

AMAZONE

Operation Manual

Centrifugal Broadcaster

ZA-X Perfect 02



MG 493
DB 537.1 (GB) 12.02
Printed in Germany



Before starting work,
please carefully read
and adhere to this op-
eration manual and
safety advice!



Preface

Dear Customer,

The centrifugal broadcasters **ZA-X Perfect 02** 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-X Perfect 02**.

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D-49502 Hasbergen-Gaste
Germany
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1. Details about the machine

1.1 Range of application

The centrifugal broadcaster ZA-X Perfect 02 has been designed for spreading dry, granular, prilled and crystalline fertilisers as well as for seeds and slug pellets.

1.2 Manufacturer

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

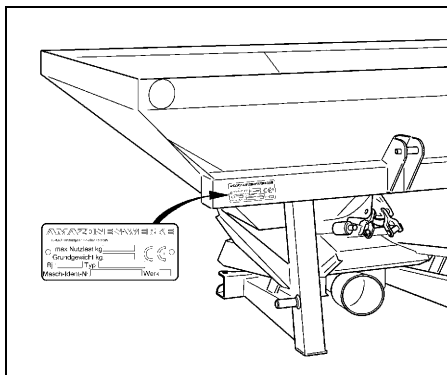
When ordering options or spare parts the machine type and the serial number of the spreader have to be included.



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.



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



1.6 Technical data

ZA-X Perfect	Typ	602	602+ S250	902	902+ S350	1402	1402+S 350
Hopper capacity	[l]	620	85	900	1250	1400	1700
Payload	[kg]	1800	1800	1800	1800	1800	1800
Net weight	[kg]	195	220	205	235	225	250
Filling height	[m]	0,91	105	0,97	1,13	1,16	1,32
Filling width	[m]	1,40	1,40	1,91	1,91	1,91	1,91
Length	[m]	1,23	1,23	1,30	1,30	1,30	1,30
Width	[m]	1,50	1,50	2,02	2,02	2,02	2,02
Total height	[m]	0,93	1,05	0,99	1,15	1,18	1,34
Power requirement	[kw]	30	30	42	65	65	75

1.6.1 Operational data

Number of revolutions of pto shaft: **540 1/min.**

(Observe data in the setting chart).

Max. working pressure of hydraulic system: **230 bar.**

1.6.2 Hydraulic system

For the hydraulic single shutter control two single acting spool valves on the tractor are required.

If the tractor is provided with only one single acting spool valve, a two-way valve unit is required for the hydraulic single shutter actuation (option).

1.6.3 Details about noise level

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

Measuring implement: OPTAC SLM 5.

The value of the sound pressure level mainly depends on the vehicle used.



1.7 Declined use of the machine

The centrifugal broadcaster **AMAZONE ZA-X Perfect 02** 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 (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 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. 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-X Perfect 02 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

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 its 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:

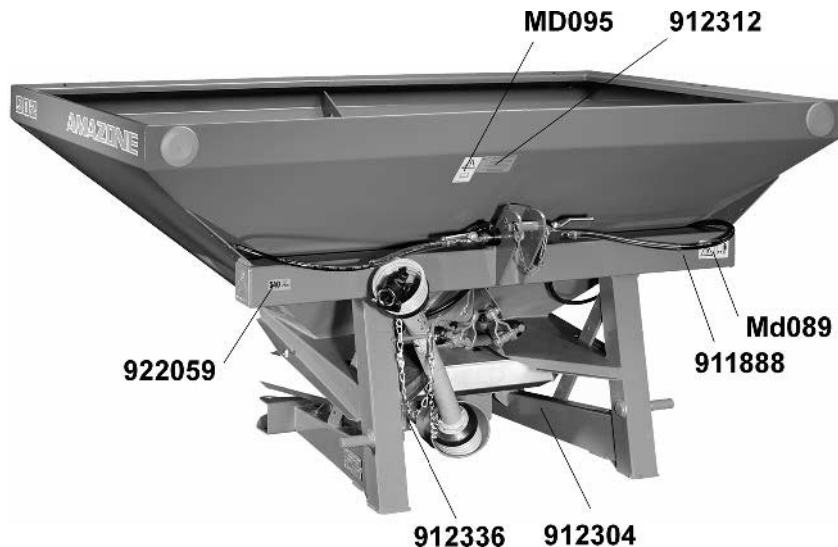


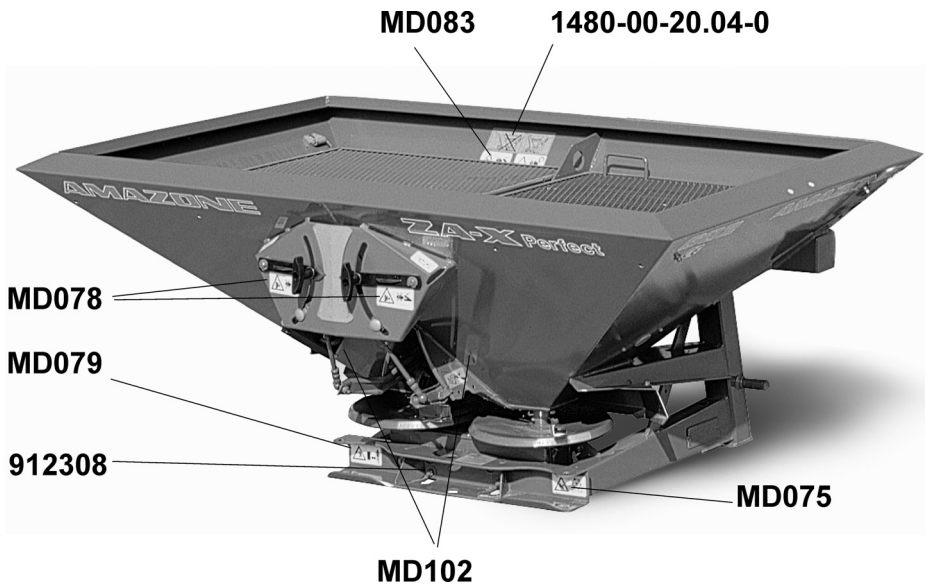
2.3.4 Warning pictographs and hint symbols on the machine

- 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. ZA 003 and Fig. ZA 004 show the fixing points of warning pictographs and hint signs. Please refer to the following pages for relevant explanations





Picture No.: 912 304



- (D)** Gelenkwellenlänge beachten (sonst Getriebeschaden). 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.

912 304

Picture No.: 912 336



D

Zapfwelle nur bei niedriger Motordrehzahl einkuppeln.
Bei Überlastung schert die Sicherungsschraube ab.
Bei häufigem Abscheren Gelenkwelle mit Reibkupplung einsetzen.

F

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.

GB

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.

NL

Aftakas alleen bij laag motortoerental inkoppelen.
Bij overbelasting breekt de breekbout af.
Bij dikwijls breken een aftakas met slipkoppeling toepassen.

912 336

Picture No.: 912 312



D

1. Vorderachsentslastung des Schleppers beachten.
2. Rührfinger, Auslauföffnungen und Streuschaufeln sauber und funktionsfähig halten.

F

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

GB

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

NL

1. Op de vooras ontlasting van de traktor letten.
2. Roerdervingers, uitloop-openingen en strooischoepen schoon en bedrijfs gereed houden.

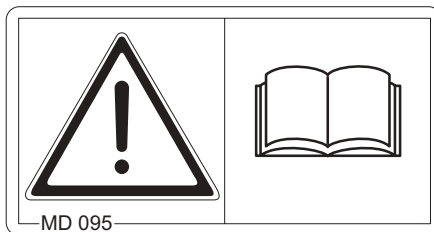
912 312



Picture No.: **MD 095**

Explanation:

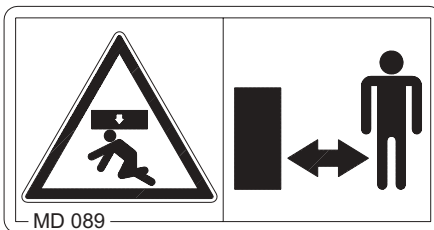
Before commencing work read the operation manual and safety advice thoroughly!



Picture No.: **MD 089**

Explanation:

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



Picture No.: **911 888**

Explanation:

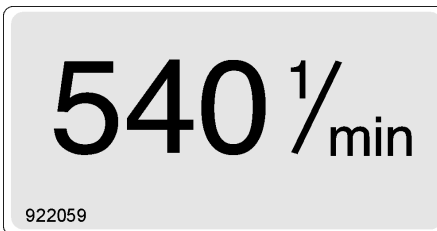
The CE-mark indicates, that the machines fulfills the requirements of the EC-guide lines Machine 89/392/EWG and the corresponding additional guide lines.



Picture No.: **922 059**

Explanation:

Max. pto shaft speed 540 R.P.M..

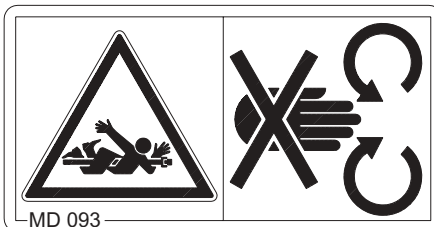


Picture No.: **MD 093**

Explanation:

Danger by rotating machine parts!

Never touch rotating shafts, spreading discs etc.!

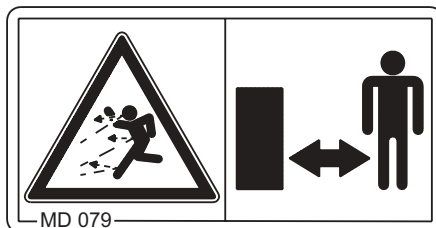


Picture No.: **MD 079**

Explanation:

Danger because of flung fertilizer particles!

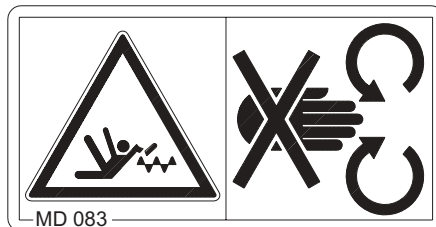
Advise people to leave the danger area



Picture No.: **MD 083**

Explanation:

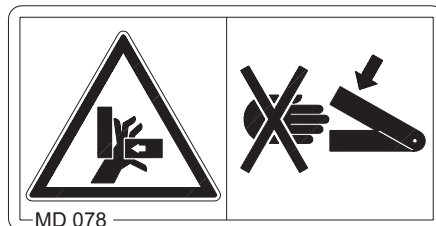
Never reach into the rotating agitator spiral!



Picture No.: **MD 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 075**

Explanation:

Do not stay within the zone of spinning spreading discs!

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

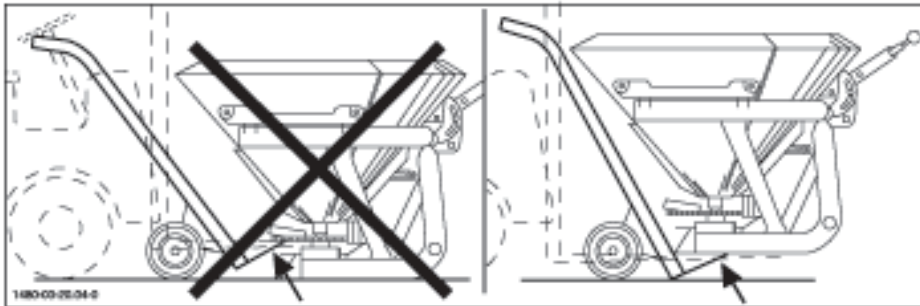
Disengage pto-shaft, stop the engine,
and remove the ignition key before ex-
changing the spreading discs!



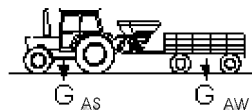
Picture No.: 1480-00-20.04-0

Explanation:

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



Picture No.: 912308



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

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



- (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-kabeltrekrem.



