prescribed.
3. When connecting the hydraulic hoses to the tractor hydraulic system ensure that the hydraulics and the tractor is at zero pressure.
4. When carrying out hydraulic operations between the tractor and the unit coupling sleeves and connectors should be identified to prevent any operating errors. If connections are mixed up reversed operations, e.g. lifting instead of lowering, may cause accidents.
5. Check hydraulic hoses in regular intervals and exchange in case of wearing or ageing. The exchange hoses must correspond to the technical requirements of the manufacturer.
6. When searching for leaks appropriate aids should be used due to danger of injury.
7. Under high pressure any fluids (such as hydraulic oil) may penetrate the skin and cause serious injury.



**In the event of injury call for a doctor immediately. There is a danger of infection.!**

8. Before starting work on the hydraulic system, lower the units, turn the system to zero pressure and switch off the engine.
9. The service life of the hose assemblies should not exceed six years including a possible storage time of

2 years. Even during proper storage and permissible stress, hoses and hose connections are subject to natural ageing which limits their storage and service life. By way of exception, the service life may be determined according to empirical values taking into account the risk of danger. Other standard values may be applied to hoses and hose connections made of thermoplastic material.

### 2.8.2 General safety and accident preventive advice for maintenance, repair and cleaning

1. Maintenance, repair and cleaning operations together with rectification of operating defects should only be carried out when the drive and the engine have been disconnected. Remove the ignition key.
2. Check nuts and bolts regularly for tightness and re-tighten if necessary.
3. When servicing a raised unit always ensure it is secured by suitable supports.
4. Remove oil, grease and filters correctly!
5. Always disconnect power before starting work on the electrical system.
6. Disconnect cable to the tractor generator and battery when carrying out electric welding work on the tractor and the mounted units.
7. Any spare parts fitted must in minimum meet with the implement manufacturer's fixed technical standards. This is, for example, ensured by using original AMAZONE spare parts.



### 3. Description of product

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

The infinitely variable setting of the different working widths is achieved by swivelling the spreading vanes on the spreading discs which are available for working widths of 18 m - 28 m or 27 m – 48 m. For these settings, please follow the data given in the setting chart. The mobile fertiliser test kit (special option) allows an easy checking of the working width.

The swivelling of the spreading vanes on the spreading discs allow the infinitely variable setting of different working widths. These settings are compiled in the setting chart. Checking the set working width is simply done with the mobile working width test kit (option).

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

The spread rate is set electronically via the AMADOS III-D or AMATRON +. The spread rate shutter slides which are actuated by the setting motors set various shutter opening widths. The shutter slide position which is required for the desired spread rate is determined by driving a test distance. As the spreading properties of the fertiliser may heavily vary we recommend that you carry out a calibration test with the fertiliser you intend to spread before starting to operate.

The integrated guide system consisting of limiter (Fig. 2/1) and trimmer (Fig. 2/2) provides an optimum limiting of the spread fan. The trimmer is moved into the front area of the spreading fan providing a permanent front limiting of the fan. The limiter is engaged for border- and field side spreading if the first tramline has been created half the working width from the field's border



Fig. 2

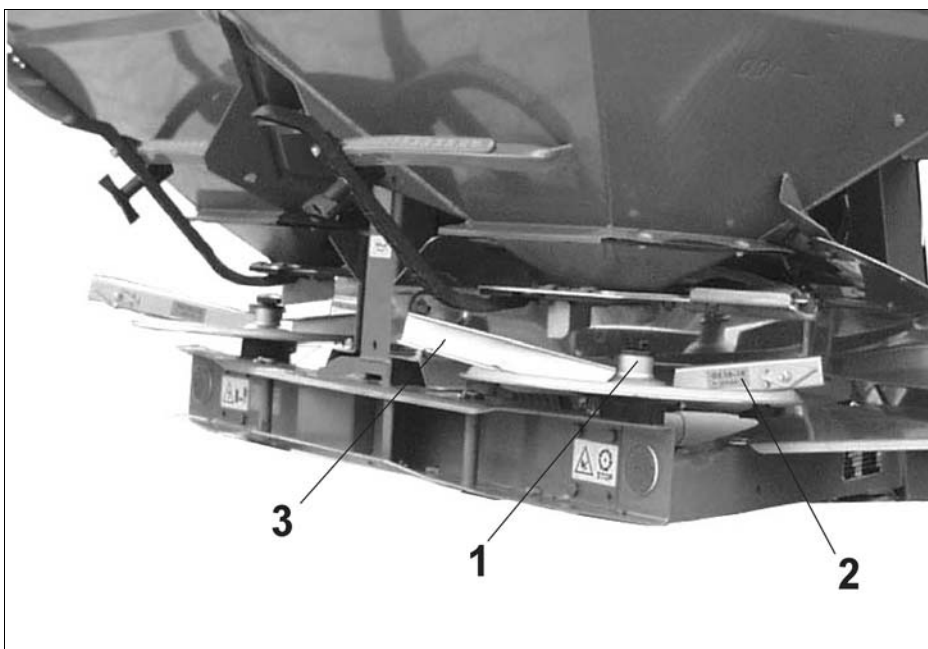


Fig. 3



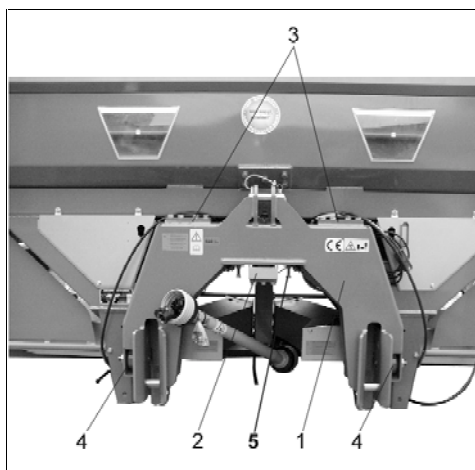
### 3.1 Remarks on the weighing technique

The ZA-M Ultra profil features an additional frame (Fig. 4/1) fitted in front of the spreader which retains the weigh cell (Fig. 4/2).

The weighing frame retains the spreader on the upper part with the aid of two leaf springs (Fig. 4/3) and on the lower part with two bracing straps (Fig. 4/4) in parallelogram design.



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



**Fig. 4**



The leaf springs (Fig. 5/1) and bracing straps (Fig. 5/2) collect all horizontal forces whereby the vertical force (the weight of the spreader) is collected by the micrometer gauge (Fig. 5/4) inside the weigh cell (Fig. 5/3).

Before starting to operate enter a calibration factor for the kind of fertiliser which you intend to spread. In case of an not known 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 AMATRON+ 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 AMATRON+. This has now calculated a new calibration factor with which the desired fertiliser rate can be accurately spread.

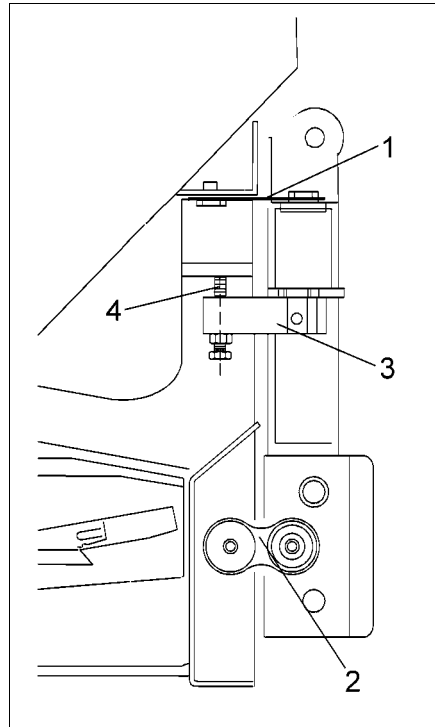


Fig. 5



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

Each one check screw (Fig. 5/5) is fitted on the left and right hand side of the fertiliser spreader ZA-M Ultra. The check screws are set with a clearance of 2 mm towards the weighing frame (see para. 9.1.2).

