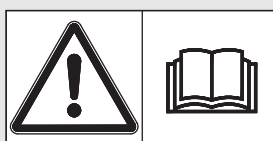




RAUCH

wir nehmen's genau

INSTRUCTION MANUAL



**Please read carefully
before using the ma-
chine.**

Keep for future reference.

This instruction manual/assembly instruction is to be considered as part of the machine. Suppliers of new and second-hand machines are required to document in writing that the instruction manual/assembly instruction was delivered with the machine and handed over to the customer.

AXEO 2.1/16.1/18.1

Original instructions

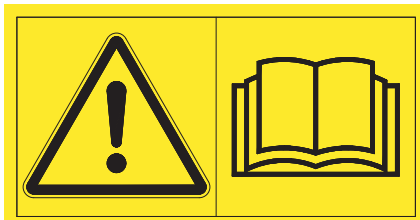
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Preface

Dear Customer

By purchasing the single-disc spreader 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 is always there for you.



Please read this operator's manual carefully before commissioning the single-disc spreader and follow the advice given.

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 is not covered by warranty claims.

▲ CAUTION



Please enter the type and serial number together with the year of manufacture of your single-disc spreader here.

This information can be obtained from the nameplate and/or at the frame.

Please always state this information when ordering spare parts or accessories, and in case of complaints.

Type

Serial number

Year of construction

Technical improvements

We are continuously improving our products. Therefore, we reserve the right to make any improvements and changes to our machine that we consider necessary without notice. This constitutes no 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

Preface

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1 Intended use and EU declaration of conformity

1.1 Intended use

The AXEO single-disc spreader may only be used in accordance with the information given in this operator's manual.

The AXEO single-disc spreader has been constructed for the following applications (intended use) exclusively:

- in winter road maintenance for spreading material that can be delivered by chute, such as grit (3/5), sand and salt,
- in agriculture for spreading dry, granular and crystalline fertilisers,

Any use outside these definitions is considered misuse. The manufacturer is not liable for any damage which results from misuse. The operator bears the entire risk.

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

The AXEO single-disc spreader may only be used, maintained and repaired by instructed and trained staff who are familiar with the characteristics of the machine and who are aware of the risks.

Important information on the operation and safe handling of the machine is provided in this operator's manual. The manufacturer also attaches warning notes and warning symbols to the machine. All such information must be followed when using the machine.

Moreover, the relevant accident prevention regulations and the other generally recognised safety, occupational health, and road traffic regulations must be strictly observed when using the machine.

Unauthorized modifications to the single-disc spreader are not permitted. They will exempt the manufacturer from liability for any damage resulting therefrom.

In the following chapters, the single-disc spreader is referred to as “**machine**”.

Foreseeable misuse

The manufacturer provides warning notes and signs on the AXEO single-disc spreader relating to foreseeable misuse. These warning notes and signs must be observed under all circumstances in order to prevent the AXEO single-disc spreader from being used for any other purpose than that specified in the operator's manual.

1 Intended use and EU declaration of conformity

1.2 Declaration of conformity

In accordance with 2006/42/EC, Appendix II, No. 1.A

**Rauch - Landmaschinenfabrik GmbH,
Landstrasse 14, 76547 Sinzheim, Germany**

We hereby declare that the product:

Single-disc spreader of the series AXEO

Type: AXEO 2.1, AXEO 6.1, AXEO 18.1

complies with all relevant regulations of the EC Machinery Directive 2006/42/EC.

Technical documents compiled by:

**Rauch - Design Management
Landstrasse 14, 76547 Sinzheim, Germany**

Norbert Rauch

(Norbert Rauch - Managing director)

2 User instructions

2.1 About this operator's manual

This operator's manual is an **integral part** of the **AXEO** single-disc spreader.

The operator's manual contains important information for a **safe, appropriate** and economic **use** and **maintenance** of the machine. Adherence to this operator's manual helps to **avoid risks**, to reduce repair costs and downtime, and to increase the machine's reliability and service life.

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 on to the new owner.

The operator's manual is intended for the operator of the machine of the AXEO series and anyone involved in operating and maintaining it. The operator's manual must be read, understood, and applied by all persons entrusted with the following work on the machine:

- Operation,
- Maintenance and cleaning,
- Repairing faults.

The following are particularly important:

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

The operator's manual **does not replace your own responsibility** as the operator and operating personnel of the control unit.

2.2 Structure of the operator's manual

The operator's manual is divided into 6 points of focus:

- General information,
- Safety instructions,
- Machine data,
- Instructions on the operation of the machine,
- Instructions on detecting and rectifying faults and
- Maintenance and repair instructions.

2.3 Notes on text descriptions

2.3.1 Instructions and procedures

Steps that the operator must carry out are shown as a numbered list.

1. Instruction for action step 1
2. Instruction for action step 2

Instructions involving only one step are not numbered. The same applies for action steps that do not have a specific sequence.

A bullet is placed in front of these instructions:

- Handling instruction

2.3.2 Listings

Listings without a specific sequence are shown with bullet points (level 1) and dashes (level 2):

- Property A
 - Point A
 - Point B
- Property B

2.3.3 References

References to other text passages in the document are indicated with section number, headline text and page number:

- **Example:** See also Chapter [3: Safety page 5](#).

References to other documents are indicated as note or instruction without exact chapter or page number:

- **Example:** Please also observe the instructions contained in the manual for the universal drive shaft.

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 Significance of warnings


The warning instructions in this manual have been structured according to the degree of danger and the probability of their occurrence.

Danger signs and symbols inform the user about other construction-related and unavoidable residual risks that may be encountered when operating the machine. The warning notes used are structured as follows:

Signal word	
Symbol	Explanation

Example

⚠ **DANGER**



Risk to life if warning is not observed

Description of the danger and possible consequences.

