RAUCH

Operator's manual

Please read carefully before using the machine!

Keep for future use

This operator's and assembly manual is an integral part of the machine. Suppliers of new and second-hand machines are required to document in writing that the operator's and assembly manual was delivered with the machine and handed over to the customer.

2.1/6.1/18.1

AXEO

5900854-f-en-0923

Original instructions

Foreword

Dear customer,
By purchasing the single disc spreader for winter road maintenance of the AXEO series, you have shown confidence in our product. Thank you very much! We want to justify this confidence. You have purchased a powerful and reliable machine.

However, in case unexpected problems arise, our customer service department is always there for you.

Please read this operator's manual carefully before commissioning the single disc spreader for winter road maintenance and observe the instructions.

This operator's manual gives detailed instructions on the operation of the machine, as well as valuable information on assembly, maintenance, and care.

This manual may also describe equipment that is not included in your machine.

Please note that damage caused by incorrect operation or improper use cannot be covered by warranty claims.

Please enter the type and serial number here together with the year of manufacture of your single disc spreader for winter road maintenance.
This information is provided on the machine nameplate or on the frame.
Please state this information when ordering spare parts or optional equipment, and in case of complaints.

Type:

Serial number:

Year of manufacture:

Technical improvements

We continuously strive to improve our products. For this reason, we reserve the right to make any improvements and changes to our machine that we consider necessary without notice. We do not accept any obligation to make such improvements or changes on machines that have already been sold.

We will be pleased to answer any other questions that you might have.

Yours sincerely

RAUCH Landmaschinenfabrik GmbH

Table of contents

1 Intended use

The single disc spreaders for winter road maintenance of the AXEO series may only be used in accordance with the stipulations of the present operator’s manual.

The single disc spreaders for winter road maintenance of the AXEO series are constructed in accordance with their intended use.

They may only be used for spreading material that can be delivered by chute, such as grit (3/5), sand, and salt, as well as in agriculture to apply granulated fertilizers.

The machine is intended as a three-point linkage on the rear of a tractor and for operation by a person.

In the following chapters, the single disc spreader is referred to as the "machine".

Any use beyond these specifications is considered as contrary to the intended use. The manufacturer shall not assume any liability for any damages resulting from this. The risk is solely carried by the operator.

The intended use also comprises the compliance with the operating, maintenance, and repair conditions prescribed by the manufacturer. Only genuine spare parts from RAUCH may be used as replacements.

The machine may only be used, maintained and repaired by people who are familiar with the characteristics of the machine and who are aware of the risks.

The instructions regarding the operation, service, and safe handling of the machine as described in this operator's manual and declared by the manufacturer in the form of warning signs and symbols on the machine must be strictly followed during operation. The relevant accident prevention regulations and other generally recognized safety-related, occupational health and road traffic regulations must be observed when using the machine.

Unauthorized modifications to the machine are not permitted. Such modifications exclude any liability of the manufacturer for any resulting damages.

■ ***Foreseeable misuse***

The manufacturer provides warning notes and signs on the mineral fertilizer spreader relating to foreseeable misuse. These warnings and warning symbols must always be observed. This way, application of the machine against the intentions of the operator’s manual is prevented.

2 User instructions

2.1 About this operator’s manual

This operator’s manual is an **integral part** of the machine.

The operator’s manual contains important instructions for **safe, proper,** and economic **use** and **maintenance** of the machine. Compliance with its stipulations helps to **avoid risks**, reduce repair costs and downtime, and to increase the reliability and service life of the machine controlled with it.

The complete documentation, comprising this operator’s manual and any other documents provided, must be kept in an easily accessible location close to where the machine is used (e.g., in the tractor).

If the machine is sold, the operator’s manual must also be passed to the new owner.

The operator’s manual is intended for the operator of the machine and anyone involved in operating and maintaining it. It must be read, understood, and applied by every person who is entrusted with the following work on the machine:

- Operation,
- Maintenance and cleaning,
- Troubleshooting.

In particular, the following is to be observed:

- The chapter on safety,
- The warnings in the text of the individual chapters.

The operator's manual does not replace your **own responsibility** as operator and operational staff of the machine control unit.

2.2 Structure of the operator’s manual

The operator’s manual is divided into six key areas in terms of content

- User instructions
- Safety instructions
- Machine data
- Instructions on operating the machine
- Instructions for finding and correcting faults
- Maintenance and service instructions

2.3 Notes on text descriptions

2.3.1 Instructions and procedures

Steps that the operator must carry out are shown as follows.

▶ Instruction for action step 1

▶ Instruction for action step 2

2.3.2 Lists

Lists without a specific sequence are shown as lists with bullet points:

- Property A
- Property B

2.3.3 References

References to other sections in the document are shown with paragraph number, header text and/or page number:

- **Example:** Please also note *3 Safety*

References to other documents are shown as information or instructions without the exact chapter or page number:

- **Example:** Follow the instructions in the operator's manual of the universal drive shaft manufacturer.

3 Safety

3.1 General information

The chapter **Safety** contains basic warning notes as well as working and traffic safety instructions for the usage of the installed machine.

The adherence to the instructions in this chapter is a prerequisite for the safe handling and trouble-free operation of the machine.

There are additional warnings in the other chapters of this operator's manual, which must also be observed. The warning instructions are given before the text for the relevant actions.

Warning notes on the supplier components can be found in the respective supplier documentation. These warning instructions must also be observed.

3.2 Meaning of warnings

The warnings in the operator's manual are classified according to the severity of the risk and the probability of its occurrence.

The warning symbols draw attention to the residual risks to which users of the machine are exposed. The warnings used are structured as follows:

Symbol + **signal word**
Explanation

Level of danger of warnings
The level of danger is indicated in the signal word. The levels of danger are classified as follows:

⚠ DANGER!

Type and source of danger

This warning warns of a danger posing an immediate threat to the health and life of people.

Ignoring these warnings will result in severe injury or death.

▶ Always observe the measures described to prevent this danger.

⚠ WARNING!

Type and source of danger

This warning warns of a potentially dangerous situation for personal health.

Ignoring these warnings leads to severe injury.

▶ Always observe the measures described to prevent this danger.

⚠CAUTION!

Type and source of danger

This warning warns of a potentially dangerous situation for personal health.

Ignoring these warnings leads to injury.

▶ Always observe the measures described to prevent this danger.

NOTICE!

Type and source of danger

This warning warns of material and environmental damage.

Ignoring these warnings will result in damage to the machine and to the environment.

▶ Always observe the measures described to prevent this danger.

This is an instruction:
General instructions contain tips for the operation and information that is particularly useful, but no warnings about hazards.

3.3 General information on the safety of the machine

The machine is constructed in accordance with the state of the art and the recognized technical regulations. However, its usage and maintenance may cause danger to the health and life of the operator or third parties and/or the impairment of the machine and other material assets.

For this reason, the machine may only be operated
- when it is in a proper and roadworthy condition,
- in awareness of safety and dangers.

Therefore, it is imperative that you have read and understood the contents of the operator's manual. You must be familiar with the applicable accident protection regulations and the generally accepted regulations for safety, occupational health, and road traffic, and apply these rules as required.

3.4 Instructions for the operator

The owner is responsible for the intended use of the machine.

3.4.1 Qualifications of personnel

Before starting any work on or with the machine, all persons who are involved in operation, maintenance or service must have read and understood this operator's manual.

- The machine may only be operated by instructed personnel authorized by the owner.
- Persons who are apprentices, in training or under instruction may only work on the machine under the supervision of an experienced person.
- Maintenance and service may only be carried out by qualified maintenance personnel.

3.4.2 Instruction

Distribution partners, works representatives or employees of the manufacturer will instruct the operator regarding the operation and maintenance of the machine.

The owner must ensure that newly recruited operating and maintenance personnel are instructed to the same extent and with the same care with regard to the operation and repair of the machine in compliance with this operator’s manual.

3.4.3 Accident prevention

Safety and accident prevention regulations are legally specified in every country. The owner of the machine is responsible for observing the regulations applicable in the country of operation.

The following instructions must also be observed:

- Never let the machine run without supervision.
- Do not ride on the machine while it is working or being transported (**no passengers**).
- **Do not use** machine parts as steps.
- Always wear tight fitting clothes. Do not wear work clothes with belts, loose threads or other items that could get caught.
- Follow the manufacturer's warnings when handling chemicals. You may have to wear personal protective equipment (PPE).

3.5 Information on operational safety

Only use the machine in safe operating condition. Avoid hazardous situations.

3.5.1 Lifting and moving the machine

The machine is delivered ex works standing on a pallet.

- Exclusively lift the machine on the pallet using a suitable lift truck or forklift truck. Please observe the total weight.
- Never lift or move the machine at the hopper or at other, non-marked anchor points.

3.5.2 Parking the machine

- Only park the machine with an empty hopper on level, firm ground.
- If the machine is parked alone (without tractor), open the metering slide completely. The return spring is released; any water that may be entering the hopper is drained.

3.5.3 Filling the machine

- Only fill the machine when the machine is mounted or attached to the tractor (depending on the machine)
- Only fill the machine when the engine of the tractor is shut off. Remove the ignition key in order to prevent the engine from being started.
- Make sure that there is adequate space on the filling side.
- Use suitable auxiliary equipment for filling the machine (e.g., front-end loader, screw conveyor).
- Fill the machine no higher than the top-edge. Check the filling level.
- Only fill the machine with the protective grid closed. This way, faults during spreading caused by lumps in the spreading material or other foreign bodies are prevented.

3.5.4 Checks before commissioning the machine

Check the operating safety of the machine before the first and every subsequent commissioning.

- Is all safety equipment at the machine installed and functioning?
- Are all fasteners and load-bearing connections tightly installed and in good condition?
- Are the spreading discs, the spreading vanes, and their attachments in good condition?
- Is the protective grid locked in the hopper?
- Are all locking mechanisms securely engaged?
- Are there **no** persons in the danger zone of the machine?
- Is the universal drive shaft cover in good condition?
- Check the mounting height. The distance between the bottom edge of the frame and the ground must not be more than 120 cm.

3.5.5 Hazard zone

Ejected spreading material may cause serious injury (e.g., to the eyes).

When persons are present between the tractor and the machine, there is a great hazard by the tractor rolling away of machine movements When persons are present between the tractor and the machine which may have fatal consequences.

The following figure displays the hazard zones of the machine.

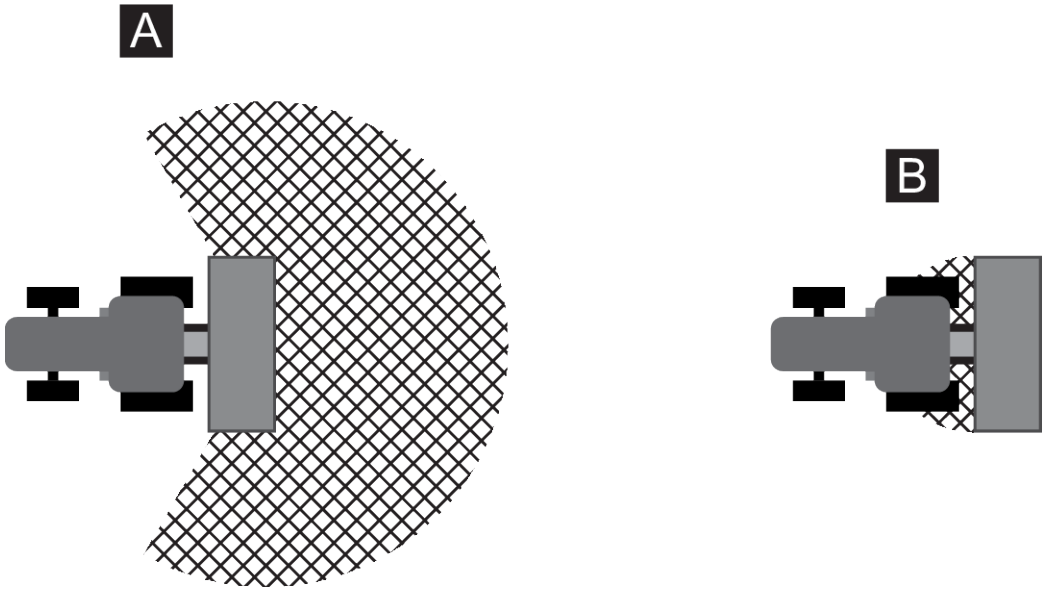


Fig. 1: Hazard zone when devices are attached

A Hazard zone in spreading operation

B Hazard zone when coupling/decoupling the machine

- Ensure that no persons are present in the spreading range [A] of the machine.
- Immediately stop the machine and the tractor if persons are present in the hazard zone of the machine.
- When you are coupling/decoupling the machine at the tractor and have to operate the hydraulic lift, make sure that no one is present in the hazard zones [B].

3.5.6 Running operation

- In the event of malfunctions, the machine is to be shut down and secured immediately. Have the fault repaired immediately by qualified technicians.
- Do not climb on the machine while the spreader unit is running.
- Only operate the machine with the protective grids in the hopper closed. During operation, the protective grid must **neither be opened nor removed**.
- Only operate the machine when the maintenance cover is closed.
- Rotating machine components can cause serious injury. Make sure that body parts or clothing never come close to rotating components.
- Do not deposit any parts (such as screws, nuts) in the hopper.
- Ejected spreading material may cause serious injury (e.g., to the eyes). For this reason, ensure that nobody is present in the spreading range of the machine.
- If the wind speed becomes too high, spreading has to be stopped as the specified spreading range cannot be guaranteed under such conditions.
- Do not climb on the machine or the tractor when it is situated beneath high-voltage electrical power lines.

3.6 Using spreading material

Improper selection or use of spreading material may cause serious injury or environmental damage.

- When selecting the spreading material, inform yourself of its effects on humans, the environment, and the machine.
- Always follow the instructions of the spreading material manufacturer.

3.7 Hydraulics system

The hydraulic system is under high pressure.

Fluid escaping under high pressure may cause serious injury and environmental damage. The following instructions must be observed to prevent danger:

- Always operate the machine below the permissible maximum operating pressure.
- **Release the pressure** from the hydraulic system **before** carrying out any maintenance. Switch off the engine of the tractor. Secure it against reactivation.
- When searching for leaks, always wear safety **glasses** and safety **gloves**.
- In case of injury in connection with hydraulic oil, consult **a physician immediately** as severe infections may occur.
- When connecting the hydraulic hoses to the tractor, ensure that the hydraulic system is **depressurized**, both on the tractor and the machine side.
- Attach the hydraulic hoses of the tractor and the spreader hydraulic systems only with the prescribed connections.
- Prevent any contamination of the hydraulic circuit. Always suspend the couplings in the brackets provided. Use the dust caps. Clean the connections before coupling them.
- Regularly check the hydraulic components and hydraulic hose lines for mechanical defects, e.g., cuts and abrasions, contusions, bends, tears, porosity, etc.
- Even when stored correctly and used within approved load limits, hoses and hose couplings are subject to a natural aging process. This limits their storage and service life.

The hydraulic hoses are designed for a maximum service life of 6 years, including storage for a maximum of 2 years.

The month and year of manufacture of the hydraulic hoses is stamped on the hose fitting.

- Have the hydraulic hoses replaced if they are damaged and after the specified service life has been reached.
- Replacement hydraulic hoses must meet the technical requirements of the equipment manufacturer. Make sure the replacement hydraulic hoses meet the maximum pressure specifications.

3.8 Maintenance and service

Maintenance and service involve additional hazards that do not occur during operation of the machine.

For this reason, take particular care when carrying out maintenance and service work. Work particularly thoroughly and cautiously.

3.8.1 Qualifications of maintenance personnel

- Welding and work on the electrical and hydraulic systems is to be carried out by qualified technicians only.

3.8.2 Wear parts

- The maintenance and service intervals described in the present operator's manual are to be strictly adhered to at all times.
- Also observe the maintenance and service intervals for the supplied components. See the supplier documentation for the relevant intervals.
- We recommend having your dealer check the condition of the machine, particularly fastening components, safety-relevant plastic components, the hydraulic system, metering components and spreading vanes, after every working season.
- Spare parts must at least comply with the technical standards specified by the manufacturer. Compliance with technical requirements is ensured using original spare parts.
- Self-locking nuts are designed to be used only once. Always use new self-locking nuts to fasten components (e.g., when replacing spreading vanes).

3.8.3 Maintenance and service tasks

- **Always switch off the tractor engine** before any cleaning, maintenance, service, and troubleshooting. **Wait until all rotating parts of the machine have come to a standstill.**
- Make sure that unauthorized persons **cannot** start the machine. Remove the ignition key of the tractor.
- Disconnect the power supply between the tractor and the machine before performing any maintenance and service tasks or before working on the electrical system.
- Check that the tractor with the machine is correctly parked. Park the spreader with an empty hopper on level, solid ground and secure it to prevent it from moving.
- Secure the lifted machine additionally against falling (e.g., by means of a safety stand) when carrying out maintenance and repair work or inspections under the lifted machine.
- Release the pressure from the hydraulic system before any maintenance and repair work.
- Only open the protective grid in the hopper if the machine has been decommissioned.
- If work is to be carried out while the PTO shaft is rotating, make sure that nobody is near the PTO or the universal drive shaft.
- Never clear blockages in the spreader hopper by hand or with the foot: always use a suitable tool.
- When cleaning with high-pressure, never aim the water jet directly at warning signs, electrical equipment, hydraulic components, and sliding bearings.
- Regularly check nuts and screws for tightness. Retighten loose connections.

3.9 Safety in traffic

When driving on public streets and roads, the tractor with the attached machine must comply with the road traffic regulations of the respective country. The owner and driver are responsible for compliance with these regulations.

3.9.1 Checks before driving

The check before departure is an important contribution to road safety. Before every trip, check compliance with the operating conditions, traffic safety, and the regulations of the country of operation.

- Is the admissible total weight complied with? Note the permitted axle load, the permitted braking load, and the permitted tire load capacity;
  - See *5 Axle load calculation*
- Is the machine attached correctly?
- Can spreading material be lost while traveling?
  - Observe the filling level of the spreading material in the hopper.
  - The metering slide must be closed.
- Check the tire pressures and the function of the tractor brake system.
- Do the lighting and labeling on the machine comply with the national regulations for operation on public roads? Ensure correct attachment.

3.9.2 Road travel with the machine

Handling, steering, and braking performance of the tractor are affected by the attached machine. For example, an excessive weight of the machine will reduce the weight on the front axle of the tractor and affect the steering.

- Adapt your driving to the modified driving characteristics.
- When driving, always ensure that there is sufficient visibility. If vision is restricted (e.g. when reversing), another person is required to direct the driver.
- Observe the admissible maximum speed.
- Avoid sudden turns when driving uphill or downhill or across a slope. The change in the center of gravity may increase the danger of tipping. Special care is to be particularly applied when driving on uneven, soft ground (e.g. when entering fields, curbs).
- Arrest sideways movement of the lower link of the three-point linkage to prevent the machine from swinging.
- Passengers are prohibited on the machine during transport and operation.

3.10 Safety equipment, warnings and instructions

3.10.1 Position of safety equipment as well as warning and instruction stickers

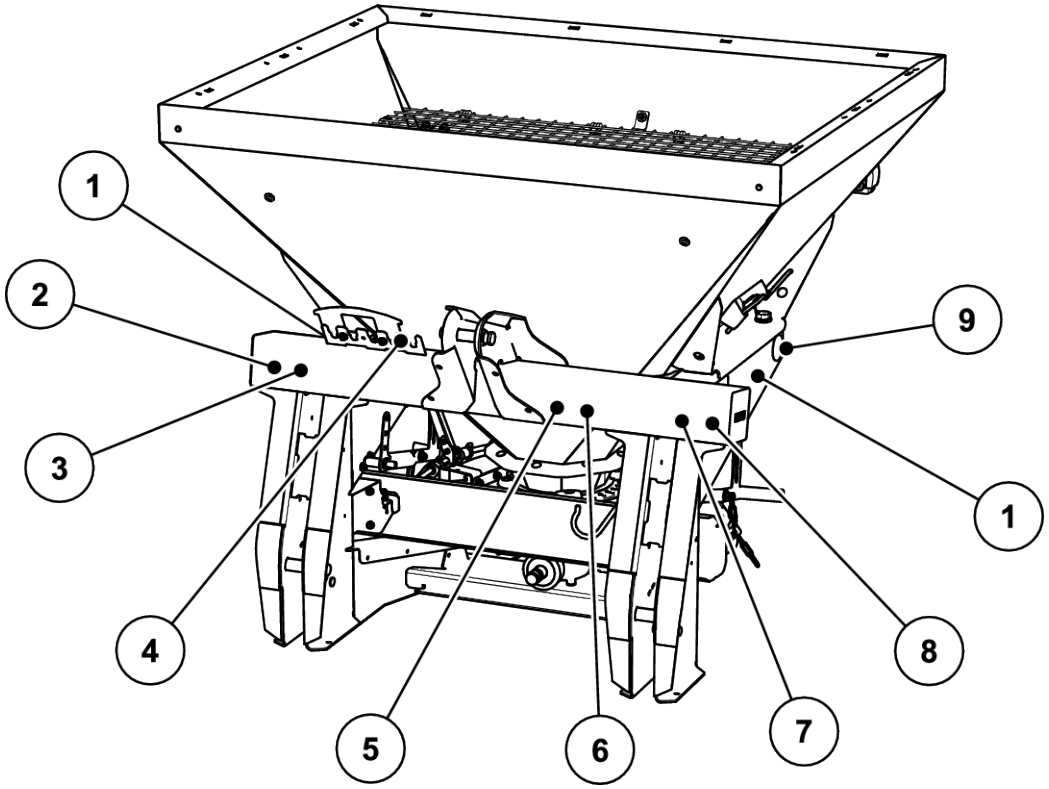


Fig. 2: Position of safety equipment, warning and instruction notices and reflector - front

[1] Instruction notice, agitator stop
[2] Factory plate
[3] Serial number
[4] Bracket for cables and hoses
[5] Instructions: maximum payload
[6] Instructions: PTO speed
[7] Warning: read operator’s manual
[8] Warning: ejection of material
[9] Yellow side reflector

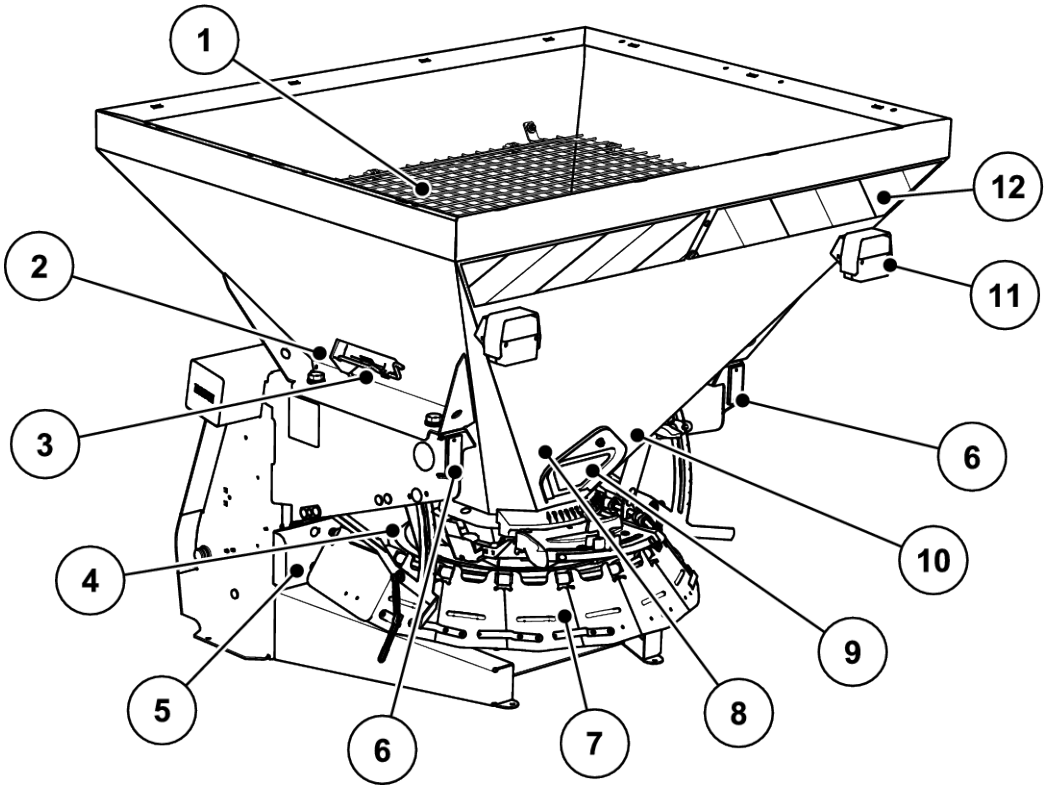
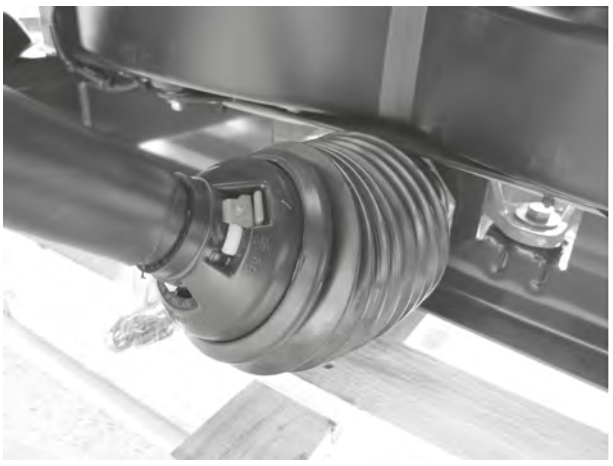


Fig. 3: Position of safety equipment, warning and instruction notices and reflector - rear

[1] Protective grid in hopper
[2] Instructions: tightening torque
[3] Adjustment lever
[4] Spreading disc cover
[5] Front spreading disc cover
[6] Red reflector
[7] Adjustable spreading disc cover (spreading width limiter)
[8] Warning: moving parts
[9] Maintenance cover
[10] Warning: remove ignition key
[11] Rear lighting
[12] Warning foil

■ ***Universal drive shaft***

[1] Universal drive shaft cover



3.10.2 Function of safety equipment

The safety equipment is designed to protect your health and life.