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 distorted.**



## 4. On receipt of the machine

Check that no damage has been caused in transit and all parts are present. Otherwise no responsibility can be accepted by us or the carrier.

Check whether all parts (including options) listed up in the delivery note are present..

- One pair of spreading discs "Omnia-Set" with swivelling spreading vanes for the working width you have indicated.
- Filling sieve against foreign particles,
- Calibration tray for the spread rate check,
- Instruction manual,
- Setting chart,
- Calculating disc rule,
- On-board-computer,
- Sample container for fertiliser service,
- Guard tube,
- Guide system trimmer/Limiter.

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



**Please check the correct fitting of the spreading discs. Looking into driving direction: left hand spreading disc decal "left hand" ("links") and right hand spreading disc decal "right hand" ("rechts").**



**Please check the correct fitting of the spreading discs. Looking into driving direction: left hand spreading disc decal "left hand" ("links") and right hand spreading disc decal "right hand" ("rechts").**

## 5. Mounting and dismounting



**Danger of tipping over!**

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



**Danger of tipping over!**

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



**Danger of tipping over!**

Mount and dismount the spreader only with empty hopper.



**Danger of tipping over!**

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



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



**Danger of tipping over!**

Only lift the implement with fitted upper link.



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



## 5.1 Mounting data

Before starting to operate determine the total weight, the axle loads and the load capacity of the tyres as well as the necessary minimum ballast of the combination tractor/mounted implement.

The distance "a" results from the sum of the distances  $a_1$  and  $a_2$ .

$a_1$  = Spacing between centre of front axle and lower tractor linking point.  
Please take this value from the instruction book of your tractor.

$a_2$  = Spacing between centre of lower tractor linking point and point of gravity front mounted implement.

$d$  = 800 mm

For calculation the following data are required:

$T_L$  [kg]: Net weight of the tractor ❶

$T_V$  [kg]: Front axle load of the empty tractor ❶

$T_H$  [kg]: Rear axle load of the empty tractor ❶

$G_H$  [kg]: Total weight rear mounted implement / rear ballast ❷

$G_V$  [kg]: Total weight front mounted implement / front ballast ❷

$a$  [m]: Spacing between point of gravity front mounted implement/ front ballast and centre front axle ❷ ❸

$b$  [m]: Wheel base of tractor ❶ ❸

$c$  [m]: Spacing between centre of rear axle and centre of lower link ball ❶ ❸

$d$  [m]: Spacing between lower link ball and point of gravity rear mounted implement / rear ballast

❶ Pls refer to instruction manual of tractor

❷ See price list

❸ Dimensions

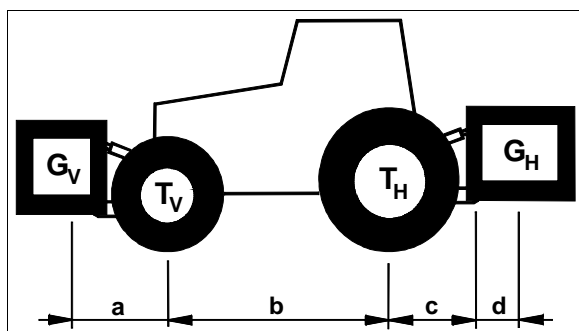


Fig. 6

Rear mounted implement or front-rear mount combinations:

## 1) Calculation of the minimum ballast front $G_{V \min}$ :

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

Enter into the table the minimum ballast required for the tractor front.

## 2) Calculation of the front axle load $T_{V \text{ tat}}$ :

(If the necessary minimum ballast front ( $G_{V \min}$ ) is not achieved with the front mounted implement ( $G_V$ ), increase the weight of the front mounted implement up to the weight of the minimum ballast front.)

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

Enter into the table the calculated actual front axle load and the permissible axle load indicated in the instruction manual of the tractor.

## 3) Calculation of the actual total weight $G_{\text{tat}}$

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

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

Enter into the table the calculated actual total weight and the total weight indicated in the instruction manual of the tractor.

## 4) Calculation of the actual rear axle load $T_{H \text{ tat}}$

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

Enter into the table the calculated actual rear axle load and the rear axle load indicated in the instruction manual of the tractor.

## 5) Tyre load capacity

Enter into the table on the next page double the value (two tyres) of the permissible tyre load capacity (please refer, e.g. to the files of the tyre manufacturer).



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

The minimum ballast must be attached to the tractor by means of a mounted implement or a ballast weight.

The calculated values should be smaller than /equal ( ≤ ) the permissible values.

## 5.2 Mounting

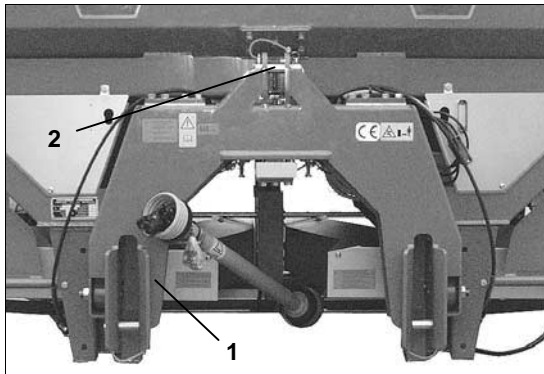
- Mount the centrifugal broadcaster to the rear hydraulic three point linkage of the tractor (please note para. 2.8).
- Fix lower link of tractor on lower link pin (cat. III) (Fig. 7/1) and secure by using a clip pin. Insert the pin into the upper hole of the lower link console. As standard this lower link console is equipped with a second lower link connection and allows a 180 mm higher mounting to the tractor (e.g. for late top dressing).
- Fix upper link with link pin (cat. III) (Fig. 7/2) and secure by using a clip pin.
- In lifted position the lower link arms of the tractor must only have little play to the sides, so that the machine does not swing to and fro during spreading operation. Secure lower link arms of the tractor with stabilising bars or chains.



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



The speed of lowering a filled spreader must never be faster than 2 seconds. If available set the throttle valve accordingly..



**Fig. 7**



### 5.2.1 PTO shaft



Only use the PTO shaft prescribed by the manufacturer..



In case the shear bolt between connecting yoke and drive input shaft flange continue to fail and on tractors with a hydraulically actuated universal joint shaft, the Walterscheid PTO shaft with friction clutch (K94/1) is recommended (option).



The PTO shaft must be fitted when the spreader is empty and has been parked

#### Fitting the PTO shaft:

- Remove fixing bolt (Fig. 8/1) .
- Twist the funnel (Fig. 9/1) in fitting position (Fig. 9/2).
- Pull off guard cone (Fig. 9/3).

Tilt machine to the rear.



Before fitting the PTO shaft clean and grease the gearbox input shaft.