Ignoring these warnings will result in very serious or even fatal injury.

- ▶ Measures to prevent the danger.

Warning severity level

The degree of danger is indicated by the signal word. The levels 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 persons.

Ignoring these warnings will result in very serious or even fatal injury.

- ▶ Always observe the measures described to prevent this danger.

▲ WARNING



Type and source of danger

This warning warns of a possible dangerous situation for the health of persons.

Ignoring these warnings will result in very serious 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 or of material and environmental damage.

Ignoring this warning can result in injuries and damage to the product or the general area.

- ▶ Always observe the measures described to prevent this danger.

NOTICE

General information containing application tips and particularly useful information, but which constitutes neither warnings nor 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,
- being aware of safety and dangers.

For this purpose, it is essential that you know and apply the content of the operator's manual, the applicable accident prevention regulations as well as the general safety, occupational health and road-traffic regulations.

3.4 Instructions for the operator

It is the operator's responsibility that the machine is used as intended.

3.4.1 Personnel qualifications

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

- The machine may only be operated by instructed personnel authorized by the owner.
- Members of staff who are still in training or subject to coaching/instructions may only work on the machine when an experienced person is present.
- Only qualified maintenance staff may implement maintenance and service work.

3.4.2 Instruction

Distribution partners, works representatives or employees of RAUCH 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 governed by law in every country. The operator of the machine shall be responsible for the compliance with these regulations applicable in the country of use.

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 climbing aids.
- Always wear tight fitting clothes. Do not wear work clothes with belts, loose threads or other items that could snag.
- Follow the manufacturer's warning notes when handling chemicals. You may have to wear personal protective equipment (PPE).

3.5 Information on operational safety

To avoid dangerous situations, only use the machine in a reliable condition.

3.5.1 Lifting and moving the machine

The machine is delivered ex works standing on a pallet.

- Only lift the machine at the pallet using a suitable pallet truck or forklift. Take the total weight into consideration.
- 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 the hopper empty and on horizontal, solid ground.
- If the machine is parked on its own (without tractor), fully open the metering slide. The return spring is released and any water in the hopper can run out.

3.5.3 Filling the machine

- Only fill the machine when the motor of the tractor is stopped. Remove the ignition key in order to ensure that the motor cannot be started.
- Use suitable auxiliary equipment for filling the spreader (e.g. front-end loader, auger, silo).
- When manually filling it (e.g. loading it with big bags), use suitable steps.
- Fill the machine no higher than the top-edge. Observe the maximum admissible payload.
- Only fill the machine when it is mounted.
- Only fill the machine when the protective grid is closed. This way, faults during spreading caused by lumps in the spreading material or other foreign bodies are prevented.

3.5.4 Checks before start-up

Check the operating safety of the machine before the first and every subsequent start-up.

- Is the entire safety equipment installed at the machine and functional?
- Are all fasteners and load-bearing connections tight and in proper condition?
- Are the spreading disc, the spreading vanes and their fixings in proper condition?
- Is the protective grid locked in the hopper?
- Are all locks firmly closed?
- Is the hazard zone of the machine clear of persons?
- Is the universal drive shaft guard in good condition?
- Check the mounting height. The distance from the lower edge of the frame to the floor may not exceed **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 caused by the tractor rolling away or machine movements which may have fatal consequences.

The following figure displays the hazard zones of the machine.

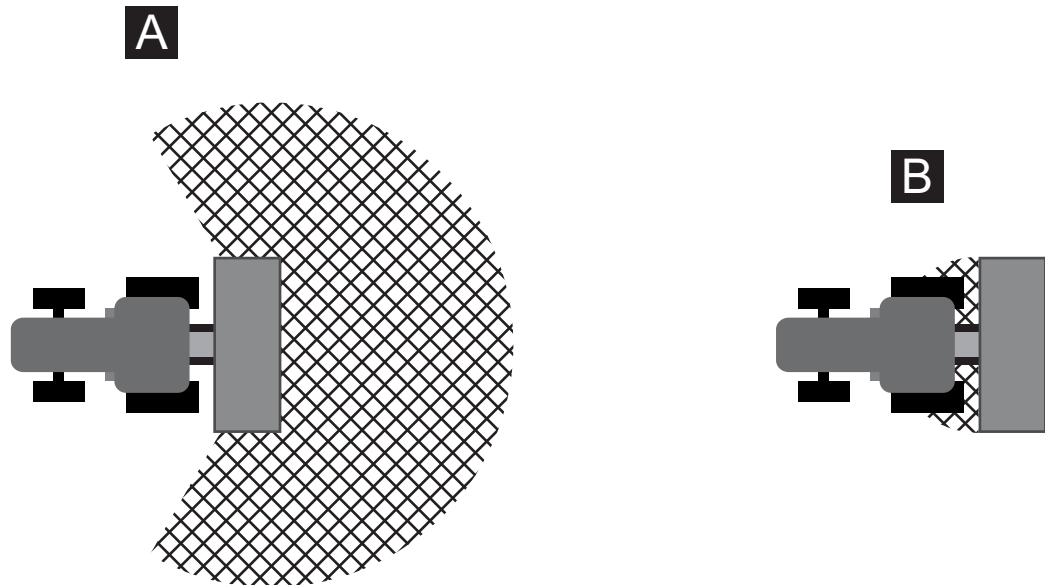


Figure 3.1: Hazard zones around attachment units

[A] Hazard zone in spreading operation

[B] Hazard zone when coupling/uncoupling the machine

- For this reason, ensure that nobody is present in 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 actuating the hydraulic lift, ensure that nobody is present in the hazard zone [B].

