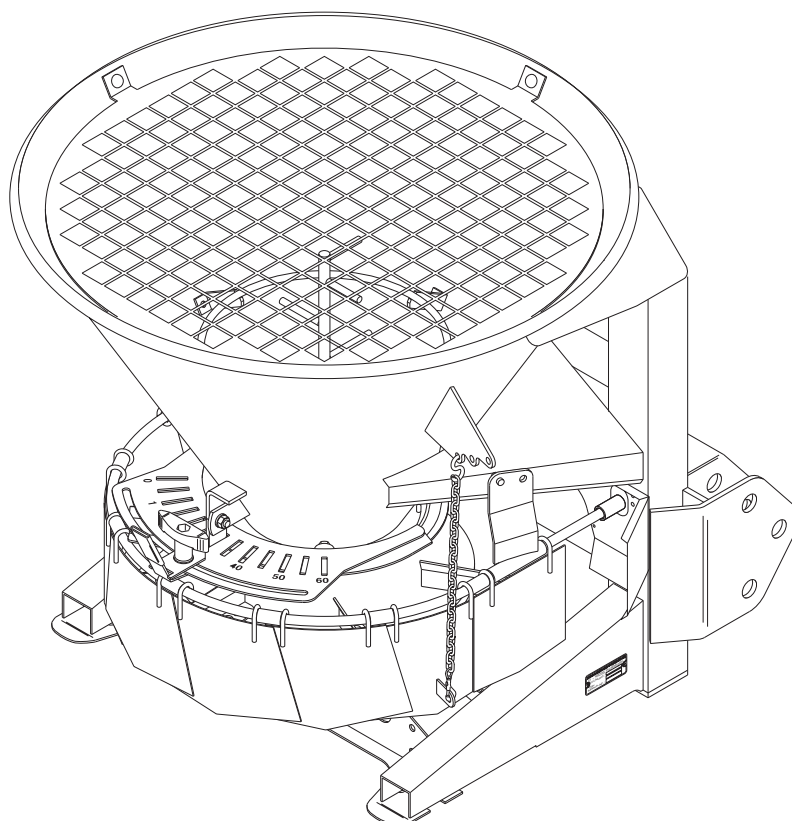


Winter application spreader

AMAZONE E + S

Operation manual and setting chart



MG 786
DB 786 (GB) 02.02
Printed in Germany



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



Preface

Dear Customer,

The winter application spreader is a machine from the comprehensive range of products of AMAZONEN-WERKE, H. Dreyer GmbH & Co. KG.

To make full use of your newly purchased machine, 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 applies for all road service spreaders of the series E + S.

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

1.1 Range of application

The spreader for winter application **AMAZONE E + S** is suited for spreading grit, sand, salt and mixtures.

1.2 Manufacturer

AMAZONEN-WERKE

H. DREYER GmbH & Co. KG

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

1.3 Conformity declaration

The machine fulfils the requirements of the EC-guide line Machine 89/392/EC and the corresponding additional guide lines.

1.4 On requesting after sales service and parts

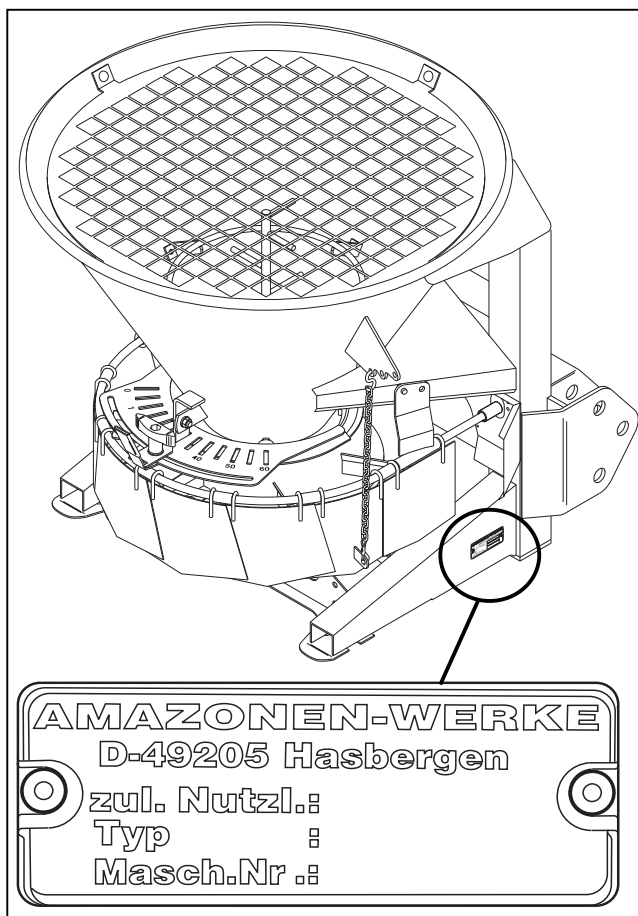
When ordering options or spare parts, the machine model and the serial number have to be quoted.



The safety technical requirements are only fulfilled if, in case of repair **AMAZONE** original spare parts are used. Using non-original spare parts will rule out the liability of **AMAZONE** for resulting damage.

1.5 Type plate

Type plate on the machine.



The entire type plate is of documentary value and should not be damaged or removed.



1.6 Technical data

Type	Hopper capacity	Payload	Net weight	Filling height	Filling width	Total length	Total width
	[l]	[kg]	[kg]	[m]	[m]	[m]	[m]
E+S 200 E+S 200 H	150	1000	105	0,86	0,86	1,00	0,95
E+S 300 E+S 300 H	265	1000	111	0,99	1,03	1,18	1,08
E+S 400 E+S 400 H	375	1000	141	1,14	1,19	1,23	1,23
E+S 600 E+S 600 H	620	1000	220	1,30	1,40	1,45	1,45

1.6.1 Operational data

Operational rev. speed of PTO shaft: **540 min⁻¹**.

(Please observe the advice in the setting chart).

Max. operational hydraulic pressure: **230 bar**.

1.6.2 Hydraulic connections

Required for the hydraulic drive of the spreading discs (E+S H): 1 single acting spool valve and one pressure free return flow. The hydraulic shutter control (special option) requires a double acting spool valve.

1.6.3 Details about noise level

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

Measuring device: OPTAC SLM 5.

The emission value depends on type of vehicle used.

1.7 Designated use of the machine

The designated use for the winter application spreader **AMAZONE E+S** is for the exclusive use only for winter service on roads and ways, etc. and in road construction for spreading grit and sand on the base layers and on the upper asphalt base and wearing layer as well as for spreading sand on sports grounds and golf courses.

Slopes of up to **20%** can be spread. On steeper slopes the spread pattern would become uneven.

Any use beyond these guidelines stipulated above is no longer considered as designated use. The manufacturer does not accept any responsibility for damage resulting from non-compliance and therefore the operator himself carries the full risk.

Under "designated use" also the manufacturer's prescribed operation, maintenance and repair conditions must be adhered to as well as the exclusive use of **original AMAZONE spare parts**.



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 cannot totally be excluded even at a designated use. These deviations may be caused e.g. by:

- Varying composition of the spreading material (e.g. granule size distribution, specific density, granule shape).
- Blocking up or bridging (e.g. by foreign particles or moisture).
- Wear of wearing parts (e.g. spreading vanes, agitator . . .) .
- 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, not adhering to the setting chart).

Therefore, check and ensure that your machine is functioning correctly before and during use. Claims regarding damage not having occurred on the machine itself will be rejected. This also applies for damage due to spreading errors..



2. Safety

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

All safety advice in this instruction manual must be strictly observed and adhered to.

2.1 Danger when not adhering to the safety advice

Not adhering to the safety advice

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

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

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

2.2 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 Identification of advice in this instruction manual

2.3.1 General danger symbol

The safety advice in this operators manual, which may lead to a danger to persons if 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 to the machine and it's function when not being adhered to, are identified with the attention symbol.



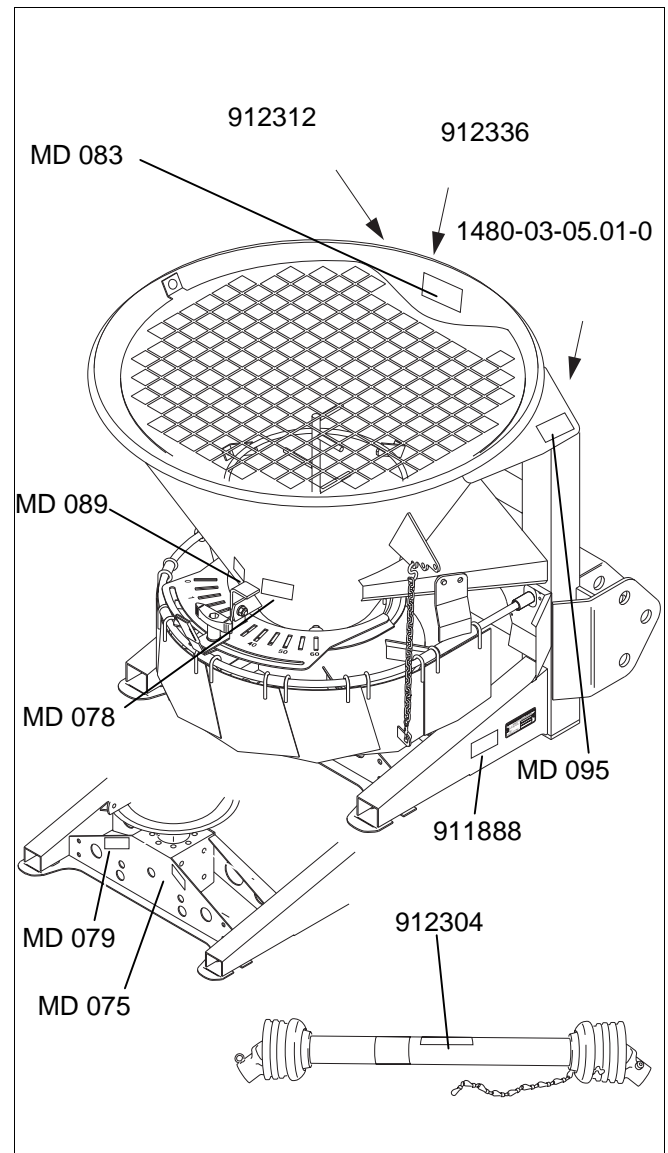
2.3.3 Hint symbol

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




2.3.4 "Attention" pictographs and "advice" pictographs on the machine

- Attention pictographs indicate dangerous points on the machine. Observing these pictographs means safety for all persons using this machine. The attention pictographs always are linked to safety/warning symbols.
- The advice pictographs mark the machine's specific points which have to be observed to ensure correct spraying operation.
- Strictly observe all warning and advice pictographs.
- Please pass on all safety advice also to other users.
- Please always keep all attention and advice signs clean and in an easily readable condition. Please ask for replacement of damaged or missing decals from your dealer and attach to relevant place! (picture-No.: = Order-No.)
- The adjacent illustrations show the fixing points of attention signs and advice 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.