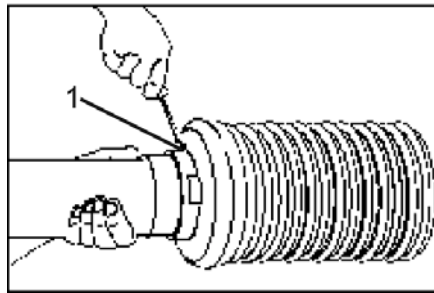


Fig. 8

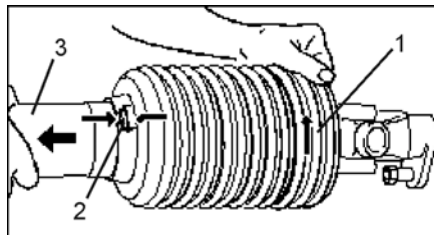


Fig. 9



- Slacken grease nipples (Fig. 10/1) and push on the PTO shaft (Fig. 10/2).
- Affix connecting yoke (Fig. 10/3) by using a shear bolt (Fig. 10/4).
- Insert grease nipples (Fig. 10/1).
- Push on guard cone (Fig. 11/1) and twist guard funnel (Fig. 11/2) into fitting position.
- Insert locking bolt (Fig. 11/3).
- Tilt machine to the front.

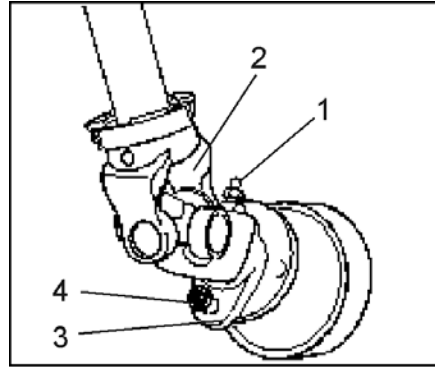


Fig. 10

Matching the PTO shaft when initially fitted



**When first mounting match PTO shaft to the tractor according to Fig. 12.6. As this matching only applies for this specific type of tractor check PTO shaft matching when changing the tractor type or repeat it if necessary.**

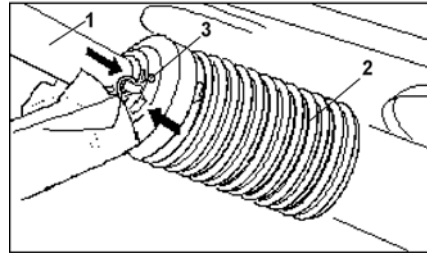


Fig. 11



When first mounting fix other PTO shaft halt to the universal joint shaft profile of the tractor without inserting the PTO shaft tubes into one another.

1. By holding the two PTO shaft tubes side by side, check whether an **overlap** of the PTO shaft tubes of **at least 40 % of LO** (LO = length in inserted condition) is guaranteed as well on the lowered as on the lifted broadcaster.
2. In inserted position the PTO shaft tubes may not touch the yokes of the universal joint. A **safety margin of at least 10 mm** should be ensured.
3. For matching the length of the PTO shaft halves hold them side by side in the closest operating position of the machine and mark.
4. Shorten inner and outer guard tube by the same amount.
5. Shorten inner and outer profile tube in the same length as the guard tube.
6. Round off the cut edges and carefully remove any metal filings.
7. Apply grease to the profile tubes and insert.
8. Hook in chains into the hole of the bracing of the upper link pocket so that a sufficient swivel range of the PTO shaft in all operating positions is guaranteed and the PTO shaft guard is prevented from rotating during operation.
9. Only operate with entirely guarded drive

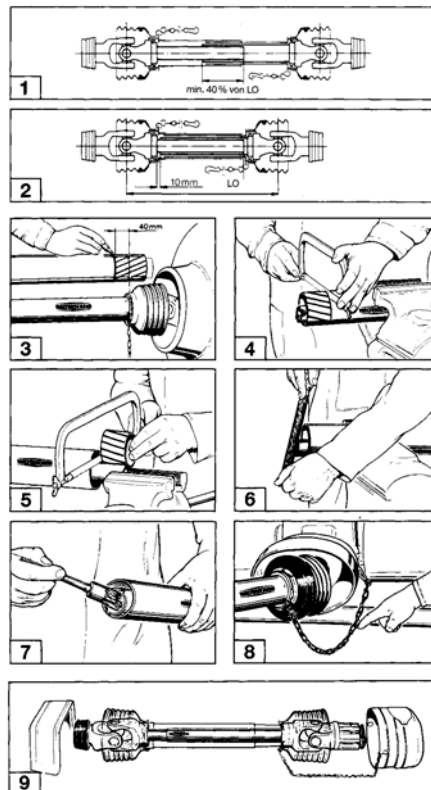


Fig. 12



On tractor and implement only use PTO shaft with complete guard and additional guard. Replace guards immediately once they have been damaged..



The maximum PTO shaft angle must never exceed 25 °.



Also note the fitting- and maintenance advice of the PTO shaft manufacturer



To avoid damage engage PTO shaft slowly at low tractor engine speed.

When parking the fertiliser spreader, the PTO shaft should be placed into catching hooks provided (Fig. 12/3) .

### 5.2.2 Centre gearbox with giving-way safety

To prevent damage (at the first fitting) (e.g. because of a not properly matched PTO shaft) the fertiliser spreader is provided with a centre gearbox with giving-way safety (Fig. 13/1).

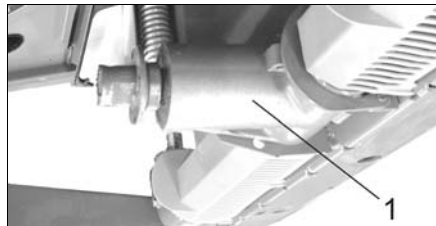


Fig. 13



### 5.2.3 Hydraulic connections



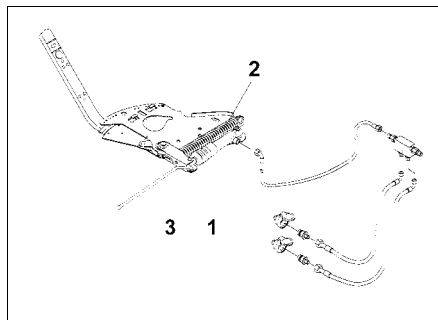
**In order to avoid damage on the fertiliser spreader the pressure in the tractor hydraulic system must not exceed 230 bar.**

The hydraulic hoses are connected to two single acting control valves on the tractor. For shutting the shutters set control valve to "lift" and for opening to "lower".

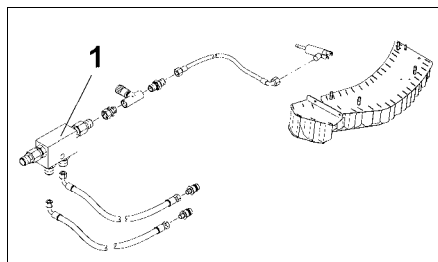
For half-side spreading the shutters can be actuated individually. The opening is shut by the shutter via the hydraulic ram (Fig. 14/1) and opened by spring action (Fig. 14/2). The position of the red rods (Fig. 14/3) indicate, whether the shutters are open or closed. If the rod is driven out the shutter is open.

An unintended opening of the shutters is avoided by using two locking blocks (Fig. 14/4) even in case of leaking spool valves on the tractor.

The hydraulic hoses for the limiter are connected with a double acting control valve. A lock tap prevents an unintended lowering of the Limiter (Fig. 15/1) even if control valves are leaking.