3.5.6 Operation

- If the machine malfunctions, stop the machine immediately and secure it. Have the fault repaired immediately by appropriately instructed and authorised personnel.
- Never climb onto the machine while the spreader unit is running.
- Only operate the machine with the protective grid in the hopper. The protective grid must not be removed during operation.
- Only operate the machine with closed maintenance cover.
- Rotating machine components can cause serious injury. For this reason, ensure that you avoid any contact between body parts or clothes and rotating components.
- Before setting the application rate, completely close the metering slide if the machine is equipped with a hydraulic metering slide actuator.
- Do not deposit any parts (such as screws, nuts) in the spreader 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 is too high, stop spreading since the specified spreading range can no longer be guaranteed under such conditions.
- Never climb onto the machine or the tractor when it is situated beneath high-voltage electrical power lines.

3.6 Use of spreading material

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

- When selecting the spreading material, inform yourself about its effects on persons, the environment, and the machine.
- Follow the directions of the spreading material manufacturer exactly.

3.7 Hydraulic system

The hydraulic system is under high pressure.

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

- Always operate the machine below the permissible maximum operating pressure.
- Depressurise the hydraulic system **before** any **maintenance work**. Turn the tractor motor off. Secure it against reactivation.
- When looking for leaks, wear **protective glasses** and **protective gloves at all times**.
- In the case of injury in connection with hydraulic oil, **consult a physician immediately** as severe infections may occur otherwise.
- When connecting the hydraulic hoses to the tractor, ensure that the hydraulic system is **depressurised**, 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 joining 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 ageing process. This limits their storage and service life.

The service life of the hose lines may not exceed 6 years, including a possible storage time of maximally 2 years.

The date of manufacture of the hoses is indicated on the hose coupling in month and year

- Replace hydraulic hoses if damaged or aged.
- Replacement of hydraulic hoses must meet the technical requirements of the equipment manufacturer. In particular, note the different maximum pressure ratings of replacement hoses.

3.8 Maintenance and service

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

- Any maintenance and service work is to be conducted with increased alertness at all times. Work particularly thoroughly and cautiously.

3.8.1 Qualifications of maintenance staff

- 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.
- Furthermore, the maintenance and service intervals of the supplier components must also be complied with. See the supplier documentation for the relevant intervals.
- We recommend that you have the condition of the machine checked after each season by your specialist dealer, paying particular attention to its fixing components, safety-relevant plastic components, hydraulics, metering parts (such as metering slide and agitator), spreading vanes and spreading discs.
- Spare parts must at least comply with the technical requirements 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 or maintenance covers).

3.8.3 Maintenance and service work

- Always switch off the tractor motor before any cleaning, maintenance and service work and when troubleshooting. Wait until all rotating parts of the machine have come to a standstill.
- Make sure that no unauthorised person can start the machine. Remove the ignition key of the tractor.
- Check that the tractor with the machine is correctly parked. Park them with an empty hopper on level, solid ground and secure them to prevent them from moving.
- Additionally secure the lifted machine against falling down (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.
- Disconnect the power supply before working on the electrical system.
- Only open the maintenance cover at the hopper if the machine has been decommissioned.
- Only open the protective grid in the hopper if the machine has been decommissioned.

- If you have to work while the PTO shaft is rotating, make sure that nobody is near the PTO or the drive shaft.
- Only remove any clogging in the hopper while the machine is at a standstill and never with your hand or foot; for this purpose, suitable tools must be used. In order to avoid clogging, the hopper may only be filled when the protective grid is mounted.
- Before cleaning the machine with water, steam jet or other cleaning agents, cover all components that must not get wet (e.g. bearings, electrical connections).
- 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 pre-departure check 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 use.

- Is the permissible total weight complied with? Note the permitted axle load, the permitted braking load, and the permitted tyre load capacity; [See also "Axle load calculation" on page 119](#).
- Check the tyre pressures and the function of the tractor brake system.
- Is the machine attached appropriately?
- Could spreading material be lost while travelling?
 - Check the filling level of the spreading material in the hopper.
 - The metering slide must be closed.
 - The ball valves must also be closed on single-acting hydraulic cylinders.
 - Switch off the electronic control unit.
- Does the lighting and marking of the machine comply with the regulations of your country with respect to driving on public roads? Make sure that warning signs, reflectors, and auxiliary lights are correctly placed.

3.9.2 Transportation drive with the machine

The handling, tilting, steering, and braking performance of the tractor is affected by the attached machine. For example, the high payload will reduce the weight on the tractor's front axle and affect its steering.

- Be aware of the changed driving behaviour.
- 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 permissible maximum speed.
- Avoid sudden turns when driving uphill or downhill or across a slope. By repositioning the gravity centre, there is a risk of toppling over. Special care is to be taken when driving on uneven, soft ground (e. g. when entering fields, at kerbs) as well.
- Set the lower link on the three-point linkage so it is rigid to prevent the machine from rocking.
- Passengers are prohibited on the machine during transport and operation.