- Before working with the machine, ensure that the safety equipment is functioning and not damaged.
- Only operate the machine when the safety equipment is functional.

Designation	Function
Protective grid in hopper	Prevents body parts from being caught by the rotating agitator. Prevents body parts from being cut off by the metering slide. Prevents faults during spreading caused by lumps in the spreading material, large stones, or other large objects (screening effect).
Maintenance cover	Enables easy replacement of the agitator.
Front spreading disc cover	Protection against getting caught by the rotating disc from the front. Prevents the ejection of spreading material to the front (direction of tractor/workplace).
Adjustable spreading disc cover (spreading width limiter)	This prevents being caught by the rotating spreading disc from the side and from the rear. It ensures the ejection of the spreading material in the desired spreading width.
Plastic cover for the spreading disc	Prevents catching by the rotating spreading disc from above
Universal drive shaft guard	Prevents body parts and clothing from being pulled into the rotating universal drive shaft.
Bracket	Attachment of the hoses and cables to the frame. Prevents the hoses and cables from being crushed or kinked. *Fig. 36 Bracket for cables and hoses*

3.11 Warning and instruction stickers

Various warning and instruction stickers are attached to the machine (for the position at the machine, please refer to *3.10.1 Position of safety equipment as well as warning and instruction stickers*).

The warning and instruction stickers are components of the machine. They must not be removed or modified.

▶ Replace missing or illegible warning and instruction stickers immediately.

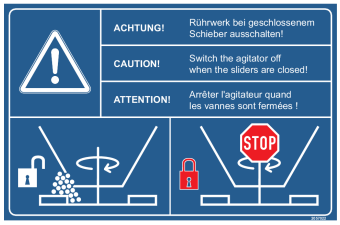
If new components are installed during repairs, the same warning and instruction stickers that were on the original parts must be placed on the new parts.

The correct warning and instruction stickers can be obtained from the spare parts service.

3.11.1 Warning stickers

Illustration	Description
	Read the operator's manual and warnings. Read and observe the operator’s manual and warnings before commissioning the machine. The operator’s manual explains in detail how to operate the spreader and contains valuable information on operation, care and maintenance.
	Danger due to ejection of material Danger of injury to the whole body caused by ejected spreading material Before commissioning, instruct all people to leave the hazard zone (spreading range) of the machine.
	Danger due to moving parts Danger of cutting off body parts It is prohibited to reach into the hazard zone of rotating parts. Switch off the engine and remove the key before carrying out maintenance, repair and adjustment work.
	Remove the ignition key. Switch off the engine and remove the key before carrying out maintenance and repair work. Disconnect the power supply
	Danger from hydraulic system Hot fluid escaping under high pressure may cause serious injury. It may also penetrate the skin and cause infection. De-pressurize the hydraulic system before maintenance work. When checking for leakage, wear protective goggles and protective gloves at all times. In the event of injury caused by hydraulic oil, seek medical attention immediately! Observe the manufacturer documentation.

3.11.2 Instruction stickers

Illustration	Description
	Rated speed of the PTO shaft The rated speed of the PTO shaft is 540 rpm.
	Agitator stop The agitator should be stopped when the metering slider is closed.
	Maximum load capacity AXEO 2.1
	Maximum load capacity
	Maximum load capacity AXEO 18.1
	**Tightening torque** for attachment of the hopper to the frame.

3.12 Name plate and machine marking

When delivering your machine, ensure that all necessary signs are present.

Depending on the country of destination, additional signs can be attached to the machine.

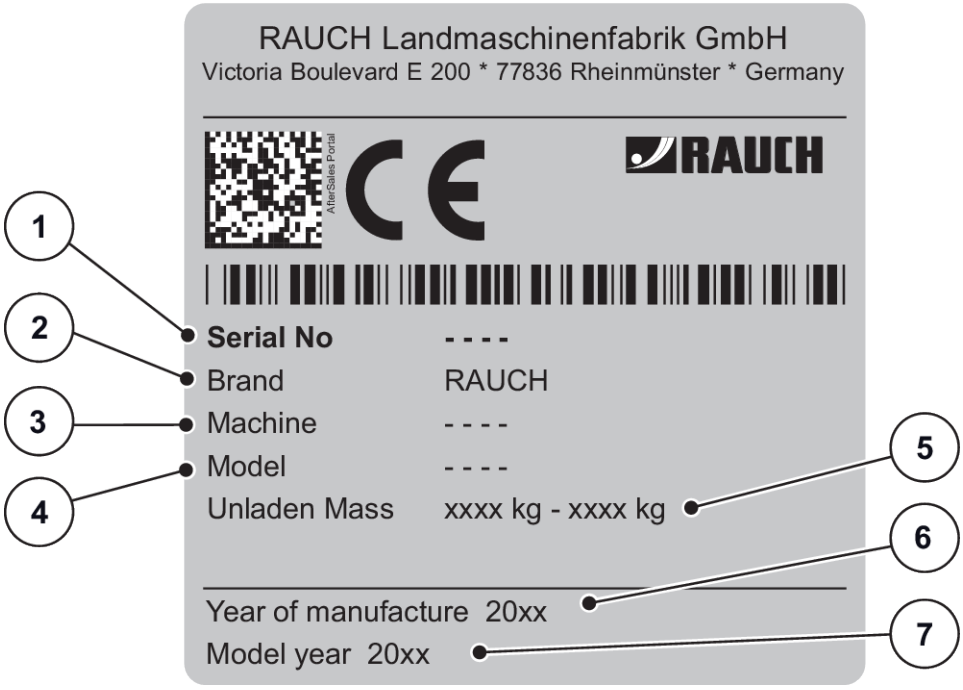


Fig. 4: Nameplate

[1] Serial number
[2] Manufacturer
[3] Machine
[4] Type
[5] Empty weight
[6] Year of construction
[7] Model year

3.13 Lighting system, front, side, and rear reflectors

▶ Correctly attach the lighting equipment to the machine as specified.

The lighting equipment must always be in operating condition.

Lights must not be covered or obscured by dirt.

The machine type AXEO 18.1 is equipped at the factory with rear and side markings in accordance with regulations (for attachment to the machine, see *3.10.1 Position of safety equipment as well as warning and instruction stickers*).

A lighting system is optionally available for the machine AXEO 2.1 and AXEO 6.1.

4 Machine data

4.1 Manufacturer

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4.2 Description of the machine

Use the machines in accordance with chapter *1 Intended use*.

The machine consists of the following assemblies.

- Hopper with agitator and outlet
- Frame and coupling points
- Drive elements (universal drive shaft, transmission, or hydraulic motor)
- Metering elements (agitator, metering slide, application rate scale)
- Elements for adjusting the spreading width
- Safety equipment - See *3.10 Safety equipment, warnings and instructions*

Some models are not available in all countries.

4.2.1 Assembly overview, back

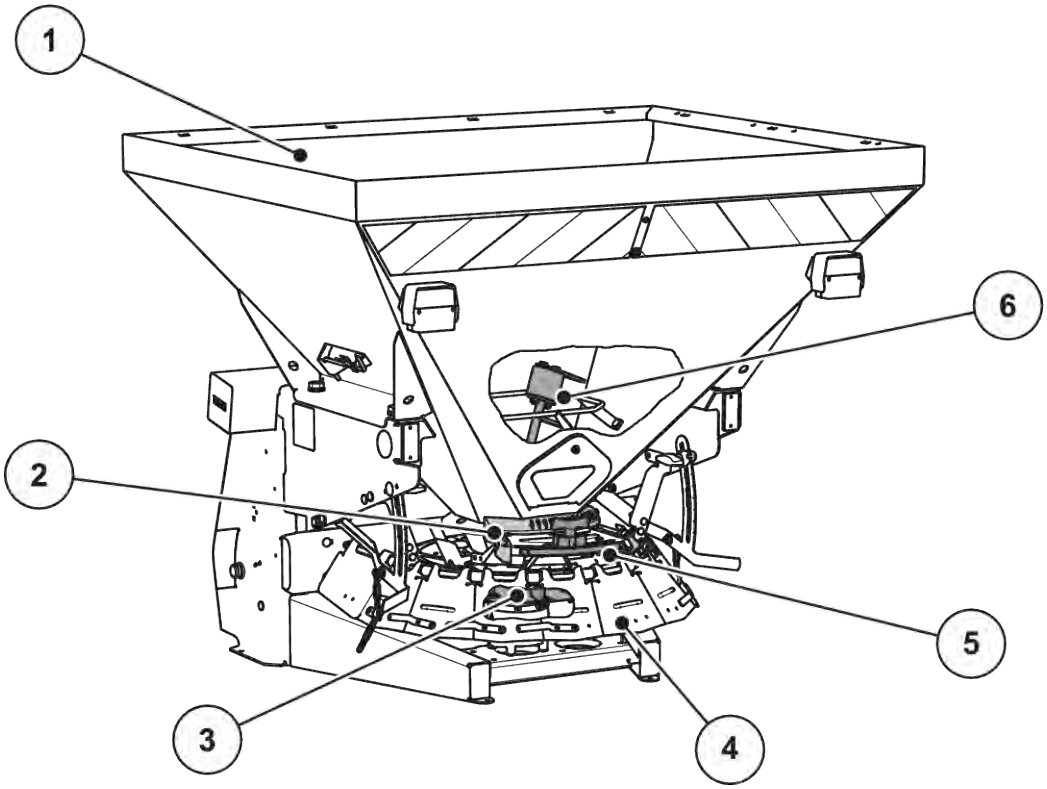


Fig. 5: Assembly overview – back

[1] Hopper
[2] Drop point adjustment center
[3] Spreading disc
[4] Spreading width limiters
[5] Application rate scale
[6] Agitator in the hopper

4.2.2 Assembly overview, front

■ ***PTO drive***

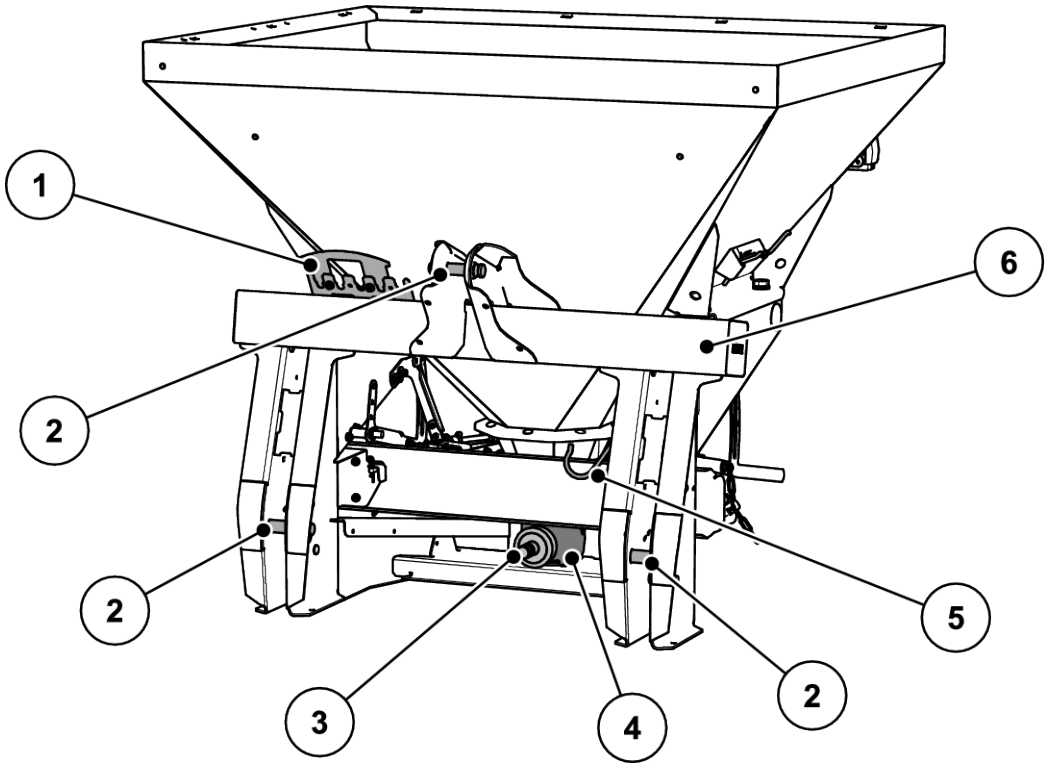


Fig. 6: Assembly overview, front

[1] Hose and cable tray
[2] Coupling points
[3] Transmission spigot
[4] Transmission
[5] Universal drive shaft mounting bracket
[6] Frame

■ ***Hydraulic drive***

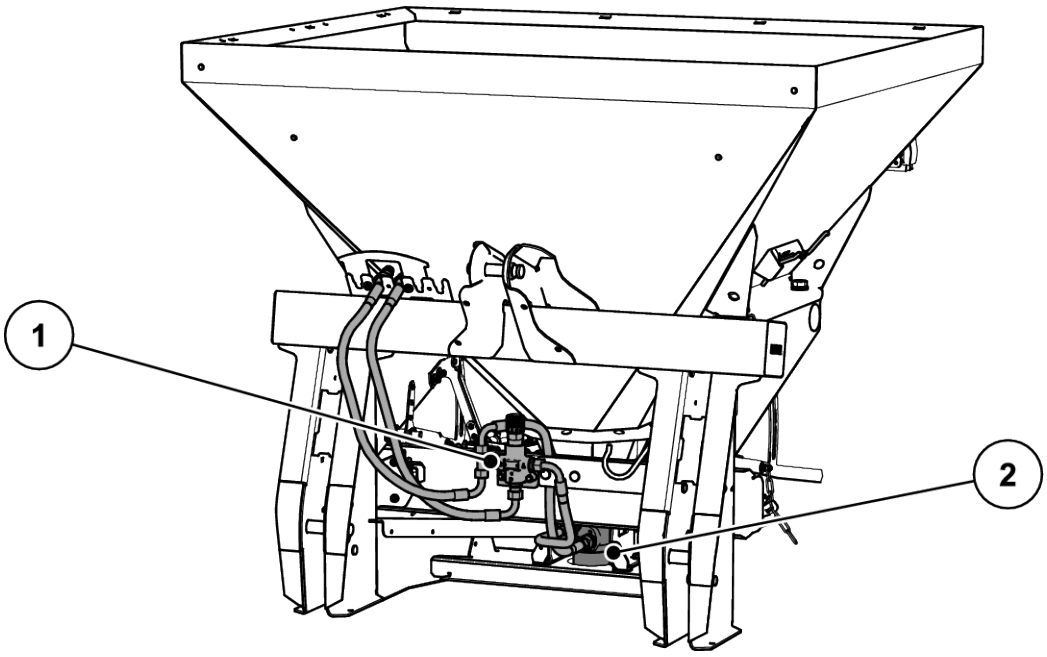


Fig. 7: Assembly overview: Hydraulic drive

[1] Flow control valve

[2] Hydraulic motor

■ ***HydroControl (-HC)***

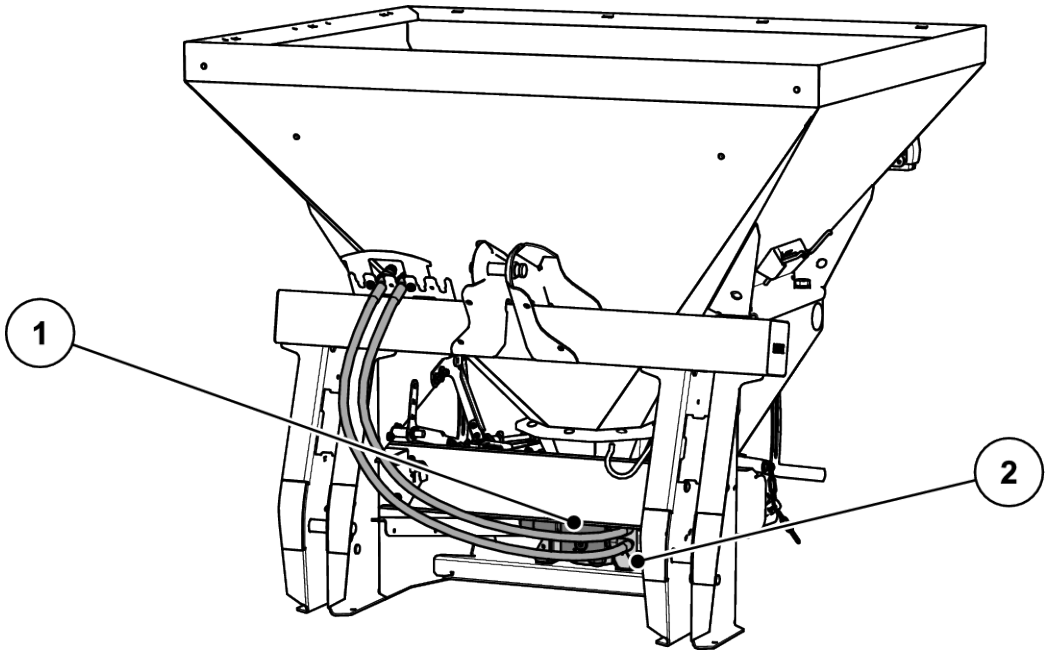


Fig. 8: Assembly overview: HydroControl (-HC)

[1] Hydraulic block

[2] Hydraulic motor

4.3 Versions

4.3.1 Drive with universal drive shaft

	AXEO 2.1 AXEO 6.1 AXEO 18.1		
Function/version	**H**	**C**	**Q**
Hydraulic metering slide actuation	●		
Electric metering slide actuation		●	
Electronic spreading quantity control			●
Electric spreading width limiter **(option)**	●	●	
Electronic spreading width limiter **(option)**			●

4.3.2 Drive with hydraulic motor

	AXEO 2.1 AXEO 6.1			
Function/version	**H-100**	**C-100**	**Q-100**	**Q-100-HC**
Hydraulic metering slide actuation	●			
Electric metering slide actuation		●		
Electric spreading width limiter		●		
Electronic spreading quantity control			●	●
Electronic speed control				●
Electric spreading width limiter **(option)**	●	●		
Electronic spreading width limiter **(option)**			●	●

	AXEO 18.1			
Function/version	**H-200**	**C-200**	**Q-200**	**Q-200-HC**
Hydraulic metering slide actuation	●			
Electric metering slide actuation		●		
Electric spreading width limiter		●		
Electronic spreading quantity control			●	●
Electronic speed control				●
Electric spreading width limiter **(option)**	●	●		
Electronic spreading width limiter **(option)**				●

4.4 Technical data

4.4.1 Technical data for the basic equipment

Data	**AXEO 2.1**	**AXEO 6.1**	**AXEO 18.1**
Overall width	100 cm	120 cm	150 cm
Overall length	87 cm	95 cm	121 cm
Filling level (Basic machine)	96 cm	123 cm	128 cm
Distance between center of gravity and lower link coupling point	40 cm	40 cm	55 cm
Filling width	88 cm	109 cm	55 cm
Working width[1]	1 - 8 m		
PTO speed max.	650 RPM		
Hopper capacity	250 l	560 l	750 l
Hydraulic pressure max.	200 bar		
Sound pressure level[2] (measured in the closed driver's cab of the tractor)	75 dB(A)		

[1)] Working width depending on spacer position, spreading disc speed and spreading material

[2)] Since the sound pressure level of the machine can only be determined when the tractor is running, the actual measured value is greatly dependent on the tractor type being used.

■ Weights and loads

The empty weight (mass) of the machine varies depending on the feature package and extension combination.

Data	AXEO 2.1	AXEO 6.1	AXEO 18.1
Empty weight	130 kg	160 kg	230 kg
Max. payload	800 kg	1000 kg	1800 kg

4.4.2 Technical data for the extensions

The machine can be operated with various attachments and attachment combinations. The capacity, dimensions and weights may change depending on the selected feature package.

Attachment AXEO 2.1	AX100
Change in capacity	+ 100 l
Change of filling height	+ 104 cm
Extension weight	14 kg
Description	4-sided

Attachment AXEO 18.1	AX 250	AX 500	AX 750
Change in capacity	+ 250 l	+ 500 l	+ 750 kg
Change of filling height	+ 15 cm	+ 29 cm	+ 44 cm
Extension weight	23 kg	35 kg	47 kg
Description	4-sided	4-sided	4-sided

4.5 Special equipment

We recommend that you have the extra equipment fitted and mounted on the basic machine by your supplier or an authorized service center.