**Fig. 14**



**Fig. 15**

## 5.3 Uncoupling the spreader from tractor



Before uncoupling the spreader from the tractor ensure that the coupling points (upper- and lower links) are relieved.

- Park the centrifugal broadcaster on level ground

## 6. Transport on public roads and ways.



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



Vehicle owner as well as the operator are responsible for adhering to the legal traffic regulations.

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

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



The traffic light kit must correspond to your national traffic law.



Check traffic light kit for proper function



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

### 6.1.1 Adjustments on tractor and fertiliser spreader for transport on public road



Do not exceed the maximum permissible transport width (in Europe 3 m) (e.g. with mounted row spreading attachment [option] according to the traffic law of your country..



When the centrifugal broadcaster is lifted for road transport, the distance between the upper edge of the rear lights and the road surface must never exceed 900 mm.



When driving on public roads with lifted implement lock the control lever against unintended lowering.!



When lifting the fertiliser broadcaster the front axle load of the tractor is relieved by different amounts depending on the size of the tractor. Always check that the necessary front axle load of the tractor (20 % of the tractor's net weight) is maintained.!



## 7. Settings

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

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

Due to varying fertiliser characteristics because of weather influence and/or unfavourable storing conditions, deviations of the physical properties of the fertiliser – also within the same kind and brand – the spreading behaviour of the fertiliser may change and thus deviations from the figures for setting the desired spread rate or working width in the setting chart may become necessary. No guarantee can be given that your fertiliser – even with the same name and from the same manufacturer – has the same spreading behaviour as the fertiliser tested by us.



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



**When spreading with your fertiliser broadcaster use the folding filling sieve against foreign particles.**



## 7.1 Setting the mounting height



Advise people to leave the danger zone behind or underneath the machine as it may swing to the rear and down if the upper link halves by accident are twisted apart or tear off.

Set the mounting height of the filled broadcaster in the field exactly according to the figures given in the setting chart. Measure the distance between soil surface and the spreading disc front and rear side (Fig. 16).

### 7.1.1 Normal fertilising

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

For the spring spreading season, when the crop has grown up to a height of 10 – 40 cm, one half of the crop height should be added to the stated mounting heights (e.g. 80/80). Thus set a mounting height of 95/95 when the crop is 30 cm tall. If the crop stands taller follow the instructions for late top dressing (Kap.7.1.2). If the crop stands very dense (rape) the fertiliser broadcaster should be set with the indicated mounting height (e.g. 80/80) above the crop. If that is no longer possible due to taller crop, then please also follow the instructions for late top dressing.

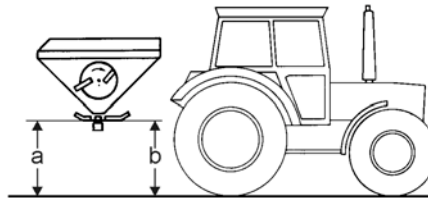


Fig. 16



### 7.1.2 Late top dressing

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

Set the mounting height of the spreader with the aid of the tractor's three-point hydraulic that high that the distance between the top of the grain and the spreading discs is approx.. **5 cm** (Fig. 17), If necessary insert the lower link pins into the lower link pin connections.

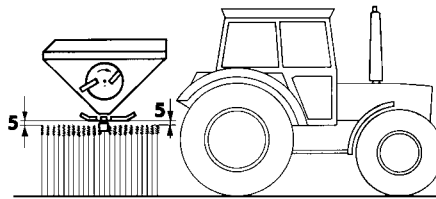


Fig. 17



**In case the PTO shaft universal joint exceeds angles of 25° use a wide angle PTO shaft.**

## 7.2 Setting the spread rate

The shutter slide position for the desired spread rate is set electronically via the two quantity shutters. For this the fertiliser calibration factor is determined by a calibration travel (please refer to instruction book for AMADOS III-D or AMATRON+).

### 7.3 Setting the working width

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

The working width is influenced by the spreading properties of the fertiliser. The main influence factors regarding the spreading properties are grain size, bulk density, surface coating and humidity. Depending in the kind of fertiliser the "Omnia-Set" spreading discs (Fig. 18) allow the setting of varying working widths.

To set the various working widths (distance between the tramlines) the spreading vanes can infinitely variably be swivelled round the pivoting point (Fig. 18/1).

By swivelling the spreading vanes in direction of rotation (Fig. 18/a) of the spreading discs (on to a higher figure on the scale) the working width is increased. When swivelling them against the direction of rotation (Fig. 18/b) the working width is reduced. The shorter spreading vane distributes the fertiliser mainly in the spread pattern centre, while the longer vane mainly spreads onto the outer range.

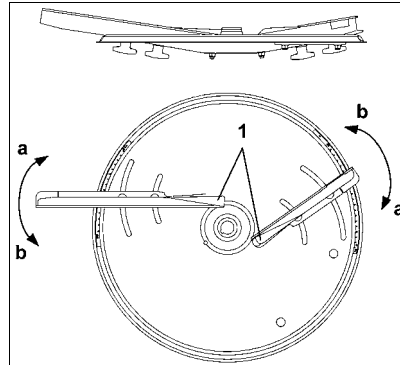


Fig. 18



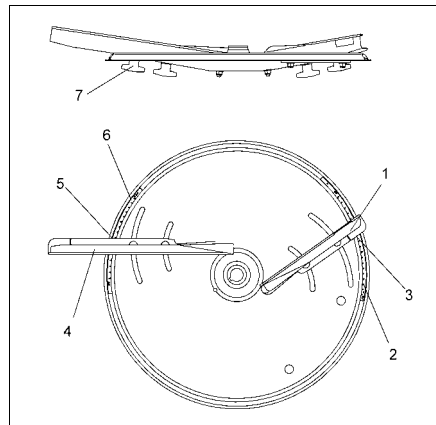
### 7.3.1 Swivelling the spreading vanes

Take from the setting chart the required vane position depending on the kind of fertiliser to be spread and on the desired working width. 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.: 05405/ 501-111 or 501-164**

For the accurate individual spreading vane setting without any tools, various, non-interchangeable scales (Fig. 19/3 and Fig. 19/4) are arranged on the spreading discs.



**Fig. 19**

## Example:

Fertiliser: CAN 27%N gran.  
Hydro Rostock

Spreading disc: OSE 18-28

Working width: 27m

Operational-  
speed 12 km / h

- For fertiliser or trade name, please refer to the setting chart (Fig. 20).
- Read off group of fertiliser.
- For spreading vane position please refer to the right hand side of the table (Fig. 21) (for group 1, working width 27m vane position according to Pos. 70/91)

Fertiliser	Trade name / type	spreading see page	Quantity factor	Group of fertiliser
CAN	CAN 27%N gran. fertiva GmbH	22-24	0.915	1
	CAN 27%N gran. Nitramoncal Agrolinz	22-24	0.915	1
	CAN 27%N gran. Hydro Rostock	22-24	0.915	1
	CAN 27%N gran. Hydro Sluiskil (NL)	22-24	0.915	1

Fig. 20

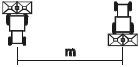
Group of fertiliser						
	18	20	21	24	27	28
1	68/90	68/90	68/90	68/90	70/91	70/91
2	67/91	67/91	67/91	67/91	67/92	67/92
3	71/89	71/89	71/89	71/89	71/89	71/89

Fig. 21

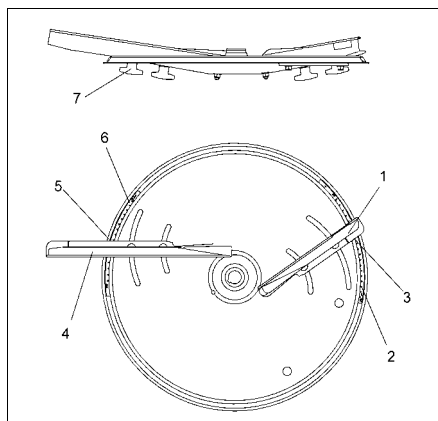
### Set spreading vanes on spreading discs as follows:

Slacken both thumb nuts (Fig. 22/7) beneath the spreading vanes.