912 304

NL

Geeft aandacht aan de lengte van de aftakas zoals de gebruikshandleiding aangeeft, anders kan de aandrijfkast beschadigen.

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.

912 336

NL

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

Picture No.: 912 312

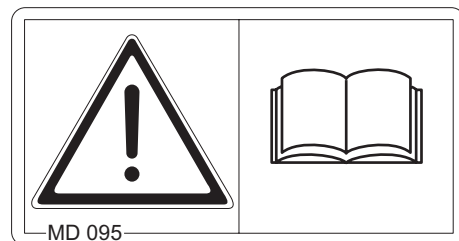
		<ol style="list-style-type: none"> 1. Vorderachsentslastung des Schleppers beachten. 2. Rührfinger, Auslauföffnungen und Streuschaufeln sauber und funktionsfähig halten.
		<ol style="list-style-type: none"> 1. Veiller à la bonne adhérence de l'essieu avant. 2. Maintenir propres et opérationnels les agitateurs, les orifices d'alimentation et les aubes.
		<ol style="list-style-type: none"> 1. Bear in mind front axle weight reduction. 2. Always keep agitator fingers, outlets and vanes clean and replace when worn or damaged.
		<ol style="list-style-type: none"> 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:

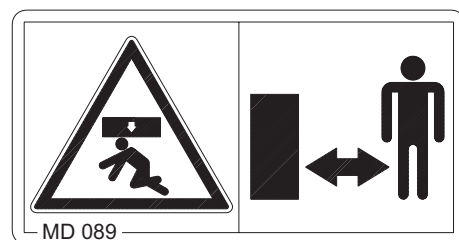
Before commencing operation read thoroughly operators manual and safety advice.



Picture No.: MD 089

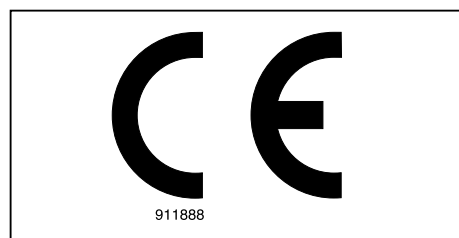
Explanation:

Never stay under a lifted spreader (unsecured load).



Picture No.: 911 888

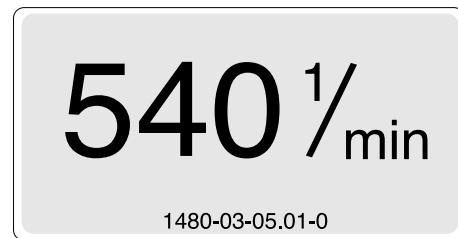
The CE sign indicates that the implement fulfils the requirements of the EC guide line Machine 89/392/EEG and the relevant additional guide lines.



Picture No.: **1480-03-05.01-0**

Explanation:

Max. PTO shaft rev. speed 540 1/min.



Picture No.: **MD 093**

Explanation:

Danger from rotating machine parts.

Never touch rotating shafts, spreading discs, etc.

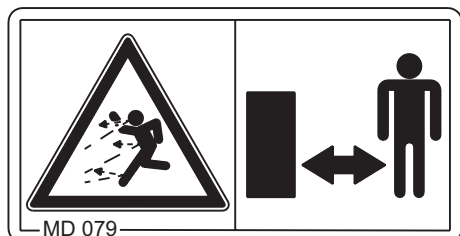


Picture No.: **MD 079**

Explanation:

Danger because of flinging spreading material particles.

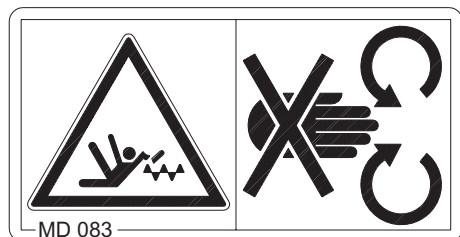
Advise people to leave the danger area.



Picture No.: **MD 083**

Explanation:

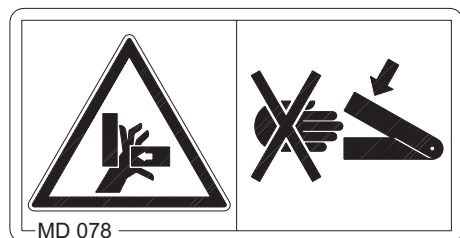
Never reach into the rotating agitator spiral.



Picture No.: **MD 078**

Explanation:

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



Picture No.: **MD 075**

Do not stay within the zone of spinning spreading discs.

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



2.4 Safety conscious operation

Besides the safety advice in this instruction manual additionally, the national, and generally valid operation safety and accident prevention advice of the authorised trade association are binding, especially UVV 3.1, UVV 3.2 and UVV 3.4.

Adhere to the safety advice on the decals on the machine.

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 prevention advice

Basic principle:

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

1. Adhere to the general rules of health- and safety precautions besides the advice in this instruction manual.
2. The fitted warning- and advising decals give important hints for a safe operation; adhering to them protects your own safety.
3. When making use of public roads adhere to applicable traffic rules.
4. Become acquainted with the machines controls and functions before beginning the operation. Doing this during operation would be too late.
5. Avoid wearing any loose clothing that would possibly wrap or catch on moving machinery.
6. Avoid danger of fire by keeping the machine clean.
7. Before beginning to move, check surrounding area (children etc.). Ensure sufficient visibility.
8. Sitting or standing on the implement during operation or during transport is not permissible.
9. Attach implements as advised and only to the advised devices.
10. Special care should be taken when the implement is coupled to or off the tractor.
11. When attaching or removing the machine bring any parking or storing devices into the corresponding position (standing safety).
12. Fit weights always to the fixing points provided and as advised for that purpose.
13. Adhere to the maximum permissible axle loads, total weights and transport dimensions.
14. Observe the outer permissible transport dimensions according to your national traffic law.
15. Fit and check transport gear, traffic lights, warnings and guards.

16. The release ropes for quick coupling three point linkages should hang freely and in the lowered position must not release by themselves.
17. During driving never leave the operator's seat.
18. Mount the implement as prescribed. Moving behaviour, steerability and braking are influenced by mounted implements, trailers and ballast weights. Check sufficient steerability and braking.
19. When lifting a three-point-implement the front axle load of the tractor is reduced depending on its size. The sufficient front axle load (20% of the tractor net weight) must be observed (pls.see instruction book of the vehicle manufacturer).
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 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 of the implement.
23. Hydraulic folding frames may only be actuated when nobody is staying in the swivelling range.
24. On all hydraulically actuated pivoting parts exists danger of injury by bruising and trapping.
25. On all hydraulically actuated pivoting parts exists danger of injury by bruising and trapping.
26. Before leaving the vehicle lower the implement to the ground. Actuate the parking brakes, stop the engine and remove ignition key.
27. Nobody should stay between vehicle and implement if the tractor is not secured against rolling away by the parking brake and/or by chocks.
28. **Note maximum permissible filling loads. Bear in mind the spreading material bulk density [kg/l].**

	Payload
E+S 200	1000 kg
E+S 300	1000 kg
E+S 400	1000 kg
E+S 600	1000 kg
29. Do not place any foreign objects inside the hopper.
30. During the calibration test watch out for danger zones due to rotating implement parts.
31. **Never park or move the spreader with filled hopper (danger of tipping over).**
32. **Before any operation check perfect seat of the fixing parts, especially for spreading disc- and spreading vane-fixing.**



2.5.2 General safety and accident prevention advice 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 vehicle 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 vehicle and implement.
5. In transport position of the implement always take care for a sufficient lateral locking of the 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. Observe manufacturer's advice.
8. Working implements should only be transported and driven on vehicles which are designed to do this.

2.5.3 General safety and accident prevention advice when operating with PTO shafts

1. Use only PTO shafts which are designed for the implement by the manufacturer and which are equipped with all legally requested guards.
2. Guard tubes and cones of the PTO shaft as well as a vehicle and implement side PTO guard must be fitted and kept in a proper condition.
3. On PTO shafts always ensure the tube has sufficient overlap in transport- and operating position. (Observe instruction manual of the PTO shaft manufacturer.)
4. Fit and remove the PTO shaft only when the universal joint shaft is disengaged and when the engine is stopped and ignition key is removed.
5. Ascertain correct fitting and securing of the PTO support.
6. Prevent PTO guard from spinning by fixing the provided chain to a nearby static part.
7. Before switching on 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 observe data in the setting chart).
8. Slow engagement of the PTO shaft protects vehicle and spreader.
9. When using the ground-related PTO take into account that the PTO speed depends on the driving speed and that the turning direction is reversed when driving backwards.

10. Before switching on the PTO shaft take care that no one stays in the danger zone of the implement.
11. Never switch on the tractor PTO while engine is stopped.
12. When operating with a switched on PTO shaft allow no one to stay near to the spinning PTO or universal joint shaft.
13. Always stop PTO when it is not needed or when the shaft is in an adverse position. Disengage the universal joint shaft as soon as the outlet openings are closed.
14. Attention! After switching off the PTO the mounted implement may continue to run by its dynamic mass.
During this period never come too close to the implement. Begin to work on the implement only after it 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 pulled out.
16. Place the uncoupled PTO shaft on the retaining support provided.
17. After removal of PTO shaft apply guard cap onto PTO stub.
18. Immediately repair any damage before operation to avoid consequential problems.