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.**

		Payload
ZA-X Perfect	602	1800 kg
ZA-X Perfect	902	1800 kg
ZA-X Perfect	1402	1800 kg
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 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 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, close shutters and disengage pto (while travelling 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 execute a short spreading on the spot only now, after having set the shutters onto the desired spreading rate start spreading.
35. If spreading on field boundaries, waters or roads use the boundary spread deflector!
36. **Before any operation check for a perfect seat of fixing parts, especially for spreading disc- and spreading vanefixing.**
4. When actuating the control levers for the three-point 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!

2.5.2 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-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!

2.5.3 General safety and accident preventive advice regarding the pto shaft

1. Use only pto shafts which are designed for the implement and which are equipped with all legally requested guards!
2. Guard tubes and cones of the pto shaft as well as tractor and implement pto guards must be fitted and kept in the correct place.
3. Note the described pto-shaft tube guards in transport- and operating position (refer to operation instruction of the pto shaft manufacturer).
4. Mounting and dismounting pto shaft only with disengaged pto shaft, stopped motor and removed ignition key!
5. Always care for correct fitting and securing of pto shaft!
6. Prevent pto guard from spinning by fixing the chains provided.



7. Before engaging the pto shaft ensure that the chosen pto-speed of the tractor corresponds to the allowable implement input speed. Usually the pto shaft speed is 540 R.P.M. (please refer to details in the spreading chart).
8. Slow engagement of the pto shaft protects tractor and spreader.
9. When using the ground speed related pto shaft note that the speed is related to the forward speed and that the sense of rotation reverses when backing up.
10. Before switching on the pto shaft nobody is allowed to stand in the area of the spinning pto- or universal joint shaft!
11. Never switch on the tractor pto while the engine is stopped!
12. When operating with the pto shaft nobody is allowed to stand in the area of the spinning pto- or universal joint shaft!
13. Always switch off pto shaft when it is in an adverse position or not needed. Switch off pto shaft as soon as the machine's outlet openings have been shut off.
14. Attention! After switching off the pto shaft the mounted implement may still continue to run by its dynamic masses. During this period never come too close to the implement. Begin work only after the implement has come to a full standstill.
15. Clean and grease the universal joint shaft and the pto-driven implement only after the pto shaft and engine have been stopped and ignition key removed.
16. Deposit removed pto shaft on the provided carrier!
17. After removal of the pto shaft replace protective cap over the tractor's pto.

18. Remedy of damages is to be undertaken before starting to operate with the implement.

2.5.4 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. Regularly check hydraulic hoses and exchange in case of damage or aging. The replacement hoses have to 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.
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.

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 make 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.



3. Description of product

The centrifugal broadcaster ZA-X Perfect 02 has been designed for mounting to the rear three-point-hydraulic (Cat. II) of the tractor. Cat. I on request.

The spreader consists of four assembly groups:

- Frame (Fig. 1/1)
- Hopper, with two tips (Fig. 1/2)
- Gear box (Fig. 1/3)
- two "Omnia-Set" spreading discs (Fig. 1/4).

As standard the centrifugal broadcaster is equipped with:

- "Omnia-Set"-spreading discs and swivel blades for late top dressing.
- Hydraulic single shutter control for individual actuation of the shutters.
- Agitator head disengagement, for switching off the agitator head when spreading to one side.
- One "Tele-Quick"-border spreading vane (Fig. 1/5) for boundary spreading according to law of fertilising or boundary spreading.



Fig. 1

3.1 Function

The spreading material slides along the hopper walls to the outlet (1). Disengageable agitator heads (2) at the base of the hopper provide even fertiliser delivery to the spreading discs.

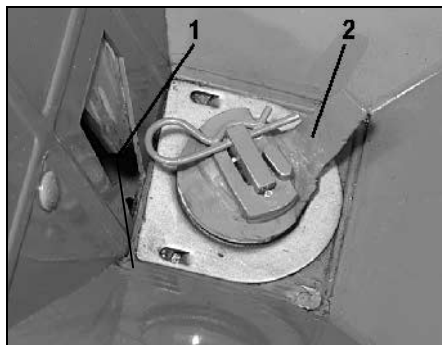


Fig. 2

The "Omnia-Set" spreading discs (Fig. 3/1) rotate in the arrow direction and are each equipped with a short (Fig. 3/2) and a long (Fig. 3/3) spreading vane.

ling spreading vanes is done according to the data in the setting chart. The relevant **setting values** are read off the **scales** (Fig. 3/4).

By **swivelling the spreading vanes** on the spreading discs the **working widths** can be varied between **10 and 18 m** - dependent on the relevant kind of fertiliser. The setting of the steplessly swivel-

An upward swivelling of the the swivel blades supplied as standard (Fig. 3/5) provides a conversion for late top dressing without any tools.

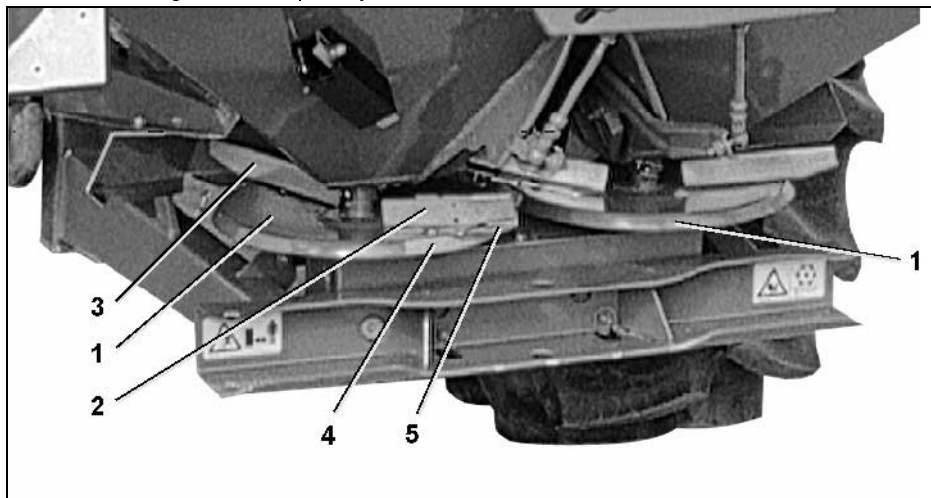


Fig. 3

The **spread rate setting** is done via the setting levers (Fig. 4/1) (setting levers are the stop for the shutter slides). The relevant **shutter slide position** can be taken from the **setting chart**. The **shutter slide position** can be read off the **Scale** (Fig. 4/2).

The shutter slides are shut via hydraulic rams and opened by tensioning springs.

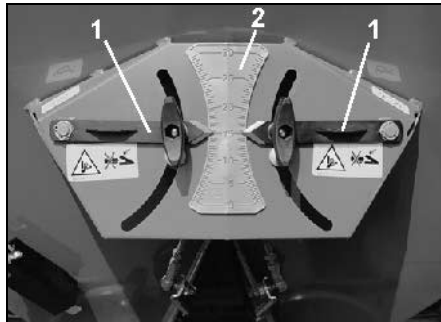


Fig. 4

3.2 Guard screen inside the hopper (ZA-X 900,1400)

The foldable guard screens cover the entire hopper and serve as

- protection against touching the rotating agitator spiral.
- protection against foreign particles during the filling procedure.

Fig. 5/...

- (1) Guard screen
- (2) Grip with guard screen locking device
- (3) Lock for open guard screen
- (4) Unlocking tool

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

Unlocking tool in:

- (Fig. 6/1) parking position (standard position)
- (Fig. 7/1) Unlocking position to swivel the guard screen upwards

Opening the guard screen:

1. Re-insert the unlocking tool from the parking position into the unlock position.
2. Take hold of the grip and turn the unlocking tool in direction of the grip (Fig. 7).

→ Guard screen locking device unlocked.

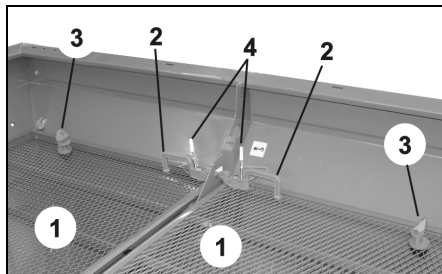


Fig. 5

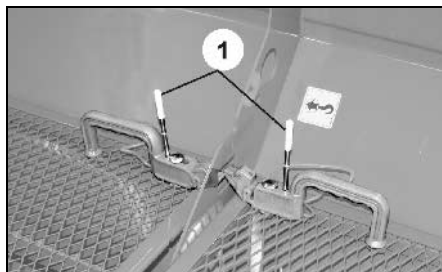


Fig. 6

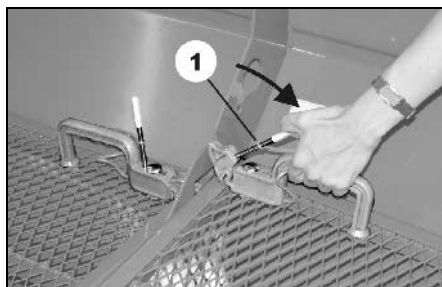


Fig. 7



3. Fold the guard screen upwards until the locking device catches.
4. Get the unlocking tool into the parking position.



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



- Prior to closing the guard screen press down the locking device (Fig. 8).
- During the closing procedure the guard screen locks automatically.

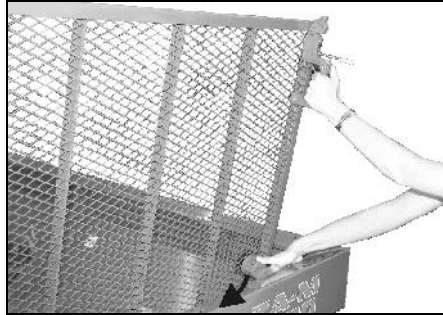


Fig. 8

4. On receipt of the machine

The scope of delivery consists of the centrifugal broadcaster (Fig. 9/1) and the pto shaft (Fig. 9/2).

Check completeness of the machine according to the delivery note Check parts for transport damages.



The centrifugal broadcasters **AMAZONE ZA-X Perfect 02** are always equipped with spreading discs "Omnia-Set" and the swivel spreading vanes (Fig. 10/2 and Fig. 10/3).



Check the correct fitting of the scales (Fig. 10/4 and Fig. 10/5) on the spreading discs. The scales on the left hand spreading disc are marked with "left hand" [links] and on the right hand one with "right hand" [rechts]. The scales (Fig. 10/4) with the figures of 0 to 20 belong to the shorter spreading vanes (Fig. 10/2) and the scales (Fig. 10/5) with the figures of 30 - 50 to the longer spreading vanes (Fig. 10/3).



Check the correct fitting of the spreading discs. Seen in rotating direction (Fig. 10/6) the agitator finger (Fig. 10/7) is situated above the shorter spreading vane (Fig. 10/2).



Fig. 9

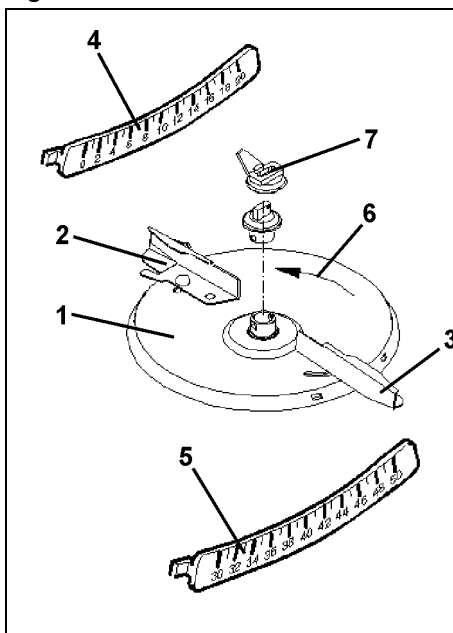


Fig. 10

4.1 Control of function

After receipt of the machine (Fig. 11/1) check for proper function.

For checking the function turn by hand (Fig. 11/1) the gearbox input shaft.

Check lubrication of the pto shaft (Fig. 11/2) and the oil level in the gear box (see para.8.2.3).



Fig. 11

4.2 Fitting the pto shaft



Danger of tipping over!

Only mount centrifugal broadcaster in unladen state!



Only use the pto shaft prescribed by the manufacturer.
Walterscheid-pto-shaft
(W100E SD05-710).