3.10 Safety equipment at the machine

3.10.1 Position of safety equipment

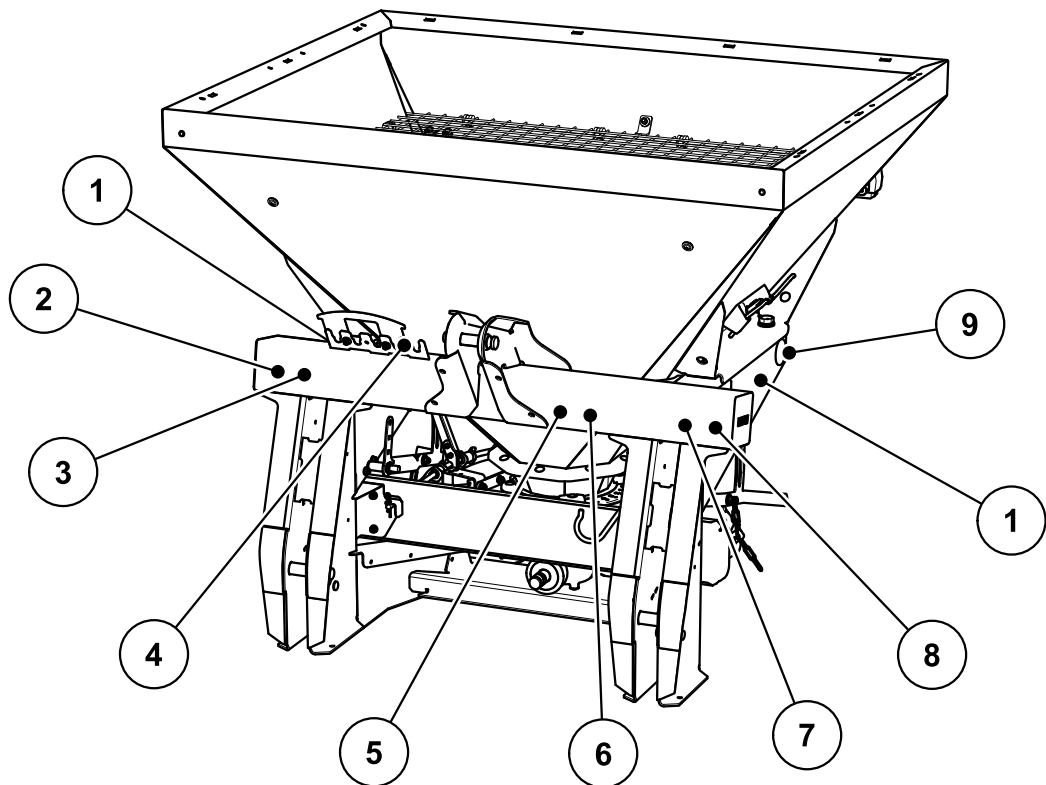


Figure 3.2: Position of safety equipment, warning and instruction notices, and reflectors - front

- [1] Instructions: Agitator stop
- [2] Nameplate
- [3] Serial number
- [4] Retainer 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 reflectors

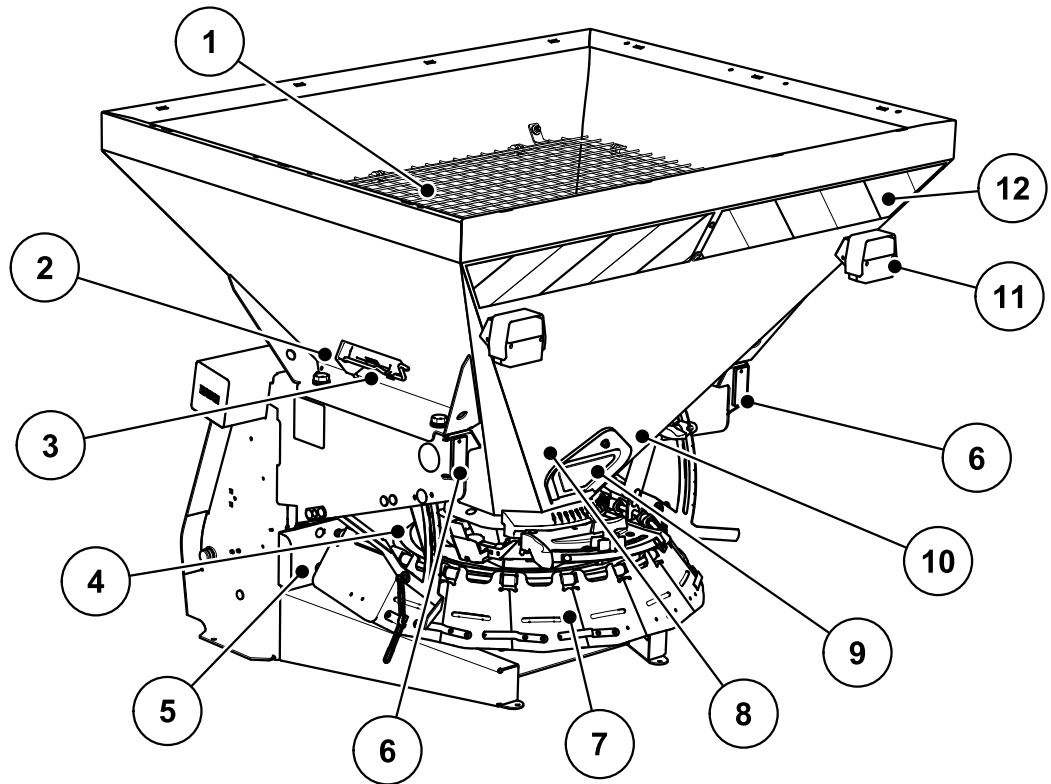


Figure 3.3: Position of safety equipment, warning and instruction notices, and reflectors - rear

- [1] Protective grid in the hopper
- [2] Instructions: Tightening torque
- [3] Adjustment lever
- [4] Spreading disc cover
- [5] Front spreading disc cover
- [6] Red reflectors, rear
- [7] Adjustable spreading disc cover (spreading width limiter)
- [8] Warning: moving parts
- [9] Maintenance cover
- [10] Warning: remove ignition key
- [11] Lighting cable, rear
- [12] Warning foil



Figure 3.4: Drive shaft guard

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 functional.
- Only operate the machine when the safety equipment is functional.

Designation	Function
Protective grid in the hopper	Prevents body parts from being pulled into 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 agitator replacement.
Front spreading disc cover	Protection against getting caught by the rotating spreading disc from the front. Prevents the spreading material from being ejected towards the front (in the direction of the tractor/workstation).
Adjustable spreading disc cover (spreading width limiter)	Protection against getting caught by the rotating spreading disc from the side and from behind. Ensures the ejection of spreading material at the desired spreading width.
Plastic cover for spreading disc	Protection against getting caught by the rotating spreading disc from the top.
Drive shaft guard	Prevents body parts from being pulled into the rotating drive shaft.
Retainer	For securing the hoses and cables to the frame. Prevents crushing or kinking the hoses and cables. Refer to figure 3.5 .