2.5.4 General safety and accident prevention advice for the hydraulic system

1. The hydraulic system is under high pressure.
2. Connect hydraulic hoses to the hydraulic rams and motors according to the advice in the instructions.
3. When fitting the hydraulic hoses to the vehicle hydraulic sockets always ensure that the hydraulic system on the vehicle as well as on the implement is without pressure.
4. To avoid wrong hydraulic connection between vehicle and implement, sockets and plugs should be marked (e. g. colour coded). This helps to prevent contrary function (lifting instead of lowering or vice versa) and reduces the danger of accident!
5. All hydraulic hoses must be checked for their operational safety by a skilled person before the first operation of the machine and then at least once a year. In case of damage or ageing replace the hydraulic hoses! The replacement hoses must correspond to the technical demands of the implement manufacturer.
6. When searching for leaks appropriate aids should be used because of the danger of injury.
7. Liquids leaking under high pressure (hydraulic oil) can penetrate the skin and cause severe injury. When injured see a doctor immediately! Danger of infection.

8. Before starting to do repair work to the hydraulic system release the pressure by actuating the control lever accordingly, lower machine to the ground and stop vehicle engine.
9. The period of use of any hose circuit should not exceed six years including a possible storing period of two years maximum. Also when stored and used properly hoses and hose circuits do age. Therefore their longevity and period of use is limited. Deviations from the above may be accepted by the Health- and Safety Authorities depending on the experience they have had and the danger potential. For hoses and hose circuits made of thermoplasts other guide lines may prevail.



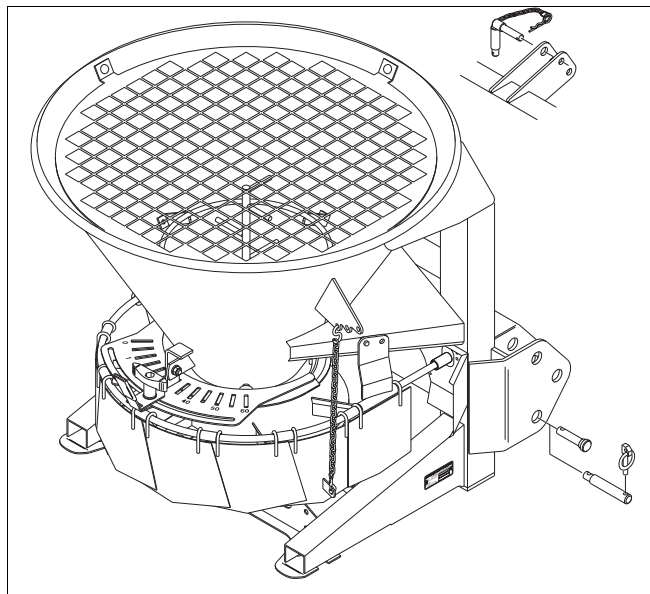
2.6 General safety and accident prevention advice for maintenance, repair and cleaning

1. Repair-, maintenance- and cleaning operations as well as the remedy of function faults should principally be conducted with drive and engine stopped. Remove ignition key.
2. Check nuts and bolts for tightness regularly. For the first time after 3 – 4 hopper fillings. If necessary retighten nuts and bolts.
3. When doing maintenance work on the lifted implement make sure that it is secured by proper supports.
4. Dispose of oil, grese 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 vehicle or on the mounted implement, remove cable from generator and battery.
7. Any spare parts fitted must, as a minimum meet with the implement manufacturers' fixed technical standards. Using original **AMAZONE** spare parts for example ensures this. Non original parts invalidate warranty and contravene these documentation for safe use.

3. Description of product

The winter application spreader has been designed for the rear 3-point linkage (cat. II) of a towing vehicle.

The spreading discs are driven either by the PTO shaft or a hydraulic motor.

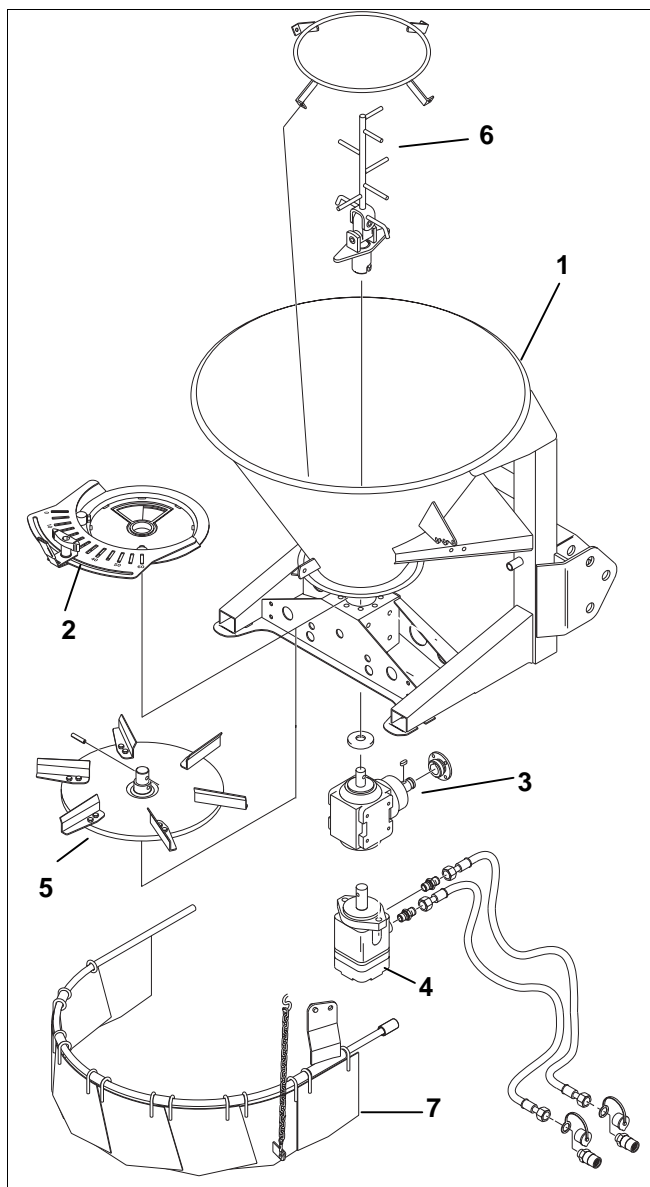


The spreader consists of the five components:

- Frame and hopper (1).
- Bottom group (2).
- Gearbox (3) or hydraulic motor (4) with spreading disc (5).
- Agitator (6).
- multiple spread width reducer (7).

The spreader is as standard equipped with:

- Tractor-3-point linkage cat. I and II..
- Drive via Walterscheid PTO shaft (E+S) or hydraulic motor (E+S H).
- Pre-selection switch for spread rate setting.
- Guard screen.
- Agitator.



3.1 Function

The spreading material slides down the hopper walls to the discharge opening (1) in the bottom group (2). The agitator (3) provides an even spreading material flow on to the spreading disc.

The spreading disc (4) rotates in clockwise direction and is provided with 6 spreading vanes (5).

Setting the various **spreading widths** is done via the multiple **spread width reducer** (6). Depending on the kind of spreading material **working widths** of between **1 and 6 m** are settable.

The spread width reducer is adjusted via the chain suspension (7) according to experience values.

Lifting the spread width reducer – **increase** of working width.

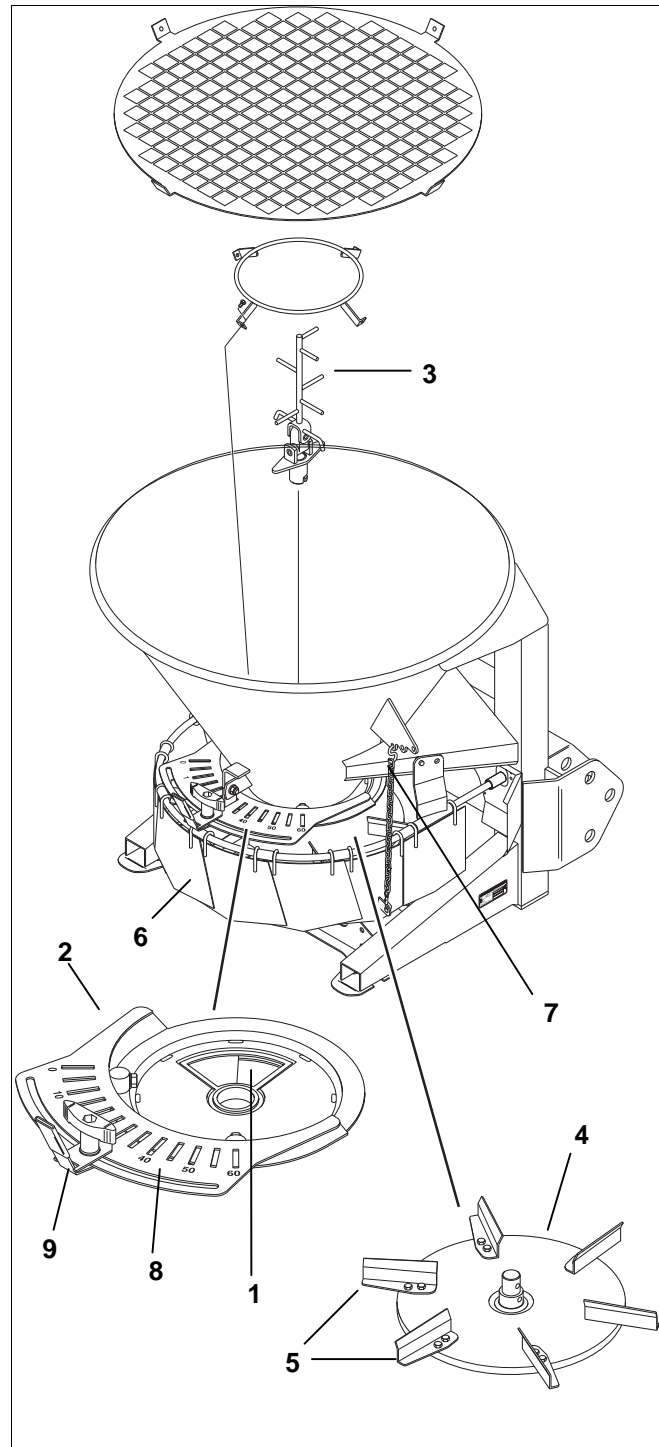
Lowering the spread width reducer – **reduction** of working width

The **spread fan** provided by the spreading disc can be moved by twisting the bottom group along the scale (8).

The shutter (9) allows the opening and closing of the discharge opening (1) as well as the spread rate setting.