Observe the instruction manual of the pto-shaft manufacturer

- Remove fixing bolt (Fig. 12/1).

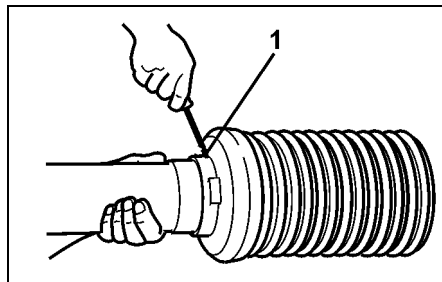


Fig. 12

- Twist cone (Fig. 13/1) into fitting position (Fig. 13/2).

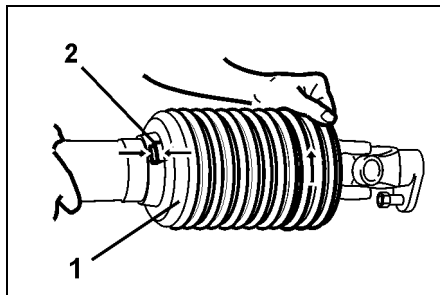


Fig. 13

- Pull off (Fig. 14/1) protective half.
- Tilt machine to the rear.



Before fitting the pto shaft grease gearbox input shaft.

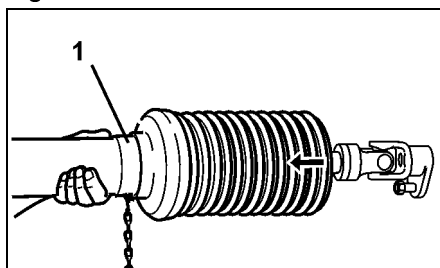


Fig. 14

- Slacken grease nipple (Fig. 15/1).
- Push on pto shaft (Fig. 15/2).
- Affix connecting yoke (Fig. 15/3) with shear bolt (Fig. 15/4).
- Tighten grease nipple (Fig. 15/1).

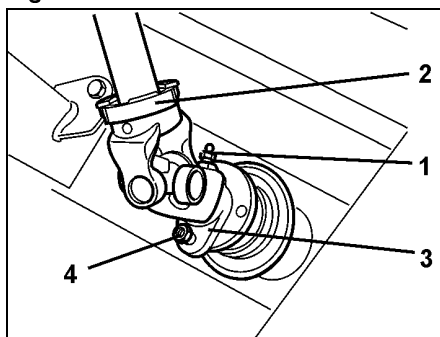


Fig. 15

- Push on protection half (Fig. 16/1).
- Twist guard cone (Fig. 16/2) into fitting position.
- Screw in lock bolt (Fig. 16/3).
- Tilt machine to the front.

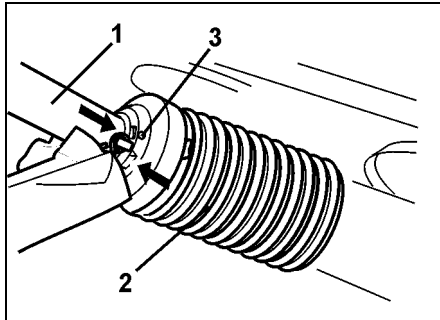


Fig. 16

- Push on second pto shaft half (Fig. 17/1) and place in retainer (Fig. 17/2).
- Secure guard tube with chain (Fig. 17/3) on the provided fixing eye (Fig. 17/4).

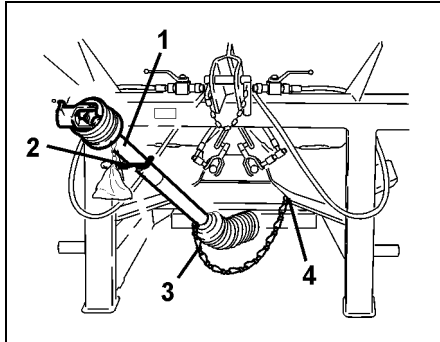


Fig. 17



5. Mounting and dismounting the centrifugal broadcaster



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 your centrifugal broadcaster only with an empty hopper.



Operations on the centrifugal broadcaster may only be executed with engine switched off and pressureless 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 linking up observe sufficient space for movement of the the lower links.



Danger of tipping over!

Lift machine only with attached upper link



5.1 Mounting

Mount the broadcaster to the **rear three-point hydraulic** (Cat. II) of the tractor (please also refer to para.2.5.2).

- Push lower link of the tractor onto the lower link pin (Cat. II) (Fig. 18/1) and secure with clip pin.
- Fix upper link with fixing pin (Cat. I or II) (Fig. 18/2) and secure

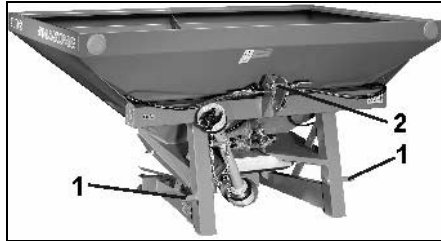


Fig. 18



Never fix upper link of Cat. II with pin Cat. I.



When adjusting the upper link advise people to leave the danger zone behind or underneath the implement



In lifted position of the broadcaster the lower link arms of the tractor may only have little play to the sides so that the machine does not sway during the spreading operation. Secure lower link arms of the tractor with stabilising bars or chains.

- Connect the hydraulic hoses (Fig. 19/1 and Fig. 19/2) of the hydraulic single shutter control each to a single acting spool valve of the tractor.

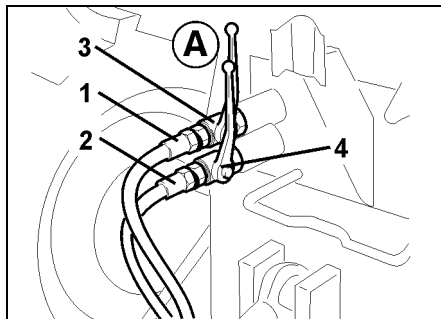


Fig. 19



When connecting the hydraulic hoses to the tractor's hydraulic

- the hydraulic system has to be pressureless on both sides!
- the ball taps (3 and 4) must be shut off: Position A!
- the corresponding control valves have to be in the float position.

- Push on pto shaft on tractor's universal joint shaft.



Ensure proper catching of the pto shaft connection!



Match pto shaft when fitted for the first time or when changing the tractor (please also refer to para. 5.3).

- Hook in fixing chains of the pto shaft guard at tractor- and implement side so that sufficient swivel range of the pto shaft in all operating positions is ensured and that the pto shaft guard does not turn during operation.



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

- For control of function actuate shutters hydraulically and check whether they shut off and open completely



When actuating the hydraulics never reach into the shutter opening, danger of injury!

5.2 Dismounting

- For mounting and dismounting always place the centrifugal broadcaster on level ground.
- Unplug the hydraulic connection hoses (Fig. 20/1 and Fig. 20/2) and place them into the provided carriers.
- Place pto shaft (Fig. 20/3) into the retainer (see illustration).



Fig. 20

5.3 Matching the pto shaft when fitting for the first time or when changing tractors

When fitting for the first time, match pto shaft to tractor. As this matching only applies for this specific tractor, check pto shaft matching when changing tractors.



Observe instruction manual of the pto-shaft-manufacturer!

- Pull apart the pto shaft halves.
- Fit pto shaft half to the implement side.
- Hold the pto shaft halves (Fig. 21/1) and (Fig. 21/2) in shortest and longest operational position, check side by side the overlap of the **pto shaft tubes**.

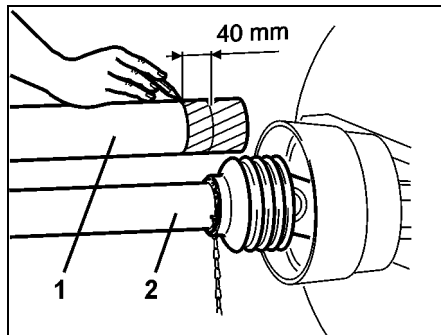


Fig. 21



In the **closest position** the pto shaft tubes may not touch the yokes of the universal joint. A safety margin of 40 mm has to be attained.

In the **longest** operational position the pto shaft tube overlapping described by the pto shaft manufacturer has to be observed (please refer here to the instruction manual of the pto shaft manufacturer).

- For matching the length of the pto shaft halves hold them side by side in the closest operational position, mark and shorten according to indication of pto shaft manufacturer.
- Insert pto shaft halves into one another.
- Push on pto shaft on the tractor's universal joint shaft.



Observe complete catching of pto shaft connection

- Hook in fixing chains of the pto shaft protection at the tractor- and implement side, check that a sufficient swivel range of the pto shaft in all operational positions is ensured and the pto shaft protection does not turn during operation



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



6. 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 25kph 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!



In case of leaking control valves and/or longer pauses, e. g. transports, the shutting of the block ball taps prevents a self-opening of the closed shutter slide. Position A = Shut-off-position.

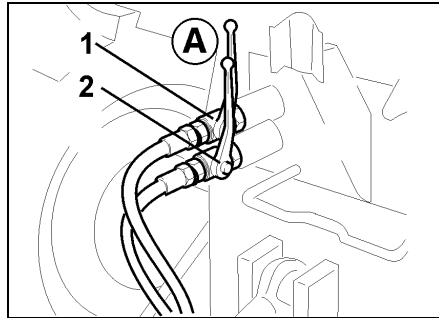


Fig. 22

7. Putting to operation



Fertiliser which may stick to spreading vanes and deflector plates must be removed after every operation.



Disengage pto shaft always when too large angling are observed or it is not needed. Disengage pto shaft as soon as shutters are closed.



the instruction manual of the tractor manufacturer)! If necessary apply front loads.

Fill hopper only with shutters closed!



Strictly observe the instruction of the fertiliser manufacturer!

7.1 Filling centrifugal broadcaster



Before filling make sure that no residue or foreign particles are in the hopper.



When filling pay attention that no foreign objects are in the fertiliser.



Observe permissible payload of the broadcaster and axle loads of the tractor!



When lifting the centrifugal broadcaster the front axle of the tractor is differently relieved depending on tractor size.



Therefore, when filling the centrifugal broadcaster observe that the required tractor front axle load is maintained

20% of the tractor's empty weight, however, also refer to

7.2 Setting and use of the fertiliser spreader

For all settings on the centrifugal broadcaster **AMAZONE ZA-X Perfect 02** 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.



The indications in the setting chart can only be taken as standard. Therefore, always conduct a spread rate check.



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).

7.2.1 Setting the mounting height



Ask people to leave the danger zone behind or underneath the machine.



Operations on the centrifugal broadcaster may only be conducted with the engine switched off and pressureless hydraulic system! Remove ignition key, secure vehicle against unintended operation and rolling away!

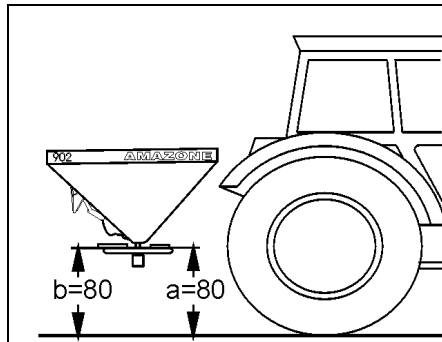


Fig. 23

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- (Fig. 23/a) and rear side (Fig. 23/b).

7.2.1.1 Normal fertilizing

The indicated mounting heights, normally horizontal $a = 80$ / $b = 80$ in cm refer to normal fertilising. **For normal fertilising the swivel blades (Fig. 24/1) of the shorter spreading vanes are normally in the lower position** (please observe hints in the setting chart).

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** (para.7.2.1.2).

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 (para 7.2.1.2.).