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

- Swivel read off edge (Fig. 22/3) of the short vane (Fig. 22/1) on figure "67" of scale (Fig. 22/2) and retighten thumb nut firmly.
- Swivel read off edge (Fig. 22/5) of the long vane (Fig. 22/4) on figure "88" of scale (Fig. 22/6) and retighten thumb nut firmly.



**Fig. 22**

### 7.3.2 Checking the working width with the mobile test kit (option)

The setting values of the setting chart have to be considered as **guide values** only, as the spreading properties of the kinds of fertiliser vary. It is recommended to check the set working widths of the fertiliser broadcaster with the **mobile test kit** (Fig. 23) (option).

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



**Fig. 23**

## 7.4 "Eco" border spreading and border spreading with Limiter Ultra

If the first tramline is created in a distance of half the working width of the fertiliser spreader to the field side, operate with Limiter Ultra as follows:

- Before starting border spreading operation adjust the border spread deflector on Limiter Ultra. The setting depends on the kind of fertiliser, the distance from the border or whether it is intended to do border- or "Eco"-border spreading and can be taken from the table (para.0).
- The following settings have to be carried out:
  - Scale figure ( 0-15 )
  - Symbol "▲" or "◆" (Fig. 24/3)
  - Additional deflector fitted/removed
- For setting the scale loosen the handles (Fig. 24/1), do the setting following the table and tighten the handles again.
- In order to swivel the border spread deflector in- or outwards, loosen the handle (Fig. 24/2 and turn the deflector until the pointer has moved to the "▲" or "◆" symbol. Retighten handles.

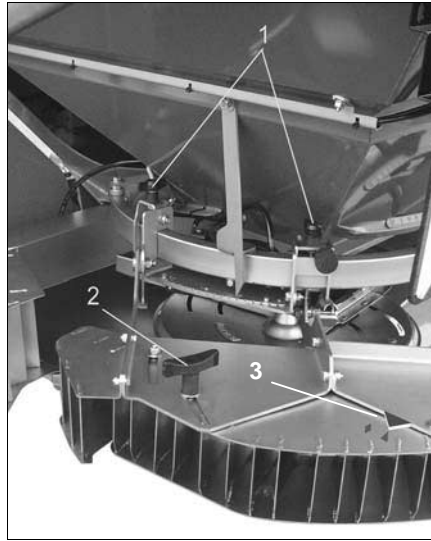
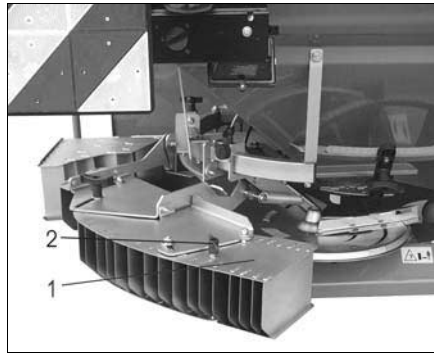
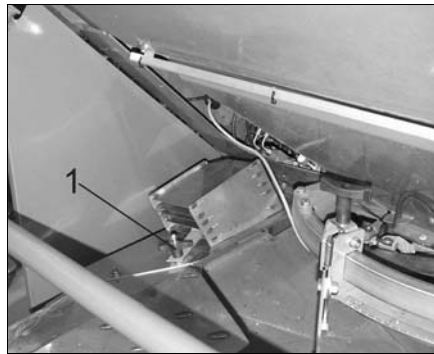


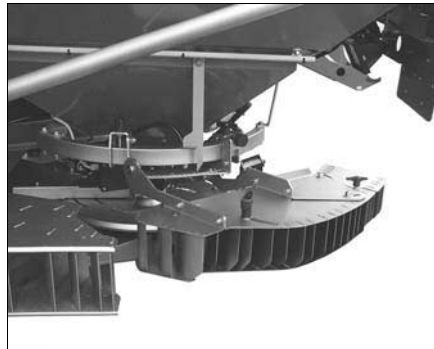
Fig. 24



- For dismantling slacken the thumb bolt (Fig. 25/2, ) and unhook the deflector. Retighten the thumb nut and with the aid of the clamping plate affix the deflector in the parking position.
- Secure the additional deflector (Fig. 25/1) with the clamping plate (Fig. 26/1) and take along in parking position (Fig. 26).
- For fitting hook in the additional deflector again and secure with the aid of the thumb bolt.

**Fig. 25****Fig. 26**

- For operation hydraulically fold down the border spread deflector into operational position (Fig. 27)..

**Fig. 27**






For boundary spreading the pre-set fertiliser spread rate should be reduced by 10 %.



For some working widths, the border spreading has to be done with reduced pto speed.

Please pay attention to the symbol  on page 34.

After having spread the border hydraulically swivel the border spread deflector upwards (Fig. 28) and continue the normal spreading operation.

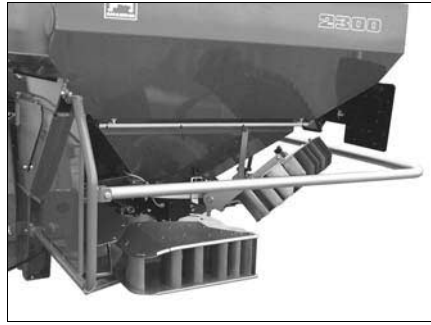






























































































































Fig. 28



7.4.1 Table for border spreading and "eco" border spreading with Limiter-Ultra

	1/2 distance		attach additional deflector
	"Eco" border spreading		swivelled inwards
	Border spreading		swivelled outwards
	Rev. speed change min -1		limiter for side spreading not operating ( swivelled upwards)

Limiter Ultra		OSE 18 - 28					
		9	10	10,5	12	13,5	14
KAS / CAN AN NPK NP DAP / MAP		◆10 	◆11 	◆10 	◆13 	◆9	◆8
		◆4 	◆4 	◆3 	◆1 	◆1	◆0
Harnstoff gran. Urea gran.		◆12 	◆10 	◆9 	◆8 	◆6	◆4
		◆2 	◆1 	◆1 	◆0 	Δ1 	Δ0 
Harnstoff gepriilt Urea prills		◆4 	◆3 	◆2 	◆0 	◆0 	◆0 
		Δ0 	Δ0 	Δ0 	X 	X 	X 
P K PK MgO		◆7 	◆5 	◆5 	◆10 	Δ12 	Δ12 
		◆4 	◆2 	◆2 	◆1 	Δ1 	Δ1 

Limiter Ultra		OSE 27- 48										925307
		13,5	14	15	16	18	20	21	22	22,5	24	
KAS / CAN AN NPK NP DAP / MAP		◆9 	◆8 	Δ15 	Δ13 	Δ8 	Δ8 	Δ7 	Δ7 	Δ7 	Δ6 	
		Δ5 	Δ4 	Δ1 	Δ0 	Δ0 	Δ0 	Δ0 	Δ0 	Δ0 	Δ0 	
Harnstoff gran. Urea gran.		◆6 	◆4 	◆4 	◆2 	◆0 	◆0 	◆0 				
		Δ1 	Δ0 	Δ0 	Δ0 	Δ0 	Δ0 	Δ0 				
Harnstoff gepriilt Urea prills		Δ6 	Δ4 	Δ0 	Δ0 	Δ0 						
		X 	X 	X 	X 	X 						
P K PK MgO		Δ14 	Δ14 	Δ12 	Δ9 	Δ5 	Δ4 	Δ3 				
		Δ3 	Δ3 	Δ1 	Δ1 	Δ1 	Δ0 	Δ0 				



## 8. Operation



Never reach into the rotating agitator spiral.