To **close the discharge opening** move the shutter (1) to scale figure "0" on the scale (8) and lock in this position.

Read the **shutter position** for **spread rate setting** off the **scale** (8). The necessary shutter position is determined either by experience values or can be taken from the **setting chart**.



4. On receipt of the machine

The spreader (1) is supplied with PTO shaft (2).

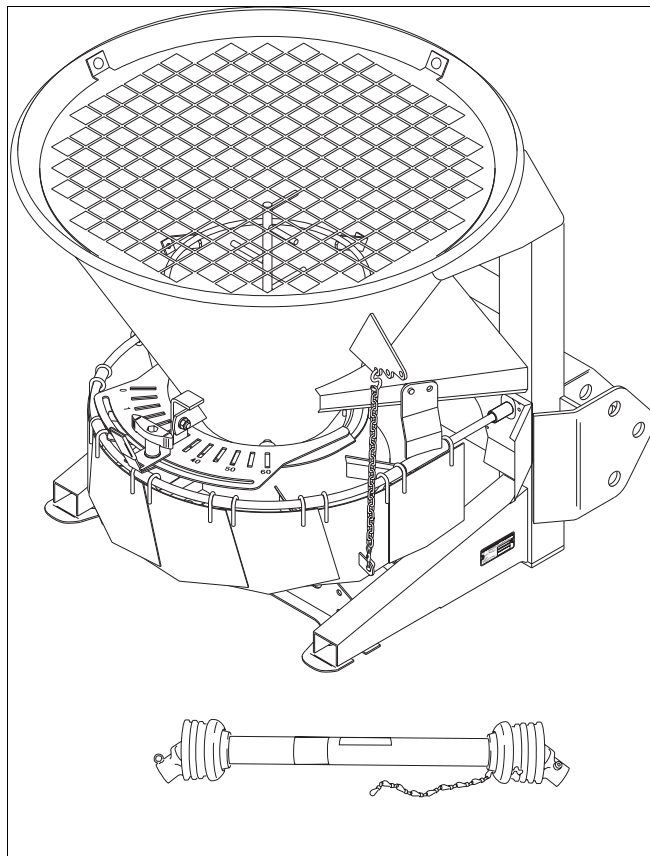
Check that no damage has been caused in transit and all parts are present according to the delivery note.

4.1 Function control

Carry out a function control after receipt of the machine (1).

For checking the function turn the machine (1) by hand one time on the gearbox input shaft.

Check lubrication of the PTO shaft (2) and the oil level in the gearbox (please refer to chapter 6.3.3).





4.2 PTO shaft drive

The reduction gear ($i = 1:2$) for the spreading disc and the agitator is driven via the PTO shaft. With this gearbox the spreading disc rev. speed is approx. 270 min⁻¹ at a PTO shaft rev. speed of 540 min⁻¹.

4.3 Fitting the PTO shaft



Danger of tipping over.

Assemble centrifugal broadcasters only with empty hopper.



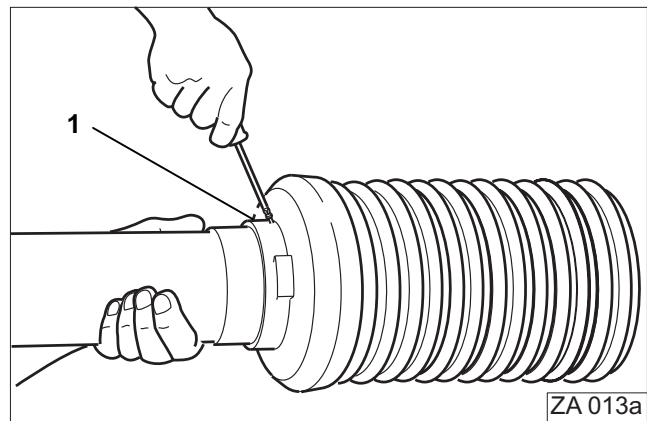
Only use the PTO shaft prescribed by the manufacturer. Walterscheid-PTO shaft (W100E-SD05-710).



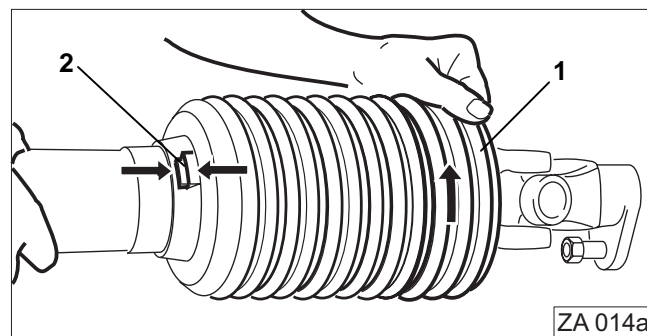
Observe the instruction manual of the PTO shaft manufacturer.

Remove the PTO shaft guard on the implement side PTO shaft half:

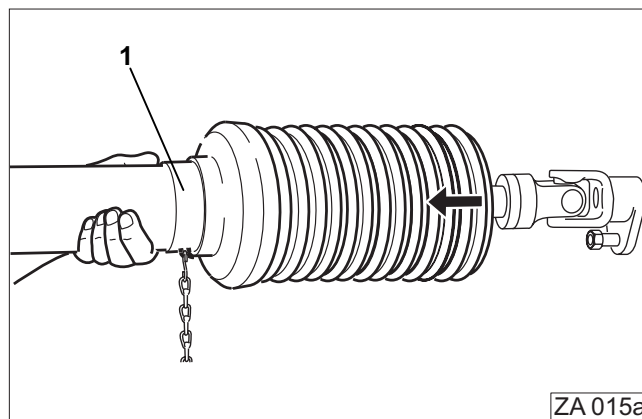
- Tilt machine to the rear.
- Remove fixing bolt (1) n.



- Twist cone (1) into fitting position (2).

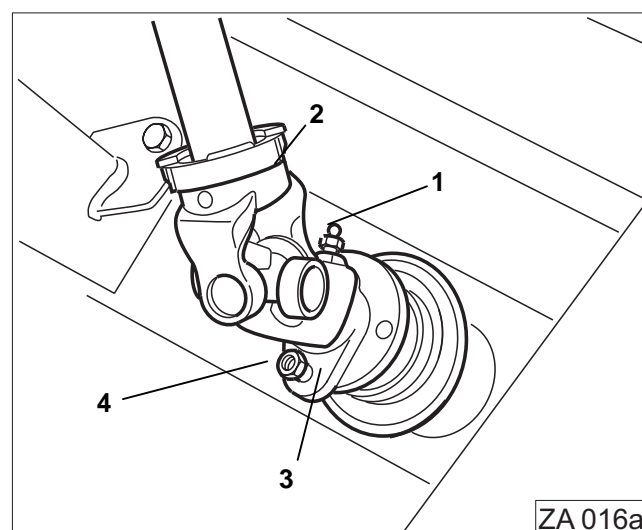


- Pull off protective half.



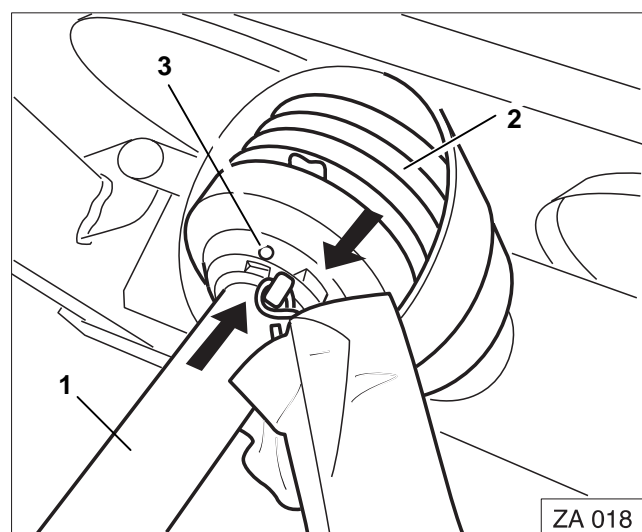
Before fitting the PTO shaft clean and grease the gearbox input shaft

- Slacken greasing nipple (1)
- Apply PTO shaft (2).
- Affix connecting yoke (3) with shear bolt (4).
- Screw in grease nipple (1).



Assembly of PTO shaft guard:

- Push on guard half (1).
- Twist guard cone (2) into fitting position.
- Screw in locking bolt (3).
- Tilt machine to the front.
- Apply second PTO shaft half and affix in the upper link bracket.
- Secure the guard tube on the frame by using a chain.





4.4 Hydraulic drive

The spreading disc and the agitator are driven via the hydraulic motor (1). This requires on the towing vehicle:

- 1 single acting spool valve
- 1 pressure free oil return flow.
- A pump capacity on the towing vehicle of min. 26 l/min. to max. 45 l/min.

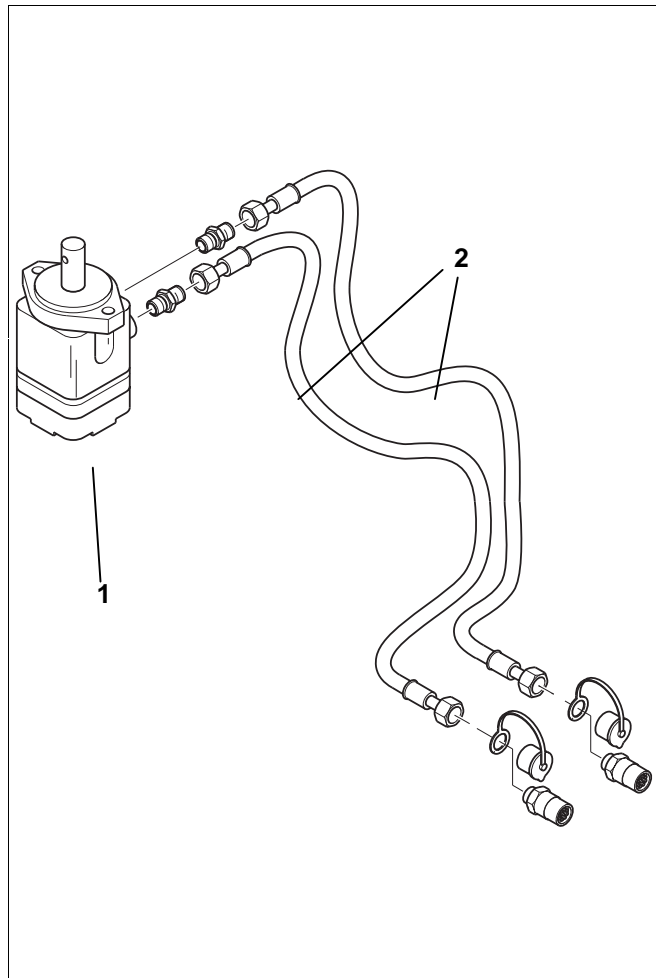


The indicated required pump capacities result in a spreading disc rev. speed of min. 250 min⁻¹ to max. 400 min⁻¹.