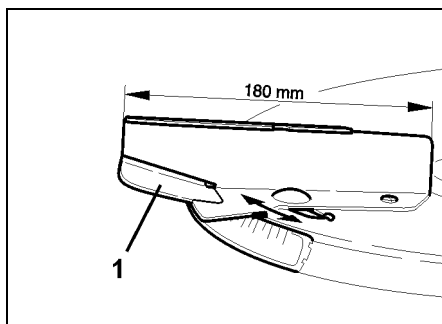


Fig. 24

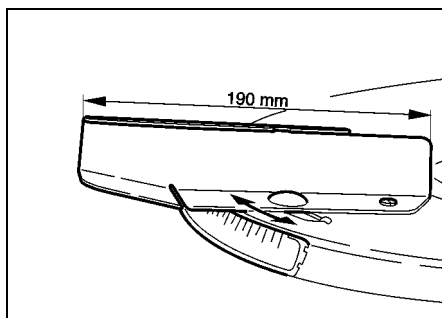


Fig. 25

7.2.1.2 Late top dressing

The shorter spreading vanes are provided with the tool-less swivel blades (Fig. 26/1) which allow the late top dressing in grain up to a crop height of 1 m - without any further option.

For late top dressing tilt upwards the swivel blades of the spreading vanes without slackening the nuts (without tools) into the upper position. Hereby the fertiliser spread fan is raised.

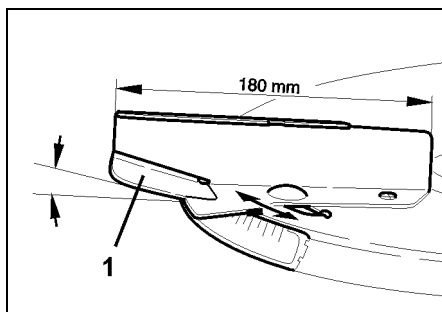


Fig. 26

Set the mounting height of the spreader with the aid of the tractor's three-point-hydraulic that high that the distance between top of the grain and spreading discs is **approx. 5 cm**.



In case the pto-shaft universal joint exceeds angles of **25°** use a wide angle pto shaft (option).

7.2.2 Setting the spread rate



Operations on the centrifugal broadcaster may only be conducted with the engine switched off and pressureless hydraulic system! Remove ignition key, secure vehicle against unintended operation and rolling away!

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

Take the **required shutter position** either directly from the **setting chart** or determine with the **calibration device** (option).

Set shutter position via setting levers as follows (ZA-X 902, 1402):

- Close shutter.
- Slacken thumb nut (Fig. 27/1).
- Read off the scale (Fig. 27/2) the scale figure for the shutter position taken either from the setting chart or determined with the calibration device.

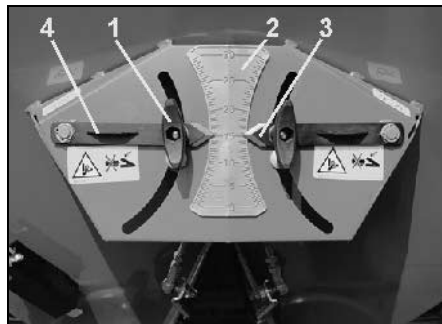


Fig. 27

- Set the read off edge (Fig. 27/3) of both setting levers (Fig. 27/4) on this scale figure.
- Retighten thumb nut (Fig. 27/1) firmly.

Set shutter position via setting levers as follows (ZA-X 602):

- Close shutter.
- Slacken the clamping lever (Fig. 28/3).
- Read off the scale (Fig. 28/2) the scale figure for the shutter position taken either from the setting chart or determined with the calibration device.
- Set the read off edge (Fig. 28/4) of both setting levers of the scale figure.
- Retighten the clamping lever (Fig. 28/3).

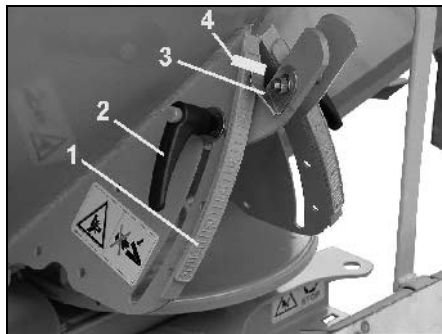


Fig. 28



Choose equal shutter position for right and left hand shutter!



When spreading only open the shutters after the described pto shaft speed (e.g. 540 R.P.M.) is reached.



7.2.2.1 Setting the spread rate according to the setting chart (standard execution)

Take the shutter position directly from the setting chart by selecting the

- kind of fertiliser to be spread.
- working width [m].
- intended operational speed [kph].
- desired spread rate [kg/ha].

Example:

Kind of fertiliser: **CAN 27 % BASF (white)**

Working width: **12 m**

Speed of operation: **10 k.p.h.**

Desired spread rate: **350 kg/ha**

Read off the setting chart the required shutter setting position "16" for spread rate 348 kg/ha.

Set shutter position via setting lever on scale figure "16" as described.



The setting figures of the setting chart may only be considered as standard data of spreading properties as the fertilisers may vary and thus may cause changes at the spread rates to be set. Therefore it is recommended to conduct a spread rate test before starting the spreading operation.

CAN 27% N gran. BASF; Hydro; DSM; Kemira; Agrolinz 1,06 kg/l														
10			12			15			16			18		
km/h			km/h			km/h			km/h			km/h		
8	10	12	8	10	12	8	10	12	8	10	12	8	10	12
8	48	38	32	40	32	27	32	25	21	30	24	20	27	21
9	81	65	54	68	54	45	54	43	36	51	41	34	45	36
10	132	106	88	110	88	73	88	71	59	83	66	55	73	59
11	196	157	131	164	131	109	131	105	87	123	98	82	109	87
12	250	208	173	216	173	144	173	138	115	162	130	108	144	115
13	326	261	218	272	218	181	218	174	145	204	163	136	181	145
14	391	313	261	326	261	217	261	209	174	245	196	163	217	174
15	457	365	305	381	305	254	305	244	203	286	228	190	254	203
16	522	417	348	435	348	290	348	278	232	326	261	217	290	232
17	585	468	390	488	390	325	390	312	260	366	293	244	325	260
18	648	518	432	540	432	360	432	345	286	405	324	270	360	286
19	708	566	472	590	472	393	472	378	315	442	354	295	393	315
20	766	613	511	638	511	426	511	408	341	479	383	319	426	341
21	822	658	548	685	548	457	548	439	365	514	411	343	457	365
22	876	701	584	730	584	487	584	467	389	548	438	365	487	389
23	928	742	619	773	619	516	619	495	412	580	464	387	516	412
24	978	782	652	815	652	543	652	522	435	611	489	406	543	435
25	1027	821	684	856	684	570	684	548	456	642	513	428	570	456
26	1074	859	716	895	716	597	716	573	477	671	537	448	597	477
27	1121	897	748	935	748	623	748	598	498	701	561	467	623	498
28	1169	935	779	974	779	649	779	623	520	731	584	487	649	520
29	1218	974	812	1015	812	676	812	649	541	761	609	507	676	541
30	1268	1014	845	1057	845	704	845	676	564	793	634	528	704	564

Fig. 29

7.2.2.2 Setting the spread rate with the aid of the calibration device (option)

With the aid of the calibration device the shutter position for the desired spread rate **without setting chart** by a Nomogramm. Hereby the deviating spreading properties of the individual kinds of fertiliser are considered.

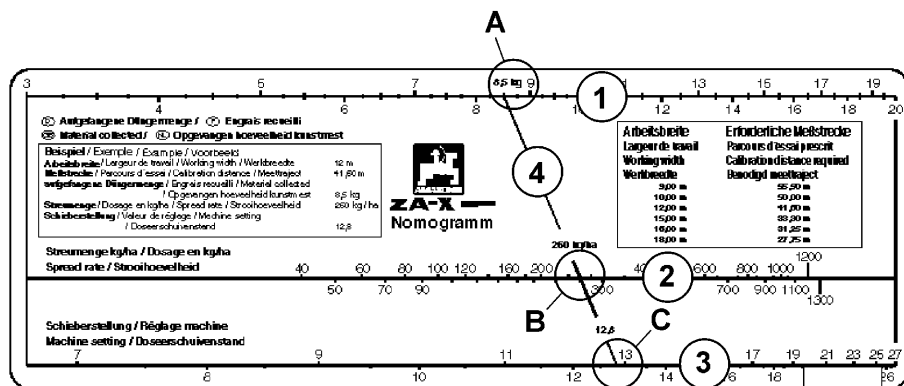


Fig. 30

The Nomogramm consists of:

1. an **upper scale** (Fig. 30/1) for the **fertiliser quantity** of between 3 and 20 kg collected at the spread rate check.
2. A **centre scale** (Fig. 30/2) for the desired **spread rate** of between 40 and 1300 kg/ha.
3. A **lower scale** (Fig. 30/3) for the shutter position of 7 to 27.

Determine the shutter position as follows:



When determining the shutter position both shutters remain closed and the pto shaft is disengaged.

Example:

Desired working width: **12 m**

Desired spread rate: **260 kg/ha**

Intended operational speed: **8 km/h**

- Hang the calibration bucket (Fig. 31/1) (option) with its handle (Fig. 31/2) into the retainer (Fig. 31/3). Lock in collecting bucket on the clamping device (Fig. 31/4).
- By pulling the rope (Fig. 31/6) open entirely the lateral slide (Fig. 31/5) of the delivery chute for approx. 5 sec. (in order to achieve an even fertiliser flow). Hereafter pour the collected fertiliser back into the hopper of the broadcaster.
- Take the test distance (41.6 m) required for the desired working width (12 m) from the table (Fig. 32/1) of the Nomogram.

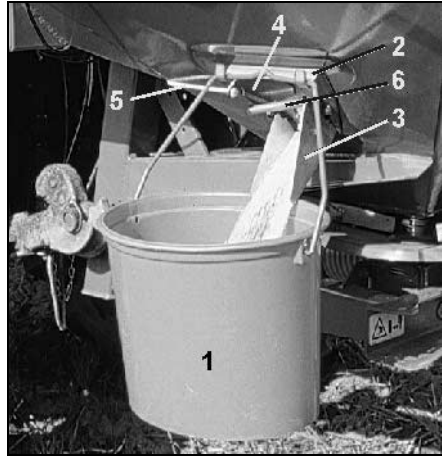


Fig. 31

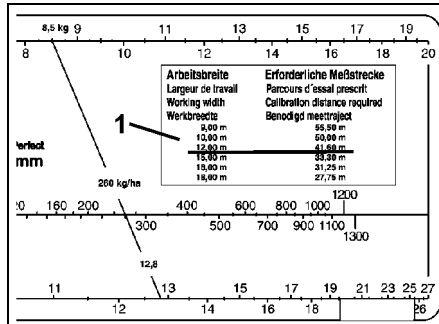


Fig. 32

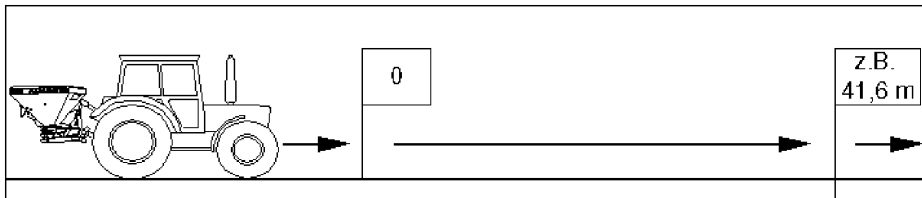


Fig. 33

- **Measure** exactly the test distance in the field. Mark beginning and end of the test distance.
- **Carefully drive test distance from beginning- to end under field conditions, i. e. with intended, constant operational speed.** Open entirely (pull until stop) the lateral slide (Fig. 34/1) of the delivery chute by means of the rope (Fig. 34/2) **exactly on the test distance beginning mark and shut off at the end mark** (by letting the rope go the spring (Fig. 34/3) pulls the lateral slide into the shut position).
- **Weigh** the fertiliser collected in the calibration bucket.
- For the collected fertiliser quantity (**8,5 kg**) read off the figure (Fig. 35/A) on the upper scale (Fig. 35/1) and for the desired spread rate (**260 kg/ha**) read off the figure (Fig. 35/B) on the centre scale (Fig. 35/2). Place a straight connecting line (Fig. 35/4) between points **A** and **B** (Fig. 35/4). The extension of this connecting line (Fig. 35/4) shows on the lower scale (Fig. 35/3) the Figure (Fig. 35/C) for the required shutter position, here „12,8”.