At new machines after 3 – 4 hopper fillings check nuts and bolts regularly for tightness and retighten if necessary.



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



When spreading mixed fertilisers mind that

- the individual kinds may have different spreading properties.

a demixing of the individual kinds may occur.



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

### 8.1

### Filling the centrifugal broadcaster



Before filling ensure that there are no residue or foreign particles in the hopper.



Before filling the spreader attach the folding sieve to sort out foreign particles.



When filling the spreader ensure that there are no foreign particles in the fertiliser.



Observe the permissible payload of the spreader (please refer to technical data) and the axle loads of the tractor.



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, please also refer to the instruction manual of the vehicle manufacturer) is maintained. If necessary apply front weights.



Before filling the hopper the shutters must be closed.!



Strictly follow the safety advice of the fertiliser manufacturer.

## 8.2 Spreading operation



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



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



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



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



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



The life span of the spreading vanes depends on the kinds of fertiliser used, the operation times and quantities spread.



### 8.3 Recommendations for broadcasting on the headlands

Precondition for an accurate broadcasting at field borders or field sides is the correct creating of tramlines. By using the border spread deflector **Limiter Ultra** the first tramline (Fig. 29/T1) is usually always created in a distance of half the tramline spacing to the field side (see para. 7.4). In the same way, such a tramline is created on the headlands. As a check a further tramline (broken line) on the headlands is very helpful – with full spacing of one working width.

Following the advice given in para. 7.4 drive along the field in the first tramline in clockwise direction (right hand turn). After this course round the field disengage Limiter (fold upwards).

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

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

**Open the shutter** when "driving up" approx. **on point P1** (Fig. 30), when the spreader is in line with the 2<sup>nd</sup> tramline on the headlands (broken line).

**Close the shutter** when "driving down" **on point P2** (Fig. 30), when the spreader is in line with the 1<sup>st</sup> tramline on the headlands.

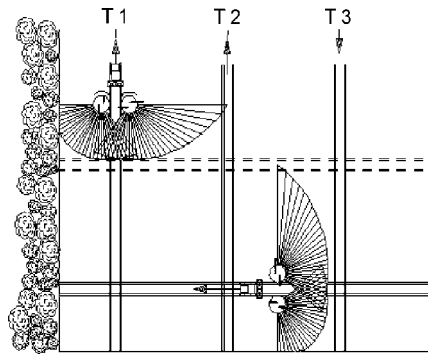


Fig. 29

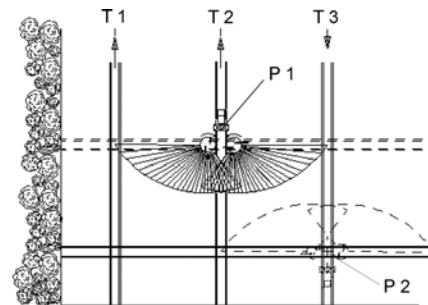


Fig. 30



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

## 8.4 Exchanging the spreading discs

- Fold upwards the guard tube (Fig. 31).
- Remove the thumb nut (Fig. 32/1).
- Turn the spreading disc until the disc hole  $\varnothing$  8 mm faces to the implement centre.
- Pull off the spreading disc from the gearbox shaft.
- Set up other spreading disc.
- Fix spreading disc by tightening the thumb nut..



**When setting up spreading discs do not mix up "left hand" and "right hand". The spreading discs are labelled (Fig. 32/2) accordingly.**



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



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



Fig. 31

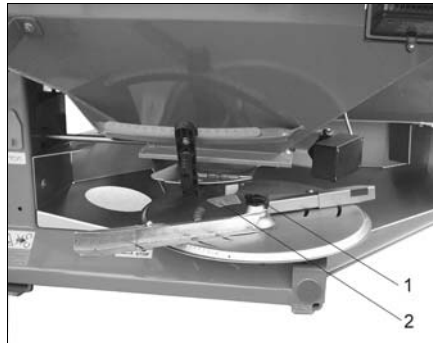


Fig. 32



## 9. Cleaning, maintenance and repair



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



After disengaging the PTO shaft the mounted implement may still continue to run by its dynamic masses. Begin any 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 machines 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.**

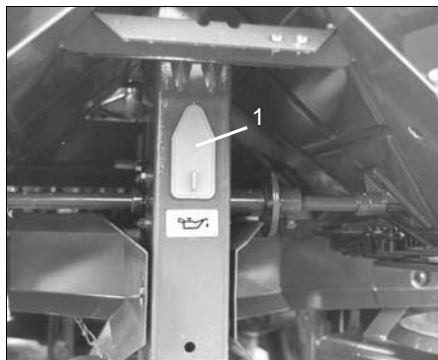


Fig. 33



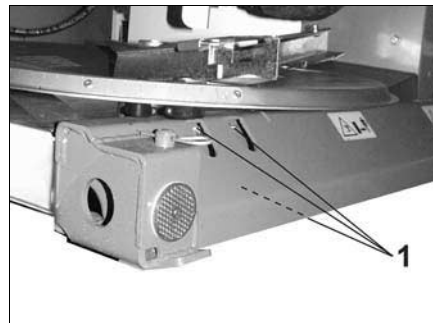
- Clean and grease agitator shaft and drive chain (Fig. 33/1).
- When parking the machine deposit the PTO shaft in the catching hook.
- The technical condition of the spreading vanes essentially influences the even lateral fertiliser distribution in the field (creation of stripes). The spreading vanes have been manufactured from especially wear resistant and non corrosive steel. However, it is indicated that the spreading vanes are wearing parts. Exchange spreading vanes as soon as breakage by wear are noticeable. The life span of the spreading vanes depends on the kinds of fertiliser used, on the operation times and quantities spread.
- Under normal conditions input- and angular gearbox are maintenance-free. The gearboxes are supplied with sufficient gear oil by the manufacturer. A refilling of oil usually is not necessary. External symptoms, e. g. fresh oil spots on the parking place or on machine parts and/or loud noise development, however, indicate an oil leakage of the gearbox housing. Search for reason, care for remedy and fill in oil.

## Oil quantity:

**Input gearbox: 0,4 l SAE 90 gear oil**

- **Angular gearbox: each 0,15 l SAE 90**

After approx. 10 hours of operation check the bolts (Fig. 34/1 ) on the angular gearbox for firm seating. ( Torque 60 Nm.)



**Fig. 34**



## 9.1 Setting and maintenance of the weighing technique

### 9.1.1 Check the horizontal position of leaf springs and bearing bracket

The leaf springs (Fig. 35/1) and bearing brackets (Fig. 35/2) should be in horizontal position as otherwise the measuring result would be distorted.