Some models are not available in all countries.

The available special equipment depends on the country of use of the machine and is not listed fully here.

- Contact your dealer/importer if you need specific special equipment.

4.5.1 Extensions

The capacity of the standard unit can be increased by fitting a hopper extension.

The extensions are bolted to the standard hopper.

An overview of the extensions can be found in chapter *4.4.2 Technical data for the extensions*

4.5.2 Hopper cover

A hopper cover can be fitted to protect the spreading material from humidity.

The hopper cover is screwed both to the main hopper as well as to the additionally mounted hopper extensions.

Hopper cover	Application
AP-X 2, foldable	• Basic machine: AXEO 2.1 • Attachment: AX 100
AP-X 6, foldable	• Basic machine: AXEO 6.1
AP-X 18, foldable	• Basic machine: AXEO 18.1 • Attachment: AX 250, AX 500, AX 750

4.5.3 Electrical remote control

With the electrical remote control, the metering slide and/or the spreading width limiter can be operated from the tractor cabin.

For the electrical remote, a 12V connection (2-pin socket) is required at the tractor.

The electric VariSpread remote control allows the metering slide, the half-side slide and the spreading width limiter to be operated from the tractor.

4.5.4 Hydraulic remote control (metering slide)

With the hydraulic remote control, the metering slide can be operated from the tractor cabin.

4.5.5 Spreader apron

Designation	Application
Spreader apron	• Basic machine

Spreader apron	Dimensions in cm (W x H)	Application
STS 2	120 x 100	Basic machine AXEO 2.1 Basic machine AXEO 6.1

Spreader apron	Dimensions in cm (W x H)	Application
STS 6	150 x 100	Basic machine AXEO 2.1 Basic machine AXEO 6.1

Spreader apron	Dimensions in cm (W x H)	Application
STS 18	180 x 100	Basic machine AXEO 18.1

Spreader apron	Dimensions in cm (W x H)	Application
STS 20	190 x 100	Basic machine AXEO 18.1

4.5.6 Agitator

■ RWK AX 140

The RWK AX 140 agitator is recommended for spreading granular fertilizer

In some cases, it can also be used with the RWK AX 140 to spread dry salt with good flow characteristics.

Fig. 9: RWK AX 140 agitator

■ RWK AX 160

The RWK AX 160 agitator is recommended for spreading grit.

Fig. 10: RWK AX 160 agitator

■ RWK AX 165

The RWK AX 165 agitator is for high-grade chippings.

Fig. 11: RWK AX 165 agitator

■ RWK AX 180

NOTICE!

Material damage due to incorrect agitator/spreading material pairing

Using the RWK AX 180 or RWK AX 220 agitator for spreading grit can lead to damage to the transmission and the hydraulic motor.

▶ Only use the spreading material approved for the installed agitator.

The RWK AX 180 agitator is recommended for spreading sand and wet salt.

Fig. 12: RWK AX 180 agitator

■ RWK AX 220

NOTICE!

Material damage due to incorrect agitator/spreading material pairing

Using the RWK AX 180 or RWK AX 220 agitator for spreading grit can lead to damage to the transmission and the hydraulic motor.

▶ Only use the spreading material approved for the installed agitator.

The RWK AX 220 agitator is recommended for use with dry salt.

Fig. 13: RWK AX 220 agitator

■ RWK AX 240

The RWK AX 220 agitator is recommended for spreading a grit-salt mix.

Fig. 14: RWK AX 240 agitator

4.5.7 Adapter for category 1N attachment

With this adapter, the AXEO 2.1 can be mounted on a tractor with category 1N.

Using the adapter for the AXEO 2.1 machine reduces the maximum permissible payload to 300 kg.

4.5.8 BLO 18 lighting

The lighting is included with the AXEO 18.1 machine as standard. AXEO 2.1 and AXEO 6.1 machines can be fitted with lighting.

Lighting	Application
BLO 18	• Rear lighting • without warning signs

Attachments are subject to the lighting regulations specified in the traffic regulations.

- Observe the traffic regulations of your country.

4.5.9 Universal drive shaft with star ratchet

The star ratchet clutch limits the torque in case of overload.

5 Axle load calculation

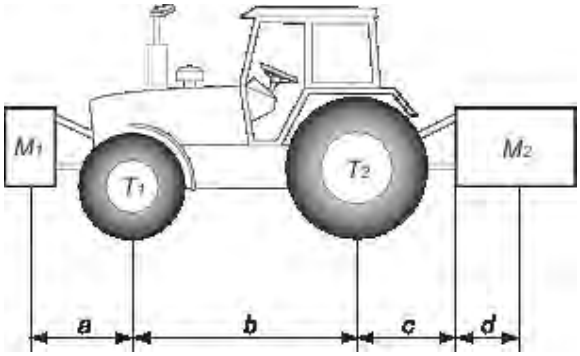
⚠ WARNING!

Overload

Mounted units on the front or rear three-point linkage must not cause the approved total weight to be exceeded.

- ▶ Before using the machine, ensure that these conditions are met.
- ▶ Implement the following calculations or weigh the tractor machine combination.

Define the total weight, axle loads, tire capacity and minimum additional mass:
The following values are required for the calculation:



Description	Units	Description	Obtained by
T	kg	Tractor unladen weight	Refer to the tractor operator's manual Measure on scale
T1	kg	Unladen load on tractor front axle	Refer to the tractor operator's manual Measure on scale
T2	kg	Empty load on tractor rear axle	Refer to the tractor operator's manual Measure on scale
t	kg	Axle loads (Tractor + machine)	Measure on scale
t1	kg	Load on front axle (Tractor + machine)	Measure on scale
t2	kg	Load on rear axle (Tractor + machine)	Measure on scale
M1	kg	Total weight of front tool or front ballast	Refer to the machine price-list or operator's manual Measure on scale

Description	Units	Description	Obtained by
M2	kg	Total weight of rear tool or rear ballast	Refer to the machine price-list or operator's manual Measure on scale
a	m	Distance between the tools' center of gravity or the front ballast and the front axle center	Refer to the machine price-list or operator's manual Dimensions
b	m	Distance between the tractor axles	Refer to the tractor operator's manual Dimensions
c	m	Distance between the rear axle center and the center of the lower link ball joints	Refer to the tractor operator's manual Dimensions
d	m	Distance between the center of the lower link ball joints and the center of gravity of the rear tool or rear ballast	Refer to the machine price-list or operator's manual

Rear tool or front-rear combination:

1) Calculation of the minimum front ballast weight: M1 minimum
M1 minimum = [M2 x (c+d) - T1 x b + 0.2 x T x b] / [a+b]
Write the minimum additional weight in the chart.

Front tool:

2) Calculation of the minimum rear ballast weight M2: minimum
M2 minimum = [M1 x a - T2 x b + 0.45 x T x b] / [b + c + d]
Write the minimum additional weight in the chart.

3) Calculation of the actual load on the front axle: T1 real
If the front tool (M1) is lighter than the minimum load required at the front (minimum), increase tool weight until the required minimum front load is reached
T1 real = [M1 x (a+b) + T1 x b - M2 x (c+d)] / [b]
Indicate front axle calculated load value and the one indicated in the tractor operator's manual.

4) Calculation of the total weight: M real
If the rear tool (M2) is lighter than the minimum load required at the rear(minimum), increase tool weight until the required minimum rear load is reached

4) Calculation of the total weight: M real
M real = M1 + T + M2
Indicate calculated total load value and the one authorized as indicated in the tractor operator's manual.

5) Calculation of the actual rear axle load: T2 real
T2 real = M real - T1 real
Indicate rear axle calculated load value and the one indicated in the tractor operator's manual.

6) Tire carrying capacity
Indicate double (2 tires) the authorized load value (see tire manufacturer indications).

Table:

	Actual value obtained by calculation	**Value authorized according to operator's manual**	**Double value of the authorized capacity per tire (2 tires)**
Minimum front/rear ballasting	kg		
Total weight	kg	kg	
Load on front axle	kg	kg	kg
Load on rear axle	kg	kg	kg
	The minimum ballasting must be made by fitting a tool or an additional mass to the tractor. The values obtained must be below or equal the authorized values.		

6 Transport without tractor

6.1 General safety instructions

Read the following instructions before transporting the machine:

- Without tractor, the machine may only be transported with an empty hopper.
- Only suitable, instructed and expressively authorized persons may execute the work.
- Suitable means of transportation and lifting equipment (e.g., crane, forklift truck, lifting tackle ...) are to be used.
- Establish the transportation route in good time and remove possible obstacles.
- Check that all safety and transportation devices are fully operational.
- Secure all danger areas appropriately, even if they only exist briefly.
- The person responsible for transportation ensures that the machine is transported appropriately.
- Unauthorized persons are to be kept away from the transport route. Cordon off the affected areas!
- Transport the machine cautiously and handle it with care.
- Ensure that allowances are made for the center of gravity. If necessary, adjust the cables to ensure that the machine is correctly aligned on the means of transport.
- Transport the machine to the set-up location as close to the ground as possible.

6.2 Loading and unloading, parking

▶ Determine the weight of the machine.

  ▷ Check the details on the name plate.

  ▷ Take the weight of mounted optional equipment into account.

▶ Carefully lift the machine with suitable lifting equipment.

▶ Carefully place the machine on the loading platform of the transportation vehicle or on solid ground.

7 Commissioning

7.1 Accepting the machine

When accepting the machine, please check the completeness of the delivery.

The standard equipment includes:
- Single disc spreader of the AXEO series
- 1 operator’s manual AXEO
- 1 Upper link pin with lynch pin and safety chain
- 2 Lower link pin with lynch pin and safety chain
- 1 Adjustable spreading width limiter
- 1 Spreading disc
- 1 Universal drive shaft including operator's manual (version H, C, Q)
- 1 Guard grille
- Variant Q or Q-100/200-HC: QUANTRON-K2 control unit
- Version C: E-CLICK control unit

Please also check any additionally ordered optional equipment.

Check for any transport damage or missing parts. Have any shipping damage confirmed by the forwarding agent.

When receiving the machine, check that attached components are correctly and tightly positioned.

In case of doubt, please contact your dealer or the factory directly.

7.2 Tractor requirements

To ensure safe and correct use of the machine of the AXEO series, the tractor must meet the necessary mechanical, hydraulic, and electrical requirements.

- Universal drive shaft connection: 1 3/8 inches, 6 splines, 540 rpm,
- **Version H**: Oil supply: Max. 200 bar, single-acting control valve
- Operating voltage: 12 V
- Three-point linkage, category I for AXEO 2.1 and 6.1
- Three-point linkage, category II for AXEO 18.1
- **Version H-100/200:**
  - 2 single-acting control valves
  - 1 free return
  - Oil supply: Max. 200 bar
- **Version C-100/200, Q-100/200, Q 100-HC7200-HC:**
  - 1 single-acting control valve
  - 1 free return
  - Oil supply: Max. 200 bar

7.3 Mounting the universal drive shaft on the machine

The machine can be equipped with a gearbox as drive for the spreading disc and agitator.

Different universal drive shafts are available in this version:

- Universal drive shaft with full protection
- Universal drive shaft with star ratchet and full protection. See *4.5.9 Universal drive shaft with star ratchet*

⚠DANGER!

Danger of pulling in on the rotating universal drive shaft

Installing and removing the universal drive shaft while the motor is running may cause serious injuries (crushing, pulling into the rotating shaft).

- ▶ Turn the tractor engine off and remove the ignition key.
- ▶ Make sure that the universal drive shaft cover is in good condition.

NOTICE!

Material damage due to an unsuitable universal drive shaft

The machine is equipped with a universal drive shaft that is designed according to the device and performance.

The use of incorrectly dimensioned or inadmissible drive shafts, for instance without guard or suspension chain, may cause personal injury or lead to damage to the tractor and/or the machine.

- ▶ Use only universal drive shafts approved by the manufacturer.
- ▶ Follow the directions in the operator's manual of the universal drive shaft manufacturer.

▶ Check the mounting position.

The drive shaft end that is marked with a tractor symbol must point to the tractor.

- Draw the lubricating nipple [1] along the universal drive shaft guard.
- Slide the plastic ring with bayonet lock on the universal drive shaft guard [2] towards the lubricating nipple using a screwdriver.

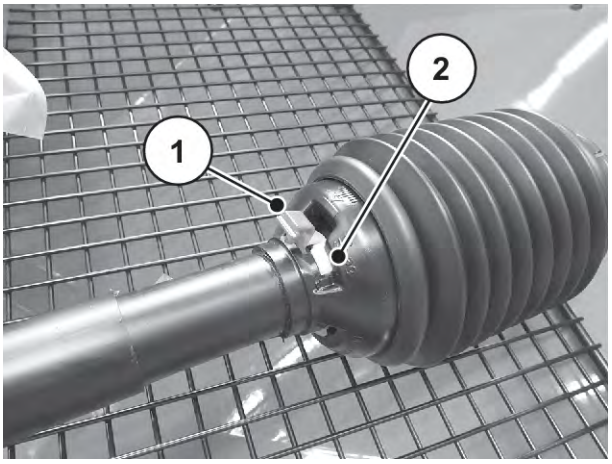


Fig. 15: Opening the universal drive shaft guard

- Pull the universal drive shaft cover backwards.
- Hold the universal drive shaft guard and the clamp in an open position with your hand.
- Grease the transmission spigot. Place the universal drive shaft on the transmission spigot.

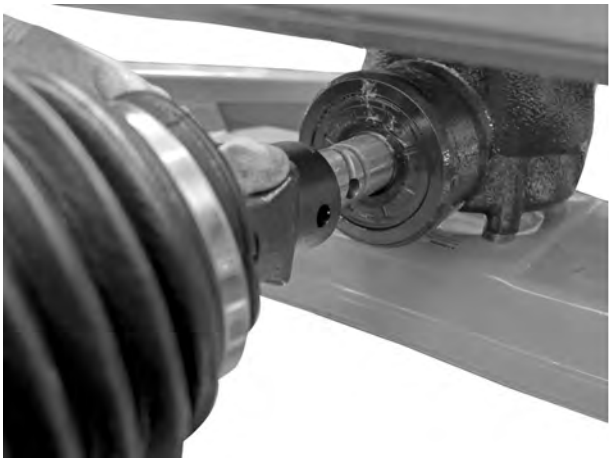


Fig. 16: Pushing the universal drive shaft onto the transmission spigot

- Tighten the hex cap screw and nut using a size 17 wrench (max. 35 Nm).

Fig. 17: Connecting the universal drive shaft

- ▶ Push the universal drive shaft guard with hose clamp over the universal drive shaft and attach it to the transmission neck.
- ▶ Tighten the hose clamp.

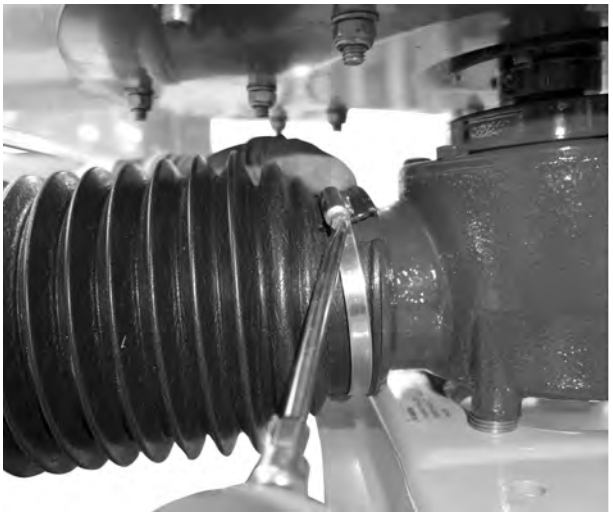


Fig. 18: Mounting the universal drive shaft guard

- ▶ Rotate the plastic ring until it reaches its locking position.
- ▶ Press the lubricating nipple into a closed position on the universal drive shaft guard.

Fig. 19: Securing the universal drive shaft cover

Notes for removal:

- Dismount the universal drive shaft in reverse order of mounting.
- Never use the suspension chain for suspending the universal drive shaft.

- ▶ Always place universal drive shafts which have been removed on the bracket provided.

  See *Fig. 6 Assembly overview, front*

7.4 Installing the machine at the tractor

7.4.1 Preconditions

⚠ DANGER!

Danger to life due to unsuitable tractor

Using an unsuitable tractor for the machine may result in severe accidents during operation or road travel.

- ▶ Only use tractors that comply with the technical requirements of the machine.
- ▶ Refer to the vehicle documents in order to check whether the tractor is suitable for the machine.

Check the following specific preconditions:

- Are both the tractor and the machine safe to operate?
- Does the tractor comply with the mechanical, hydraulic, and electrical requirements?
- Do the mounting categories of the tractor and the machine match (if necessary, consult your dealer)?
- Is the machine securely positioned on level and solid ground?
- Do the axle loads conform to the stipulated calculations?

7.4.2 Mounting

⚠ DANGER!

Danger to life due to carelessness or incorrect operation

There is a crushing hazard that may result in fatal injury for persons standing between the tractor and the machine when the tractor approaches or the hydraulic system is actuated.

The tractor may brake too late or not at all because of carelessness or incorrect operation.

- ▶ Ensure that nobody is present in the hazard zone between the tractor and the machine.

⚠ DANGER!

Risk of tipping or falling

There are no anchor or lifting points provided on the attachments or the frame of the machine.

If the machine is lifted or moved on the attachments or the frame, it may tip over or fall. There is a risk of death.

- ▶ Fasten the machine to a pallet.

- The machine is installed at the three-point linkage (rear power lift) of the tractor.

Mounting instructions

- Connect the AXEO 2.1/6.1 to the tractor with category II **only** with the distance dimension category I and by plugging on reducing sleeves.
- Connect the AXEO 18.1 to the tractor with category III **only** with the distance dimension category II and by plugging on reducing sleeves.
- Connect the AXEO 2.1 to the tractor with category 1N **only** with an adapter.
  - The maximum payload is reduced to 300 kg.
- Always install the machine horizontally.
- The bottom and upper link pins must be secured with linch pins or spring clips.
- Attach the machine according to the values in the spreading material chart. This guarantees correct cross-distribution of the spreading material.
- Any oscillating movements during spreading are to be avoided. Make sure that the machine does not have too much play to the sides.
  - The lower link arms of the tractor are to be braced by means of stabilizing struts or chains.

■ *Determining the mounting height*

The information on the mounting height refers to the distance between the lower edge of the spreading disc and the ground with a horizontally mounted machine. The specified mounting height [dimension **A**] is **55 cm**.

▶ Measure the distance between the lower edge of the frame and the ground.

▷ The distance must be **33 cm** [dimension **B**].

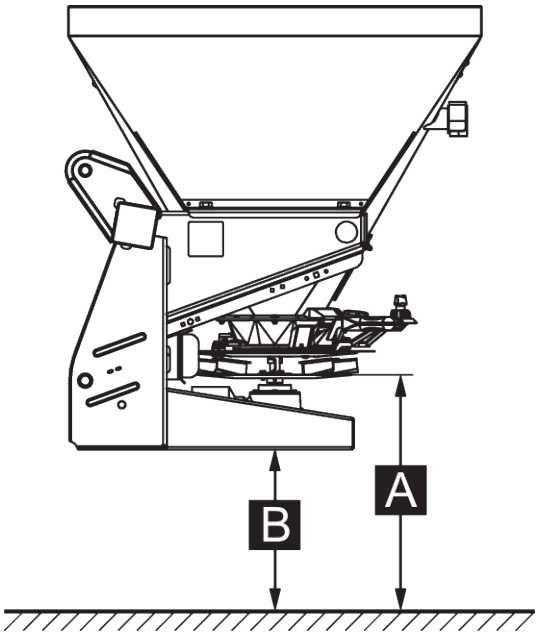


Fig. 20: Setting the mounting height

A 55 cm B 33 cm

To protect against inadvertently touching the spreading discs, the distance between the lower edge of the frame and the ground must not exceed 120 cm [dimension B]. This corresponds to a maximum admissible mounting height of the machine of 142 cm [dimension A].

- ▶ Start the tractor.
  - ▷ Check: The PTO shaft is switched off.
- ▶ Move the tractor to the machine.
  - ▷ Do not latch the lower link hooks into place yet.
  - ▷ Make sure there is enough space between the tractor and the machine in order to be able to connect the drives and control elements.
- ▶ Switch off the tractor engine. Pull the hand brake of the tractor. Remove the ignition key.
- ▶ Mount the universal drive shaft on the tractor.
- ▶ Connect the electric and hydraulic slide actuators and the lighting.
- ▶ From the tractor cab, connect the lower link hooks and the upper link to the designated coupling points; please refer to the operator's manual of the tractor.

We recommend using lower link hooks with a hydraulic upper link for safety and comfort.

- ▶ Check that the machine is securely positioned.
- ▶ Carefully lift the machine to the desired lifting height.

NOTICE!

Material damage caused by a universal drive shaft that is too long

When the machine is lifted up, the halves of the universal drive shaft can come into contact with each other. This may cause damage to the universal drive shaft, to the gearbox or the machine.

- ▶ Check the clearance between the machine and the tractor.
- ▶ Make sure that there is enough space (at least 20 to 30 mm) between the outer pipe of the universal drive shaft and the protective cone on the spreading side.

- ▶ Shorten the universal drive shaft, if required.

Only your dealer or your specialist workshop may shorten the universal drive shaft.

Observe the installation and shortening instructions provided in the operator's manual of the universal drive shaft manufacturer when checking and adjusting the universal drive shaft. The operator's manual is attached to the drive shaft on delivery.

7.5 Mounting the agitator

- The agitator is fixed with a bayonet lock.
- The agitators offered can be found under *4.5.6 Agitator*
- For dismounting the agitator, please refer to *11.6 Checking the agitator for wear*

▶ Open the maintenance cover.

▶ Grease the transmission shaft. (Grease the bayonet lock and agitator)

▶ Put the agitator onto the transmission shaft.

▶ Turn the agitator counterclockwise until it reaches the stop.

Ensure that the bayonet lock engages securely.

▶ Close the maintenance cover.

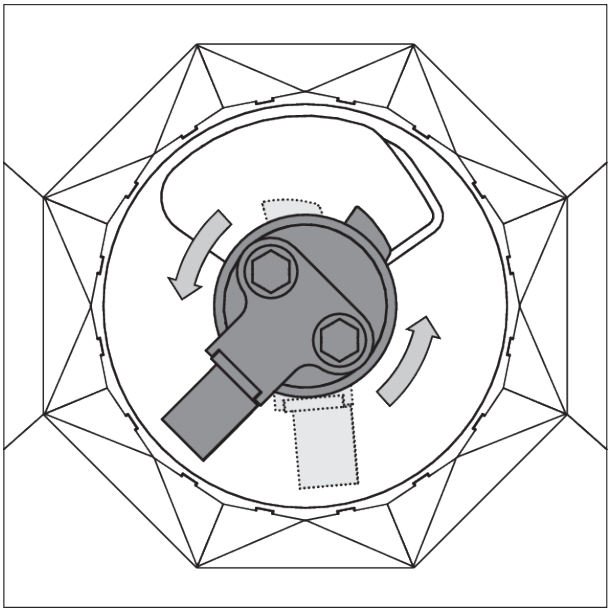


Fig. 21: Agitator mounted

7.6 Connecting the hydraulic drive

Depending on the model, the machine may be equipped with a hydraulic motor as a drive for the spreading disc and the agitator.