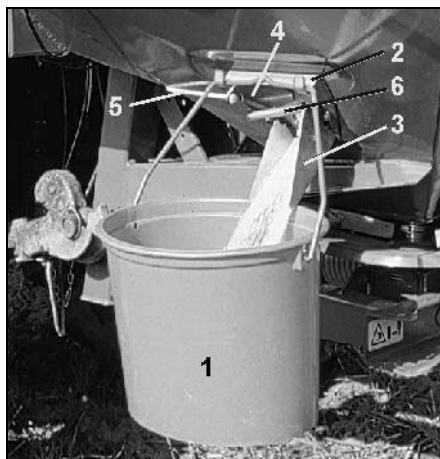


Fig. 34

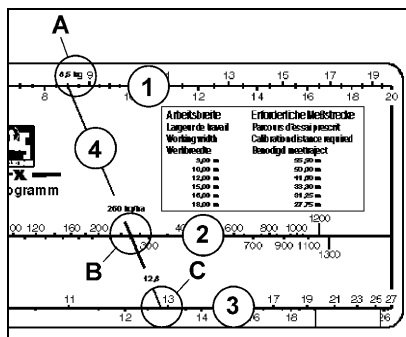


Fig. 35



7.2.3 Setting the working width

The working width is influenced by the spreading properties of the fertiliser.

As known, the main influence factors regarding the spreading properties are

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

Depending on the kind of fertiliser the "Omnia-Set" spreading discs allow the setting of varying working widths between 10 and 18 m.

For setting varying working widths (distances between the tramlines) the spreading vanes are steplessly horizontally adjustable around the fixed pivot point (Fig. 36/2) after slackening the relevant thumb nut (Fig. 36/1).

By swivelling the spreading vanes on a higher figure of the scale (Fig. 36/3) the working width becomes wider.

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

The technical condition of the spreading vanes essentially contributes to an even lateral fertiliser distribution in the field.

The spreading vanes have been manufactured from especially wear resistant, corrosion-free steel. However, it is pointed out that the spreading vanes and their swivel blades are wearing parts.

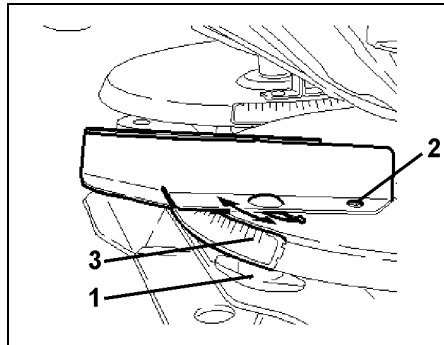


Fig. 36

The longevity of spreading vanes and swivel blades depends on the kinds of fertiliser used, the times of operation and the spreading quantities



Exchange spreading vanes or swivel blades as soon as breakages by wear can be recognised (please also refer to para 8.6 and 8.7).

7.2.3.1 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 (4 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

For the exact, tool-less setting of the individual spreading vane positions, two different nor interchangeable scales (Fig. 37/1 and Fig. 37/2) have been placed on every spreading disc.



The shorter vane (Fig. 37/3) relates to the scale (Fig. 37/1) having figures from 0 to 20 and the longer vane (Fig. 37/4) relates to the scale (Fig. 37/2) having figures from 30 to 50.



When spreading mixed fertilisers observe that

- the individual kinds may have different spreading properties
- a separation of the individual kinds may occur



The given setting recommendations for the lateral distribution (working width) only refer to the weight distribution and not on the nutrition supply.

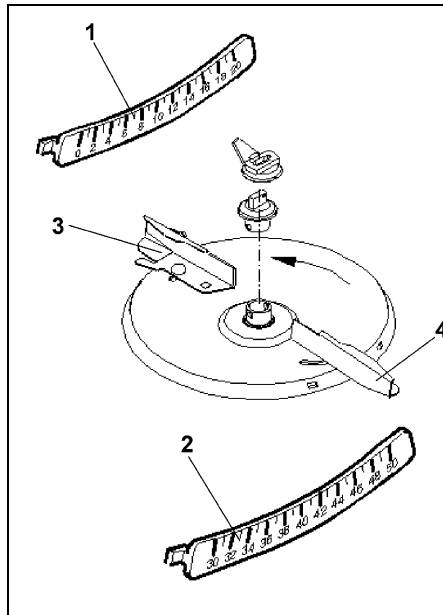


Fig. 37

Example:

Kind of fertiliser: CAN 27 % N gran,
BASF

Working width: 12 m

Take the vane position from the setting
chart "8/40"

Kind of fertiliser						Spread- rates s. page
	10	12	15	16	18	
CAN 27% N gran. BASF; Hydro; DSM; Kemi- ra; Agrolinz	8/40	8/40	8/41	8/41	8/42	28

Excerpt from the setting chart

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

Slacken thumb nut (Fig. 38/1).



**For slackening the thumb nut
turn spreading disc so that
the thumb nut can be slack-
ened without any problems.**

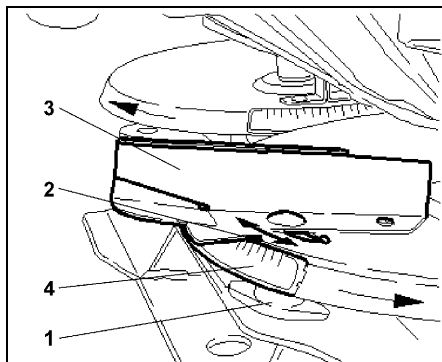


Fig. 38

- Swivel read off edge (Fig. 39/2) of the short vane (Fig. 39/3) onto figure "8" of the scale.
- **Tighten thumb nut (Fig. 39/1) firmly (without any tool).**
- Slacken thumb nut (Fig. 39/1)
- Swivel read off edge (Fig. 39/2) of the long spreading vane (Fig. 39/3) onto figure "42" of the scale

**Tighten thumb nut (Fig. 39/1) firmly
(without any tool).**

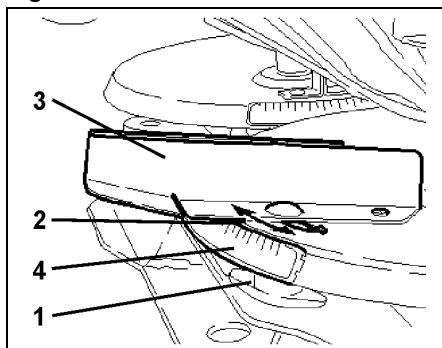


Fig. 39



7.2.3.2 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 (option).

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

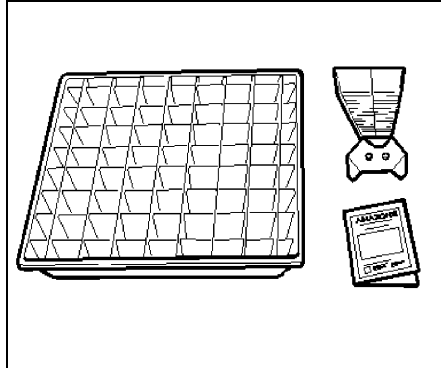


Fig. 40

7.3 Spreading on field boundaries

For spreading on field boundaries:

- the boundary spreading vane "**Tele-Quick**" (standard) for left hand side field boundary or side spreading or
- the boundary spread deflector (option) are used.



7.3.1 Boundary or headland spreading with the boundary spreading vane „Tele-Quick“

With the swivellable, telescopic boundary spreading "Tele-Quick" the spreading width of the fertiliser can be set onto the distance of the first wheel mark (tramline) from the field's boundary.

Take the relevant vane position directly from the setting chart under consideration of:

- the kind of fertiliser to be spread
- the distance [m] of the first wheel mark (tramline) from the field's boundary.

For setting the telescopic vane the kinds of fertiliser can be divided into 6 groups:

Group I: granular material with good flowing properties with a bulk density of approx. 1,0 kg/l, e.g. CAN, NP- and NPK-types.

Group II: prilled material with good flowing properties with a bulk density up to approx. 1,0 kg/l, e. g. CAN, NP- and NPK-types.

Group III: granular, coarse material with meanflowing properties with a bulk density above 1.5 kg/l, e. g. phosphate - and potash types.

Group IV: granular, coarse material with mean flowing properties with a bulk density less than 1.5 kg/l, e. g. DAP-, MAP-types.

Group V: Urea granular with a bulk density of up to approx. 0,8 kg/l.

Group VI: Urea prilled with a bulk density of up to approx. 0,8 kg/l.

When using the boundary spreading vane "Tele-Quick" it is distinguished between:

- the **boundary spreading** according to fertiliser application decree and
- the **side spreading** alongside the owned, equally to be treated areas (except for surface waters).

When using the boundary spreading vane "Tele-Quick" it is distinguished between:

- the **boundary spreading** according to fertiliser application decree and

the **side spreading** alongside the owned, equally to be treated areas (except for surface waters).

7.3.1.1 Boundary spreading according to fertiliser application legislation

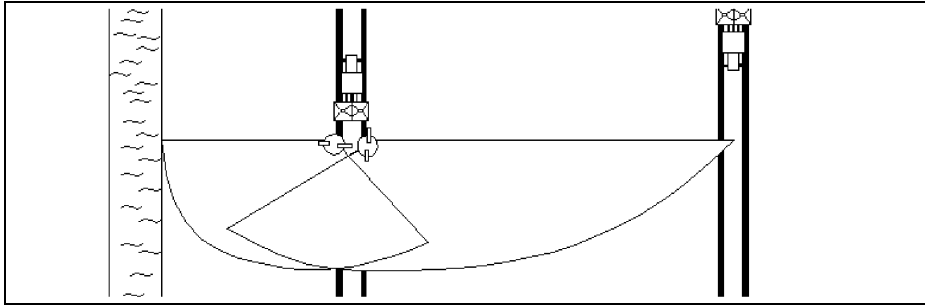


Fig. 41

According to fertiliser application legislation

- no fertiliser may drop beyond the boundary.
- washing out and floating (e. g. in surface waters) must be avoided.

By this imposition an underfertilised side strip of about 2 to 6 m automatically results, depending on the distance of the first track mark from the field's border.

Due to this inevitable spreading width reduction, also the shutter position has to be reduced by 2 positions (graduation marks).

7.3.1.2 Boundary spreading alongside the owned equally to be treated areas

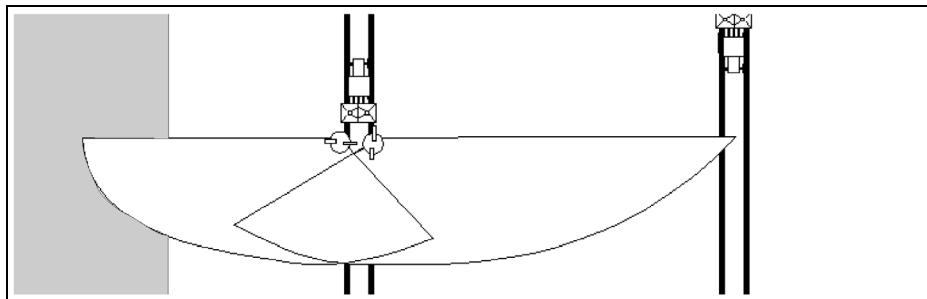


Fig. 42

In certain cases (e. g. beside owned, equally to be treated areas [except for surface waters]) by another vane position a nearly complete fertilising to the field's boundary can be achieved and thus an underfertilises side strip can be avoided. In these cases do not reduce the shutter position



The spread patterns may deviate from the spread patterns shown.



7.3.1.3 Setting and fitting the border spreading vane "Tele-Quick"



Operations on the centrifugal broadcaster may only be conducted with switched off engine and pressureless hydraulic system! Remove ignition key, secure vehicle against unintended operation and rolling away!