If the pump capacity is within the upper range, operate with a reduced engine nominal rev. speed of the towing vehicle and thus with a reduced pump capacity. This measure results in less wear on agitator and hopper bottom, especially when spreading grit.

- Hydraulic hoses (2)
(Length 1,60 m)
 - The "flow hose" is equipped with a **yellow** galvanised plug (**hard** pressure spring on the plug)
 - "Return flow" with **silver** galvanised plug (**soft** pressure spring in the plug) and return valve.



5. Mounting and dismounting



Danger of tipping over.

For mounting and dismounting place the spreader on level ground. Don't lift at the front.



Danger of tipping over!

Mount and dismount the spreader only with an empty hopper.



Any operation on the spreader should only be carried out with switched off motor and pressure-free hydraulic system.



Remove ignition key. Secure the vehicle against unintended starting and rolling away.



Danger of tipping over

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



Danger of tipping over

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



Danger of tipping over.

Lift machine only with attached upper link.



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

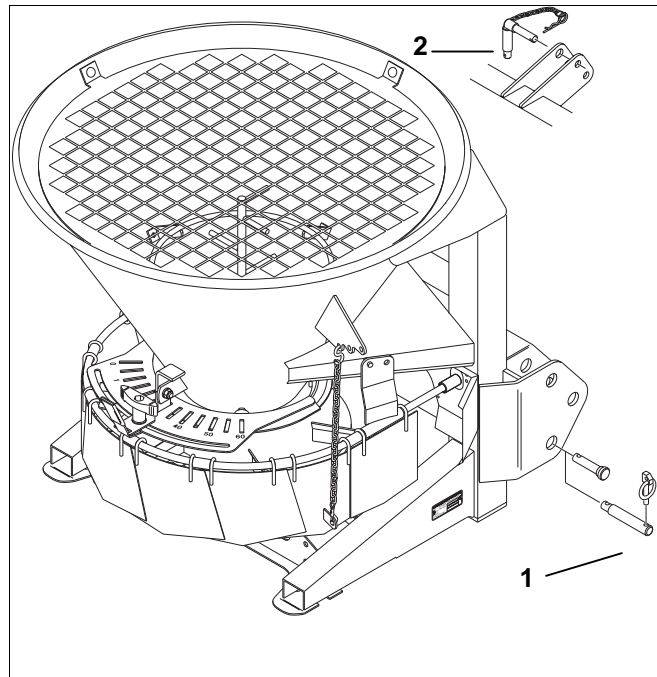


Ensure a horizontal and lateral stable mounting cross ways to the driving direction to prevent the machine from swinging to and fro during spreading operation.

5.1 Mounting

Mount the spreader to the rear three point hydraulic cat. I or II or to a special fitting device on the towing vehicle (please refer to chapter 2.5.2).

- Push lower link of the towing vehicle or of the fitting device on to the lower link pins (cat. I or II) (1) and secure by using a clip pin.
- Fix upper link with fixing (Kat. I or II) (2) and secure.



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



Advise people to leave the danger area behind or underneath the implement while carrying out settings on the upper linkage.



In lifted position of the spreader the lower link arms of the tractor may have only little lateral play so that the implement does not swing to and fro during spreading operation. Secure the lower link arms of the tractor with stabilising rods or chains.

5.1.1 E+S with PTO shaft

- Push the PTO shaft on to the tractor universal joint shaft.



Ensure a proper catching of the PTO shaft connection.



When initially fitted and when changing the vehicle type match PTO shaft (for this, please refer to para. 5.3).



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

- Hook in fixing chains of the PTO shaft guard on towing vehicle and implement side so that a sufficient swivel range of the PTO shaft in all operating positions is ensured and that the PTO shaft guard does not spin during operation.

5.1.2 E+S with hydraulic motor



The hydraulic system is under high pressure.

Connect hydraulic hoses to the hydraulic rams and motors according to the advice in the instructions.

When fitting the hydraulic hoses to the vehicle hydraulic sockets always ensure that the hydraulic system on the vehicle as well as on the implement is without pressure.

- Connect the oil return flow hose with a pressure free oil return flow.



The oil return flow hose is provided with a silver galvanised plug, soft pressure spring on the plug and a return valve.

- Connect the flow hose with a single acting spool valve.



The "flow hose" is provided with a yellow galvanised plug and hard pressure spring on the plug.



The spreading disc rotates in clockwise direction.



In case of a wrong direction of rotation re-bolt or exchange the hoses

on the motor,

on the towing vehicle or

on both of them.

5.2 Dismounting

- For dismantling place the spreader with empty hopper on a level ground so that there is no need to lift the machine at the front (danger of tipping over).
- Dismount the spreader from the towing vehicle.
- (E+S) Fix PTO shaft with the upper link pin in the upper link shackle.
- (E+SH) Place couplings for the hydraulic hoses in the provided retainers.

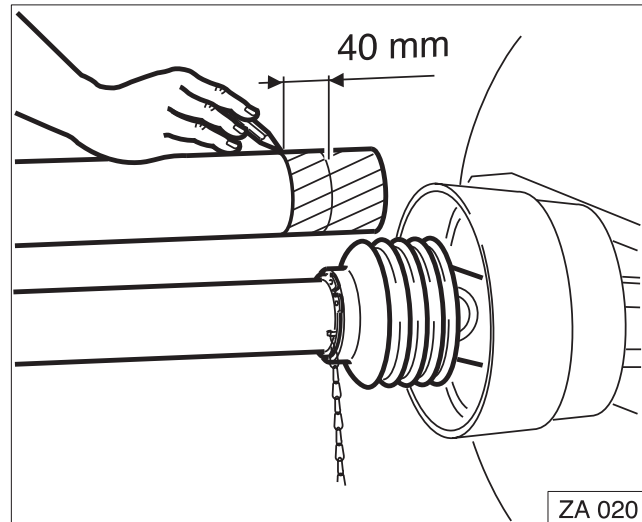
5.3 Initial fitting and matching up of the PTO shaft

When initially fitting, match PTO shaft to the vehicle. As this matching only applies for this specific vehicle type, check or repeat PTO shaft matching when changing vehicles.



Observe the instruction manual of the PTO shaft manufacturer.

- Pull apart the PTO shaft halves.
- Fit PTO shaft half to the vehicle side.
- Hold the PTO shaft halves (1) and (2) in their shortest and longest operational position side by side and check the **overlap of the PTO shaft tubes**.
- In **shortest position** the universal joint shaft tubes must never hit the universal yokes. Allow a safety spacing of **at least 40 mm**.
- In the **longest** operational position the **PTO shaft tube overlapping** prescribed by the PTO shaft manufacturer has to be observed (please refer 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 the PTO shaft manufacturer.
- Insert PTO shaft halves into one another.
- Push PTO shaft on the vehicle's universal joint shaft.



Ensure a proper catching of the PTO shaft connection.

- Hook in fixing chains of the PTO shaft guard on towing vehicle and implement side so that a sufficient swivel range of the PTO shaft in all operating positions is ensured and that the PTO shaft guard does not spin during operation.



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

6. Transport on public roads



For travelling on public roads with the spreader mounting to a towing vehicle 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 of their country

According to the harmonised European traffic regulations traffic lights and warning plates are required on spreaders mounted to a towing vehicle. These regulations read as follows:

- If the prescribed rear lights, the direction indicators or the registration No. of the towing vehicle are hidden by the spreader (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 towing vehicle, extra parking warning plates and limiting lights are required. If the mounted implement protrudes more than 1 m beyond the tail lights of the towing vehicle 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.



For travelling on public roads secure the implement against unintended lowering.



7. Putting into operation



The max. angling of the PTO shaft cross joint must not exceed 25°.



Always switch off the pto shaft in case of too large angling or when it is not used.



To avoid damage engage pto shaft or hydraulic drive only at slow tractor engine speed.



To avoid a grinding of the spreading material and thus an increased wear of the agitator and the float hopper bottom open the shutters wide enough so that an unhindered flow of the spreading material is ensured (especially important with grit).



Spreading material which has frozen over night may cause damage on the agitating device when switching on the spreading disc drive.

7.1 Filling the spreader



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



Observe the permissible payload. Bear in mind the specific bulk density [kg/l]. Depending on the condition of the spreading material (moist or dry) other specific weights may occur.



Before filling check the specific weight of your spreading material. Weigh accurately 1 litre spreading material. The weight is the specific weight [kg/l].



Observe the maximum payload and permissible axle loads and the permissible total weight of the towing vehicle. If necessary travel on public roads with only half filled hopper.



Moving characteristics, steering and braking ability are affected by mounted implements, trailers or ballast weights. Therefore, take account to these effects and allow sufficient steering and braking.

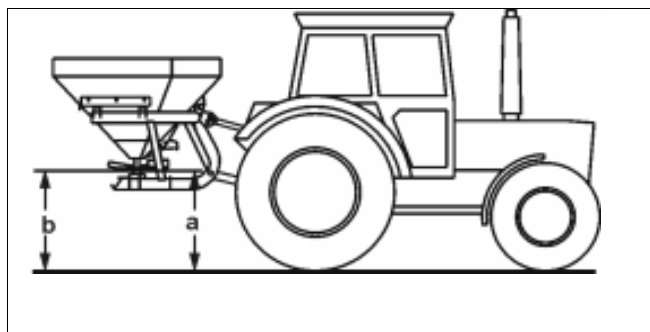


Therefore, when filling the spreader observe that the required towing vehicle front axle load is maintained (20 % of the vehicle's empty weight, however, also refer to the instruction manual of the vehicle manufacturer).

7.2 Setting the mounting height

Set the mounting height of the spreader with filled hopper on to 60 cm (up to 4 m working width)..