A single-acting control valve and a free return flow are needed on the tractor. An additional check valve is installed in the return line.

The hydraulic drive is connected to the tractor via 2 hydraulic hoses.

▶ Connect the plug with the red protective cap to the pressure line.

▶ Connect the plug with the blue protective cap to the return line.

▶ Place uncoupled hydraulic hoses only over the holder for hoses and cables. See *Fig. 36 Bracket for cables and hoses*

▶ Do not allow removed hydraulic hoses to hang down to the ground.

▶ **Before uncoupling, open the metering slider completely** (see *Fig. 35 Metering slider open, hydraulic cylinder on end stop*).

■ ***Concerns the variants H-100/200, Q-100/200, C-100/200***

The machine is driven by a hydraulic motor with a 100 cm³ or 200 cm³ displacement volume.

- ▶ Adjust the agitator speed to your spreading material according to the information in the spreading material chart.
- ▶ Set the agitator speed on the handwheel of the flow control valve.

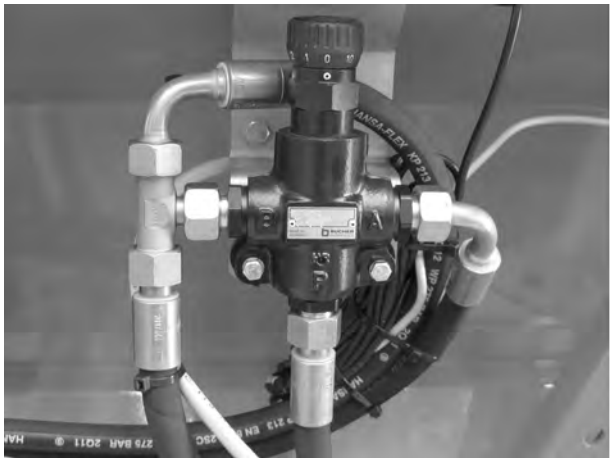


Fig. 22: Flow control valve

The spreading disc and agitator for machines with HydroCotrol (variant Q-100/200-HC) are driven automatically via the QUANTRON-K2 control unit.

The function HydroControl is described in the separate operator's manual for the QUANTRON-K2 control unit.

7.7 Connecting the hydraulic slide actuator:

A single-acting hydraulic cylinder with return spring is used on the machine: Oil pressure closes, spring force opens.

The hydraulic slide actuator is connected to the tractor via a hydraulic hose.

A single acting control valve is required on the tractor.

⚠WARNING!

Danger of crushing and shearing in the area of the spread rate adjustment

When loosening the locking screw of the metering rate stop, the metering lever can move unexpectedly and jerkily towards the end of the guide slot and cause severe injuries to the fingers.

- ▶ Only loosen the locking screw of the metering rate stop when the metering slider is closed.
- ▶ Never insert fingers into the guide slot of the spread rate adjustment.

If the machine is parked alone (without tractor), open the metering slider completely: Hydraulic cylinder is at end stop, return spring is still tensioned.

Mounting

- ▶ Depressurize the hydraulic system.
- ▶ Remove the hoses from the retainer at the frame of the machine.
- ▶ Insert the hoses into the corresponding coupling on the tractor.

7.8 Connecting the electronic slide actuators

The version Q machines are equipped with an electronic metering slider actuator.

The electronic slide actuator is described in a separate operator's manual for the QUANTRON-K2 control unit. This operator's manual is an integral part of the control unit.

7.9 Connecting the electric slide actuators

The machines of the version C are equipped with electronic slide actuators.

The description of the electric slider control can be found in the separate operator's manual for the E-Click control unit for winter service. This operator's manual is an integral part of the control unit.

7.10 Connecting the actuator for the spreading width limiter

Depending on the variant, an actuator for the electric spreading width adjustment is fitted to the machine.

Fig. 23: Marking of the control units for the spreading width limiter

Connection

- ▶ Connect the plug of the actuator to the control unit.

7.11 Connecting the lighting

■ ***AXEO 18.1***

The lighting system is mounted on the machine as standard.

▶ Connect the lighting system to the tractor via the 7-pin plug.

■ ***AXEO 2.1/6.1***

The lighting system is available as an option. See *Chapter 4.5.8 - BLO 18 lighting - Page 35*

▶ Connect the lighting system to the tractor via the 7-pin plug.

■ ***AXEO 2.1/6.1***

The lighting system is available as an option. See *Chapter 4.5.8 - BLO 18 lighting - Page 35*

▶ Connect the lighting system to the tractor via the 7-pin plug.

7.12 Filling the machine

⚠DANGER!

Danger of injury due to running engine

Working on the machine with the engine running may result in serious injury caused by mechanical components and escaping spreading material.

- ▶ **Never** fill the tractor when the motor is running.
- ▶ Switch off the tractor engine.
- ▶ Remove the ignition key.
- ▶ Ensure that nobody is present **in the hazard zone**.

⚠DANGER!

Danger due to inadmissible overall weight

Exceeding the overall weight can lead to breakage during operation and negatively affects the operational and road safety of the vehicle (machine and tractor).

Serious personal injury is possible as well as material and environmental damage.

- ▶ Always observe the information in chapter *4.4 Technical data*.
- ▶ Prior to filling, determine the maximum quantity to be loaded.
- ▶ Observe the admissible overall weight.

- ▶ Close the metering slide.
- ▶ When determining the maximum admissible load, observe the specific weight of the spreading material (kg/l).
  - ▷ The weight of the spreading material depends on the type of the spreading material (e.g., grit, sand, fertilizer) and its condition (dry, damp).
- ▶ **Only** fill the machine when it is attached to the tractor. Make sure that the tractor is standing on level and solid ground.
- ▶ Secure the tractor against moving. Apply the handbrake.
- ▶ Switch off the tractor engine and remove the ignition key.
- ▶ Fill the machine with auxiliary equipment (e.g., front-end loader, screw conveyor, silo).
- ▶ When manually filling it (e.g., loading it with big bags), use suitable steps.
- ▶ Maximally fill the machine up to the edge.

The machine is filled.

8 Calibration

For precise control of the discharge amount, we recommend running a new calibration test every time the spreading material type is changed.

Execute the calibration:

- Before spreading for the first time
- If the spreading material quality has changed significantly (moisture, high dust content, granulate damage)
- If a new spreading material is used

The calibration must be conducted while the PTO shaft is running at a standstill or during travel over a test track.

For the machines with variant Q, carry out the calibration test on the QUANTRON-K2 control unit.

The calibration test is described in a separate operator's manual for the QUANTRON-K2 control unit. This operator’s manual is an integral part of the QUANTRON-K2 control unit.

8.1 Determining the output volume

- Calculate the nominal output volume before starting the calibration test.

The exact forward speed must be known to calculate the nominal output volume.

To calculate the nominal output volume per minute, you will require the following:
- Forward speed,
- Working width,
- Desired application rate

Example: You wish to calculate the nominal output rate.
- Your forward speed is **3 km/h**,
- The working width is specified to be **4 m**,
- The application rate should be 50 g/m².

If you cannot find your values in the spreading material chart, the nominal output rate is to be determined by means of a formula.

$$\text{Nominal output rate (kg/min)} = \frac{\text{Forward speed (km/h) x working width (m) x application rate (g/m2)}}{60}$$

Example

$$\frac{3\ \text{km/h} \times 4\ \text{m} \times 50\ \text{g/m2}}{60} = 10\ \text{kg/min}$$

8.2 Implementing the calibration test

⚠ WARNING!

Risk of injury due to chemicals

Escaping fertilizer may lead to injury to eyes and nasal mucous membranes.

- ▶ Wear safety goggles during calibration.
- ▶ Follow the manufacturer's warnings when handling chemicals. Wear the recommended personal protective equipment (PPE).
- ▶ Before running the calibration test, ensure that all people leave the hazard zone of the machine.

Requirements:

- The metering slide is closed.
- PTO and tractor engine are switched off and locked to prevent unauthorized starting.
- An adequately sized hopper is ready for collecting the discharged spreading material. The hopper’s empty weight is known.
- Using the spreading material chart, the pre-set values for the metering slide stop are determined and known.
- There is sufficient spreading material in the hopper.

Select the calibration time to obtain the maximum possible spreading material discharge quantity. The higher the quantity, the higher the precision of the measurement (e.g., Nominal output rate: 10 kg/min, calibration test time: 3 min, used spreading material quantity: 30 kg).

- ▶ Mount the agitator indicated in the spreading material chart for the respective spreading material. See *7.5 Mounting the agitator*
- ▶ Fill the machine.
- ▶ Place a foil or a hopper for collecting the spreading material under the machine.
- ▶ Set the adjustment lever of the spreading width limiter to the lower stop (lowest spreading width).
- ▶ Set the metering slide stop to the scale value from the spreading material chart.
- ▶ Switch on the tractor and the PTO shaft.
- ▶ Open the metering slide for the calibration test time specified before (e.g., 60 seconds). Close the metering slide when this time has elapsed.
- ▶ Switch off the PTO shaft and the tractor. Remove the ignition key.
- ▶ Determine the collected weight.
- ▶ Compare the actual quantity with the target quantity.

Actual volume = nominal volume: The adjustment lever at the metering slide is set correctly. End calibration test.

Actual volume < nominal volume: Set the adjustment lever at the metering slide to a higher scale value and repeat the calibration test.

Actual volume > nominal volume: Set the adjustment lever at the metering slide to a lower scale value and repeat the calibration test.

9 Spreading operation

⚠DANGER!

Danger of injury due to running engine

Working on the machine with the engine running may result in serious injury caused by mechanical components and escaping fertilizer.

- ▶ Wait until all moving parts have come to a complete stop before making any adjustments or performing maintenance work.
- ▶ Switch off the tractor engine.
- ▶ Remove the ignition key.
- ▶ Ensure that nobody is present **in the hazard zone**.

9.1 General information

The modern technology and design of our machines and exhaustive, continuous testing in the factory's spreading material test system ensure that you will have a perfect spreading pattern.

In spite of the care taken during machine manufacture, deviations in application or other faults are possible even with designated usage.

Reasons for this may be:

- Changes in the physical properties of the spreading material (such as variable grain size distribution, variable density, grain size and surface, and moisture)
- Clumping and damp spreading material
- Wind drift: stop spreading at high wind speeds.
- Blockages or bridge formation (e.g., due to foreign objects, bag residue, wet spreading material).
- Uneven ground
- Abrasion of wear parts, e.g., agitator, spreading vanes, outlet.
- Damage from external causes
- Poor cleaning and care for preventing corrosion
- Incorrect drive speeds and forward speeds
- Calibration test has not been carried out or calibration test has been carried out with incorrect values (e.g., incorrect PTO speed)
- Incorrect machine settings

Cleaning the machine after each use prevents deposits at the hopper base. You can thus reduce the wear of the agitator and increase the operational reliability of your machine.

- ▶ Pay close attention to the machine settings. Even a slightly incorrect setting may adversely affect the spreading pattern.
- ▶ Check that your machine is working properly and that the application is sufficiently precise before every use of the spreader and during work (carry out a calibration test).

Particularly hard spreading material types (such as grit) increase the wear on the spreading vanes.

- **Always** use the protective grid supplied to prevent blockages, e.g., caused by foreign objects or fertilizer clumping.
- For spreading, select the PTO speed and/or the spreading disc speed with which you have carried out the calibration test.

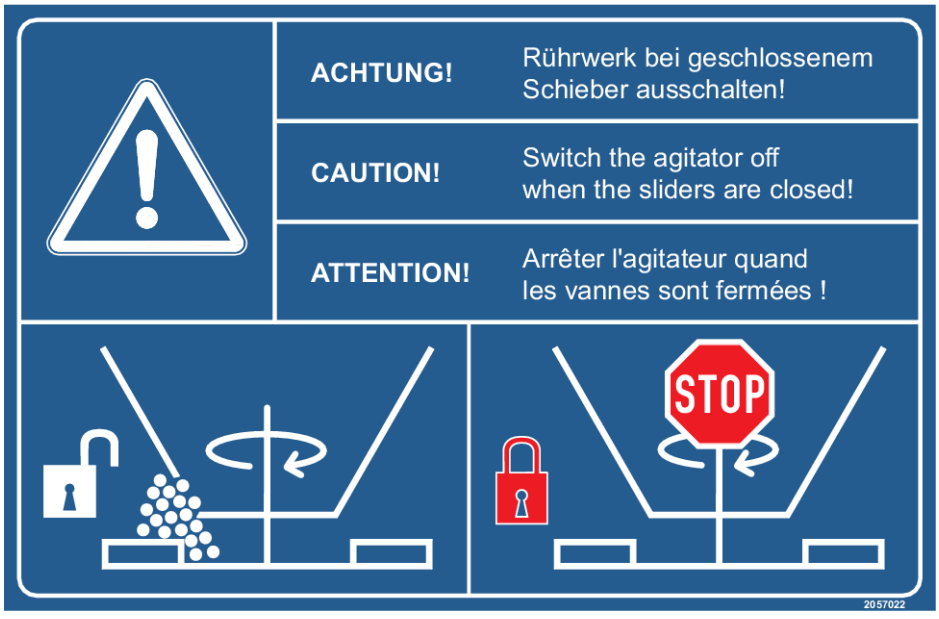
Claims for damage other than to the machine will not be accepted.

This also means that no liability will be accepted for damage resulting from spreading errors.

9.2 General information on the agitator

Depending on the spreading material, 5 different agitators are available.

Agitator type	Application/spreading material	See
RWK AX 140	Granulated fertilizer	Page *100*
RWK AX 160	Grit	Page *98*
RWK AX 180	Sand and moist salt	Page *98*
RWK AX 220	Dry salt	Page *99*
RWK AX 240	Grit salt mixture	Page *101*



NOTICE!

Possible material and environmental damage

The rotating agitator may lead to an increased wear or hardening of the spreading material if the metering slide is closed.

This hardening can impact or completely hinder the discharge of spreading material.

▶ Always deactivate the agitator when the metering slide is closed.

9.3 Instructions regarding the spreading operation

The intended use of the machine includes compliance with the operating, maintenance, and service conditions in accordance with the manufacturer specifications. **Spreading** therefore always includes **preparation** and **cleaning/maintenance**.

⚠DANGER!

Danger of injury when spreading

Contact with rotating machine components (universal drive shaft, spreading disc, agitator) may cause injury. Body parts or objects may be caught or pulled in.

▶ **Only** spread material with the protective grid installed.

▶ Carry out the spreading work according to the following procedure.

⚠CAUTION!

Risk of injury due to ejected spreading material

Only for machines with electronic control unit

If there are faults, it is possible that the metering slider unexpectedly opens during road transport to the spreading location. There is a risk of slipping and personal injury due to ejected spreading material.

▶ Before leaving for the spreading location, always switch off the electronic machine control unit.

- Carry out spreading operations in accordance with the sequence described below.

Preparation

- Install the machine at the tractor: *44*
- Close the metering slide.
- Set the mounting height: *44*
- Fill the machine: *51*
- Run the calibration test: *53*
- Set the spreading width limiter: *68*

Spreading

- Travel to the spreading location
- Switch on the drive.
- Open the metering slider and start spreading operations.
- Finish spreading operations and close the metering slide.
- Turn off the drive.
- Discharge residual material: *102*

Cleaning/maintenance

- Open the metering slide.
- Remove the machine from the tractor.
- Clean and maintain the machine: *108*

9.4 Setting the machine

⚠DANGER!

Danger of injury due to running engine

Working on the machine with the engine running may result in serious injury caused by mechanical components and escaping fertilizer.

- Wait until all moving parts have come to a complete stop before making any adjustments or performing maintenance work.
- Switch off the tractor engine.
- Remove the ignition key.
- Ensure that nobody is present **in the hazard zone**.

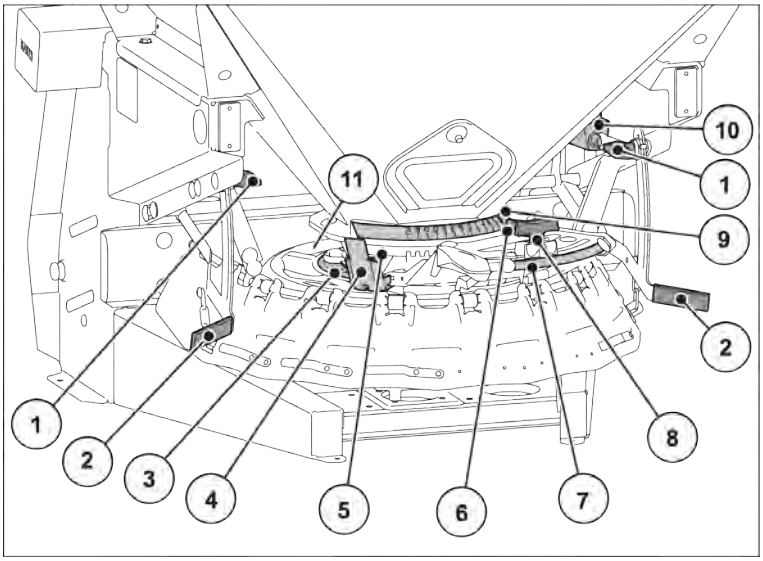


Fig. 24: Adjustment options on the machine

[1] Adjusting screw for mechanical spread width limitation
[2] Adjusting lever for spreading width limitation
[3] Number scale for adjusting the half-side slide
[4] Half-side slide
[5] Locking screw for half-side slide
[6] Display/fixing of the drop point
[7] Number scale for setting the application rate
[8] Locking screw with indicator element for fixing the application rate
[9] Letter scale for setting the drop point
[10] Actuator (only with electric spread width limiter)
[11] Spacer of the spreading disc

Use the setting elements to set the spreading parameters of the machine.

Parameter	Meaning	Description, see page
Application rate	Adjustment of the application rate by changing the metering slider opening	*61*
Spread pattern position	Adjustment of working width and spread pattern by:	
	• Changing the drop point	*64*
	• Adjusting the half-side slide	*66*
	• Setting the spacers	*67*
Spreading width	Adjustment of the spreading width in the range of about 1 - 8 meters (depending on the spreading material)	*68*

9.4.1 Setting the application rate

The **Q** variant has an electronic slider actuation for setting the spreading density.

The electronic metering slider actuation is described in the separate supplementary instructions for the control unit QUANTRON-K2. These supplementary instructions are supplied with the control unit.

⚠ WARNING!

There is a risk of injury by crushing and shearing in the application rate setting areas

When loosening the locking screw of the spreading rate stop, the metering slider can move unexpectedly and jerkily against the end of the guide slot.

This may result in injuries to the fingers.

- ▶ Only loosen the locking screw of the metering rate stop when the metering slider is closed.
- ▶ Never insert fingers into the guide slot of the spread rate adjustment.
- ▶ If the machine is parked alone (without tractor), open the metering slider completely: Hydraulic cylinder is at end stop, return spring is still tensioned.

You can set the application rate via the metering slider opening at the numeric scale on the scale plate.

- Adjusting it downwards, in the direction of higher values, opens the metering slide.
- Adjusting it upwards, in the direction of lower values, closes the metering slide.

NOTICE!

Material damage caused by an insufficient metering slide opening

Insufficiently opened metering slides may lead to blocking and cause damage to the spreading material. Increasing wear occurs at the agitator.

- ▶ Select an adequately large opening for the metering slide at which the spreading material can flow out unhindered.

[1] Pointer stop
[2] Locking screw
[3] Number scale of the scale sheet

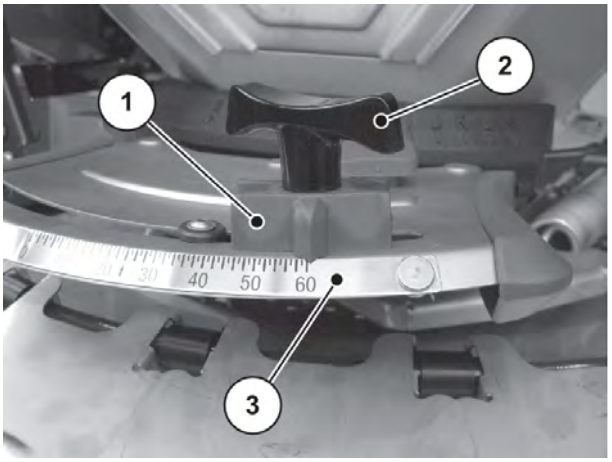


Fig. 25: Setting the application rate

- ▶ Close the metering slides completely.
- ▶ Determine the position for the scale setting in the spreading material chart or based on the calibration test.
- ▶ Loosen the locking screw [2] on the stop.
- ▶ Slide the pointer of the stop [1] to the determined position.
- ▶ Tighten the locking screw.

9.4.2 Set the speed of the spreading discs or the agitator

■ ***PTO drive***

The speed to be set for the spreading disc or the agitator can be found in the spreading material chart. See *9.5 Using the fertilizer chart*

With smaller working widths and good spreading material quality, the agitator speed can be reduced.

■ ***Drive with hydraulic motor (variant H-100/200, Q-100/200, C-100/200)***

For machines with hydraulic drive, set the speed via the flow control valve. The values to be set can be found in the following table.

Possible spreading errors and material damage

- Incorrectly set spreading disc or agitator speed
  - Consequence: Wear or spreading error
- Excessively high spreading disc or agitator speed
  - Consequence: increased mechanical stress on the spreading material

- ▶ Refer to the spreading material chart for the speed specified for the respective spreading material.

With smaller working widths and good spreading material quality, the agitator speed can be reduced.

The setting values may differ depending on the tractor used and the type of oil.

- Check the speeds with the tractor you are using for correctness.

■ ***Setting values for 100 cm³ hydraulic motor***

Handwheel setting on the flow control valve	Speed in rpm	Spreading material
2.5	55	
3	120	
3.5	180	
3.75	200	Grit
4	225	Salt and sand
4.5	280	
5	330	Fertilizer
5.5	370	Fertilizer
6	410	Fertilizer
6.5	450	Fertilizer

■ ***Setting values for 200 cm³ hydraulic motor***

Handwheel setting on the flow control valve	Speed in rpm	Spreading material
4.5	145	
5	172	
5.5	190	Grit
6	210	
6.5	230	Salt and sand
7	246	

9.4.3 Adjusting the drop point

The change of the drop point serves to adapt to different spreading materials and spreading patterns.

You set the drop point via the letter scale of the drop point.

- Adjustment in the direction of letter **A**: Center of gravity of the spread pattern shifts to the left.
- Adjustment in the direction of letter **M**: Center of gravity of the spread pattern shifts to the right.