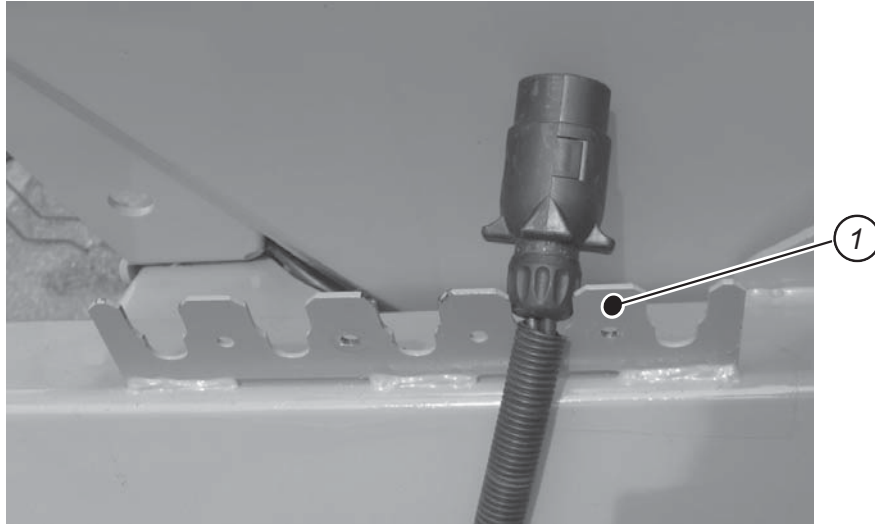


Figure 3.5: Retainer for cables and hoses

[1] Retainer 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 [figure 3.2](#)).

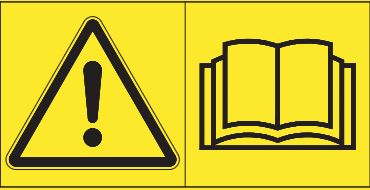


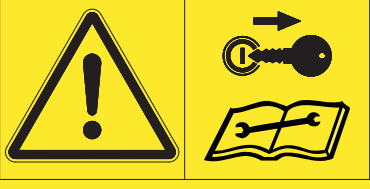
The warning and instruction stickers are components of the machine. They must not be removed or modified. Missing or illegible signs must be replaced immediately.

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.


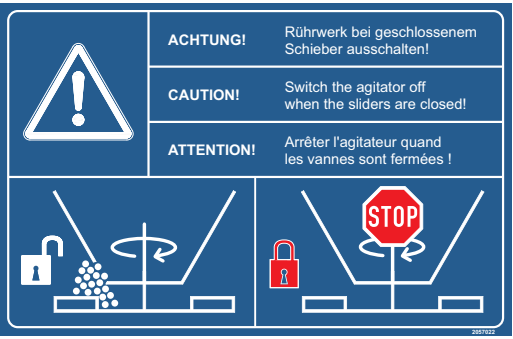



NOTICE




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

3.11.1 Warning stickers

	<p>Read the operator's manual and warnings.</p> <p>Read and observe the operator's manual and warning messages before commissioning the machine.</p> <p>The operator's manual explains in detail how to operate the spreader and contains valuable information on operation, care and maintenance.</p>
	<p>Danger due to ejection of material.</p> <p>Danger of injury to the whole body caused by ejected spreading material.</p> <p>Before starting the spreading operation, instruct all people to leave the hazard zone (spreading range) of the machine.</p>
	<p>Danger due to moving parts.</p> <p>Risk of body parts being cut off.</p> <p>Reaching into the danger areas of the rotating spreading disc, the agitator or the universal drive shaft is prohibited.</p> <p>Switch off the tractor's motor and remove the key before carrying out repair and adjustment work.</p>
	<p>Remove the ignition key.</p> <p>Before carrying out any repair and maintenance work, shut off the engine and remove the ignition key. Disconnect the power supply.</p>

3.11.2 Instruction stickers and nameplate

	<p>PTO speed The rated speed of the PTO shaft is 540 rpm.</p>
	<p>Agitator stop If the metering slide is closed, the agitator is to be stopped.</p>
	<p>Maximum payload of 800 kg with the AXEO 2.1</p>
	<p>Maximum payload of 1000 kg with the AXEO 6.1</p>
	<p>Maximum payload of 1800 kg with the AXEO 18.1</p>

	<p>Tightening torque of 120 Nm (hopper at frame)</p>
	<p>Nameplate</p>
	<p>Serial number</p>

3.12 Lighting system with reflector and sidelights

The lighting equipment must be attached as specified and must always be in operating condition. Lights must not be covered or obscured by dirt.

Machine type AXEO 18.1 is factory-equipped with proper rear and side lighting (for attachment to the machine, please refer to [figure 3.2](#)). For types AXEO 6.1 and AXEO 2.1, the lighting system is available as a option.

4 Technical data

4.1 Manufacturer

RAUCH Landmaschinenfabrik GmbH

Landstraße 14

D-76547 Sinzheim

Phone: +49 (0) 7221 / 985-0

Fax: +49 (0) 7221 / 985-200

Service Centre, Technical Customer Service

RAUCH Landmaschinenfabrik GmbH

Postfach 1162

D-76545 Sinzheim

Phone: +49 (0) 7221 / 985-250

Fax: +49 (0) 7221 / 985-203

4.2 Description of the machine

Use the machines of the AXEO series in accordance with chapter [“Intended use“ on page 1.](#)

The machine consists of the following assemblies.