Measure on the spreading disc front side - (a = 60) and rear side (b = 60) from ground surface.



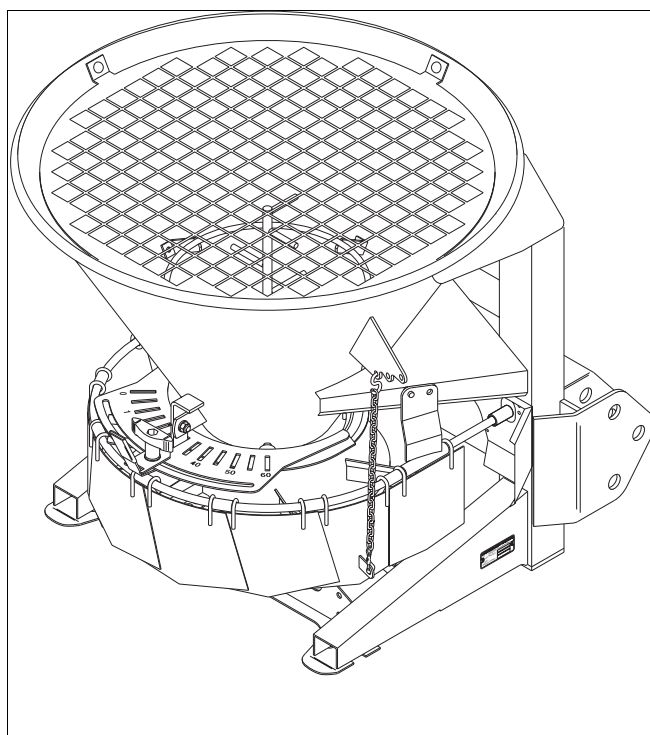
7.3 Setting the working width

Working widths of between 1 m and 6 m can be set, depending on the kind of spreading material. For this the multiple spreading width reducer (1) is adjusted via the chain suspension (2) according to experience values.



No accurate spread pattern will be achieved with damaged or bent spreading width reducer elements.

Please also refer to para. 7.4 "Swivelling the spread fan".



7.3.1 Checking the spreading width

Check the set working width with the aid of

- a yard stick or
- by sight.

If the actual and the required working width do not coincide, re-adjust the selected working width setting.

Correction of working width setting:

1. Increasing the working width

- Lift the spread width reducer by shortening the chain.
- Increase the drive speed of the spreading discs depending on the spreading material.
-

2. Reducing the working width

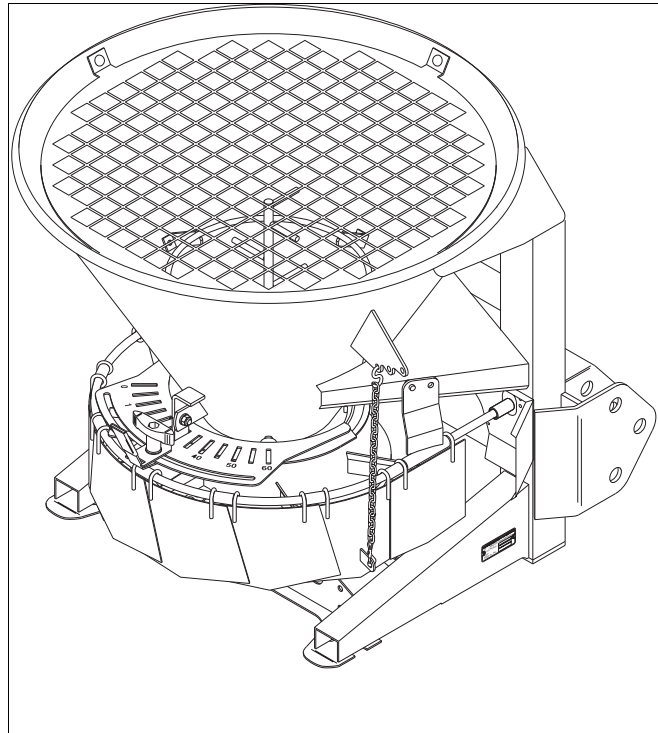
- Lower the working width reducer by extending the chain.
- Reduce the drive speed of the spreading discs depending on the spreading material.

7.4 Swivelling the spread fan

The material spread from the spreading discs forms the spread fan which can be swivelled by twisting the bottom group (1) within the range of the scale (2). The spread fan created by the

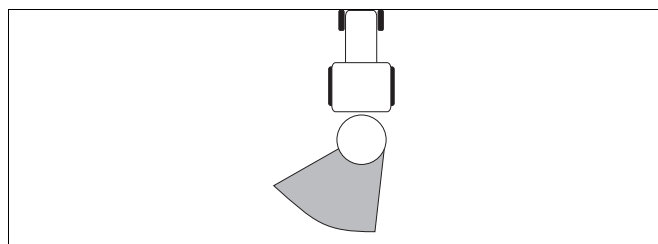
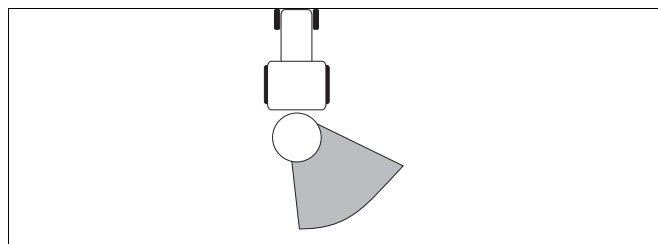
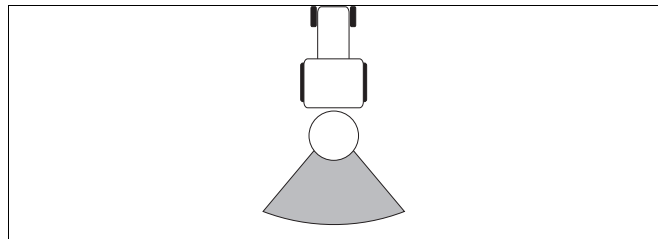
Procedure:

- Lift the bottom group locking ratchet (4) and twist the bottom group (1) either in clockwise direction or counter clockwise.
- Lower the bottom group locking ratchet (4) in order to lock the bottom group (1) in this new position.



Way of function:

- If the bottom group has been set to the scale figure "30" ((neutral position) the spreading disc creates a spreading material dependent symmetric spread fan towards the implement's longitudinal axle.
- If the bottom group is twisted in direction of the scale figure "0" (clockwise) the spreading disc creates a spread fan which is moved to the right hand side in relation to the implement's longitudinal axle (seen in driving direction).
- If the bottom group is twisted in the direction of the scale figure "60", the spreading disc creates a spread fan which is moved to the left hand side in relation to the implement's longitudinal axle (seen in driving direction).



7.5 Setting the spread rate

The shutter slide position depends on:

- the kind of spreading material (sand salt or mixture) and its characteristics (granular, coarse/fine, moist, dry).
- the desired spreading width [m].
- the intended operational speed [km/h].
- the desired spread rate [g/m²].

The **spread rate is set** by moving the shutter slide lock (1) of the shutter (2) along the scale (3) according to experience values or according to the indications given in the **E + S setting chart**. This way different opening diameters of the discharge opening can be set.

Moving the shutter slide lock to a higher figure of the scale (3) means:

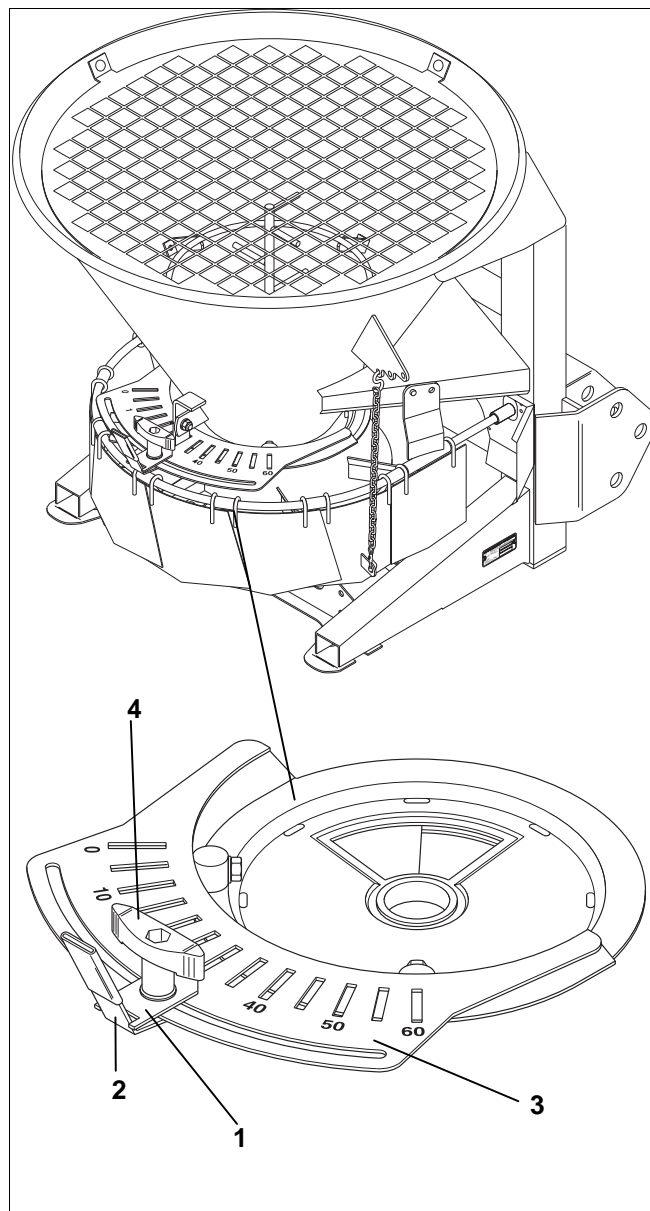
- larger opening diameter of the discharge openings.
- increased spread rate.



As the spreading properties of the spreading materials may heavily vary (e.g. moist or dry) we recommend that you determine the desired shutter position for the desired spread rate with the aid of a spread rate check.

Procedure of spread rate setting:

- Slacken the thumb nut (4) .
- Set the pointer of the shutter slide lock (1) onto the desired figure on the scale (3).
- Retighten thumb nut (4) firmly.