■ ***Symmetrical spreading pattern***

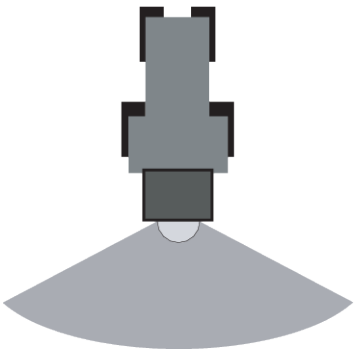


Fig. 26: Symmetrical spreading pattern

■ ***Asymmetrical spreading pattern***

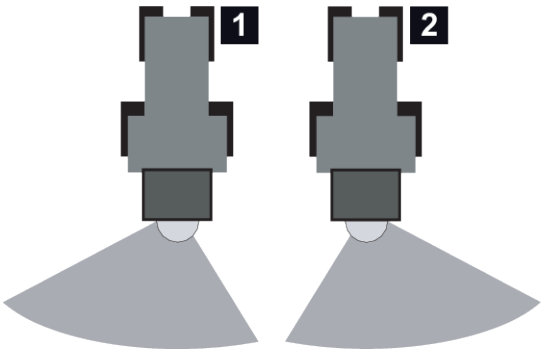


Fig. 27: Asymmetrical spreading pattern

[1] Spreading to the left (in the direction of travel)

[2] Spreading to the right (in the direction of travel)

Use the following positions for a symmetrical spread pattern, RAUCH which have been determined for different spreading materials, as a reference value:

- Grit: Position **E**
- Salt: Position **F**
- Sand: Position **J**

While doing this, pay attention to the spreading material tables, *9.5 Using the fertilizer chart*.

Fig. 28: Drop point adjustment center

▶ Determine the position for the drop point using the spreading material chart.

▶ Grip the left and right handle.

▶ Press the pointer unit.

The lock is released. The adjustment center can be moved.

▶ Slide the adjustment center with the pointer unit to the determined position.

▶ Release the pointer unit.

The adjustment center is locked.

▶ Thoroughly check that the adjustment center is locked.

The drop point is set.

If adjusting the drop point is not sufficient to set a symmetrical spread pattern, you can adjust the spacer on the spreading disc.

- See *9.4.5 Setting the spreading vane*

9.4.4 Adjusting the half-side slide

For a sharp-edged demarcation at the right edge of the carriageway, you must set the spreading pattern to asymmetrical spreading in the left direction of travel.

To achieve an even spreading pattern, the half-side slide must also be adjusted.

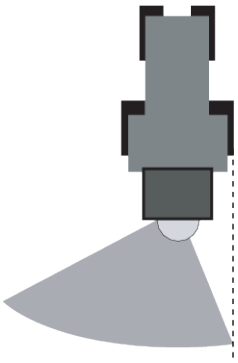


Fig. 29: Sharp-edged demarcation to the right (scattering to the left)

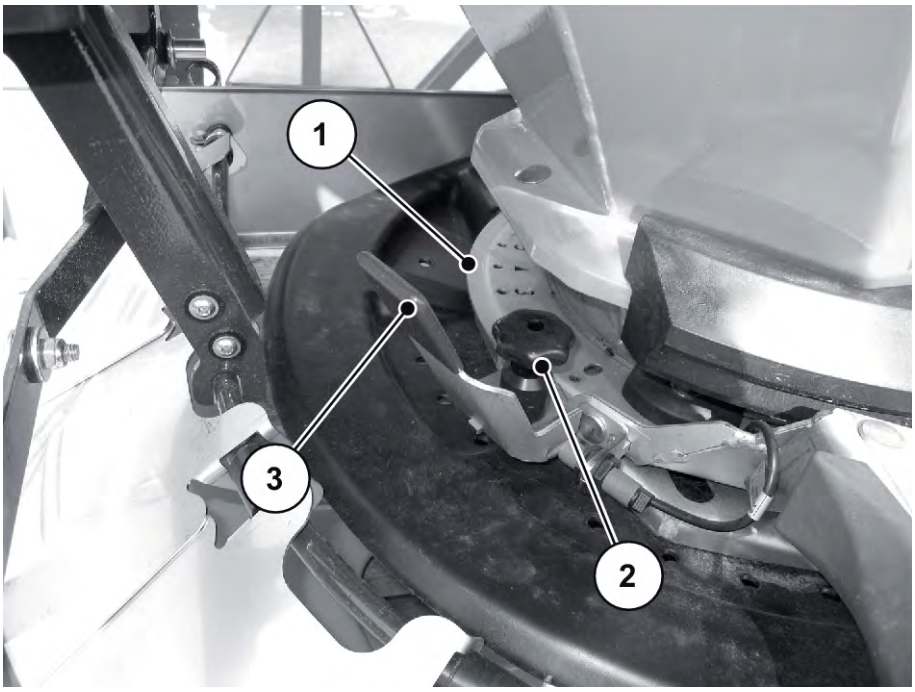


Fig. 30: Adjusting the half-side slide

[1] Number scale of the scale sheet
[2] Locking screw
[3] Adjustment lever

- ▶ Loosen the locking screw [2] on the half-side slide.
- ▶ Move the adjustment lever [3] to the desired position.
  - ▷ Adjustment lever in the direction of **larger** numerical values: Metering slider is **closed**.
  - ▷ Adjustment lever in the direction of **smaller** numerical values: Metering slider is **opened**.
- ▶ Tighten the locking screw [2].
- ▶ Check the spreading pattern (visual inspection or measurement) and, if applicable, correct the settings.

Notes on the setting

For sharp-edged demarcation of the spreading pattern at the right edge of the carriageway with quantity compensation and uniform spreading material distribution

- ▶ Determine setting values for the spreading material used from the spreading material chart.
- ▶ Lower the right-hand spreading width limiter.
- ▶ Close the half-side slide. See *Fig. 30 Adjusting the half-side slide*

9.4.5 Setting the spreading vane

Dispose of the self-locking nuts after releasing them and replace them with new ones. See *11.7 Spreading vane replacement*

■ **Increasing the spreading density on the right in direction of travel**

- ▶ Observe the rotational direction of the spreading disc.

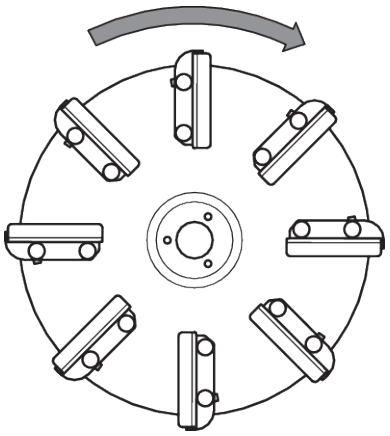


Fig. 31: Rotational direction of spreading disc

- ▶ Dismount the screws of the spreading vanes with the respective nuts and washers.

- ▶ Reset the spreading vanes against the rotary direction of the spreading disc.
  - ▷ White arrow: Rotational direction of spreading disc
  - ▷ Grey arrow: Adjustment of the spreading vanes against the rotary direction of the spreading disc

  With this setting, the spreading material is ejected **earlier**.

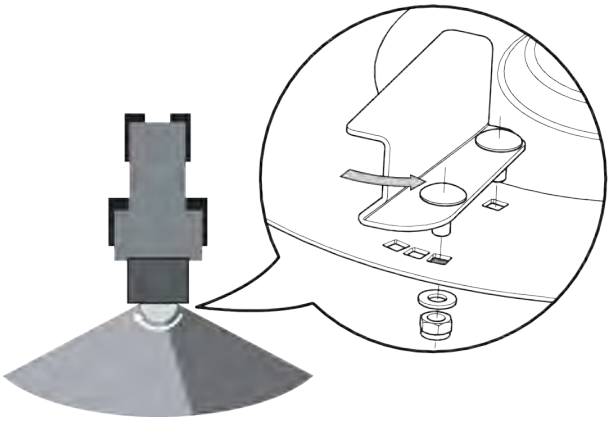


Fig. 32: Spreading density on the right in direction of travel

- ▶ Screw on the spreading vane (tightening torque: about 18 Nm). For this purpose, always use new self-locking nuts.

The spreading density on the right-hand side viewed in the direction of travel is increased.

■ Spreading density on the left in direction of travel

- ▶ Dismount the screws of the spreading vanes with the respective nuts and washers.
- ▶ Set the spreading vanes forward against the rotary direction of the spreading disc.
  - ▷ White arrow: Rotational direction of spreading disc
  - ▷ Grey arrow: Adjustment of the spreading vanes in the rotary direction of the spreading disc

  With this setting, the spreading material is ejected **later**.

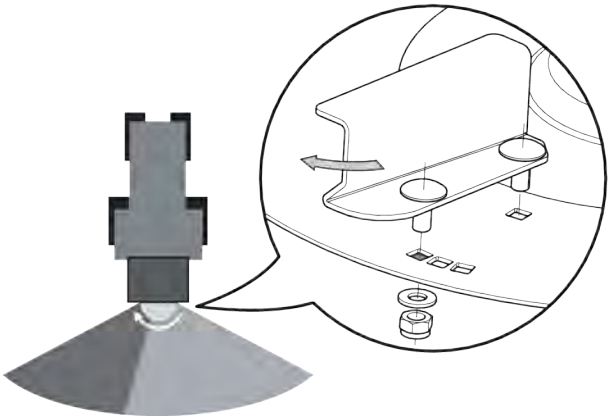


Fig. 33: Spreading density on the right in direction of travel

- ▶ Screw on the spreading vane (tightening torque: about 18 Nm). For this purpose, always use new self-locking nuts.

The spreading density on the left-hand side viewed in the direction of travel is increased.

9.4.6 Set the spreading width limiter

Using different positions, the spreading width limiter makes spreading widths of about **1 m - 8 m** possible at a mounting height of **about 55 cm** (see mounting height specification *44*).

Depending on the equipment of your machine, the spreading width can be adjusted in 4 different ways.

Design of the spreading width adjustment	Characteristic
Mechanical, left and right separately adjustable	Allows symmetrical and asymmetrical spreading patterns
Electric, with an actuator on the right side. A coupling rod connects both sides (optional).	Allows the symmetrical spread pattern to be changed during travel.
Electric, with separate actuators on the left and right sides (optional)	Enables changing from a symmetrical to an asymmetrical spread pattern during travel.
Electric, with one actuator on the left or right side (optional)	Enables unilateral change of the spread pattern during travel.

Check to make sure that the spreading width limiter is in good condition. Damaged or bent elements of the spreading width limiter impact the spreading pattern.

Adjustment:

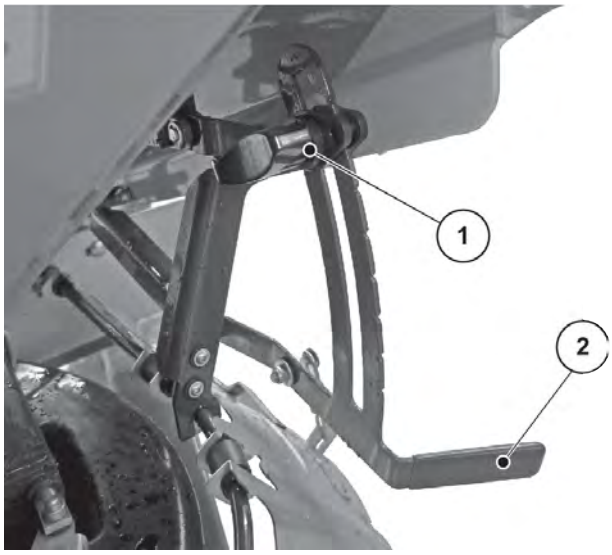


Fig. 34: Spreading width limiter

[1] Locking screw

[2] Adjustment lever with scale

- ▶ Loosen the locking screw [1] on the spreading width limiter.
- ▶ Move the adjustment lever [2] to the desired position.
  - ▷ Adjustment lever upward: Spreading width is increased.
  - ▷ Adjustment lever downward: Spreading width is decreased.
- ▶ Tighten the locking screw [1].

  The new spreading width is set.
- ▶ Check the spreading pattern (visual inspection or measurement), if applicable, correct the settings.

9.4.7 Adjustment options with HydroControl

If the machine is equipped with the function HydroControl, the disc speed and the spreading width limitation are set via the control unit QUANTRON-K2.

Observe the separate operator's manual for the control unit. This operator's manual is supplied with the control unit QUANTRON-K2.

9.5 Using the fertilizer chart

The values in the spreading material chart have been determined using the manufacturer’s test system.

The spreading material used here has been obtained from manufacturers or dealers. Experience shows that your spreading material - even with identical specifications - may have different spreading properties due to storage, transport, and many other reasons.

Together with the machine settings indicated in the spreading material charts, this may lead to a different application rate and a less optimal spreading material distribution.

The following instructions should therefore be observed:

- Always check the actual application rate by means of calibration. See *8 Calibration*
- Observe the setting values exactly. Even a slightly incorrect setting may adversely affect the spreading pattern.
- Adjustments for spreading materials not listed in the spreading material chart can be determined by means of calibration.

With small working widths, the spreading disc speed can be reduced. Implement another calibration test with the new speed (RPM).

The operator is responsible the correct adjustments for the spreading material in use.

We point out specifically that we do not accept any liability for damage resulting from incorrect spreader settings.

Further spreading material charts can be found on the spreading material chart CD provided.

Spreading material chart for winter road maintenance	**Link**
Grit	*72*
Sand	*74*
Rock salt	*76*
Saltine salt	*78*

Spreading material chart for fertilizer	**Link**
Basatop Sport COMPO	*80*
Cornufera NPK Günther	*82*
ENTEC avant COMPO	*84*
Floranid N32 COMPO	*86*
Floranid permanent COMPO	*88*
Kalkammonsalpeter, Floral	*90*
Kornkali, K + S GmbH	*92*
Rasen Floranid COMPO	*94*
Thomaskali, K + S GmbH	*96*

■ ***Grit (3/5 mm)***

- PTO shaft speed: n = **450** rpm
- Drop point: **E**
- Mounting height: **B = 33** cm
- Half-side slide: **0**
- Spreading disc speed: 200 rpm
- Flow factor: 1.35
- Agitator type: **RWK AX 160**

Setting values for the metering slider stop

Spreading width [m]		**1**					**2**				
Spreading density [g/m2]		**100**	**150**	**200**	**250**	**300**	**100**	**150**	**200**	**250**	**300**
Speed [km/h]	3	13	15	16	17	18	16	18	20	22	23
	6	16	18	20	22	23	20	23	26	28	31
	10	19	22	24	26	28	24	28	33	37	40
	15	22	25	28	32	36	28	36	40	44	49
	20	24	28	33	37	40	33	40	45	54	–
	25	26	32	37	41	44	37	44	54	–	–
	30	28	36	40	44	49	40	49	–	–	–

Spreading width [m]		**3**					**4**				
Spreading density [g/m2]		**100**	**150**	**200**	**250**	**300**	**100**	**150**	**200**	**250**	**300**
Speed [km/h]	3	18	21	23	25	27	20	23	26	28	31
	6	23	27	31	36	38	26	31	37	40	43
	10	28	36	40	44	49	33	40	45	54	–
	15	36	42	49	60	–	40	49	–	–	–
	20	40	49	–	–	–	45	–	–	–	–
	25	44	60	–	–	–	54	–	–	–	–
	30	49	–	–	–	–	–	–	–	–	–

Spreading width [m]		**6**					**8**				
Spreading density [g/m2]		**100**	**150**	**200**	**250**	**300**	**100**	**150**	**200**	**250**	**300**
Speed [km/h]	3	23	27	31	36	39	26	31	37	40	43
	6	31	38	43	49	–	37	43	52	–	–
	10	40	49	60	–	–	45	–	–	–	–
	15	49	60	–	–	–	–	–	–	–	–
	20	60	–	–	–	–	–	–	–	–	–
	25	–	–	–	–	–	–	–	–	–	–
	30	–	–	–	–	–	–	–	–	–	–

■ ***Sand***

- PTO shaft speed: n = **540** rpm
- Drop point: **J**
- Mounting height: **B = 33** cm
- Half-side slide: **0**
- Spreading disc speed: 230 rpm
- Flow factor: 0.78
- Agitator type: **RWK AX 180**

Setting values for the metering slider stop

Spreading width [m]		**1**					**2**				
Spreading density [g/m2]		**100**	**150**	**200**	**250**	**300**	**100**	**150**	**200**	**250**	**300**
Speed [km/h]	3	16	18	19	20	21	19	21	23	25	27
	6	19	22	23	25	27	23	27	30	33	35
	10	22	25	28	31	33	28	33	37	41	45
	15	25	30	33	36	39	33	39	45	58	–
	20	28	33	37	41	45	37	45	60	–	–
	25	31	36	41	47	58	41	58	–	–	–
	30	33	39	45	58	–	45	–	–	–	–

Spreading width [m]		**3**					**4**				
Spreading density [g/m2]		**100**	**150**	**200**	**250**	**300**	**100**	**150**	**200**	**250**	**300**
Speed [km/h]	3	21	24	27	29	32	23	27	30	33	35
	6	27	32	35	39	43	30	35	40	45	56
	10	33	39	45	58	–	37	45	60	–	–
	15	39	52	–	–	–	45	–	–	–	–
	20	45	60	–	–	–	60	–	–	–	–
	25	58	–	–	–	–	–	–	–	–	–
	30	–	–	–	–	–	–	–	–	–	–

Spreading width [m]		**6**				
Spreading density [g/m2]		**100**	**150**	**200**	**250**	**300**
Speed [km/h]	3	27	32	35	39	43
	6	35	43	56	–	–
	10	45	–	–	–	–
	15	–	–	–	–	–
	20	–	–	–	–	–
	25	–	–	–	–	–
	30	–	–	–	–	–

■ ***Rock salt***

- PTO shaft speed: n = **540** rpm
- Drop point: **F**
- Mounting height: **B = 33** cm
- Half-side slide: **0**
- Spreading disc speed: 230 rpm
- Flow factor: 1.22
- Agitator type: **RWK AX 220**

Setting values for the metering slider stop

Spreading width [m]		**1**					**2**				
Spreading density [g/m2]		**5**	**10**	**20**	**30**	**40**	**5**	**10**	**20**	**30**	**40**
Speed [km/h]	3	–	–	–	–	–	–	–	–	–	10
	6	–	–	–	–	10	–	–	10	10.5	11.5
	10	–	–	9	10.5	11.5	–	–	11.5	12.5	13.5
	15	–	–	10	11.5	12.5	–	10	12.5	14.5	16
	20	–	–	11	12.5	13.5	–	11	13.5	16	18
	25	–	10.5	11.5	13.5	15	10.5	11.5	15	17.5	20
	30	–	11	12.5	14.5	16	11	12.5	16	19	22

Spreading width [m]		**3**					**4**				
Spreading density [g/m2]		**5**	**10**	**20**	**30**	**40**	**5**	**10**	**20**	**30**	**40**
Speed [km/h]	3	–	–	–	10.5	11	–	–	10	11	11.5
	6	–	–	10.5	12	13.5	–	10	11.5	13.5	15
	10	–	10.5	12.5	14.5	16	–	11.5	13.5	16	18
	15	10	11.5	14.5	17	19	10	12.5	16	19	22
	20	10.5	12.5	16	19	22	11	13.5	18	22	25.5
	25	11	13.5	17.5	21	25	11.5	15	20	25	27.5
	30	11.5	14.5	19	23	26.5	12.5	16	22	26.5	29.5

Spreading width [m]		**6**					**8**				
Spreading density [g/m2]		**5**	**10**	**20**	**30**	**40**	**5**	**10**	**20**	**30**	**40**
Speed [km/h]	3	–	–	11	12	13.5	–	10	11.5	13.5	14.5
	6	–	10.5	13.5	15.5	17.5	10	11.5	15	17.5	19.5
	10	10.5	12.5	16	19	22	11.5	13.5	18	22	25.5
	15	11.5	14.5	19	23	26.5	12.5	16	22	26.5	29.5
	20	12.5	16	22	26.5	29.5	13.5	18	25.5	29.5	34.5
	25	13.5	17.5	25	29	33.5	15	20	27.5	33.5	39
	30	14.5	19	26.5	31.5	37	16	22	29.5	37	44

■ ***Saltine salt***

- PTO shaft speed: n = **540** rpm
- Drop point: **F**
- Mounting height: **B = 33** cm
- Half-side slide: **0**
- Spreading disc speed: 230 rpm
- Flow factor: 1.38
- Agitator type: **RWK AX 220**

Setting values for the metering slider stop

Spreading width [m]		**1**					**2**				
Spreading density [g/m2]		**5**	**10**	**20**	**30**	**40**	**5**	**10**	**20**	**30**	**40**
Speed [km/h]	3	–	–	–	–	–	–	–	–	6	6.5
	6	–	–	5.5	6	6.5	–	–	6.5	7	8
	10	–	–	6	7	7.5	–	6	7.5	9	10.5
	15	–	–	7	8	9	–	7	9	11	12.5
	20	–	6	7.5	9	10.5	6	7.5	10.5	12.5	14
	25	–	6.5	8	10.5	11.5	6.5	8	11.5	13.5	15
	30	6	7	9	11	12	7	9	12	14.5	16.5

Spreading width [m]		**3**					**4**				
Spreading density [g/m2]		**5**	**10**	**20**	**30**	**40**	**5**	**10**	**20**	**30**	**40**
Speed [km/h]	3	–	–	6	6.5	7.5	–	–	6.5	7.5	8
	6	–	6	7	8.5	10.5	–	6.5	8	10.5	11.5
	10	–	7	9	11	12.5	6	7.5	10.5	12.5	13.5
	15	6	8	11	12.5	14.5	7	9	12.5	14.5	16.5
	20	7	9	12.5	14.5	16.5	7.5	10.5	14	16.5	19
	25	7.5	10.5	13.5	16	18.5	8	11.5	15	18.5	21.5
	30	8	11	14.5	17.5	20.5	9	12	16.5	20.5	23.5

Spreading width [m]		**5**				
Spreading density [g/m2]		**5**	**10**	**20**	**30**	**40**
Speed [km/h]	3	–	–	7	8	9.5
	6	–	7	9.5	11	12.5
	10	6.5	8.5	11.5	13.5	15.5
	15	7.5	10.5	13.5	16	18.5
	20	8.5	11.5	15.5	18.5	21.5
	25	9.5	12.5	17	20.5	23.5
	30	10.5	13.5	18.5	22.5	26

■ ***Basatop Sport COMPO***

- Composition NPK 20 - 5 - 10
- Fertilizer density: 1.10 kg/l
- Half-side slide: 5
- Agitator type: RWK AX 140

- **Application rate in kg/ha**

Spreading width		**5**			**6**			**7**			**8**		
PTO speed (rpm)		**540**			**540**			**750**			**1000**		
Spreading disc speed (rpm)		**230**			**230**			**325**			**430**		
Mounting height		**33**			**33**			**33**			**33**		
Drop point		**H**			**H**			**I**			**i**		
Metering slider stop	**Flow rate amount (kg/min)**	**km/h**			**km/h**			**km/h**			**km/h**		
		8	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**
20	12.5	188	150	125	156	125	104	134	107	89	117	94	78
21	14.8	222	178	148	185	148	123	159	127	106	139	111	93
22	17.1	257	205	171	214	171	143	183	147	122	160	128	107
23	19.4	291	233	194	243	194	162	208	166	139	182	146	121
24	21.7	326	260	217	271	217	181	233	186	155	203	163	136
25	24	360	288	240	300	240	200	257	206	171	225	180	150
26	24.7	371	297	247	309	247	206	265	212	177	232	185	155
27	25.4	382	305	254	318	254	212	273	218	182	239	191	159
28	26.2	392	314	262	327	262	218	280	224	187	245	196	164
29	26.9	403	323	269	336	269	224	288	230	192	252	202	168
30	27.6	414	331	276	345	276	230	296	237	197	259	207	173
31	29	435	348	290	362	290	242	311	248	207	272	217	181
32	30.4	455	364	304	380	304	253	325	260	217	285	228	190
33	31.7	476	381	317	397	317	265	340	272	227	298	238	198
34	33.1	497	397	331	414	331	276	355	284	237	311	248	207
35	34.5	518	414	345	431	345	288	370	296	246	323	259	216
36	36.6	550	440	366	458	366	305	393	314	262	344	275	229
37	38.8	582	465	388	485	388	323	416	332	277	364	291	242