- Hopper with agitator and outlet
- Frame and coupling points
- Drive elements (universal drive shaft, transmission, hydraulic motor)
- Metering elements (agitator, metering slide, scale for the spreading volume)
- Elements for adjusting the working width
- Safety equipment, see [“Safety equipment at the machine“ on page 16.](#)

4.2.1 Assembly overview, rear (all machine types)

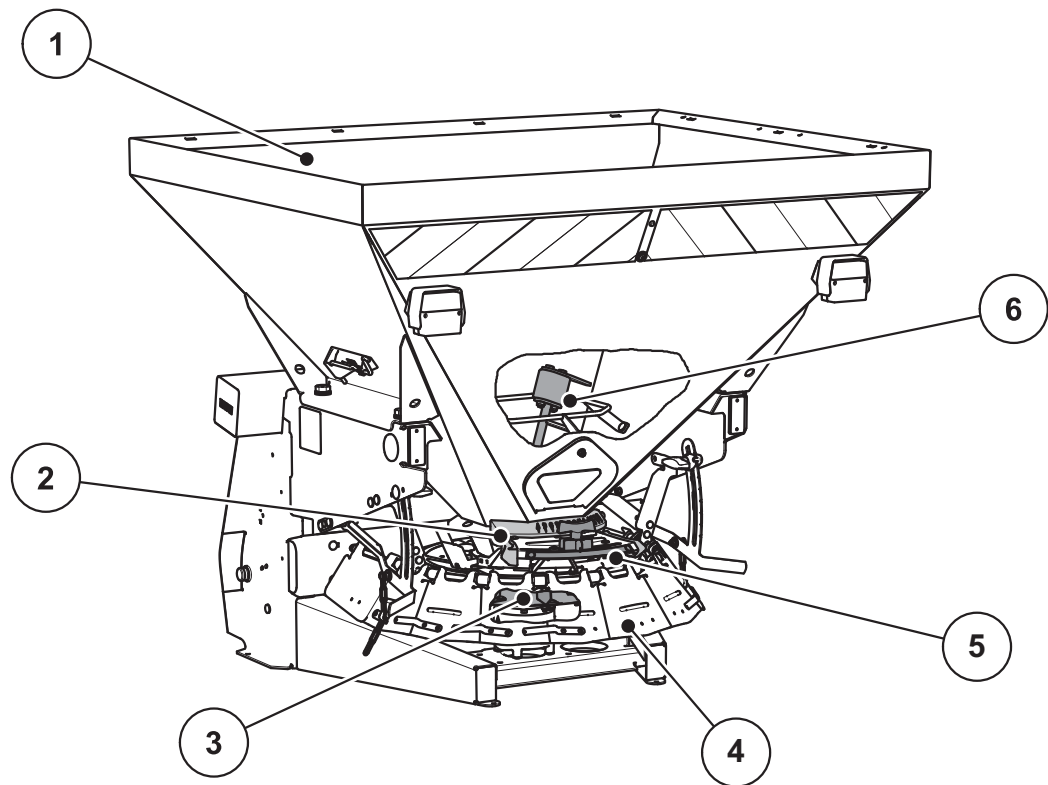


Figure 4.1: Assembly overview - Rear

- | | |
|--------------------------------------|------------------------------------|
| [1] Hopper | [4] Spreading width limiter plates |
| [2] Adjustment centre for drop point | [5] Application rate scale |
| [3] Spreading disc | [6] Agitator in hopper |