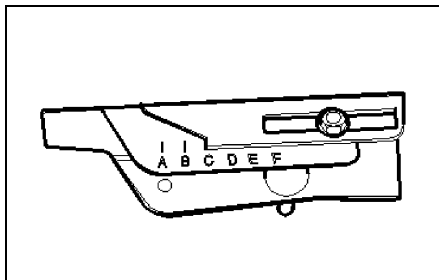


Fig. 43

Example:

Kind of fertiliser: **CAN 27 % N gran., BASF**

Distance of the first tramline

to the field's boundary: **7,5 m**

a. Boundary spreading according to fertiliser application legislation

Kind of fertiliser					
	5	6	7,5	8	9
CAN- and NPK - kinds gran.	 400 B50	 400 D50	 450 E50	 450 E50	 500 F50

Excerpt from the setting chart "Boundary spreading with Tele-Quick vanes"

Take the **spreading vane position for boundary spreading according to the fertiliser application decree from the setting chart "E/50"**.

b. Field side spreading beside owned, equally to be treated areas

Take the spreading vane position for the field side spreading from the setting chart "E/50".

Kind of fertiliser	5	6	7,5	8	9
CAN- und NPK-Sorten granuliert	B50	D50	E50	E50	F50

Excerpt from the setting chart "Field side spreading with Tele-Quick vanes"

Procedure when setting

- Take the border spreading vane (Fig. 44/1) out of the retaining pocket (Fig. 44/2).
- Dismantle the long spreading vane (Fig. 44/3) of the left hand spreading disc (Fig. 44/4).

When not being used fix the border spreading vane "Tele-Quick" with the long spreading vane in the retaining pocket (Fig. 44/2).

- Slacken fixing bolt of the vane outer part on the border spreading vane (Fig. 45/1) with the inner hexagon socket of the thumb nut (Fig. 45/2).
- Set the read off edge (Fig. 45/3) on scale (Fig. 45/4) on the letter value "C" (boundary spreading) or "E" (field's side spreading) (only valid for the indicated example) and retighten thumb nut (Fig. 45/2) firmly.



Fig. 44

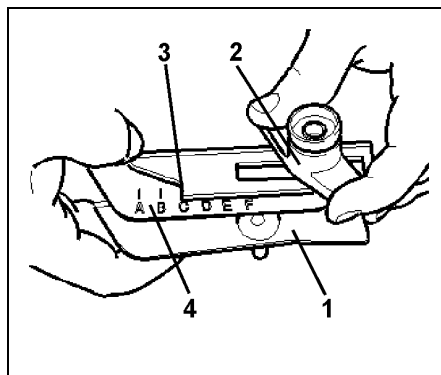


Fig. 45

Changing the vane length

Set vane outer part on a higher letter value on the scale.

- Increase spreading width.
- Spreading fan steeper.
- Fit the set border spreading vane (Fig. 46/1) with the thumb nut (Fig. 46/2) on the spreading disc.
- Set the read off edge (Fig. 46/3) on the scale (Fig. 46/4) to figure "47" (boundary spreading) or "50" (side spreading) (only valid for the indicated example) and retighten thumb nut (Fig. 46/2) firmly.

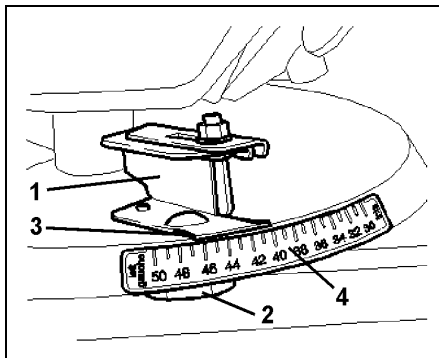


Fig. 46

Changing vane position

Swivel telescopic vane on a higher setting figure of the scale.

- Increase spreading width.
- Spreading fan steeper.
- For border spreading swivel back the shutter position of the setting lever (Fig. 47/1) on the left hand implement side for two scale lines on the scale (Fig. 47/2).



After finishing the boundary spreading, bring the left hand shutter position back to its former position and exchange spreading vanes.

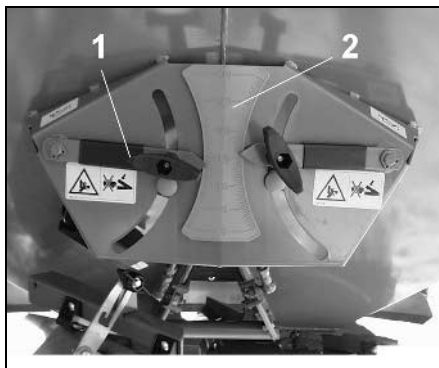


Fig. 47

7.3.2 Border spreading with the boundary spread deflector (option)



Operations on the centrifugal broadcaster may only be conducted with switched off engine and pressureless hydraulic system! Remove ignition key, secure vehicle against unintended operation and rolling away!

If the tramline is placed into the first working path of the seed drill (with a 3 m seed drill the distance of the first tramline to the field's side is 1.50 m), proceed with the **left hand** boundary spread deflector as follows

- Close left hand shutter (Fig. 48/1).
- Slacken thumb nut (Fig. 48/2).
- Swivel downwards the boundary spread deflector (Fig. 48/3) from out of operation position (Fig. 48/4) to operation position (Fig. 49/5).
- Tighten thumb nut (Fig. 48/2).

Disengage the left agitator head (please refer to para.7.4).



After finishing the boundary spreading:

- swivel upwards the boundary spread deflector again and arrest.
- bring back left hand shutter position into the former position.
- engage the left hand agitator head.

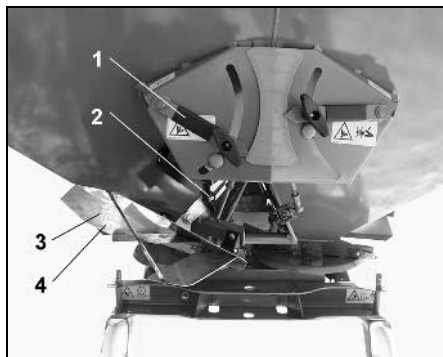


Fig. 48

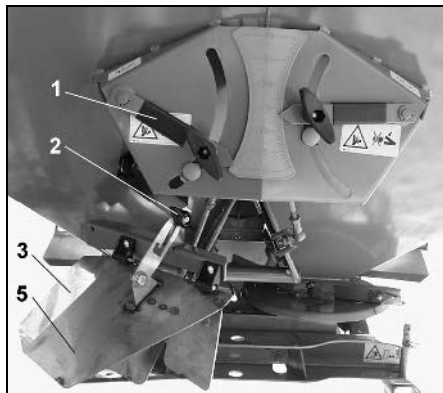


Fig. 49

7.4 Switching on and off agitator head



Operations on the centrifugal broadcaster may only be conducted with switched off engine and pressureless hydraulic system! Remove ignition key, secure vehicle against unintended operation and rolling away!

For switching off the agitator head (Fig. 50/1) remove coupling plug (Fig. 50/2) beneath the relevant hopper base.



If the agitator head is switched on again, strictly observe that the agitator finger (Fig. 50/3) is situated above the short vane (Fig. 50/4).

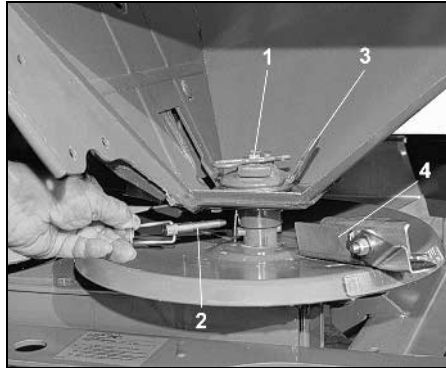


Fig. 50

7.5 Spreading pressure sensitive fertilisers



Operations on the centrifugal broadcaster may only be conducted with switched off engine and pressureless hydraulic system! Remove ignition key, secure vehicle against unintended operation and rolling away!

With some spreading material, as e. g. some kinds of urea or green manure seed the extension on the agitator head has to be removed as follows:

- Pull off clip pin (Fig. 51/1).
- Remove agitator head extension (Fig. 51/2).
- **The clip pin (Fig. 52/3) must implicitly be fitted against direction of rotation (Fig. 52/4).** (Illustrated is the right hand implement side seen in driving direction).

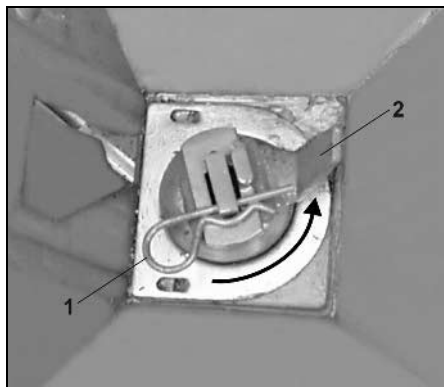


Fig. 51

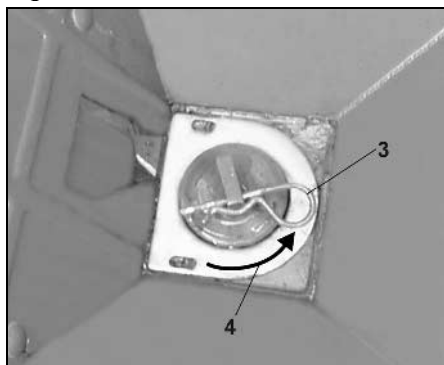


Fig. 52



7.6 Hints for the setting chart

Before spreading seeds (oil seeds) and slug pellets conduct a **stationary spread rate control** with the desired spread rates of less than 50 kg/ha according to para.7.6.2.

7.6.1 Hints for spreading slug pellets (e.g. Mesuro)

In standard specification the centrifugal broadcaster **AMAZONE ZA-X Perfect 02** can also be used for wide spreading of slug pellets. Slug pellets (e. g. Mesuro) have a granular shape or similar and is spread in relatively small rates (e. g. 3 kg/ha).



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 advice of the manufacturer and to the general protective measures for handling pesticides (code of practice by the health and safety board).

When spreading slug pellets take care,

- that the agitator heads are always covered with spreading material.
- that the pto shaft is constantly driven at **540 R.P.M.**



A residue of approx. 3 kgs cannot be. For emptying the spreader open the shutter and collect spreading material on a ground sheet.

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

7.6.2 Stationary spread rate control

A stationary spread rate control can be deducted if the driving speed of the tractor in the field is known exactly.

Example:

Spreading material:	Slug pellets
Working width:	10 m
Operational speed:	8 km/h
Desired spread rate:	3 kg/ha

- Remove the spreading vanes of the two spreading discs.
- Place a collecting canvass around the rear part of the spreader.
- Take the shutter position directly from the setting chart by observing the desired working width, operational speed and desired spread rate. In the setting chart the **spread rate of 3.2 kg/ha** and the **shutter position 6.0** are indicated.
- Read off edge of the stop a bit underneath the scale figure **6.0**.



- At first determine from the left hand side table the required time for spreading an area of **0.5 ha** at the desired working width and operational speed. For the given example the time is **3 min. 45 sec.**



For working widths and operational speeds not shown in the table, please refer to para. 7.6.2.1

Table for converting the required time for spreading an area of 0.5 ha

Working width [m]	Operational speed [km/h]	Required time to spread 0,5 ha [min. and sec.]
6	6	8 min. 20 sec.
	8	6 min. 15 sec.
	10	5 min.
	12	4 min. 10 sec.
	14	3 min. 34 sec.
10	6	5 min.
	8	3 min. 45 sec.
	10	3 min.
	12	2 min. 30 sec.
	14	2 min. 8,5 sec.
12	6	4 min. 10 sec.
	8	3 min. 7,5 sec.
	10	2 min. 30 sec.
	12	2 min. 5 sec.
	14	1 min. 47 sec.
15	6	3 min. 20 sec.
	8	2 min. 30 sec.
	10	2 min.
	12	1 min. 40 sec.
	14	1 min. 26 sec.
16	6	3 min. 7,5 sec.
	8	2 min. 21 sec.
	10	1 min. 53 sec.
	12	1 min. 34 sec.
	14	1 min. 20 sec.
18	6	2 min. 47 sec.
	8	2 min. 5 sec.
	10	1 min. 40 sec.
	12	1 min. 23 sec.
	14	1 min. 11 sec.



- Drive pto shaft with **540 R.P.M.**
- Open both shutters for exactly **3 min. 45 sec.**
- Weigh collected spreading material [kg] (für 0,5 ha), e. g. 1,5 kg.
- Convert the collected spreading material [kg] into spreading material [kg/ha].