7.5.1 Spread rate check

The spread rate [g/m²] depends on:

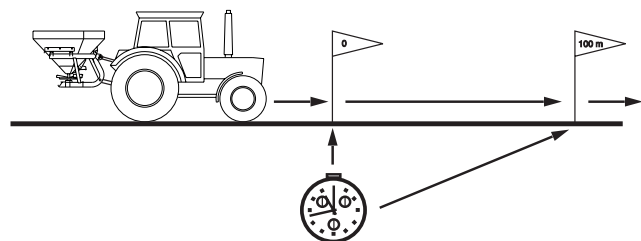
- the shutter position.
- the operational speed.
- the PTO shaft rev. speed.
- condition of spreading material (granular, coarse/fine, moist, dry).

A spread rate check is recommended with any change of spreading material or when it changed its condition.

If the operational speed of the towing vehicle is known a stationary spread rate is possible.

1. How to determine the actual speed of operation

- Carefully measure a test distance of 100 m. Mark beginning and end of the test distance.
- Drive test distance from beginning to end mark with the intended, constant operational speed. Determine the required time with the aid of a stopwatch.



e.g. 100m in 120 sec.

- Determine the operational speed [km/h].

Operational speed [km/h]	=	$\frac{360}{\text{time for 100m}}$
-----------------------------	---	------------------------------------

Example: 100 m in 120 sec.

$$\frac{360}{120 \text{ sec}} = 3 \text{ km/h}$$

2. Determining the required spread rate per minute [g/min] for the desired spread rate:

$\text{So [g/min]} = \text{St [g/m}^2\text{]} \times \text{FI [m}^2\text{/min]}$
--

So: required spread rate

St: desired spread rate

FI: area efficiency

$\text{FI [m}^2\text{/min]} = \text{W [m/min]} \times \text{A [m]}$

FI: Area efficiency

W: Travelled distance

A: Working width

$\text{W [m/min]} = \frac{\text{F [m/h]}}{60}$
--

W: Travelled distance

F: Operational speed

Example:

Operational speed F: 3 km/h

Working width A: 4m

desired spread rate St: 50 g/m²

required spread rate So: [g/min]

$$\text{W} = \frac{3000 \text{ [m/h]}}{60} = 50 \text{ m/min}$$

$$\text{F} = 50 \text{ m/min} \times 4 \text{ m} = 200 \text{ m}^2\text{/min}$$

$$\text{So} = 50 \text{ g/m}^2 \times 200 \text{ m}^2\text{/min}$$

$$\text{So} = 10000 \text{ g/min}$$

The necessary required spread is 10 kg/min.

3. Spread rate checking procedure

- Place a plastic wrap underneath the spreader.
- Lower the spreader to its lowest position.
- Move the working width reducer in its lowest position.
- Start the towing vehicle's engine. With the manual gas lever constantly set the engine's rev. speed according to the PTO shaft rev. speed (e.g. **540 min⁻¹**)
- Engage PTO shaft.
- Open the shutter for precisely 1 minute in the desired shutter slide position.
- To determine the actually set spread rate [g/m²] weigh the collected amount of spreading material and compare with the determined required spread rate [g/min].



If the actual and the desired spread rate do not coincide, re-adjust the shutter slide position. If necessary repeat the spread rate check.

.



During the spread rate check be aware of rotating implement parts and spreading material particles being thrown around. Danger of injury.



8. Cleaning, maintenance and repair



As a matter of principle all repair-, maintenance- and cleaning work as well as remedy of function faults should be carried out with disengaged universal joint shaft and stopped vehicle engine. Remove ignition key.



When doing maintenance work on the lifted implement make sure that it is secured by proper supports.



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.



Any spare parts fitted must, as a minimum meet with the implement manufacturers' fixed technical standards. Using original AMAZONE spare parts for example ensures this.



All hydraulic hoses must be checked for their operational safety in regular intervals. Exchange in case of damage or ageing. The period of use of any hose circuit should not exceed six years. The replacement hoses must correspond to the technical demands of the implement manufacturer.



When searching for leaks appropriate aids should be used because of the danger of injury.



Liquids leaking under high pressure (hydraulic oil) can penetrate the skin and cause severe injury. When injured see a doctor immediately! Danger of infection.



Before starting to do repair work to the hydraulic system, lower machine to the ground, release the pressure and stop vehicle engine.



Dispose of oil, grese and filters in the appropriate manner.



Grease the shutter guides after any operation.



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

8.1 Cleaning

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

Dismantle bottom group and clean carefully.

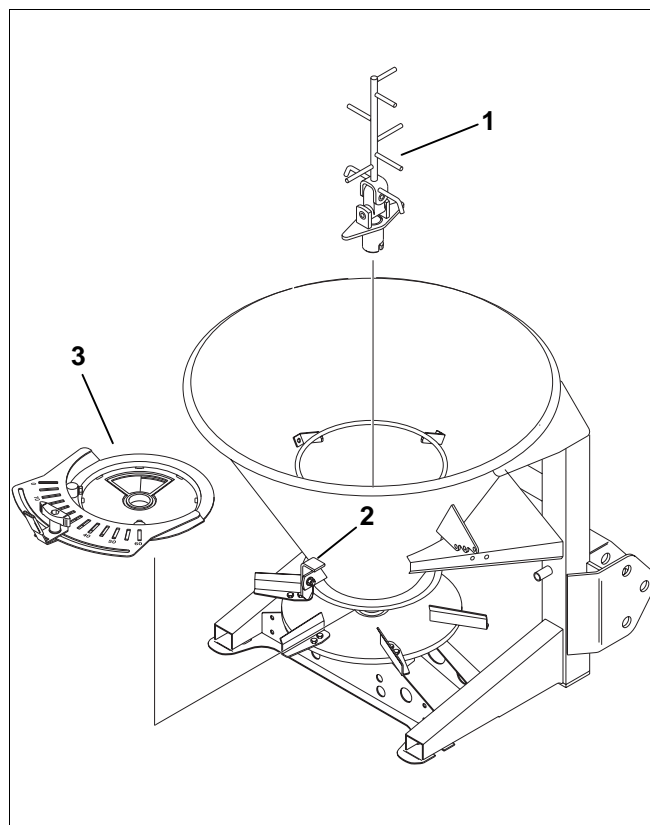
Treat dry machine with an anticorrosive agent(Only use biologically degradable protective agents).

Park machine with **opened, greased** shutter.

8.1.1 Dismantling of bottom group

- Twist the agitator (1) in counter clockwise direction and remove.
- Lift the bottom group locking ratchet (2) and pull out the bottom group (3) to the rear.

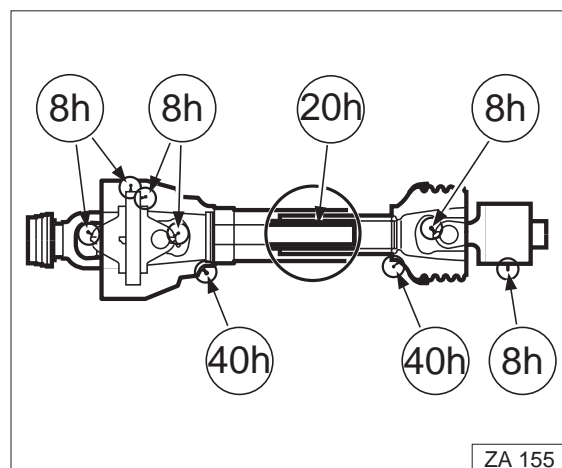
The re-assembly is done in vice versa order.



8.2 Lubrication

8.2.1 Greasing of PTO shaft

The adjacent illustration shows the greasing intervals for the PTO shaft in hours. For further information, please refer to the instruction manual of the PTO shaft manufacturer..



ZA 155

8.2.2 Gearbox oil

The gearbox is supplied with sufficient oil by the manufacturer. **With horizontally mounted implement and after having removed the oil drain plug (1) the oil level should be visible on the lower edge of the hole.** 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 refill oil.

For refilling oil

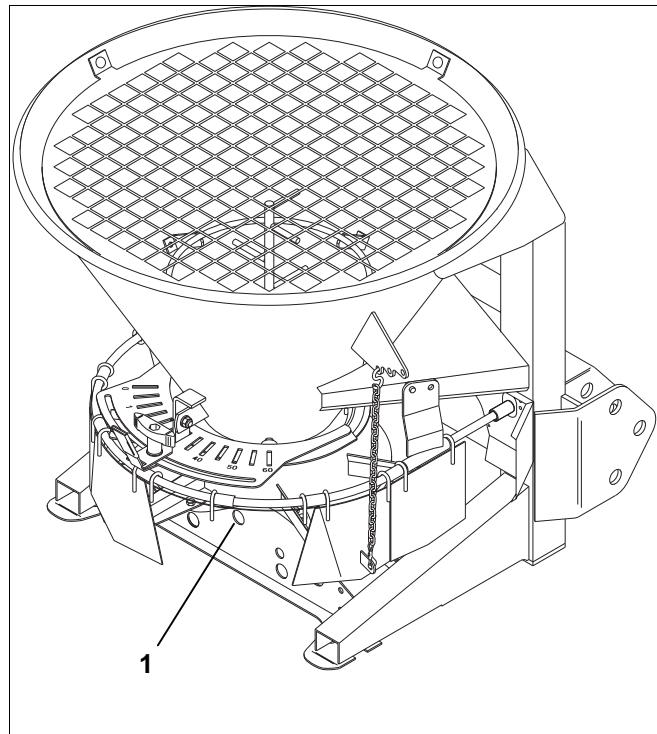
- lift the spreader horizontally,
- remove oil drain plug (1),
- refill oil (until lower edge of the hole),
- Screw in oil drain plug (1).