4.2.2 Assembly overview, front, PTO drive

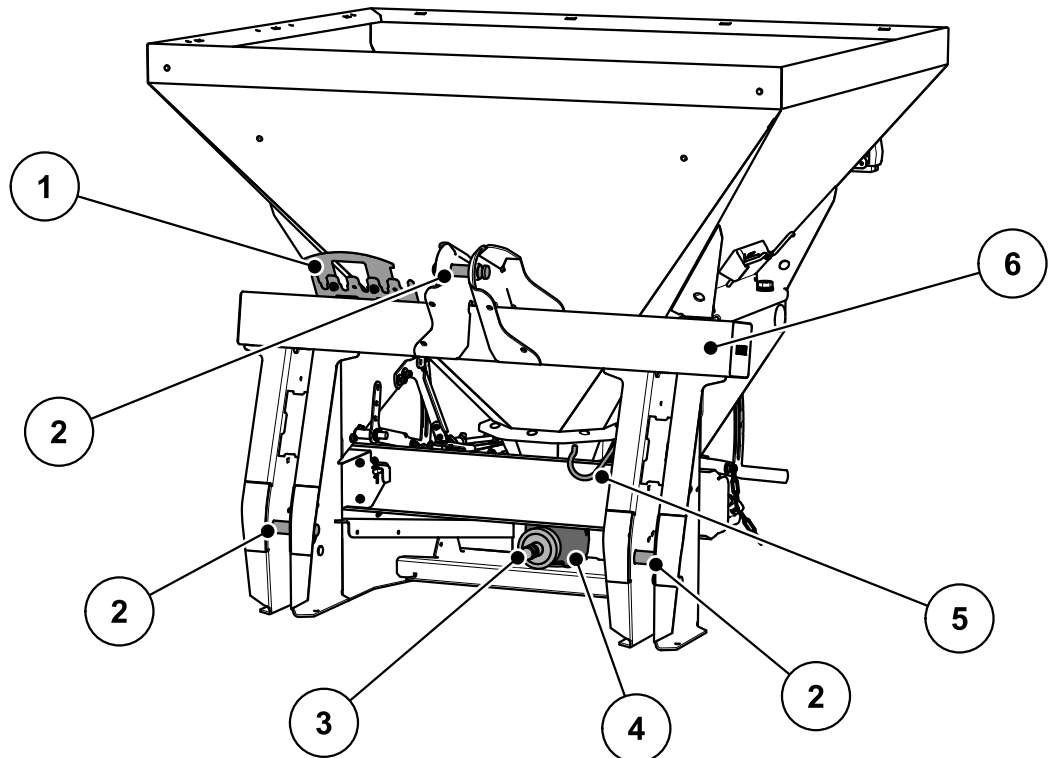


Figure 4.2: Assembly overview - Front

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

4.2.3 Assembly overview, front, hydraulic drive

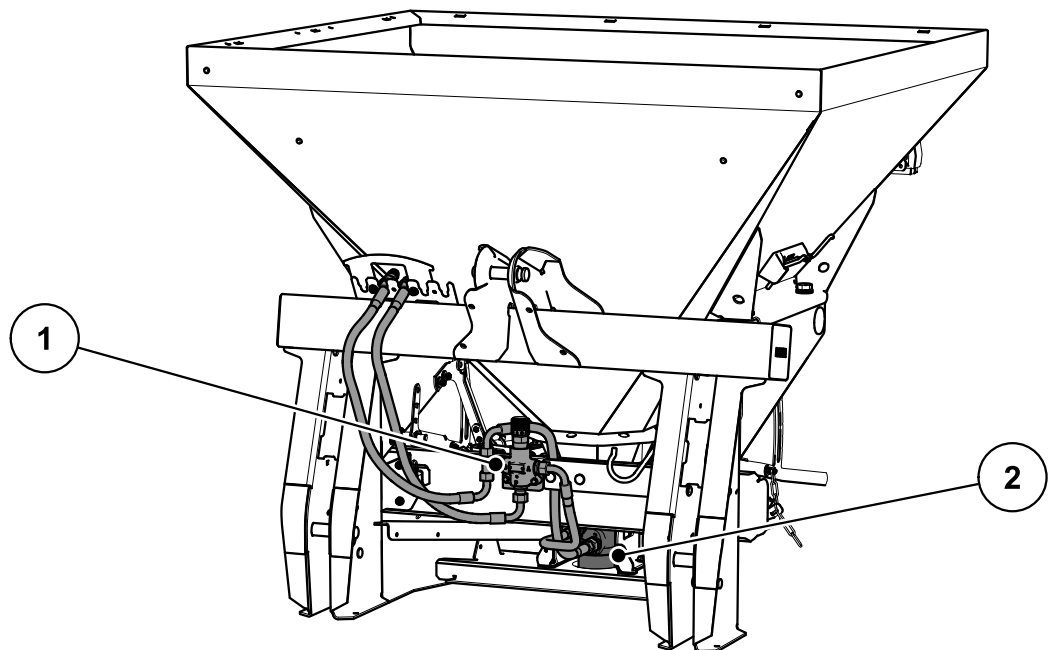


Figure 4.3: Assembly overview: Hydraulic drive

- | |
|-------------------------------|
| [1] Current regulation valve. |
| [2] Hydraulic motor |

4.2.4 Assembly overview, HydroControl (-HC)

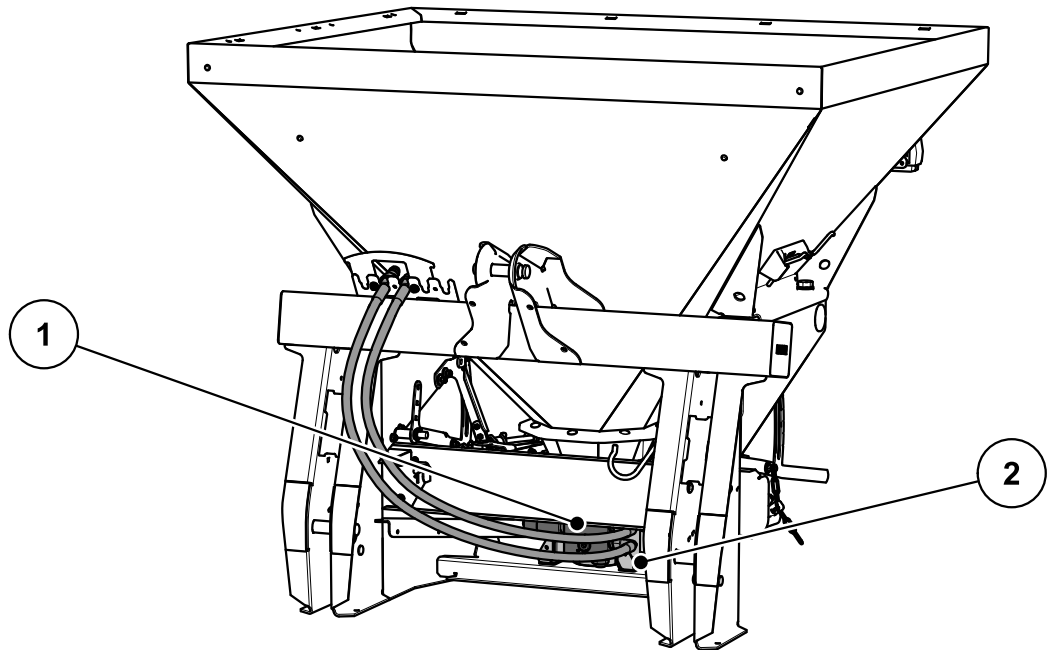


Figure 4.4: Assembly overview: HydroControl (-HC) example

- [1] Hydraulic block
- [2] Hydraulic motor

4.3 Versions

4.3.1 Drive with universal drive shaft

Type Function / version	AXEO 2.1			AXEO 6.1			AXEO 18.1		
	H	C	Q	H	C	Q	H	C	Q
Hydraulic metering slide actuator	•			•			•		
Electrical metering slide actuator		•			•			•	
Electronic application rate control			•			•			•
Electronic speed control			•			•			•
Electrical spreading width limiter (option)	•	•	•	•	•	•	•	•	•
Electronic spreading width limiter (option)	•	•	•	•	•	•	•	•	•