Spreading width		5			6			7			8		
PTO speed (rpm)		540			540			750			1000		
Spreading disc speed (rpm)		230			230			325			430		
Mounting height		33			33			33			33		
Drop point		H			H			I			i		
Metering slider stop	Flow rate amount (kg/min)	km/h			km/h			km/h			km/h		
		8	10	12	8	10	12	8	10	12	8	10	12
38	40.9	614	491	409	512	409	341	438	351	292	384	307	256
39	43.1	646	517	431	538	431	359	461	369	308	404	323	269
40	45.2	678	542	452	565	452	377	484	387	323	424	339	283

■ ***Cornufera NPK, Günther***

- Composition NPK 20 - 5 - 8
- Fertilizer density: 1.10 kg/l
- Half-side slide: 5
- Agitator type: RWK AX 140

- **Application rate in kg/ha**

Spreading width		**5**			**6**			**7**			**8**		
PTO speed (rpm)		**540**			**540**			**750**			**1000**		
Spreading disc speed (rpm)		**230**			**230**			**325**			**430**		
Mounting height		**33**			**33**			**33**			**33**		
Drop point		**H**			**H**			**I**			**i**		
Metering slider stop	**Flow rate amount (kg/min)**	**km/h**			**km/h**			**km/h**			**km/h**		
		8	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**
20	9.6	144	115	96	120	96	80	103	82	69	90	72	60
21	11.4	170	136	114	142	114	95	122	97	81	107	85	71
22	13.1	197	157	131	164	131	109	141	112	94	123	98	82
23	14.9	223	179	149	186	149	124	159	128	106	140	112	93
24	16.6	250	200	166	208	166	139	178	143	119	156	125	104
25	18.4	276	221	184	230	184	153	197	158	131	173	138	115
26	20.2	303	243	202	253	202	169	217	173	144	190	152	126
27	22	331	264	220	276	220	184	236	189	157	207	165	138
28	23.9	358	286	239	298	239	199	256	205	170	224	179	149
29	25.7	385	308	257	321	257	214	275	220	183	241	193	161
30	27.5	413	330	275	344	275	229	295	236	196	258	206	172
31	29.6	444	355	296	370	296	247	317	254	211	278	222	185
32	33.8	507	406	338	423	338	282	362	290	241	317	254	211
33	31.7	476	380	317	396	317	264	340	272	226	297	238	198
34	35.9	539	431	359	449	359	299	385	308	256	337	269	224
35	38	570	456	380	475	380	317	407	326	271	356	285	238
36	40	601	480	400	501	400	334	429	343	286	375	300	250
37	42.1	631	505	421	526	421	351	451	361	301	395	316	263

Spreading width		5			6			7			8		
PTO speed (rpm)		540			540			750			1000		
Spreading disc speed (rpm)		230			230			325			430		
Mounting height		33			33			33			33		
Drop point		H			H			I			i		
Metering slider stop	Flow rate amount (kg/min)	km/h			km/h			km/h			km/h		
		8	10	12	8	10	12	8	10	12	8	10	12
38	44.1	662	529	441	552	441	368	473	378	315	414	331	276
39	46.2	692	554	462	577	462	385	495	396	330	433	346	289
40	48.2	723	578	482	603	482	402	516	413	344	452	362	301
41	50.3	754	603	503	629	503	419	539	431	359	471	377	314
42	52.4	785	628	524	655	524	436	561	449	374	491	393	327
43	54.4	817	653	544	681	544	454	583	467	389	510	408	340
44	56.5	848	678	565	707	565	471	606	484	404	530	424	353
45	58.6	879	703	586	733	586	488	628	502	419	549	440	366

■ ***ENTEC avant, COMPO***

- Composition NPK 12 - 7 - 6
- Fertilizer density: 1.13 kg/l
- Half-side slide: 5
- Agitator type: RWK AX 140

- **Application rate in kg/ha**

Spreading width		**5**			**6**			**7**			**8**		
PTO speed (RPM)		**540**			**540**			**750**			**1000**		
Spreading disc speed (RPM)		**230**			**230**			**325**			**430**		
Mounting height		**33**			**33**			**33**			**33**		
Drop point		**I**			**I**			**I**			**I**		
Metering slider stop	**Flow quantity (kg/min)**	**km/h**			**km/h**			**km/h**			**km/h**		
		8	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**
20	12	180	144	120	150	120	100	129	103	86	113	90	75
21	14	210	168	140	175	140	117	150	120	100	131	105	88
22	16	240	192	160	200	160	133	171	137	114	150	120	100
23	18	270	216	180	225	180	150	193	154	129	169	135	113
24	20	300	240	200	250	200	167	214	171	143	188	150	125
25	22	330	264	220	275	220	183	236	189	157	206	165	138
26	24.3	364	291	243	304	243	202	260	208	173	228	182	152
27	26.6	398	319	266	332	266	221	285	228	190	249	199	166
28	28.8	433	346	288	361	288	240	309	247	206	270	216	180
29	31.1	467	373	311	389	311	259	333	267	222	292	233	195
30	33.4	501	401	334	418	334	278	358	286	239	313	251	209
31	36	539	432	360	450	360	300	385	308	257	337	270	225
32	38.5	578	462	385	482	385	321	413	330	275	361	289	241
33	41.1	616	493	411	514	411	342	440	352	293	385	308	257
34	43.6	655	524	436	546	436	364	468	374	312	409	327	273
35	46.2	693	554	462	578	462	385	495	396	330	433	347	289

Spreading width		5			6			7			8		
PTO speed (RPM)		540			540			750			1000		
Spreading disc speed (RPM)		230			230			325			430		
Mounting height		33			33			33			33		
Drop point		I			I			I			I		
Metering slider stop	Flow quantity (kg/min)	km/h			km/h			km/h			km/h		
		8	10	12	8	10	12	8	10	12	8	10	12
36	48.9	733	586	489	611	489	407	524	419	349	458	366	305
37	51.5	773	618	515	644	515	429	552	442	368	483	386	322
38	54.2	813	650	542	677	542	452	581	464	387	508	406	339
39	56.8	853	682	568	711	568	474	609	487	406	533	426	355
40	59.5	893	714	595	744	595	496	638	510	425	558	446	372
41	62	930	744	620	775	620	517	664	531	443	581	465	387
42	64.5	967	774	645	806	645	537	691	553	460	604	483	403
43	66.9	1004	803	669	837	669	558	717	574	478	628	502	418
44	69.4	1041	833	694	868	694	579	744	595	496	651	521	434
45	71.9	1079	863	719	899	719	599	770	616	514	674	539	449
46	74.1	1111	889	741	926	741	617	794	635	529	694	555	463
47	76.2	1143	915	762	953	762	635	817	653	544	715	572	476
48	78.4	1176	941	784	980	784	653	840	672	560	735	588	490
49	80.5	1208	966	805	1007	805	671	863	690	575	755	604	503
50	82.7	1241	992	827	1034	827	689	886	709	591	775	620	517

■ ***Floranid N32, COMPO***

- Composition 32% N
- Fertilizer density: 0.52 kg/l
- Half-side slide: 5
- Agitator type: RWK AX 140

- **Application rate in kg/ha**

Spreading width		**3**			**4**			**5**			**6**		
PTO speed (rpm)		**540**			**750**			**1000**			**1000**		
Spreading disc speed (rpm)		**230**			**325**			**430**			**430**		
Mounting height		**33**			**33**			**33**			**33**		
Drop point		**L**			**M**			**M**			**K**		
Metering slider stop	**Flow rate amount (kg/min)**	**km/h**			**km/h**			**km/h**			**km/h**		
		8	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**
15	3	75	60	50	56	45	38	45	36	30	38	30	25
16	3.7	94	75	62	70	56	47	56	45	37	47	37	31
17	4.5	112	90	75	84	67	56	67	54	45	56	45	37
18	5.2	131	104	87	98	78	65	78	63	52	65	52	44
19	6	149	119	99	112	89	75	89	72	60	75	60	50
20	6.7	168	134	112	126	101	84	101	80	67	84	67	56
21	7.8	196	156	130	147	117	98	117	94	78	98	78	65
22	8.9	224	179	149	168	134	112	134	107	89	112	89	75
23	10.1	252	201	168	189	151	126	151	121	101	126	101	84
24	11.2	280	224	186	210	168	140	168	134	112	140	112	93
25	12.3	308	246	205	231	185	154	185	148	123	154	123	103
26	13.3	333	266	222	250	200	167	200	160	133	167	133	111
27	14.3	359	287	239	269	215	179	215	172	143	179	143	120
28	15.4	384	307	256	288	230	192	230	184	154	192	154	128
29	16.4	410	328	273	307	246	205	246	197	164	205	164	137
30	17.4	435	348	290	326	261	218	261	209	174	218	174	145
31	18.7	467	373	311	350	280	233	280	224	187	233	187	156
32	19.9	498	398	332	374	299	249	299	239	199	249	199	166

Spreading width		3			4			5			6		
PTO speed (rpm)		540			750			1000			1000		
Spreading disc speed (rpm)		230			325			430			430		
Mounting height		33			33			33			33		
Drop point		L			M			M			K		
Metering slider stop	Flow rate amount (kg/min)	km/h			km/h			km/h			km/h		
		8	10	12	8	10	12	8	10	12	8	10	12
33	21.2	530	424	353	397	318	265	318	254	212	265	212	177
34	22.4	561	449	374	421	337	281	337	269	224	281	224	187
35	23.7	593	474	395	444	356	296	356	284	237	296	237	198
36	24.7	618	494	412	464	371	309	371	297	247	309	247	206
37	25.7	644	515	429	483	386	322	386	309	257	322	257	215
38	26.8	669	535	446	502	401	335	401	321	268	335	268	223
39	27.8	695	556	463	521	417	347	417	333	278	347	278	232
40	28.8	720	576	480	540	432	360	432	346	288	360	288	240
41	29.5	739	591	492	554	443	369	443	354	295	369	295	246
42	30.3	757	606	505	568	454	379	454	363	303	379	303	252
43	31	776	620	517	582	465	388	465	372	310	388	310	259
44	31.8	794	635	529	596	476	397	476	381	318	397	318	265
45	32.5	813	650	542	609	488	406	488	390	325	406	325	271
46	33	825	660	550	619	495	413	495	396	330	413	330	275
47	33.5	838	670	558	628	503	419	503	402	335	419	335	279
48	34	850	680	567	638	510	425	510	408	340	425	340	283
49	34.5	863	690	575	647	518	431	518	414	345	431	345	288
50	35	875	700	583	656	525	438	525	420	350	438	350	292

■ ***Floranid permanent, COMPO***

- Composition NPK 16 - 7 - 15
- Fertilizer density: 1.01 kg/l
- Half-side slide: 5
- Agitator type: RWK AX 140

- **Application rate in kg/ha**

Spreading width		**5**			**6**			**7**			**8**		
PTO speed (rpm)		**540**			**750**			**750**			**1000**		
Spreading disc speed (rpm)		**230**			**325**			**325**			**430**		
Mounting height		**33**			**33**			**33**			**33**		
Drop point		**L**			**L**			**L**			**I**		
Metering slider stop	**Flow rate amount (kg/min)**	**km/h**			**km/h**			**km/h**			**km/h**		
		8	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**
20	11.5	173	138	115	144	115	96	123	99	82	108	86	72
21	13.4	201	161	134	168	134	112	144	115	96	126	101	84
22	15.3	230	184	153	191	153	128	164	131	109	143	115	96
23	17.2	258	206	172	215	172	143	184	147	123	161	129	108
24	19.1	287	229	191	239	191	159	205	164	136	179	143	119
25	21	315	252	210	263	210	175	225	180	150	197	158	131
26	23.4	352	281	234	293	234	195	251	201	167	220	176	147
27	25.9	388	311	259	324	259	216	277	222	185	243	194	162
28	28.3	425	340	283	354	283	236	303	243	202	266	212	177
29	30.8	461	369	308	385	308	256	330	264	220	288	231	192
30	33.2	498	398	332	415	332	277	356	285	237	311	249	208
31	35.8	536	429	358	447	358	298	383	307	255	335	268	224
32	38.3	575	460	383	479	383	319	411	328	274	359	287	240
33	40.9	613	491	409	511	409	341	438	350	292	383	307	256
34	43.4	652	521	434	543	434	362	465	372	310	407	326	272
35	46	690	552	460	575	460	383	493	394	329	431	345	288
36	48.4	726	581	484	605	484	403	519	415	346	454	363	303
37	50.8	762	610	508	635	508	423	544	435	363	476	381	318

Spreading width		5			6			7			8		
PTO speed (rpm)		540			750			750			1000		
Spreading disc speed (rpm)		230			325			325			430		
Mounting height		33			33			33			33		
Drop point		L			L			L			I		
Metering slider stop	Flow rate amount (kg/min)	km/h			km/h			km/h			km/h		
		8	10	12	8	10	12	8	10	12	8	10	12
38	53.2	798	638	532	665	532	443	570	456	380	499	399	333
39	55.6	834	667	556	695	556	463	596	477	397	521	417	348
40	58	870	696	580	725	580	483	621	497	414	544	435	363

■ ***Kalkammonsalpeter, Floral***

- Composition 27% N
- Fertilizer density: 1.07 kg/l
- Half-side slide: 5
- Agitator type: RWK AX 140

- **Application rate in kg/ha**

Spreading width		**5**			**6**			**7**			**8**			**9**		
PTO speed (RPM)		**540**			**750**			**750**			**1000**			**1000**		
Spreading disc speed (RPM)		**230**			**325**			**325**			**430**			**430**		
Mounting height		**33**			**33**			**33**			**33**			**33**		
Drop point		**G**			**G**			**H**			**H**			**H**		
Metering slider stop	**Flow quantity (kg/min)**	**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**
20	11	165	132	110	138	110	92	118	94	79	103	83	69	92	73	61
21	12.7	191	153	127	159	127	106	136	109	91	119	95	80	106	85	71
22	14.4	217	173	144	181	144	120	155	124	103	135	108	90	120	96	80
23	16.2	242	194	162	202	162	135	173	139	115	152	121	101	135	108	90
24	17.9	268	215	179	224	179	149	192	153	128	168	134	112	149	119	99
25	19.6	294	235	196	245	196	163	210	168	140	184	147	123	163	131	109
26	21.8	327	262	218	273	218	182	234	187	156	204	164	136	182	145	121
27	24	360	288	240	300	240	200	257	206	171	225	180	150	200	160	133
28	26.2	393	314	262	328	262	218	281	225	187	246	197	164	218	175	146
29	28.4	426	341	284	355	284	237	304	243	203	266	213	178	237	189	158
30	30.6	459	367	306	383	306	255	328	262	219	287	230	191	255	204	170
31	32.6	490	392	326	408	326	272	350	280	233	306	245	204	272	218	181
32	34.7	520	416	347	434	347	289	372	297	248	325	260	217	289	231	193
33	36.7	551	441	367	459	367	306	393	315	262	344	275	230	306	245	204
34	38.8	581	465	388	485	388	323	415	332	277	363	291	242	323	258	215
35	40.8	612	490	408	510	408	340	437	350	291	383	306	255	340	272	227

Spreading width		5			6			7			8			9		
PTO speed (RPM)		540			750			750			1000			1000		
Spreading disc speed (RPM)		230			325			325			430			430		
Mounting height		33			33			33			33			33		
Drop point		G			G			H			H			H		
Metering slider stop	Flow quantity (kg/min)	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
36	43.2	649	519	432	541	432	360	463	371	309	405	324	270	360	288	240
37	45.7	685	548	457	571	457	381	489	392	326	428	343	286	381	305	254
38	48.1	722	577	481	602	481	401	516	412	344	451	361	301	401	321	267
39	50.6	758	607	506	632	506	421	542	433	361	474	379	316	421	337	281
40	53	795	636	530	663	530	442	568	454	379	497	398	331	442	353	294
41	55.4	831	665	554	693	554	462	594	475	396	519	416	346	462	369	308
42	57.8	867	694	578	723	578	482	619	495	413	542	434	361	482	385	321
43	60.2	903	722	602	753	602	502	645	516	430	564	452	376	502	401	334
44	62.6	939	751	626	783	626	522	671	537	447	587	470	391	522	417	348
45	65	975	780	650	813	650	542	696	557	464	609	488	406	542	433	361

■ ***Kornkali, K + S GmbH***

- Composition 40% K, 6% MgO
- Fertilizer density: 1.15 kg/l
- Half-side slide: 5
- Agitator type: RWK AX 140

- **Application rate in kg/ha**

Spreading width		**4**			**5**			**6**			**7**		
PTO speed (RPM)		**540**			**540**			**850**			**1000**		
Spreading disc speed (RPM)		**230**			**230**			**370**			**430**		
Mounting height		**33**			**33**			**33**			**33**		
Drop point		**L**			**L**			**L**			**L**		
Metering slider stop	**Flow quantity (kg/min)**	**km/h**			**km/h**			**km/h**			**km/h**		
		8	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**
20	10.5	197	158	131	158	126	105	131	105	88	113	90	75
21	12.1	227	182	152	182	145	121	152	121	101	130	104	87
22	13.7	258	206	172	206	165	137	172	137	115	147	118	98
23	15.4	288	230	192	230	184	154	192	154	128	165	132	110
24	17	318	255	212	255	204	170	212	170	142	182	146	121
25	18.6	349	279	233	279	223	186	233	186	155	199	159	133
26	20.7	388	310	259	310	248	207	259	207	172	222	177	148
27	22.8	427	341	285	341	273	228	285	228	190	244	195	163
28	24.8	466	373	311	373	298	248	311	248	207	266	213	177
29	26.9	505	404	337	404	323	269	337	269	224	288	231	192
30	29	544	435	363	435	348	290	363	290	242	311	249	207
31	31.3	587	470	392	470	376	313	392	313	261	336	268	224
32	33.6	631	505	421	505	404	336	421	336	280	360	288	240
33	36	674	539	450	539	432	360	450	360	300	385	308	257
34	38.3	718	574	479	574	459	383	479	383	319	410	328	273
35	40.6	761	609	508	609	487	406	508	406	338	435	348	290

Spreading width		4			5			6			7		
PTO speed (RPM)		540			540			850			1000		
Spreading disc speed (RPM)		230			230			370			430		
Mounting height		33			33			33			33		
Drop point		L			L			L			L		
Metering slider stop	Flow quantity (kg/min)	km/h			km/h			km/h			km/h		
		8	10	12	8	10	12	8	10	12	8	10	12
36	42.3	793	634	529	634	507	423	529	423	352	453	362	302
37	44	824	659	550	659	528	440	550	440	366	471	377	314
38	45.6	856	685	571	685	548	456	571	456	380	489	391	326
39	47.3	887	710	592	710	568	473	592	473	394	507	406	338
40	49	919	735	613	735	588	490	613	490	408	525	420	350
41	51.1	959	767	639	767	614	511	639	511	426	548	438	365
42	53.3	999	799	666	799	639	533	666	533	444	571	457	381
43	55.4	1039	831	693	831	665	554	693	554	462	594	475	396
44	57.6	1079	863	720	863	691	576	720	576	480	617	493	411
45	59.7	1119	896	746	896	716	597	746	597	498	640	512	426
46	61.3	1149	919	766	919	735	613	766	613	511	656	525	438
47	62.8	1178	942	785	942	754	628	785	628	524	673	538	449
48	64.4	1207	966	805	966	773	644	805	644	537	690	552	460
49	65.9	1236	989	824	989	791	659	824	659	550	707	565	471
50	67.5	1266	1013	844	1013	810	675	844	675	563	723	579	482

■ ***Rasen Floranid NPK, COMPO***

- Composition NPK 20 - 5 - 8
- Fertilizer density: 0.90 kg/l
- Half-side slide: 5
- Agitator type: RWK AX 140

- **Application rate in kg/ha**

Spreading width		**5**			**6**			**7**		
PTO speed (rpm)		**540**			**540**			**750**		
Spreading disc speed (rpm)		**230**			**230**			**325**		
Mounting height		**33**			**33**			**33**		
Drop point		**I**			**I**			**I**		
Metering slider stop	**Flow rate amount (kg/min)**	**km/h**			**km/h**			**km/h**		
		8	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**
20	12	180	144	120	150	120	100	129	103	86
21	14	210	168	140	175	140	117	150	120	100
22	16	240	192	160	200	160	133	171	137	114
23	18	270	216	180	225	180	150	193	154	129
24	20	300	240	200	250	200	167	214	171	143
25	22	330	264	220	275	220	183	236	189	157
26	24.3	364	291	243	304	243	202	260	208	173
27	26.6	398	319	266	332	266	221	285	228	190
28	28.8	433	346	288	361	288	240	309	247	206
29	31.1	467	373	311	389	311	259	333	267	222
30	33.4	501	401	334	418	334	278	358	286	239
31	36	539	432	360	450	360	300	385	308	257
32	38.5	578	462	385	482	385	321	413	330	275
33	41.1	616	493	411	514	411	342	440	352	293
34	43.6	655	524	436	546	436	364	468	374	312
35	46.2	693	554	462	578	462	385	495	396	330
36	48.9	733	586	489	611	489	407	524	419	349
37	51.5	773	618	515	644	515	429	552	442	368

Spreading width		5			6			7		
PTO speed (rpm)		540			540			750		
Spreading disc speed (rpm)		230			230			325		
Mounting height		33			33			33		
Drop point		I			I			I		
Metering slider stop	Flow rate amount (kg/min)	km/h			km/h			km/h		
		8	10	12	8	10	12	8	10	12
38	54.2	813	650	542	677	542	452	581	464	387
39	56.8	853	682	568	711	568	474	609	487	406
40	59.5	893	714	595	744	595	496	638	510	425
41	62	930	744	620	775	620	517	664	531	443
42	64.5	967	774	645	806	645	537	691	553	460
43	66.9	1004	803	669	837	669	558	717	574	478
44	69.4	1041	833	694	868	694	579	744	595	496
45	71.9	1079	863	719	899	719	599	770	616	514
46	74.1	1111	889	741	926	741	617	794	635	529
47	76.2	1143	915	762	953	762	635	817	653	544
48	78.4	1176	941	784	980	784	653	840	672	560
49	80.5	1208	966	805	1007	805	671	863	690	575
50	82.7	1241	992	827	1034	827	689	886	709	591

■ ***Thomaskali, K + S GmbH***

- Composition 10% P - 15% K
- Fertilizer density: 1.35 kg/l
- Half-side slide: 5
- Agitator type: RWK AX 140

- **Application rate in kg/ha**

Spreading width		**5**			**6**			**7**			**8**		
PTO speed (RPM)		**540**			**540**			**750**			**1000**		
Spreading disc speed (RPM)		**230**			**230**			**325**			**430**		
Mounting height		**33**			**33**			**33**			**33**		
Drop point		**I**			**I**			**I**			**I**		
Metering slider stop	**Flow quantity (kg/min)**	**km/h**			**km/h**			**km/h**			**km/h**		
		8	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**	**8**	**10**	**12**
20	11.3	170	136	113	141	113	94	121	97	81	106	85	71
21	13.3	200	160	133	167	133	111	143	114	95	125	100	83
22	15.4	231	185	154	192	154	128	165	132	110	144	115	96
23	17.4	261	209	174	218	174	145	187	149	124	163	131	109
24	19.5	292	234	195	243	195	162	209	167	139	182	146	122
25	21.5	323	258	215	269	215	179	230	184	154	202	161	134
26	23.8	357	286	238	298	238	198	255	204	170	223	179	149
27	26.1	392	313	261	326	261	218	280	224	186	245	196	163
28	28.4	426	341	284	355	284	237	304	243	203	266	213	178
29	30.7	461	368	307	384	307	256	329	263	219	288	230	192
30	33	495	396	330	413	330	275	354	283	236	309	248	206
31	35.8	537	430	358	448	358	298	384	307	256	336	269	224
32	38.6	579	463	386	483	386	322	414	331	276	362	290	241
33	41.4	621	497	414	518	414	345	444	355	296	388	311	259
34	44.2	663	530	442	553	442	368	474	379	316	414	332	276
35	47	705	564	470	588	470	392	504	403	336	441	353	294

Spreading width		5			6			7			8		
PTO speed (RPM)		540			540			750			1000		
Spreading disc speed (RPM)		230			230			325			430		
Mounting height		33			33			33			33		
Drop point		I			I			I			I		
Metering slider stop	Flow quantity (kg/min)	km/h			km/h			km/h			km/h		
		8	10	12	8	10	12	8	10	12	8	10	12
36	50.1	752	602	501	627	501	418	537	430	358	470	376	313
37	53.3	799	639	533	666	533	444	571	457	381	500	400	333
38	56.4	846	677	564	705	564	470	605	484	403	529	423	353
39	59.6	893	715	596	745	596	496	638	511	425	558	447	372
40	62.7	941	752	627	784	627	523	672	537	448	588	470	392
41	65	974	780	650	812	650	541	696	557	464	609	487	406
42	67.2	1008	807	672	840	672	560	720	576	480	630	504	420
43	69.5	1042	834	695	869	695	579	744	596	496	651	521	434
44	71.7	1076	861	717	897	717	598	769	615	512	673	538	448
45	74	1110	888	740	925	740	617	793	634	529	694	555	463

9.6 Gritting

⚠ WARNING!