Collected spreading material [kg/0,5ha] x 2 = spreading material [kg/ha]

$$1,5 \text{ kg}/0,5 \text{ ha} \times 2 = 3 \text{ kg/ha}$$

If deviations occur, correct shutter position accordingly and repeat the spread rate control.

7.6.2.1 Conversion of the required time for spreading 0.5 ha for working widths or operational speeds not shown in the table

$$\text{Required time [sec.] for the spreading of 0,5 ha at desired working width} = \frac{5000}{\text{working width [m] x operational speed [km/h]}} \times 3,6$$



8. Maintenance and Repair

8.1 Cleaning



Clean, grease or set the centrifugal broadcaster or the universal joint shaft only after the pto shaft has been disengaged, the engine has been stopped and the ignition key is removed



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



In case of injuries caused by penetrating oil consult a doctor immediately.



After every operation remove the fertiliser sticking to spreading vanes and deflector plate pockets.

After use clean the machine with a normal jet of water (greased implements only on washing bays with oil traps).

Clean outlets and shutters especially carefully.

Treat dry machine with an anticorrosive agent. (Only use biologically degradable protective agents).

Park machine with opened, greased shutters.

8.2 Lubrication

8.2.1 Lubrication pto shaft

The greasing intervals for the pto shaft are shown in hours in the left hand side table. For further informations, please refer to the instruction manual of the pto shaft-manufacturer.

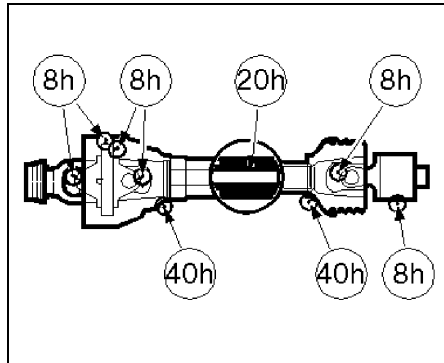


Fig. 53

8.2.2 Lubrication chart of the centrifugal broadcaster

Apply oil to the greasing points on your centrifugal broadcaster daily before every operation



Grease the threads of the T-bolts (Fig. 54/1) for the shutter lever locking as well as their washers, so that the clamping connection remains functioning.

In certain intervals slacken, clean and grease the ball joints (Fig. 54/2).

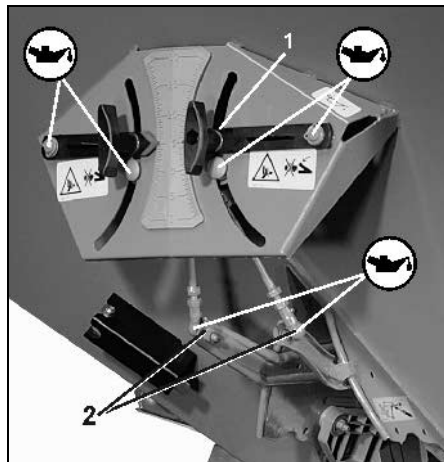


Fig. 54

8.2.3 Checking the gear box oil level

Under normal conditions the gear box is maintenance-free. The gear boxes are supplied with sufficient oil by the manufacturer. **The oil level must be visible in the oil level gauge** (Fig. 55/1). A refilling of oil normally 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 gear box housing. Search for reason, care for remedy and fill with oil.

For refilling oil

- tilt broadcaster to the front,
- unscrew oil level gauge (Fig. 55/1),
- refill oil,
- screw in oil level gauge (Fig. 55/1) again.
- Oil filling quantity: 1,6 l SAE 90

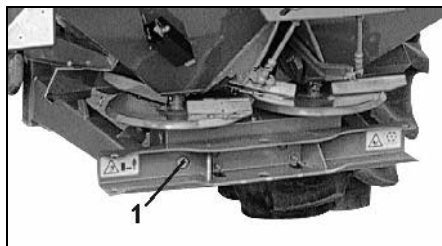


Fig. 55



8.3 Shear-off safety for the pto shaft

The separately supplied bolts 8 x 30 DIN 9, 31, 8.8 are **shear bolts** (Fig. 56/1) for fixing the pto shaft yoke on the flange of the gear box input shaft. Always apply grease when fitting the pto shaft to the gear box input shaft.

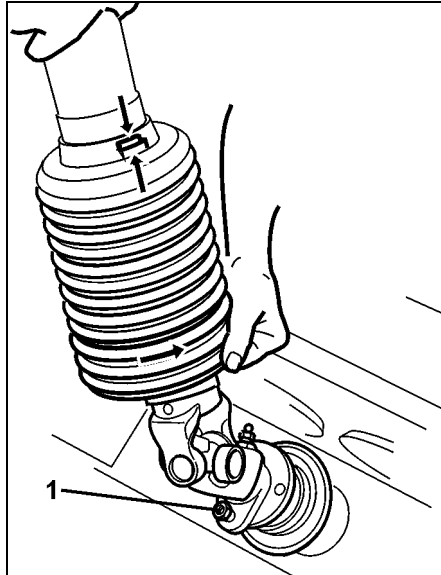


Fig. 56

8.4 Checking the space between agitator finger/hopper wall and spreading vane/deflector plates

The **spacing** between hopper wall (Fig. 57/1) and agitator finger (Fig. 57/2) has to be **6 - 7 mm**. If necessary bend agitator finger tip.

The **spacing** between the **spreading vanes** (Fig. 57/3) and **deflector plate** (Fig. 57/4) has to be **5 - 8 mm**. If necessary displace deflector plate accordingly.



The agitator head finger (Fig. 57/2) must be situated above the short vane (Fig. 57/3).

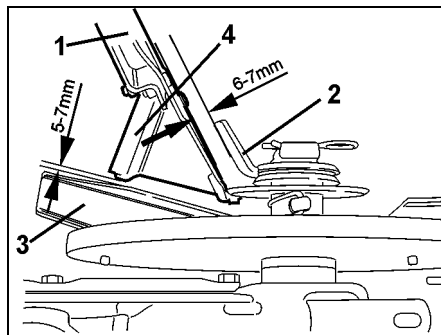


Fig. 57

8.5 Checking and correcting the basic setting of the shutter slides

If at equal shutter slide position an uneven emptying of the split hopper is noticed, the shutter slide basic position has to be checked.

8.5.1 Check shutter basic position with the setting gauge (option)



When actuating the shutter slides do not reach into the hopper outlet opening! Danger of injury!

Checking the shutter slides' basic position:

- Close shutter slides.
- Set shutter slide position to „11” via the setting levers (Fig. 58/1).
- Open shutter slides.
- Now the setting gauge (Fig. 59/2) should easily pass through the opened outlet diameter.

In case the opening is too narrow or too large, readjust shutter slide basic position (see para 8.5.3).

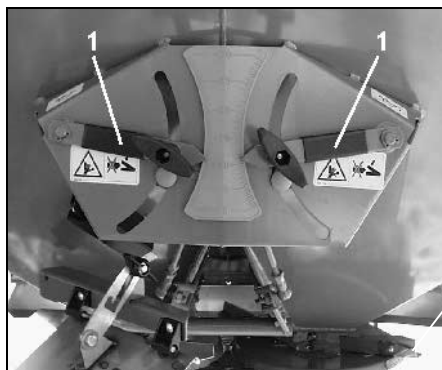


Fig. 58

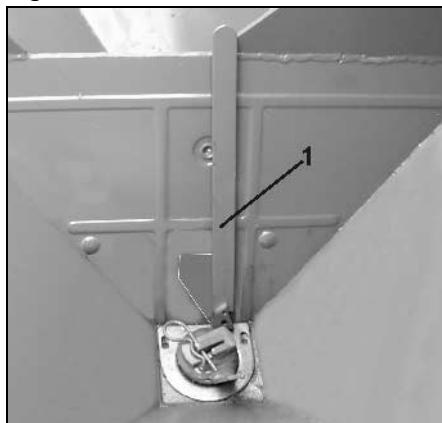


Fig. 59

8.5.2 Visual checking of the shutter slide basic position



When actuating the shutter slides do not reach into the hopper outlet opening! Danger of injury!

Checking the shutter slides' basic position:

- Close shutter slides.
- Set shutter slide position to „11” via the setting levers (Fig. 60/1).
- Open shutter slides.
- At outlet diameter (Fig. 61/2) created with shutters slide position "11", the edge (Fig. 61/3) of the shutter slide (Fig. 61/4) must intersect the lower corner (Fig. 61/5) of the outlet opening.

In case the opening is too narrow or too large, readjust shutter slide basic position (see para 8.5.3).

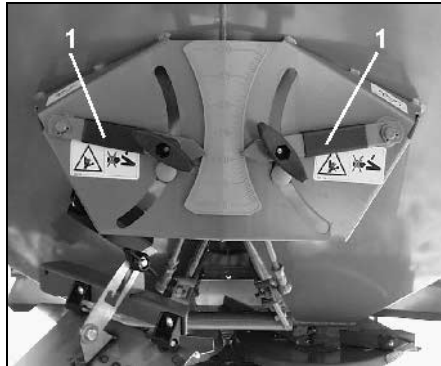


Fig. 60

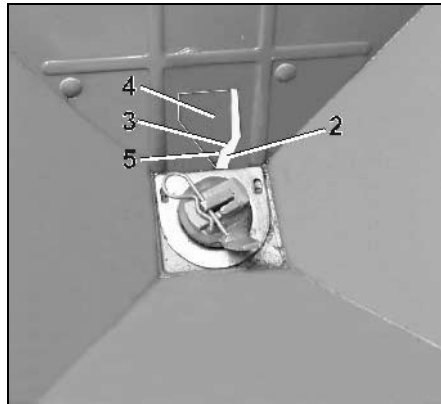


Fig. 61

8.5.3 Adjust shutter slide basic position with the setting gauge (option)



When actuating the shutter slides do not reach into the hopper outlet opening! Danger of injury!

Correction of shutter slide basic setting:

- Open shutter slide.
- Insert setting gauge (Fig. 62/1).
- Shut the relevant shutter slide and lock by ball tap (the shutter slide now sits close to the setting gauge).
- After slackening the thumb nut (Fig. 63/1) the setting lever (Fig. 63/2) must touch the stop (Fig. 63/3). In this position the read off edge (Fig. 63/4) for the shutter position must show the figure "11" on the scale.

If this is not the case adjust the stop position (3) by twisting the connecting rods (5) accordingly.

- Set shutter slide position on "11".
- Slacken counter nuts (Fig. 63/6) of the connecting rods (Fig. 63/5).
- Twist the connecting rods as long as the stop (Fig. 63/3) lies close at the setting lever (Fig. 63/2).
- Retighten counter nut.

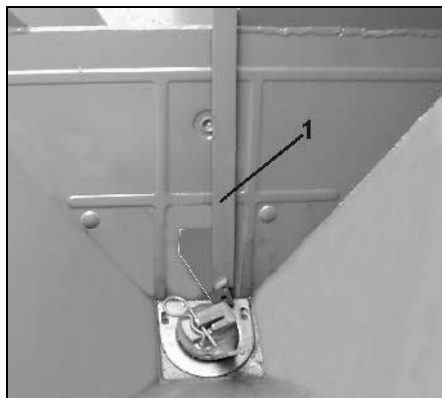


Fig. 62

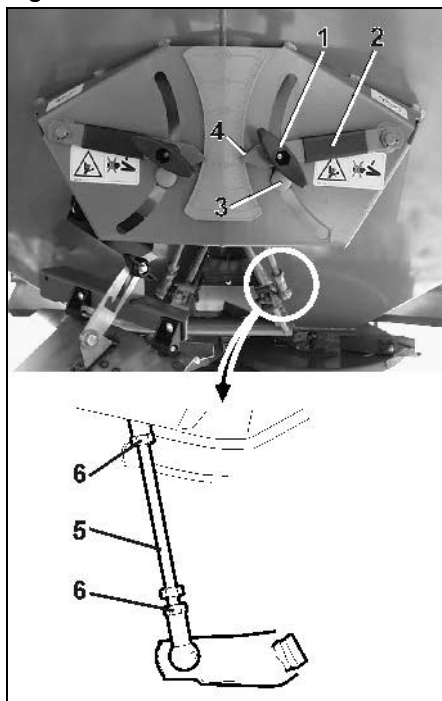


Fig. 63



8.6 Exchange of spreading vanes



Exchange spreading vanes as soon as breakages by wear can be recognised.