Oil filling quantity: 0,35 l SAE 90

Maintenance intervals

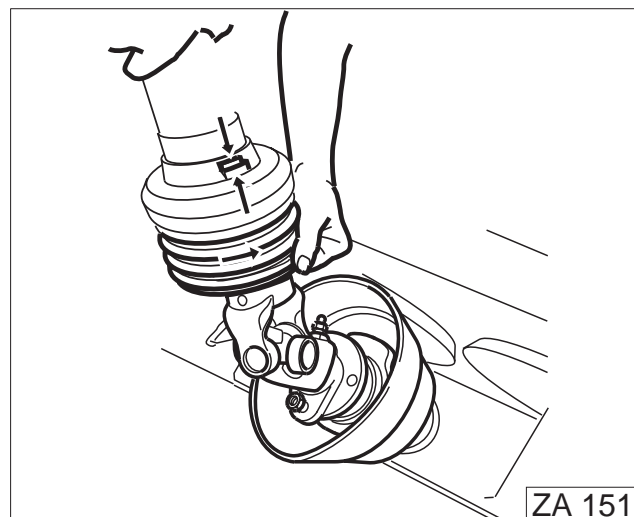
- 1. oil change after 50 hours of operation.

then oil change every 500 to 800 hours of operation – **at least, however, once a year.**



8.3 Shear-off safety on the PTO shaft

The separately supplied **bolts 8 x 30, DIN 931, 8.8** are **spare shear bolts (1)** 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.



8.4 Exchange of spreading vanes



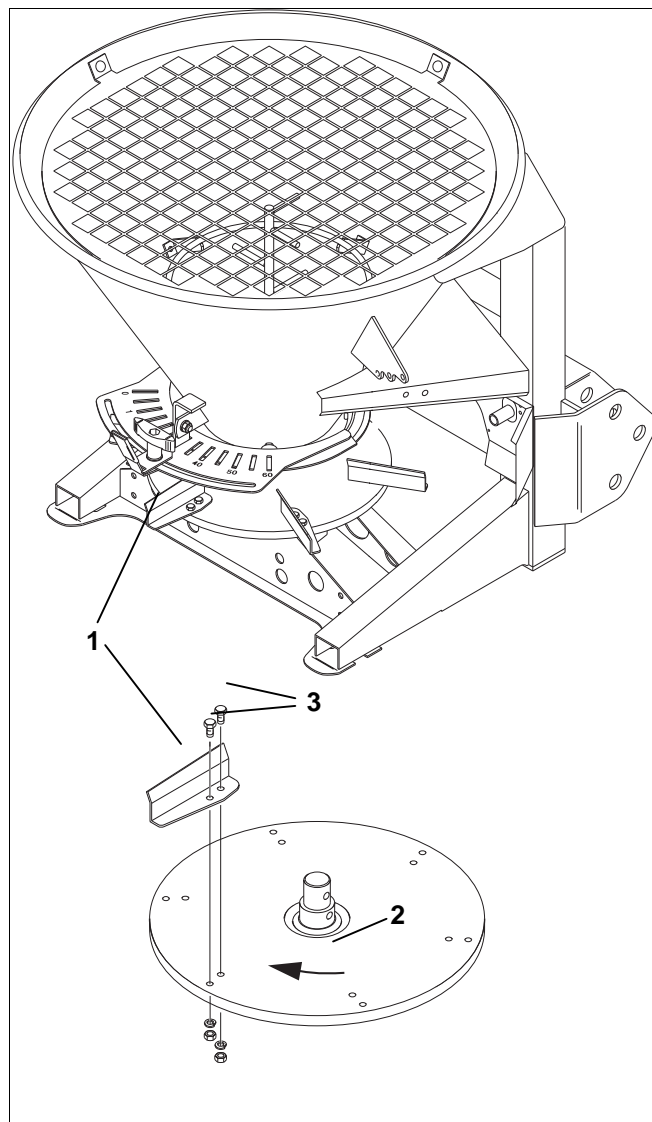
Exchange spreading vanes as soon as breakage by wear can be noted.



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

Exchange spreading vane as follows:

- Remove spreading width reducer.
- Remove bolts (3) and exchange spreading vane (1).
- Retighten bolts (3) firmly.



9. Setting charts

9.1 Sand

Shutter position	Sand																											
	Bulk density: 1, 5 kg/l																											
	Table figures in g/m ²																											
	Effective spreading width [m]: 1							2							3							4						
	Km/h							Km/h							Km/h							Km/h						
	1	6	8	10	12	14		1	6	8	10	12	14		1	6	8	10	12	14		1	6	8	10	12	14	
10	420	70	53	42	35	30		210	35	26	21	18	15		140	23	18	14	12	10		105	18	13	11	9	8	
15	1428	238	179	143	119	102		714	119	89	71	60	51		476	79	60	48	40	34		357	60	45	36	30	26	
20	2388	398	299	239	199	171		1194	199	149	119	100	85		796	133	100	80	66	57		597	100	75	60	50	43	
25	3420	570	428	342	285	244		1710	285	214	171	143	122		1140	190	143	114	95	81		855	143	107	86	71	61	
30	4644	774	581	464	387	332		2322	387	290	232	194	166		1548	258	194	155	129	111		1161	194	145	116	97	83	
35	5880	980	735	588	490	420		2940	490	368	294	245	210		1960	327	245	196	163	140		1470	245	184	147	123	105	
40	7200	1200	900	720	600	514		3600	600	450	360	300	257		2400	400	300	240	200	171		1800	300	225	180	150	129	
45	8490	1415	1061	849	708	606		4245	708	531	425	354	303		2830	472	354	283	236	202		2123	354	265	212	177	152	
50	9900	1650	1238	990	825	707		4950	825	619	495	413	354		3300	550	413	330	275	236		2475	413	309	248	206	177	
55	11100	1900	1425	1140	950	814		5700	950	713	570	475	407		3800	633	475	380	317	271		2850	475	356	285	238	204	

PTO shaft rev. speed: 540 R.P.M.

Distance between spreading disc and ground: 60 cm

Setting chart values are indicated in g/m².

9.2 Thawing salt

Shutter position	Thawing salt																With agitator							
	Bulk density: 1, 26 kg/l																							
	Table figures in g/m²																							
	Effective spreading width [m]: 1						2						3						4					
Km/h						Km/h						Km/h						Km/h						
	1	6	8	10	12	14	1	6	8	10	12	14	1	6	8	10	12	14	1	6	8	10	12	14
10	945	158	118	95	79	68	473	79	59	47	39	34	315	53	39	32	26	23	236	39	30	24	20	17
15	3144	524	393	314	262	225	1572	262	197	157	131	112	1048	175	131	105	87	75	786	131	98	79	66	56
20	5640	940	705	564	470	403	2820	470	353	282	235	201	1880	313	235	188	157	134	1410	235	176	141	118	101

9.3 Moraine grit

Shutter position	Moraine grit																																	
	Bulk density: 1, 42 kg/l																																	
	Table figures in g/m²																																	
	2												3						4						5									
Effective spreading width [m] 1												Km/h						Km/h						Km/h						Km/h				
1	6	8	10	12	14	1	6	8	10	12	14	1	6	8	10	12	14	1	6	8	10	12	14	1	6	8	10	12	14					
10	210	35	26	21	18	15	105	18	13	11	9	8	70	12	9	7	6	5	53	9	7	5	4	4	42	7	5	4	3					
15	1920	320	240	192	160	137	960	160	120	96	80	69	640	107	80	64	53	46	480	80	60	48	40	34	384	64	48	38	32	27				
20	3660	610	458	366	305	261	1830	305	229	183	153	131	1220	203	153	122	102	87	915	153	114	92	76	65	732	122	92	73	61	52				
25	5220	870	653	522	435	373	2610	435	326	261	218	186	1740	290	218	174	145	124	1305	218	163	131	109	93	1044	174	131	104	87	75				
30	6600	1100	825	660	550	471	3300	550	413	330	275	236	2200	367	275	220	183	157	1650	275	205	165	138	118	1320	220	165	132	110	94				
35	8100	1350	1013	810	675	579	4050	675	506	405	338	289	2700	450	338	270	225	193	2025	338	253	203	169	145	1520	270	203	162	135	116				
40	9480	1580	1185	948	790	677	4740	790	593	474	395	339	3160	527	395	316	263	226	2370	395	296	237	198	169	1896	316	237	190	158	135				
45	10620	1770	1328	1062	885	759	5310	885	664	531	443	379	3640	590	443	364	296	253	2665	443	332	266	221	190	2124	354	266	212	177	152				
50	11820	1970	1478	1182	958	844	5910	958	739	591	493	422	3940	657	493	394	328	281	2955	493	369	296	246	211	2364	394	296	236	197	169				
55	12870	2145	1609	1287	1073	919	6435	1073	804	644	536	460	4290	715	536	429	358	306	3218	536	402	322	268	230	2574	429	322	257	215	184				

9.4 Slag

Shutter position	Slag																														
	Bulk density: 1, 4 kg/l																														
	Table figures in g/m²																														
	effective spreading width (m): 1						2						3						4						5						
	Km/h						Km/h						Km/h						Km/h						Km/h						
	1	6	8	10	12	14	1	6	8	10	12	14	1	6	8	10	12	14	1	6	8	10	12	14	1	6	8	10	12	14	
10		288	48	36	29	24	21	144	24	18	14	12	10	96	16	12	10	8	7	72	12	9	7	6	5	58	10	7	6	5	4
15		1980	330	248	198	165	141	990	165	124	99	83	71	660	110	83	66	55	47	495	83	62	50	41	35	396	66	50	40	33	28
20		4155	693	519	416	346	297	2078	346	260	208	173	148	1385	231	173	139	115	99	1039	173	130	104	87	74	831	139	104	83	69	59
25		6120	1020	765	612	510	437	3060	510	383	306	255	219	2040	340	255	204	170	146	1530	255	191	153	128	109	1224	204	153	122	102	87
30		7920	1320	990	792	660	566	3960	660	495	396	330	283	2640	440	330	264	220	189	1980	330	248	198	165	141	1684	264	198	160	132	113
35		9660	1610	1208	966	805	690	4830	805	604	483	403	345	3220	537	403	322	268	230	2415	403	302	242	201	173	1932	322	242	193	161	138
40		11280	1860	1410	1128	940	806	5640	940	705	564	470	403	3760	627	470	376	313	269	2820	470	353	282	235	201	2256	376	282	226	188	161
45		12690	2115	1586	1269	1058	906	6345	1058	793	635	529	453	4230	705	529	423	353	302	3173	529	397	317	264	227	2538	423	317	254	212	181
50		14220	2370	1778	1422	1185	1016	7110	1185	889	711	593	508	4740	790	593	474	395	339	3555	593	444	356	296	254	2844	474	356	284	237	203
55		15480	2580	1935	1548	1290	1106	7740	1290	968	774	645	553	5160	860	645	516	430	396	3870	645	484	387	323	276	3096	516	387	310	258	221



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