Risk of injury due to spreading material

Ejected spreading material may cause injury.

- ▶ Ensure that nobody is present in the hazard zone.

Please note, when spreading a grit:

- ▶ Use the **RWK AX 160** agitator. See *Fig. 10 RWK AX 160 agitator*
- ▶ For spreading grit, a PTO speed of 450 rpm and/or a disc speed of 200 rpm is sufficient.
- ▶ Before each transportation drive, the drive must be disengaged.
- ▶ Slowly couple the PTO shaft at a low motor speed of the tractor in order to prevent damage to the agitator drive.
- ▶ With a closed metering slide, even for short periods, switch off the machine drive.
- ▶ Open the metering slider until the agitator can discharge the grit in an unhindered manner.

With temperatures below 0°C, damp spreading material may freeze in the hopper and damage the agitator when the PTO shaft is switched on.

- ▶ Ensure that the spreading material in the hopper cannot freeze.
- ▶ Do not leave the filled machine outside over night.
- ▶ Ensure that the spreading material remains dry.

9.7 Spreading sand or damp salt

⚠ WARNING!

Risk of injury due to spreading material

Ejected spreading material may cause injury.

- ▶ Ensure that nobody is present in the hazard zone.

Note when spreading sand or moist salt:

- ▶ Use agitator **RWK AX 180**. See *Fig. 12 RWK AX 180 agitator*
- ▶ The maximum PTO speed of 540 rpm and/or a spreading disc speed of 230 rpm must be observed.
- ▶ Before each transportation drive, the drive must be disengaged.
- ▶ With a closed metering slide, even for short periods, switch off the machine drive.
- ▶ Open the metering slider until the agitator can discharge the sand or moist salt in an unhindered manner.
- ▶ Slowly couple the PTO shaft at a low motor speed of the tractor in order to prevent damage to the agitator drive.
- ▶ Switch off the agitator when the hopper is empty.
- ▶ Observe the instructions for mounting and dismounting the **RWK AX 180** agitator in the corresponding mounting instructions. See *11.6.1 Dismounting the agitator*
- ▶ Due to the hygroscopic effect of salt, only use the machine with a hopper cover.
- ▶ Avoid a longer storage of salt in the hopper.

Depending on the quality and under ideal conditions, you can also spread rock salt with the AX 140 agitator.

Cleaning the machine after each use prevents deposits at the hopper base. You can thus reduce the wear of the agitator and increase the operational reliability of your machine.

9.8 Spreading dry salt

⚠WARNING!

Risk of injury due to spreading material

Ejected spreading material may cause injury.

- ▶ Ensure that nobody is present in the hazard zone.

Note when spreading sand or dry salt:

- ▶ Use the RWK AX 220 agitator. See *Fig. 13 RWK AX 220 agitator*
- ▶ The maximum PTO speed of 540 rpm and/or a spreading disc speed of 230 rpm must be observed.
- ▶ Before each transportation drive, the drive must be disengaged.
- ▶ With a closed metering slide, even for short periods, switch off the machine drive.
- ▶ Open the metering slider until the agitator can discharge the dry salt in an unhindered manner.
- ▶ Slowly couple the PTO shaft at a low motor speed of the tractor in order to prevent damage to the agitator drive.
- ▶ Switch off the agitator when the hopper is empty.
- ▶ Observe the instructions for mounting and dismounting the RWK AX 220 agitator in the corresponding mounting instructions. See *11.6.1 Dismounting the agitator*
- ▶ Due to the hygroscopic effect of salt, only use the machine with a hopper cover.
- ▶ Avoid a longer storage of salt in the hopper.

Depending on the quality and under ideal conditions, you can also spread dry salt with the **RWK AX 140** agitator.

Cleaning the machine after each use prevents deposits at the hopper base. You can thus reduce the wear of the agitator and increase the operational reliability of your machine.

If the agitation effect is not sufficient, lock the middle fingers with an M6 screw.

9.9 Spreading granulated fertilizer

⚠ WARNING!

Risk of injury due to spreading material

Ejected spreading material may cause injury.

- ▶ Ensure that nobody is present in the hazard zone.

When spreading granulated fertilizer, please observe the following:

- ▶ Use the **RWK AX 140** agitator. *4.5.6.1 RWK AX 140*
- ▶ The maximum PTO speed of 1000 rpm and/or a spreading disc speed of 430 rpm must be observed.
- ▶ Before each transportation drive, the drive must be disengaged.
- ▶ With a closed metering slide, even for short periods, switch off the machine drive.
- ▶ Open the metering slide until the agitator can discharge the fertilizer in an unhindered manner.
- ▶ Slowly couple the PTO shaft at a low motor speed of the tractor in order to prevent damage to the agitator drive.
- ▶ Switch off the agitator when the hopper is empty.
- ▶ Observe the instructions for mounting and dismounting the RWK AX 140 agitator in the corresponding mounting instructions. Please also refer to *11.6.1 Dismounting the agitator*

Cleaning the machine after each use prevents deposits at the hopper base. You can thus reduce the wear of the agitator and increase the operational reliability of your machine.

9.10 Spreading grit-salt mixture

⚠WARNING!

Risk of injury due to spreading material

Ejected spreading material may cause injury.

- ▶ Ensure that nobody is present in the hazard zone.

Please note, when spreading a grit-salt mixture:

- ▶ Use the **RWK AX 240** agitator. See *Fig. 14 RWK AX 240 agitator*
- ▶ For spreading grit or granular fertilizer, a PTO speed of 450 rpm and/or a disc speed of 200 rpm is sufficient.
- ▶ Before each transportation drive, the drive must be disengaged.
- ▶ With a closed metering slide, even for short periods, switch off the machine drive.
- ▶ Open the metering slide until the agitator can discharge the grit-salt mixture in an unhindered manner.
- ▶ Slowly couple the PTO shaft at a low motor speed of the tractor in order to prevent damage to the agitator drive.
- ▶ Switch off the agitator when the hopper is empty.
- ▶ Observe the instructions for mounting and dismounting the RWK AX 240 agitator in the corresponding mounting instructions. Please also refer to *11.6.1 Dismounting the agitator*

With temperatures below 0°C, damp spreading material may freeze in the hopper and damage the agitator when the PTO shaft is switched on.

- ▶ Ensure that the spreading material in the hopper cannot freeze.
- ▶ Do not leave the filled machine outside over night.
- ▶ Ensure that the spreading material remains dry.

Cleaning the machine after each use prevents deposits at the hopper base. You can thus reduce the wear of the agitator and increase the operational reliability of your machine.

When spreading a grit-salt mixture, bridging over the agitator can occur.

- In this case, reduce the amount of salt or use a dry spreading material.

9.11 Discharging residual material

⚠ WARNING!

Danger of crushing and shearing in the area of the spread rate adjustment

When loosening the locking screw of the metering rate stop, the metering lever can move unexpectedly and jerkily towards the end of the guide slot and cause severe injuries to the fingers.

- ▶ Only loosen the locking screw of the metering rate stop when the metering slider is closed.
- ▶ Never insert fingers into the guide slot of the spread rate adjustment.

If the machine is parked alone (without tractor), open the metering slider completely. The hydraulic cylinder is at the end stop, the return spring is still tensioned.

⚠ WARNING!

Risk of injury due to rotating machine parts

Rotating machine components (universal drive shaft, spreading disc) may catch and pull-in body parts or objects. Contact with rotating machine components may cause bruises, abrasions and crushing injuries.

Ejected spreading material may cause injury.

- ▶ Always stay outside the area of rotating machine components while the machine is running.
- ▶ Ensure that nobody is present in the hazard zone of the machine.

To maintain the value of your machine, discharge the hopper immediately after every use.

- ▶ Deactivate the drive and switch off the tractor motor.
- ▶ For collecting the spreading material, place a foil under the machine or position a sufficiently sized hopper beneath the outlet.
- ▶ Lower the spreading width limiter completely.
- ▶ Open the metering slide fully.
- ▶ Deactivate the tractor motor and the drive of the machine and empty the hopper until no spreading material is discharged.
- ▶ Switch off the machine drive and the tractor engine and lock them to prevent unauthorized starting. Remove the ignition key of the tractor.
- ▶ While the metering slide is open, move the drop point back and forth until the last spreading material residues have fallen out.

9.12 Parking and unhitching the machine

⚠DANGER!

Crushing hazard between the tractor and the machine

Persons standing between the tractor and the machine while they are being parked or decoupled are in lethal danger.

- ▶ Ensure that nobody is present in the hazard zone between the tractor and the machine.

Requirements for parking the machine:

- Only park the machine on level, solid ground.
- Only park the machine when the hopper is empty.
- Relieve the load on the coupling points (lower / upper link) before removing the machine.
- After unhitching, place the universal drive shaft, hydraulic hoses, and electric cables in the retainers provided for the purpose.

It is essential that you observe the following instructions for parking the machine if it is equipped with hydraulic slide valve actuation.

⚠WARNING!

Danger of crushing and shearing in the area of the spread rate adjustment

When loosening the locking screw of the metering rate stop, the metering lever can move unexpectedly and jerkily towards the end of the guide slot and cause severe injuries to the fingers.

- ▶ Only loosen the locking screw of the metering rate stop when the metering slider is closed.
- ▶ Never insert fingers into the guide slot of the spread rate adjustment.
- ▶ If the machine is parked alone (without tractor), open the metering slider completely: Hydraulic cylinder is at end stop, return spring is still tensioned.

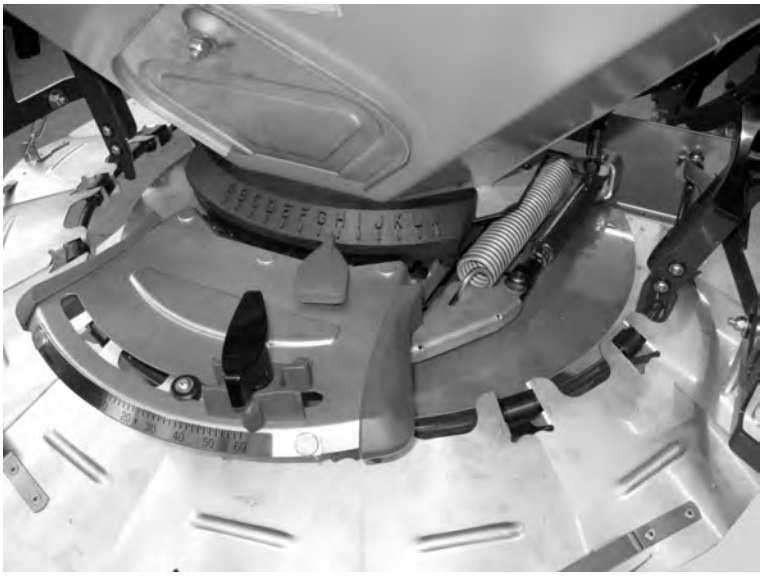


Fig. 35: Metering slider open, hydraulic cylinder on end stop

Open metering slides:

- ▶ Close the metering slider completely via the control valve.
- ▶ Set the quantity stop to the maximum quantity.
- ▶ Open the metering slider completely via the control valve.

The hydraulic cylinder is at the end stop.

The return spring is still tensioned.

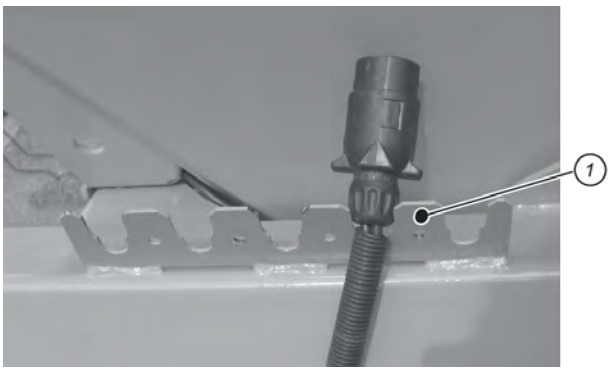


Fig. 36: Bracket for cables and hoses

[1] Bracket for cables and hoses

10 Faults and possible causes

⚠WARNING!

Risk of injury due to incorrect troubleshooting

Delayed or incorrect repairs by unqualified personnel may result in severe personal injury as well as in damages to the machine and the environment.

- ▶ Any faults occurring must be repaired **immediately**.
- ▶ Repairs may only be carried out by **qualified** personnel.

Troubleshooting requirements:

- Switch off the tractor engine and lock it to prevent unauthorized starting.
- Park the machine.

Please take particular note of the warnings in chapter *3 Safety* and *11 Maintenance and service*.

Fault	Possible cause	Measure
Uneven spreading material distribution	Caked-on spreading material on spreading discs, on spreading vanes, on the outlet	▶ Remove caked-on spreading material.
	Worn spreading vane.	▶ Replace spreading vane.
	The metering slide does not open all the way.	▶ Check the function of the metering slide.
	Drop point set incorrectly.	▶ Correct the settings.
Irregular spreading material feed to spreading disc	Outlet blocked	▶ Clear clogging.
	Defective agitator	▶ Check agitator and replace if necessary. See *11.6 Checking the agitator for wear* ▶ Clear clogging.
Spreading disc is fluttering.		▶ Check for tight fit.

Fault	Possible cause	Measure
Metering slide does not open	The metering slide is sluggish.	▶ Check the slide, the lever and the joints for smooth movement and improve if necessary. ▶ Check tension spring.
	Power supply to actuator interrupted	
	Reducing plate at the hose connection of the plug-in connector is contaminated.	
Agitator not working.	Agitator drive is defective.	▶ Check for wear. ▶ Check the dowel pins for damage and wear.
Metering slide opens too slowly	Reducing plate at the hose connection of the plug-in connector is contaminated.	▶ Clean the shield.
Metering openings clogged: • By clumped spreading material • By damp spreading material • By other impurities (leaves, straw, bag residues)	Blockages	▶ Park tractor, remove ignition key, disconnect the power supply, ▶ Open the metering slide. ▶ Place collecting vessel underneath. ▶ Clean the outlet **from the front** by means of a suitable tool. ▶ Remove foreign bodies from the hopper. ▶ Close the metering slide again.

Fault	Possible cause	Measure
The spreading disc does not rotate or stops suddenly after being turned on.	When using a universal drive shaft with shear pin protection • The shear pin is defective	▶ Check the shear pin protection, and replace if necessary (see the universal drive shaft manufacturer's manual).
	With hydraulic drive	▶ Check the plug connector of the hydraulic hoses. ▶ Check the plug connection of the machine cable.

11 Maintenance and service

11.1 Safety

Maintenance and service involve additional hazards that do not occur during operation of the machine.

For this reason, take particular care when carrying out maintenance and service work. Work particularly thoroughly and cautiously.

Have major maintenance work carried out by your dealer.

Please note the warnings in the chapter *3 Safety*

Take **particular note of the instructions** in the section. *3.8 Maintenance and service*

Observe the following instructions in particular:

- Welding and work on the electrical and hydraulic systems is to be carried out by qualified technicians only.
- There is a **risk of tipping** when working at the lifted machine. Always secure the machine using suitable supports.
- Always use **both** eyelets in the hopper for lifting the machine by means of hoisting gear.
- There is a risk of **crushing and shearing** at power-operated components. Make sure that there is no one in close proximity to the moving parts during maintenance.
- Spare parts must at least comply with the technical standards specified by the manufacturer. This is assured with original spare parts.
- Before starting any cleaning, maintenance, or repair work, and when troubleshooting, switch off the tractor's engine, remove the ignition key, and wait until all moving parts of the machine have come to a stop.
- By controlling the machine with an operating unit, additional risks and hazards due to externally operated components may arise.
  - Disconnect the power supply between the tractor and the machine.
  - Disconnect the power supply cable from the battery.
- Repairs may **ONLY be carried out by instructed and authorized workshops**.

■ ***Maintenance plan***

Task	Before operation	After operation	After the first X hours	After the first X hours	After the first X hours	Every X hours	Every X hours	Every X hours	Weekly	Quarterly	After the first X years	At the beginning of the season	At the end of the season
Value (X)			10	50	100	30	50	100			10		
Cleaning													
Cleaning		X											
Lubrication													
Universal drive shaft												X	
Joints, bushes							X					X	
Agitator bayonet lock							X					X	X
Universal joint of the RWK 10 agitator							X			X		X	X
Check													
Wear parts								X				X	
Screw connections	X		X			X						X	
Metering slide									X			X	
RWK AX 140 agitator	X												
RWK AX 160 agitator	X												
RWK AX 165 agitator	X												
RWK AX 180 agitator	X												
RWK AX 220 agitator	X												
RWK AX 240 agitator	X												
Thrust ring	X												
Stop ring	X												
Spacer	X						X						
Oil level				X	X						X	X	

11.2 Cleaning the machine

■ ***Cleaning***

▶ Clean the outlet ducts and the slide guide area from below only.

▶ Only clean oiled machines at washing points fitted with an oil separator.

▶ When cleaning with high-pressure, never aim the water jet directly at warning signs, electrical equipment, hydraulic components, and sliding bearings.

▶ After cleaning, treat the **dry** machine, **especially the coated spreading vanes and stainless steel parts**, with an environmentally friendly anti-corrosion agent.

▷ A suitable polishing kit can be ordered from authorized dealers for treating rust spots.

11.3 Lubrication plan

11.3.1 Lubricating the drive shaft

■ ***Universal drive shaft***

- Lubricant: Grease
- See operator’s manual of the manufacturer.

11.3.2 Lubricating links and bushes

■ ***Joints, bushes***

- Lubricant: Grease, oil

The joints and bushes are designed for dry operation but can be lightly greased.

11.3.3 Lubricating the agitator bayonet lock

■ ***Agitator bayonet lock***

- Lubricant: Grease

▶ Ensure smooth movement of the bayonet lock and grease regularly.

▶ Grease at the end of the season.

11.3.4 Lubricating the universal joint of the RWK 10 agitator

■ ***Universal joint of the RWK 10 agitator***

- Lubricant: Grease, oil

▶ Ensure smooth movement of the universal joint and grease regularly.

▶ Grease at the end of the season.

11.4 Wear parts and screw connections

11.4.1 Checking wear parts

■ ***Wear parts***

Wear parts are: **Spreading vanes, agitator, hopper floor, and thrust ring**

- Inspect wear parts on a regular basis.

Replace these parts if they show signs of wear, deformation, holes, or aging. Otherwise, the spreading pattern will not be correct.

The durability of wear parts depends, among other things, on the material being spread.

11.4.2 Checking the screw connections

■ ***Screw connections***

Screw connections have been tightened to the specified torque and locked at the factory. Vibrations and shocks, in particular during the initial operating hours, can loosen screw connections.

▶ Check all screw connections for tightness.

Some components are mounted with self-locking nuts.

▶ When mounting these components, always use new self-locking nuts.

Observe the tightening torques of the standard screw connections.

- See *14.1 Torque value*

11.5 Metering slide adjustment

■ ***Metering slide***

⚠ DANGER!

Risk of crushing and shearing!

When working on components that move automatically (adjusting lever, metering slides), there is a crushing and shearing risk.

- ▶ Pay attention to the shear point of the metering slide opening and the metering slide during adjustment.
- ▶ Turn the tractor engine off, remove the ignition key.
- ▶ Open the metering slide fully.
- ▶ Do not actuate the hydraulic metering slide during adjustment.

▶ Check the setting of the metering slide for even opening before each spreading season and also during the season, if necessary.

Requirement

- The mechanics must be able to move freely in order to check the metering slide setting.

▶ Unhook the return spring with the adjustment lever.

▶ Unhook the actuator or the hydraulic cylinder.

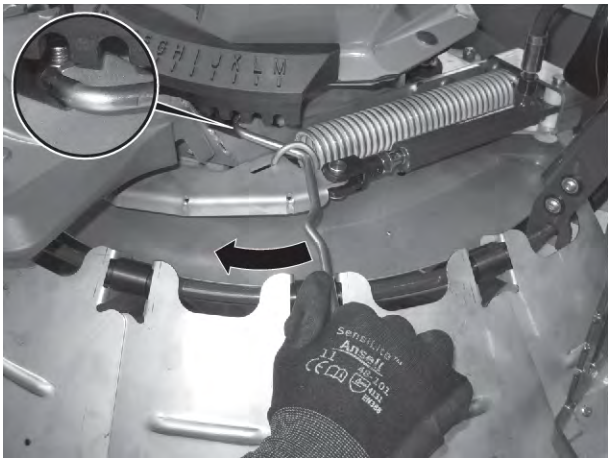


Fig. 37: Unhooking the return spring

Check:

- ▶ Open the maintenance cover.
- ▶ Dismount the agitator.
- ▶ Put a pin [1] with a diameter of 25 mm into the metering opening.
- ▶ Slide the metering slide against the pin.
- ▶ Tighten the adjusting screw.