Take care when fitting the spreading vanes. The open side of the U-shaped spreading vanes (Fig. 64/1) shows in rotating direction (Fig. 64/2).



Do not mix up the right hand and left hand spreading vanes.

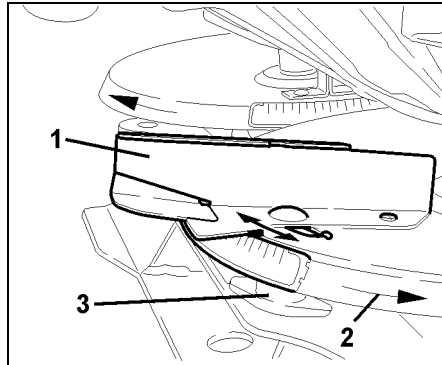


Fig. 64

Change spreading vanes as follows:

- Remove thumb nut (Fig. 64/3) and change spreading vane (Fig. 64/1).
- Retighten thumb nut firmly (Fig. 64/3).

8.7 Exchange swivel blades as follows:



Exchange swivel blades as soon as breakages by wear can be noticed.

Exchange swivel blades as follows:

- Remove self locking nut (Fig. 65/1).
- Take off spring washers (Fig. 65/2).
- Exchange swivel blades (Fig. 65/3).
- If necessary also exchange plastic disc (Fig. 65/4).
- **Heap up** spring washers (Fig. 65/2) **reciprocally** (do not stack).
- Tighten self locking nut (Fig. 65/1) with a torque of **6 - 7 Nm** so that the swivel blade can still be swivelled by hand, however does not swivels upwards by itself when being in operation

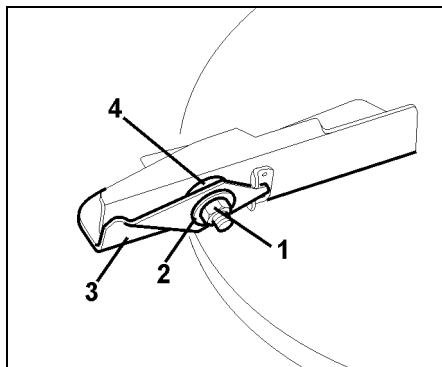


Fig. 65



9. Special optional equipment

9.1 Boundary spread deflector, left hand „Limiter X“

Product-No.: 919654

With the spreading deflector **Limiter X** as well **normal-border** as **eco-border spreading** can be carried out. The spreading deflector can be engaged and disengaged hydraulically.

- For boundary spreading a spread rate reduction is achieved with the aid of the supplied cordage.



Fig. 66

9.2 Boundary spread deflector

For boundary spreading if the first tram-line centre has been created 1.5 to 2.0 m from the field's boundary.

left hand - for left hand boundary spreading

Product-No.: 177 301

Scope of delivery:

- Boundary spread deflector (here left hand side) with fixing bolts.

9.2.1 Fitting the boundary spread deflector

Fix the bar (Fig. 67/1) of the boundary spread deflector (Fig. 67/2) with the four fixing bolts (Fig. 67/3) to the roof plate of the centrifugal broadcaster.

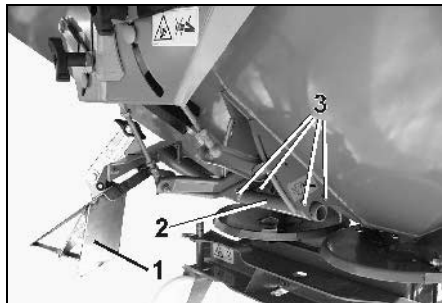


Fig. 67

9.3 Calibration device

With the calibration device the shutter slide position for the desired spread rate with the aid of the Nomogram is determined.

Product No.: 133 202

Scope of delivery:

- 1 - Delivery chute with fixing bolts
- 2 - Collecting tray
- 3 - Nomogramm

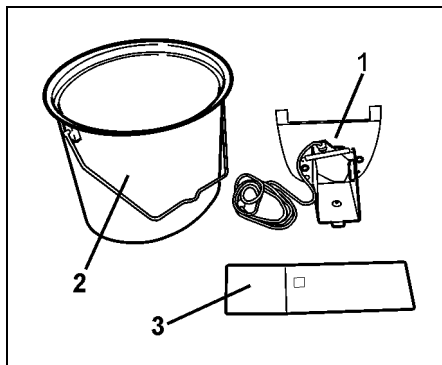


Fig. 68

9.3.1 Fitting the calibration device

- Remove the plastic plug (Fig. 69/1).



Fig. 69

- Fit the delivery chute (Fig. 70/1) with the aid of the fixing bolts (Fig. 70/2).

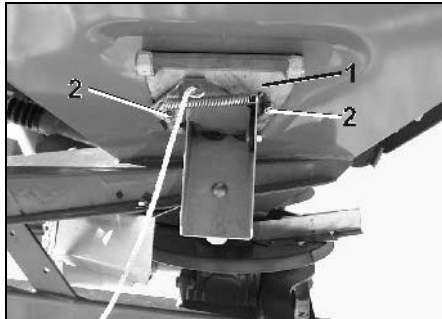


Fig. 70

9.4 Swivelable hopper cover

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

Product No.: 919 441

- ZA-X 602

Product No.: 918 616

- ZA-X 902
- ZA-X 902 + 302
- ZA-X 1402
- ZA-X 1402 + 302

Scope of delivery:

Folding hopper cover with fixing bolts.



Fig. 71

9.5 Rear light kit with warning plates

Product No.: 916 253

The rear light kit is directly bolted to the hopper rear wall. It consists of :

- Lamp combinations l.h. and r.h.,
- Parking warning plates according to DIN 11030,
- Registration plate carrier and
- Connecting cable.



9.6 Transport- and parking device (detachable)

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

Product No.: 914 193

Scope of delivery:

- 1 - Two castor wheels (pressure bearing)
- 2 - Two rollers
- 3 - Four split pins or
- 4 - Four clip pins (depending on the machine type)

9.6.1 Fitting the transport device

- Fit the pressure bearing rollers (Fig. 72/1) at the front of the bar and secure with split pins (Fig. 72/2).
- Fit the rollers (Fig. 72/3) at the rear in the hook-in bar and secure with split pin (Fig. 72/2).

Two positions can be chosen:

- Position **a** for rolling to the rear.
- Position **b** for rolling to the side.

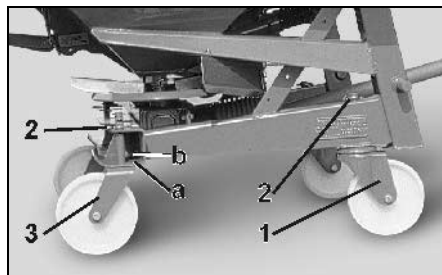


Fig. 72

9.7 Two-way-valve unit

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

Product No.: 145 6000

Scope of delivery:

- 1 - Two-way-valve unit
- 2 - One carrier

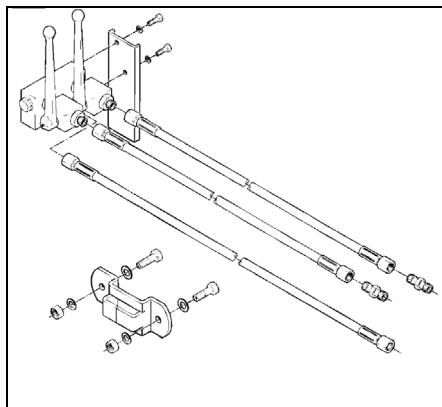


Fig. 73

9.7.1 Fitting the two-way-valve unit



When fitting the two-way-valve unit the hydraulic system has to be pressureless. Danger of injury by penetrating oil!

- Dismantle existing block taps from the hydraulic hoses (Fig. 74/1).
- Collect penetrating oil.
- Connect hydraulic hoses (Fig. 74/2) of the two-way-valve unit to the hydraulic hoses (Fig. 74/1).
- Fix protective cap (Fig. 74/3) on the connecting hoses.

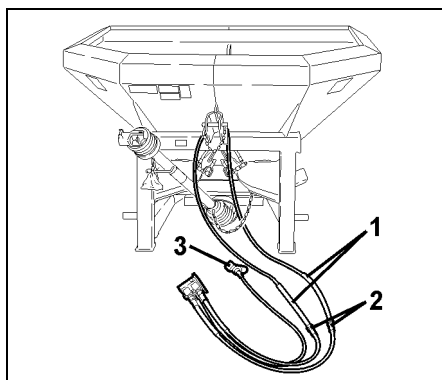


Fig. 74

Fit carrier of the two-way-valve unit at the implement

- Drill two holes ($\varnothing$ 12 mm) for the fixing bolts (Fig. 75/1) in a suitable position.
- Fit carrier (Fig. 75/2) with fixing bolts (Fig. 75/1).

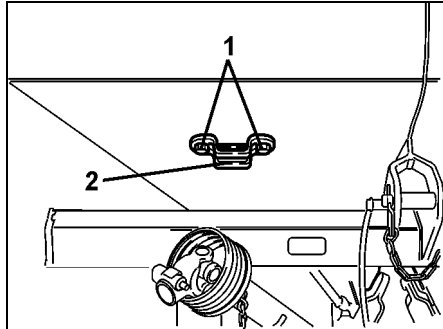


Fig. 75

Fit carrier of the two-way-valve unit on the tractor

- Drill two holes ($\varnothing$ 12 mm) for the fixing bolts (Fig. 76/1) in a suitable.
- Fit carrier (Fig. 76/2) with the fixing bolts (Fig. 76/1).

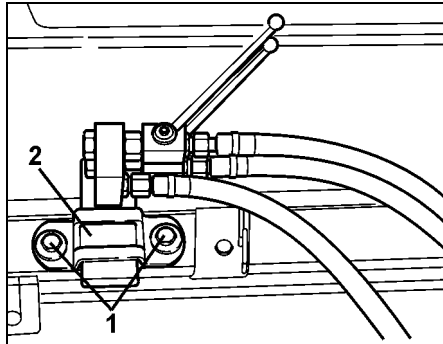


Fig. 76

9.8 Pto shaft with friction clutch

If the shear bolt between connecting yoke and gearbox input shaft repeatedly shears off and on tractors with roughly engaging tractor pto the Walterscheid pto shaft with friction clutch is recommended.



Regarding the fitting of the p.t.o.-shaft pls. see para. 4.2. Dismantling the existing pto shaft is done in reverse order to the connection instructions (see para.5.3).

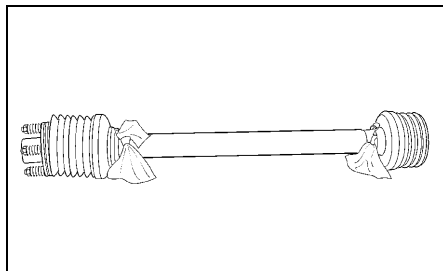


Fig. 77



Danger of tipping over. Exchange pto shaft only on the empty centrifugal broadcaster.



Only use pto shaft described by the manufacturer. Walterscheid-ptø shaft

(W 2102-SD05-710-K 94/1).



Observe instruction manual of the pto-shaft manufacturer!



Match pto shaft (see para .5.3.).

9.9 P.T.O.-shaft "Tele-Space"

Product No.: EJ 295

The p.t.o.-shaft for the comfortable coupling of the broadcaster to the tractor.



Fig. 78

9.10 Row-Spreading Device

Product No.: 915 832

This row spreading device can be set for spreading to 2-, 4- or 6 - rows of row-crops and of special crops. It can be retro-fitted at any time.

The outlet tubes can be asdjusted to row spacings of up to 90 cm (35 1/2 in.).



Fig. 79

9.11 Hopper extensions S 250, S 350

S 250 for ZA-X 602

Product-No.: 924390

S 350 for ZA-X 902/1402

Product-No.: 924181





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