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

After a spread fertiliser quantity of approx. 10 000 kg the micrometer gauge (Fig. 35/4) might have set or worked into the rest block (Fig. 35/3). This may cause the leaf springs to dislocate from the horizontal position.

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



**Align leaf springs and bearing brackets only when the hopper is empty.!**

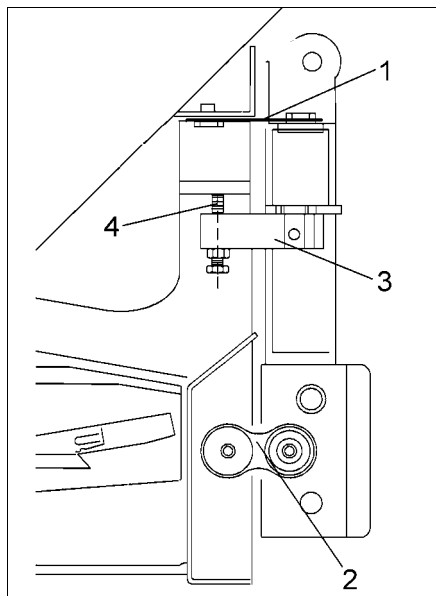


Fig. 35

You will find the micrometer gauge (Fig. 36/1) in the centre underneath the frame of the spreader in the weigh cell.

For this:

- Slacken counter nut (Fig. 36/2)
- Readjust micrometer gauge (Fig. 36/1)

Retighten counter nut (Fig. 36/2)



**After settings on the micrometer gauge of the weigh cell calibrate the spreader again (please refer to instruction manual of AMADOS III-D or AMA-TRON+).**



**Then please note para. 9.1.2**

## 9.1.2 Setting the clearance on the limiting bolts

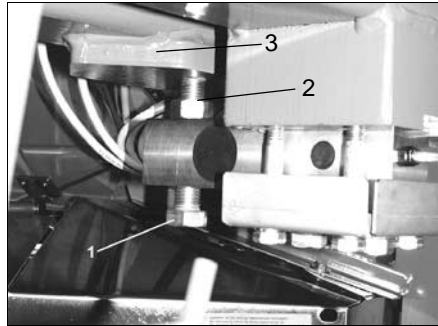
Set the limiting bolts (Fig. 37/1) with a clearance of 2 mm according to illustration

They are located on the left and right hand side of the spreader frame.

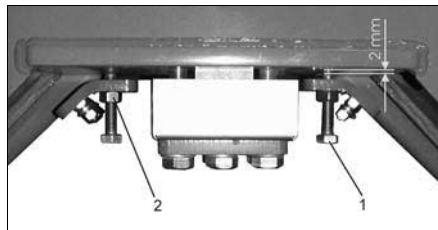
For this:

- Slacken counter nut (Fig. 37/2)
- Set the limiting bolts (Fig. 37/1)
- Retighten counter nut (Fig. 37/2)

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



**Fig. 36**



**Fig. 37**



### 9.1.3 Counterbalancing the spreader

If the fertiliser hopper is empty and AMADOS III-D or the AMATRON+ do not show a filling weight of 0 kg (+/- 5 kg) carry out a fresh balancing (please refer to instruction manual AMADOSIII-D or AMATRON+).

This might occur, e.g., when special options have been fitted.

### 9.1.4 Calibrating the spreader

If – after filling - the counterbalanced spreader does not show the correct filling weight the spreader must be calibrated once more (please refer to instruction book for AMADOS III-D or AMATRON+).

## 9.2 Shear off safety for PTO shafts and agitator shaft drive

- The separately supplied **bolts 8 x 30, DIN 931, 8.8** are **exchange bolts for fixing the PTO shaft yoke on the flange** of the gearbox input shaft. Always apply grease when fitting the PTO shaft to the gearbox input shaft.
- Agitator spiral clip (Fig. 38/1) serve as shear off safety for the agitator shaft.

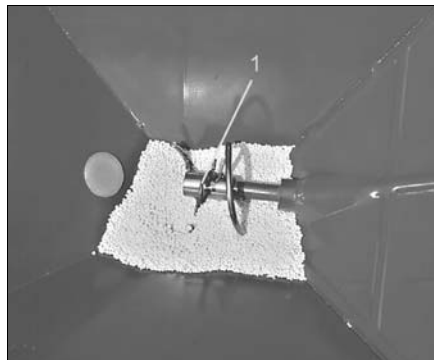


Fig. 38

## 9.3 Exchanging spreading vanes

- Slacken self-locking nut (Fig. 39/1).
- Remove washer and flat mushroom head bolt (Fig. 39/2,3).
- Slacken thumb nut (Fig. 39/4) and exchange spreading vanes.
- Fitting the spreading vanes is done in vice versa order.
- Tighten the self locking nut (Fig. 39/1) in such a way that the spreading vane can be swivelled by hand.

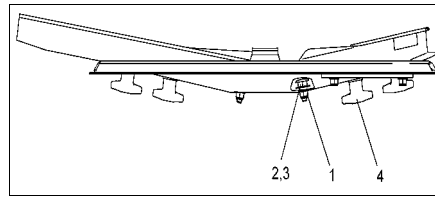


Fig. 39



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

## 9.4 Dismantling PTO shaft

- Slacken tapered grease nipple in the connecting yoke of the PTO shaft – by opening under side of the protective cone.
- Remove shear bolt between yoke flange and PTO shaft and flange of the gearbox input shaft.
- With the aid of a flat bar push the connecting yoke off the gearbox input shaft from the rear through the slit in the protective cone rear wall (on the hopper under side).



**When pushing the connecting yoke off the gearbox input shaft repeatedly slightly twist the PTO shaft.**



## 10. Special options

### 10.1 Spreading discs "Omnia-Set"

#### 10.1.1 Spreading disc pair "Omnia-Set" OSE 27-48

For working widths or tramline spacings of 28 m to 48 m. Order No. 924725.

#### 10.1.2 Spreading disc pair "Omnia-Set" OSE 18-28

### 10.2 Transport- and parking device (detachable)

The detachable transport- and parking device (Fig. 40) allows a comfortable coupling to the three-point hydraulic of the tractor and an easy manoeuvring in the yard and inside buildings .

Order No.: 914 192



**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.**

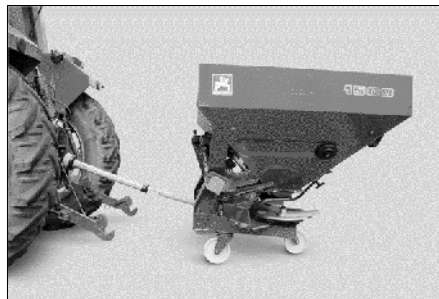


Fig. 40

### 10.3 Folding hopper cover

Also in wet weather conditions, the folding hopper cover guarantees dry spreading material. For filling the hopper cover is simply folded upwards.

Order No.: 924297

### 10.4 Extension S 600

Order-No.: 924294

### 10.5 Mobile fertiliser test kit for checking the working width

Please refer to para. 1.1.1 – checking the working width with the aid of the mobile fertiliser test kit.

Order No.: 125 900

### 10.6 PTO shaft with friction clutch

If the shear bolt between connecting yoke and gearbox input shaft flange and on tractors with roughly engaging tractor PTO repeatedly shears off, the Walterscheid PTO shaft with friction clutch (Fig. 41) is recommended.