  The pin is secured.

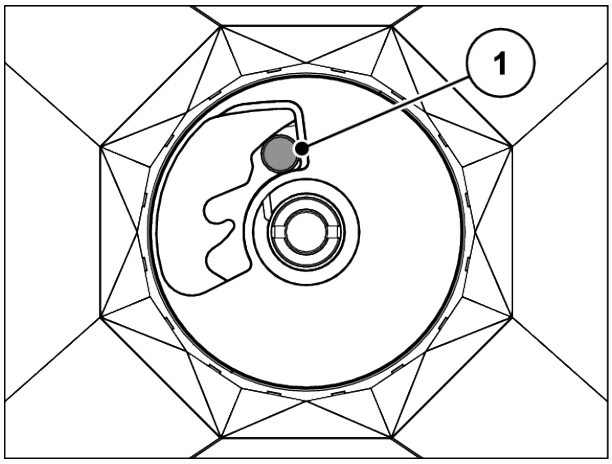


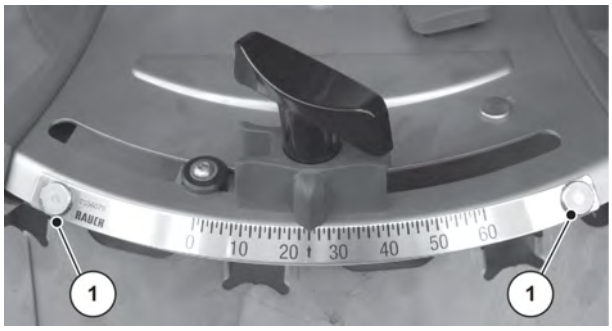
Fig. 38: Pin in the metering slide opening

The stop at the lower scale arc (metering scale) is at scale value 24.

If the position is incorrect, the scale has to be re-set.

Adjustment:

- ✓ The metering slide is pushed lightly against the pin.
- ▶ Release the fastening screw [1] on the scale arc.
- ▶ Adjust the scale arc in such a way that **scale value 24** lies exactly under the pointer element.
- ▶ Screw the scale arc down with the fastening screw.



- ▶ Remove the pin.
- ▶ Hook in the actuator or hydraulic cylinder.
- ▶ Hook in the return spring.
- ▶ Mount the agitator and close the maintenance cover.

11.6 Checking the agitator for wear

11.6.1 Dismounting the agitator

■ ***Dismounting the agitator***

The agitator is fixed with a bayonet lock.

- ▶ Open the maintenance cover.
- ▶ Turn the agitator clockwise until it reaches the stop.
- ▶ Lift the agitator out in an upwards direction.

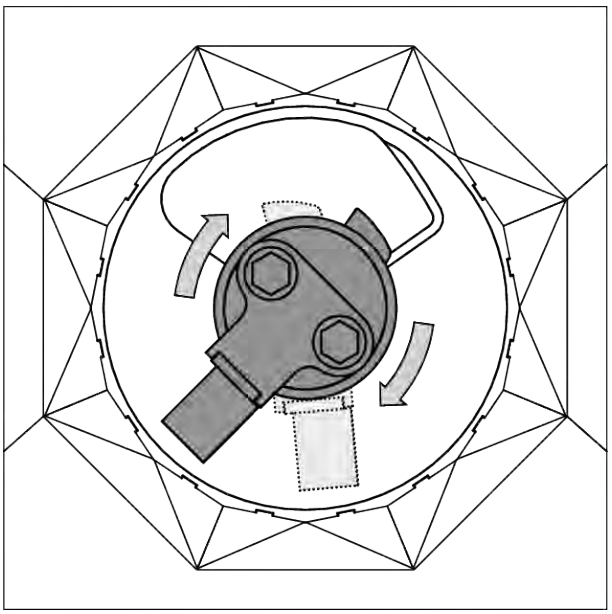


Fig. 39: Dismounting the agitator

Mount the agitator in the reverse order. See *Chapter 7.5 - Mounting the agitator - Page 48*

11.6.2 Checking the RWK AX 140 agitator for wear

■ ***RWK AX 140 agitator***

- ▶ Check the plastic element [1] for damage and wear.

  In the event of increased wear, replace the plastic element.
- ▶ Check the agitator finger for damage and wear.

  The agitator finger [2] must not be bent.

  Excessively worn agitator fingers can break and must be replaced.
- ▶ If the spreading material no longer flows out evenly from the metering opening, replace the agitator finger.

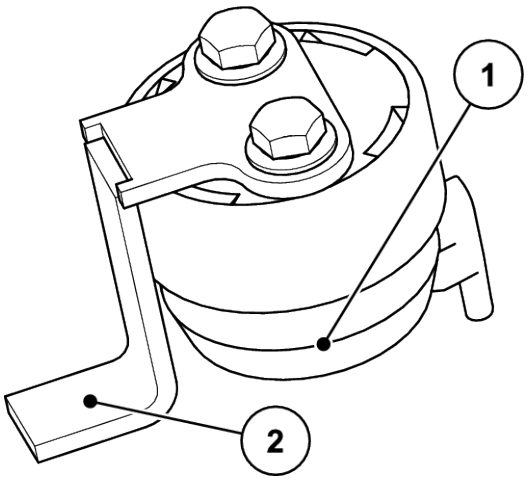


Fig. 40: RWK AX 140 agitator

11.6.3 Checking the RWK AX 160 agitator for wear

■ ***RWK AX 160 agitator***

▶ Check the agitator finger for damage and wear.

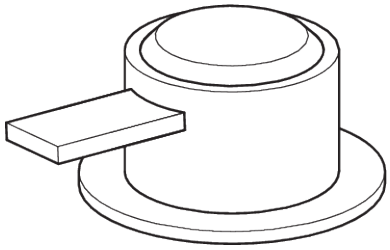


Fig. 41: RWK AX 160 agitator

11.6.4 Checking the RWK AX 165 agitator for wear

■ ***RWK AX 165 agitator***

▶ Check the agitator finger for damage and wear.

▶ Replace the agitator is necessary.

11.6.5 Checking the RWK AX180 agitator for wear

■ ***RWK AX 180 agitator***

▶ Check the plastic element [1] for damage and wear.

In the event of increased wear, replace the plastic element.

▶ Check the agitator finger [2] for damage and wear.

The agitator finger must not be bent.

Excessively worn agitator fingers can break and must be replaced.

▶ Check the universal joint [3] for smooth operation.

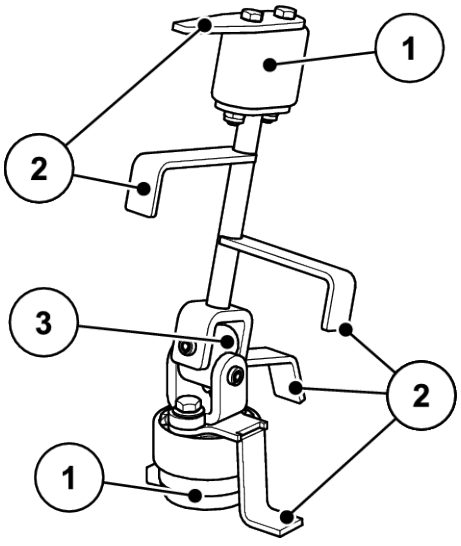


Fig. 42: RWK AX 180 agitator

11.6.6 Checking the RWK AX 220 agitator for wear

■ ***RWK AX 220 agitator***

- ▶ Check the plastic element [1] for damage and wear.

  In the event of increased wear, replace the plastic element.
- ▶ Check the agitator finger [2] for damage and wear.

  Excessively worn agitator fingers can break and must be replaced.
- ▶ Check the universal joint [3] for smooth operation.

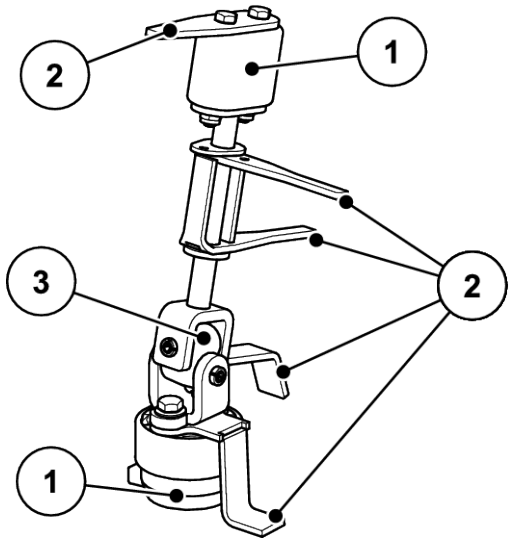


Fig. 43: RWK AX 220 agitator

11.6.7 Check the RWK AX 240 agitator for wear

■ ***RWK AX 240 agitator***

- ▶ Check the chains [1] for damage and wear.

  In the event of increased wear, replace the chains.
- ▶ Check the agitator finger [2] for damage and wear.

  Excessively worn agitator fingers can break and must be replaced.

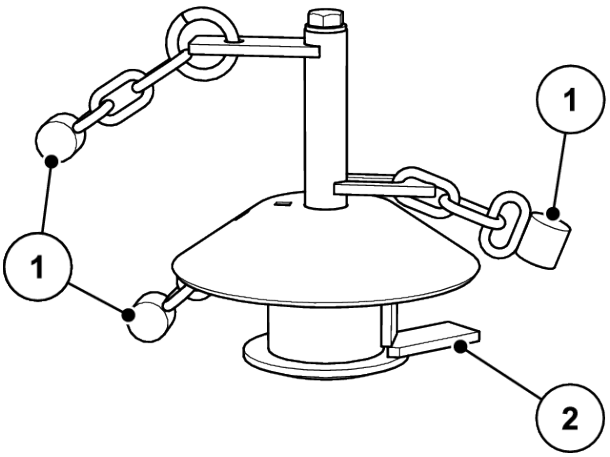


Fig. 44: RWK AX 240 agitator

11.6.8 Checking the thrust ring for wear

■ ***Thrust ring***

- ▶ Check the thrust ring for damage and wear.
  - ▷ The ring must be replaced when the groove in the thrust ring can no longer be seen at the very latest.

Mounting the thrust ring

- ▶ Align the groove to the metering opening.
- ▶ The thrust ring should be on the base plate.

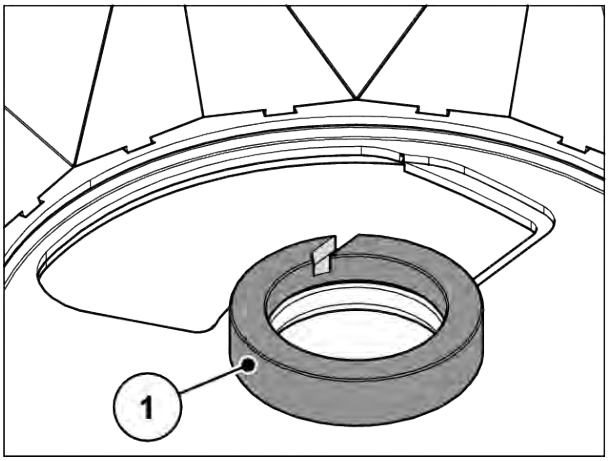


Fig. 45: Thrust ring

11.6.9 Checking the stop ring in the hopper for wear

■ ***Stop ring***

- ▶ Check the stop ring in the hopper for damage and wear.

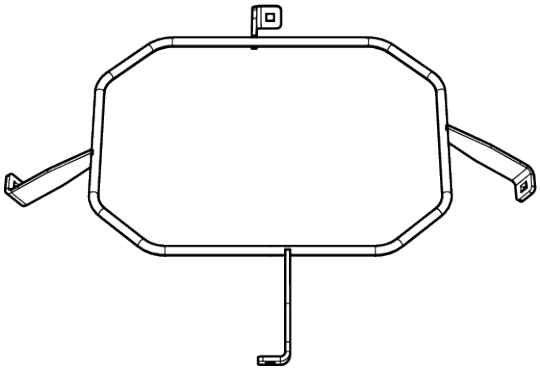


Fig. 46: Stop ring in the hopper

11.7 Spreading vane replacement

■ ***Spacer***

Have the worn spreading vanes replaced **only** by your dealer or your expert workshop.

Requirement:

- The spreading discs have been removed.

NOTICE!

Conformity of the spreader vane types

The type and size of the spreader vanes are adapted to the spreading disc. Incorrect spreader vanes can cause damage to the machine and the environment.

- ▶ ONLY use spreader vanes which are approved for the relevant disc.
- ▶ Compare the labeling on the spreader vane. The model and size of the new and old spreader vanes must be identical.

Spreading vane replacement

- ▶ Loosen the self-locking nuts at the spreading vane and remove the spreading vane.

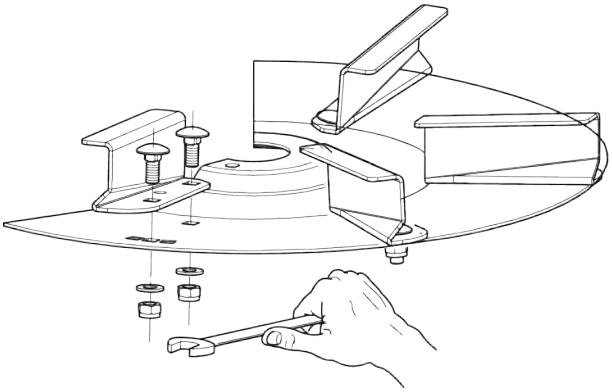


Fig. 47: Loosening the screws of the spreading vane

- ▶ Attach the new spreading vane to the spreading disc. Make sure that you have the correct spreading vane type.
- ▶ Screw-on the spreader vane (tightening torque: **20 Nm**). For this purpose, **always use new self-locking** nuts.

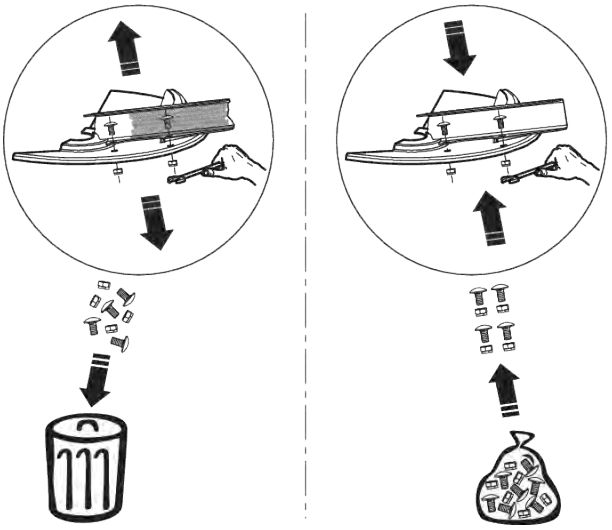


Fig. 48: Using new self-locking nuts

11.8 Transmission oil

11.8.1 Quantities and types

The transmission of the machine is filled with approx. **0.25 l** transmission oil. All oils as per SAE 85W-90 API GL-5 are suitable for filling the transmission.

Manufacturer	Types of oil
Aral	Transmission oil HYP 85W-90
Esso	Gear Oil GX-D 85W-90

Do not mix different types of oil.

- **Never** mix different oil types.

11.8.2 Checking the oil filling level

■ ***Oil level***

The transmission does not need to be lubricated under normal operating conditions.

✓ In order to check the filling level and for filling, the machine is in a horizontal position.
✓ PTO drive and tractor engine are stopped, the ignition key of the tractor is removed.

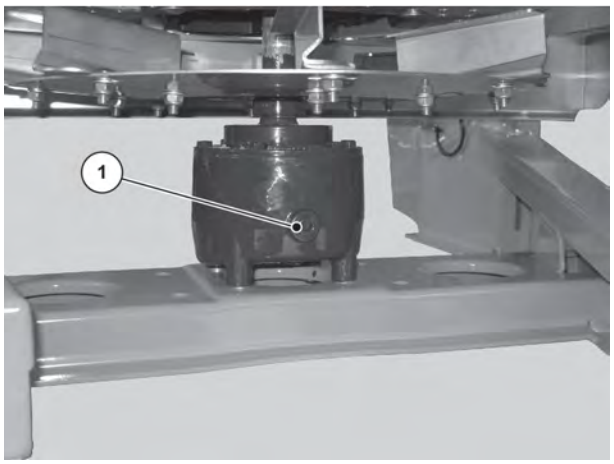


Fig. 49: Checking screw for transmission oil level

[1] Oil level checking screw

Checking the oil filling level:

▶ Open the oil level checking screw [1].

The oil level is satisfactory when the oil reaches the lower edge of the hole.

11.8.3 Filling in oil

Filling in oil:

▶ Only use SAE 85W-90 transmission oil.

▶ Open the checking screw.

▶ Fill transmission oil into the opening until the oil level at the checking screw reaches the lower edge of the hole.

▶ Close the checking screw.

12 Winterizing and preserving

12.1 Safety

NOTICE!

Environmental pollution due to unsuitable disposal of hydraulic and transmission oil

The hydraulic and transmission oils are not entirely biodegradable. Therefore, oil must be prevented from entering the environment in an uncontrolled manner.

- Collect/dam escaped oil with sand, soil, or other absorptive material.
- Collect hydraulic and transmission oil in a suitable container provided for the purpose, and dispose of it in accordance with the local statutory requirements.
- Draining and penetration of oil into the sewerage system is to be prevented.
- Prevent the penetration of oil into the water drain by setting up sand or earth barriers, or by using other appropriate barrier methods.

12.2 Winterizing

Thoroughly clean the machine before winterizing (refer to chapter *11.2 Cleaning the machine*)

- Open the metering slide.
- Hang up hoses and cables with the connector facing downwards to ensure that water can drain well.
- Parking the machine (refer to chapter*9.12 Parking and unhitching the machine*)
- Preservation of hydraulic components and parts susceptible to rust. To do this, use suitable anti-corrosion agent. E.g., protective wax
- Place dust caps on hoses and cable.

12.3 Preserving the machine

Only spray on approved and environmentally friendly agents.

Prevent mineral oil-based agents (diesel, etc.). They can negatively affect plastics, are rinsed off when the machine is first washed, and can get into the sewage system.

- Only spray the machine once certain that it is completely **clean** and **dry**.
- Treat the machine with environmentally friendly anti-corrosion agents.
- Use protective wax:
  - Preservation of hydraulic components such as screw connections, hose fittings
  - Preservation of galvanized screws

13 Disposal

13.1 Safety

NOTICE!

Environmental pollution due to unsuitable disposal of hydraulic and transmission oil

The hydraulic and transmission oils are not entirely biodegradable. Therefore, oil must be prevented from entering the environment in an uncontrolled manner.

- ▶ Collect/dam escaped oil with sand, soil, or other absorptive material.
- ▶ Collect hydraulic and transmission oil in a suitable container provided for the purpose, and dispose of it in accordance with the local statutory requirements.
- ▶ Draining and penetration of oil into the sewerage system is to be prevented.
- ▶ Prevent the penetration of oil into the water drain by setting up sand or earth barriers, or by using other appropriate barrier methods.

NOTICE!

Environmental pollution caused by inappropriate disposal of packaging materials

Packaging material contains chemical compounds, which must be dealt with appropriately.

- ▶ Packaging material is to be disposed of at an authorized waste management company.
- ▶ Observe the national regulations.
- ▶ Packaging material may not be burned nor disposed of with the domestic waste processing.

NOTICE!

Environmental pollution caused by inappropriate disposal of components

The inappropriate disposal of materials is a threat to the environment.

- ▶ Only authorized companies may be commissioned with disposal.

13.2 Disposal of the machine

The following points apply without restriction. Stipulate suitable precautionary measures based on the national legislation and implement them.

- ▶ All components, auxiliary and operating materials from the machine must be removed by specialist staff.
  - ▷ In so doing, these parts are to be sorted into specific categories.
- ▶ All waste products are then to be disposed of in accordance with local regulations and directives for recycling or special refuse categories by authorized companies.

14 Appendix

14.1 Torque value

Permissible torques for A2-70 and A4-70 screws for lengths up to 8 x thread diameter,		
Thread	**Friction coefficient μ**	**Permissible torques Nm**
M5	0.14	4.2
	0.16	4.7
M6	0.14	7.3
	0.16	8.2
M8	0.14	17.5
	0.16	19.6
M10	0.14	35
	0.16	39
M12	0.14	60
	0.16	67
M14	0.14	94
	0.16	106
M16	0.14	144
	0.16	162
M18	0.14	199
	0.16	225
M20	0.14	281
	0.16	316
M22	0.14	376
	0.16	423
M24	0.14	485
	0.16	546
M27	0.14	708
	0.16	797

Permissible torques for A2-70 and A4-70 screws for lengths up to 8 x thread diameter,		
Thread	**Friction coefficient μ**	**Permissible torques Nm**
M30	0.14	969
	0.16	1092

15 Guarantee and warranty

RAUCH devices are manufactured using modern production methods and with the greatest of professional care, and are subjected to numerous inspections.

This is why RAUCH is offering a 12 month warranty if the following conditions are met:

- The warranty starts on the date of purchase.
- The warranty covers material or manufacturing defects. We are liable for third-party products (hydraulics, electronics) only to the extent of the relevant manufacturer During the warranty period, manufacturing and material defects will be rectified free of charge with the replacement or repair of the affected parts. Other rights extending beyond the above, such as claims for conversion, reduction, or replacement for reasons of damage not suffered by the supplied product are explicitly excluded. Warranty services are provided by authorized workshops, by RAUCH factory representatives or the factory itself.
- Consequences of natural wear, dirt, corrosion, and all defects caused by improper use as well as external influences shall be excluded from the warranty. Any unauthorized repairs or changes to the original condition will void the warranty. The warranty is voided if any spare parts other than genuine RAUCH spare parts were used. Therefore, the directions in the operating manual must be observed. Please contact our company representatives of the parent company if you have any questions or doubts. Warranty claims must be submitted to the company within 30 days at the latest after the damage has occurred. The date of purchase and the machine number must be indicated. If repairs under the warranty are required, they must be carried out by the authorized workshop only after consultation with RAUCH or the company's appointed representatives. The warranty period will not be extended by warranty work. Transport damage is not a factory defect and is therefore not covered by the manufacturer's warranty manufacturer.
- Claims for damage other than to the RAUCH devices will not be accepted. This also means that no liability will be accepted for damage resulting from spreading errors. Unauthorized modifications of the RAUCH devices may result in consequential damage, for which the manufacturer will not accept any liability. The manufacturer's exclusion from liability will not apply in the case of willful intent or gross negligence by the owner or a senior employee, and in cases where – according to the product liability law – there is liability for personal injury or material damage to privately used objects in the event of defects in the supplied product. The exclusion from liability will also not apply if characteristics are missing that are explicitly guaranteed, if the purpose of their guarantee was to protect the purchaser against damage not suffered by the supplied product itself.

RAUCH Streutabellen
RAUCH Fertilizer Chart
Tableaux d'épandage RAUCH
Tabele wysiewu RAUCH
RAUCH Strooitabellen
RAUCH Tabella di spargimento
RAUCH Spredetabellen
RAUCH Levitystaulukot
RAUCH Spridningstabellen
RAUCH Tablas de abonado

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https://streutabellen.rauch.de/

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