Order No.: EJ 281



### Fitting

- Remove PTO shaft supplied as standard (please refer to para.).
- Loosen and pull off the fitted protective cone from the gearbox extension.
  - Lift the twisting protection.
  - Twist and pull off the protective cone.



**Replace the protective cone by the supplied longer protective cone (accident prevention).**

- Remove yoke flange from gearbox input shaft.
- Clean gearbox input shaft.
- Slacken counter nut (Fig. 41/1) in connecting yoke from friction clutch (until the grub screw does not protrude the counter nut outside any longer). Drive out inner hex. grub screw (Fig. 41/2) and check whether

the connecting yoke can easily be pushed onto the PTO shaft.

- Pull connecting yoke off the gearbox input shaft again.
- Set protective cone on the gearbox extension and lock by twisting.

Push connecting yoke (Fig. 41/3) with grease applied until the stop of the gearbox input shaft (Fig. 41/4) .

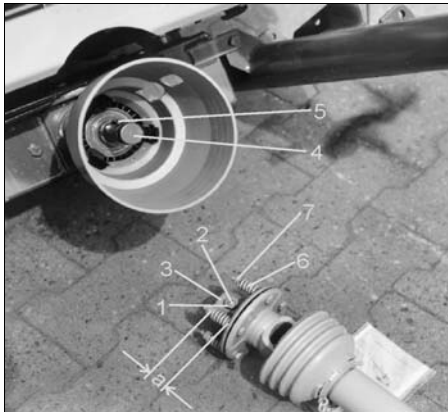


**Take care for a complete covering of the feather key (Fig. 41/5) .**

- Secure special PTO shaft against axial displacement. To do this firmly tight the threaded pin by using the Allen key and secure using a counter nut (Fig. 41/1) .



**Before the first operation and longer periods of stand still "air" the friction clutch.**



**Fig. 41**



## Dismounting

- Slacken counter nut (Fig. 42/1) in connecting yoke from friction clutch. Drive out grub screw (Fig. 42/2).
- With the aid of a flat bar push the connecting yoke of the gearbox input shaft from the rear through the slit in the protective cone rear wall (on the hopper under side).

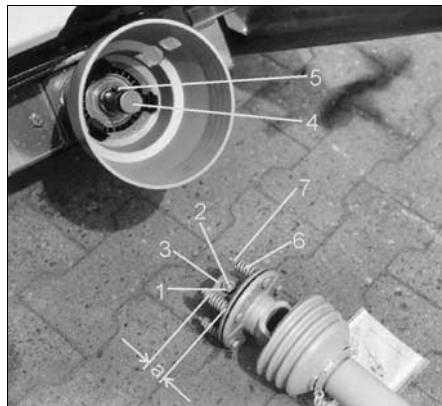
## Functioning and maintenance of friction clutch

Short-time torque peaks of above **approx. 400 Nm**, as they might occur for example when engaging the PTO shaft, are limited by the friction clutch. The friction clutch prevents damage on PTO shaft and gearbox elements. Therefore, the function of the friction clutch has always to be assured. A baking of the friction linings by corrosion prevent an actuation of the friction clutch. For this reason **"air" the friction clutch after a**

**longer period of standstill or before the first operation:**

- Remove friction clutch from gearbox input shaft.
- Relief springs (Fig. 42/6) by slackening the nuts (Fig. 42/7).
- Fully turn the clutch by hand. Hereby any baking by rust or humidity between the friction linings will be loosened.
- Tighten nuts that much that the pressure springs have the prescribed fitting length of **a = 26,5 mm**.
- Push friction clutch on to gearbox input shaft and fix. The friction clutch is now ready for operation again.

**High air humidity, strong pollution or cleaning the machine with a high pressure cleaner increase the danger of baking of the friction linings.**



**Fig. 42**



### **10.7 PTO shaft W 100E-810**

(standard PTO shaft) **Order No.: EJ 280**

### **10.8 PTO shaft W TS100E-810**

Telespace telescopic. **Order No.: EJ 296**

## **11. Operation in the event of electrical failure**

In the event of electrical faults occurring on AMADOS III-D or on the AMATRON+ or the electric servo- motors, the operation can be continued even if the fault cannot be remedied straight away (please refer to the instruction manual for AMADOS III-D or the AMATRON+).

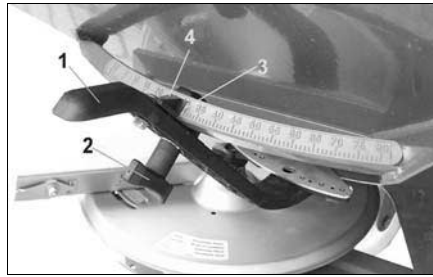
## 11.1 Setting the spread rate

**Set the spread rate with the mounted machine, disengaged drive and closed shutters.**

The necessary **shutter position** for the **spread rate** is set with the aid of the two setting levers (Fig. 43/1).

- Take off the setting motors and install the clamping device of the setting levers (please refer to the instruction manual for AMADOS III-D or AMATRON+).
- Slacken thumb nut (Fig. 43/2) of the setting levers (Fig. 43/1).
- Set the read off edge (Fig. 43/3) of the setting lever pointer (Fig. 43/4) to the relevant shutter position.

Retighten thumb nut firmly.



**Fig. 43**



**Setting operation, mantling or dismantling of spreading discs or attaching or removing of the collection bucket may only be carried out with disengaged PTO shaft, switched off motor and removed ignition key.**



**Setting operation, mantling or dismantling of spreading discs or attaching or removing of the collection bucket may only be carried out with disengaged PTO shaft, switched off motor and removed ignition key.**









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**EG-Konformitätserklärung**

entsprechend der EG-Richtlinie 98/37/EG

**Déclaration de conformité pour la CE**

conforme à la directive de la CE 98/37/CE

**EC Declaration of Conformity**

according to Directive 98/37/EC

**EG-Conformiteitsverklaring**

overeenkomstig Richtlijn 98/37/EG

Wir erklären in alleiniger Verantwortung, daß das Produkt / Nous déclarons sous notre seule responsabilité que le produit / We declare under our sole responsibility, that the product / Wij verklaren enig in verantwoording, dat het produkt

**Zentrifugaldüngerstreuer / Epandeur centrifuge**

Fabrikat / marque / make / merk

**Twin Disc Centrifugal Broadcasters / Centrifugaalstrooiers**

Fabrikat / marque / make / merk

**ZA-M Ultra**

Typ / modèle / model / type

auf das sich diese Erklärung bezieht, den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Richtlinie **98/37/EG** sowie den Anforderungen der EG-Richtlinie **89/336/EEG** (EMV-Richtlinie) entspricht.

faisant l'objet de la déclaration est conforme aux prescriptions fondamentales en matière de sécurité et de santé stipulées dans la Directive de la CEE **98/37/CE** ainsi qu'aux prescriptions de la Directive de la CEE **89/336/CEE**.

to which this declaration relates corresponds to the relevant basic safety and health requirements of the Directive **98/37/EC** and of the Directive **89/336/EEC**.

waarop deze verklaring betrekking heeft, beantwoordt aan de van toepassing zijnde fundamentele veiligheids- en gezondheidseisen van de richtlijn **98/37/EG**, en aan de eisen van de richtlijn **89/336/EEG** van toepassing zijn.

Hasbergen,  
27.02.02

**ppa Dr. Bernd Scheufler**

(Leiter Entwicklung / directeur technique /  
director of development / directeur ontwikkeling)

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