4.3.2 Drive with hydraulic motor

Type Function / version	AXEO 2.1				AXEO 6.1			
	H-100	C-100	Q-100	Q-100-HC	H-100	C-100	Q-100	Q-100-HC
Hydraulic metering slide actuator	•				•			
Electrical metering slide actuator		•				•		
Electrical spreading width limiter		•				•		
Electronic application rate control			•	•			•	•
Electronic speed control				•				•
Electrical spreading width limiter (option)	•	•	•	•	•	•	•	•
Electronic spreading width limiter (option)	•	•	•	•	•	•	•	•

Type	AXEO 18.1			
	H-200	C-200	Q-200	Q-200-HC
Function / version				
Hydraulic metering slide actuator	•			
Electrical metering slide actuator		•		
Electrical spreading width limiter		•		
Electronic application rate control			•	•
Electronic speed control				•
Electrical spreading width limiter (option)	•	•		•
Electronic spreading width limiter (option)				•

4.4 Technical data of basic equipment

Dimensions:

Data	AXEO 2.1	AXEO 6.1	AXEO 18.1
Total 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 centre of gravity and lower link coupling point	40 cm	40 cm	55 cm
Filling width	88 cm	109 cm	139 cm
Working width (depending on spreading material and spreading disc type)	1 - 8 m	1 - 8 m	1 - 8 m
PTO speed max.	650 rpm	650 rpm	650 rpm
Hopper capacity	250 l	560 l	750 l
Hydraulic pressure max.	200 bar	200 bar	200 bar
Sound pressure level ¹ (measured in the closed driver's cabin of the tractor)	75 dB(A)	75 dB(A)	75 dB(A)

1. Since the sound pressure level of the machine can only be determined while the tractor is running, the actual measured value substantially depends on the tractor used.

Weights and loads:

NOTICE

The empty weight (mass) of the machine varies depending on the feature package and attachment combination. The empty weight (mass) shown on the nameplate refers to the standard version.

Data	AXEO 2.1	AXEO 6.1	AXEO 18.1
Empty weight	130 kg	160 kg	230 kg
Payload max.	800 kg	1000 kg	1800 kg

4.5 Technical data of extensions and extension combinations

Machines of the AXEO series can be operated with different extensions and combinations of extensions. The capacity, dimensions and weights may change depending on the selected feature package.

Extension AXEO 2.1	AX 100
Change in capacity	+ 100 l
Change in filling height	+ 14 cm
Extension weight	14 kg
Description	4-sided

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

5 Transportation without tractor

5.1 General safety instructions

Read the following instructions before transporting the machine:

- If no tractor is used, the machine may only be transported with an empty hopper.
- The work may only be carried out by suitable, trained and expressly authorised personnel.
- Suitable means of transportation and lifting equipment (e.g. crane, forklift truck, lifting tackle ...) are to be used.
- Determine the transportation route early, 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.
- Unauthorised persons are to be kept away from the transport route. The areas concerned must be cordoned off!
- Cautiously transport the machine and handle it with care.
- Make sure that allowance is made for the centre of gravity. If necessary, adjust the lifting tackle so that the machine is correctly suspended.
- Transport the machine to the final destination as close to the ground as possible.

5.2 Loading and unloading, parking

1. Determine the weight of the machine.
Details are provided on the nameplate.
If applicable, also take the weight of mounted special equipment into account.
2. Carefully lift the machine with suitable lifting equipment.
3. Carefully set the machine down on the loading platform of the transport vehicle or on solid ground.

6 Commissioning

6.1 Accepting the machine

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

The standard equipment includes

- 1 single-disc spreader of the AXEO series
- 1 operator's manual AXEO 2.1/6.1/18.1
- 1 upper link pin with lynch pin and securing chain
- 2 upper link pins with lynch pin and securing chain
- 1 adjustable spreading width limiter
- 1 spreading disc
- 1 universal drive shaft including operator's manual (model H, C, Q)
- 1 protective grid
- Version Q or Q-100/200-HC: QUANTRON-K2 control unit
- Version C: E-CLICK control unit

Please also check any special accessories that you may have ordered.

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

NOTICE

When receiving the machine, check that all attached components are correctly and securely tightened.

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

6.2 Requirements for the tractor

To ensure a safe and correct use of the machine, 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:**
 - two (2) single-acting control valves
 - 1 free return
 - Oil supply: max. 200 bar
- **Version C-100/200, Q-100/200, Q 100-HC/200-HC:**
 - 1 single-acting control valve
 - 1 free return
 - Oil supply: max. 200 bar

6.3 Mounting the universal drive shaft (versions H, Q, C)

Depending on the version, the machine can be equipped with a transmission as drive for the spreading disc and agitator.

▲ CAUTION



Material damages due to unsuitable drive shaft

The machine is delivered with a 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 universal drive shafts approved by the manufacturer only.
- ▶ Follow the directions in the operator's manual of the universal drive shaft manufacturer.

Depending on the version, the machine may be equipped with different universal drive shafts:

- Universal drive shaft with full protection
- Universal drive shaft with ratchet clutch and full protection Refer to [11.9: Universal drive shaft with ratchet clutch, page 116](#).

6.3.1 Checking the length of the universal drive shaft

- Check the length of the universal drive shaft during its first assembly to the tractor.
 - ▷ Universal drive shaft tubes that are too long can result in damage to the universal drive shaft and the machine.

NOTICE

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

6.3.2 Fitting / removing the universal drive shaft

Fitting:

1. Check the installation position.
 - ▷ The drive shaft end that is marked with a tractor symbol must point to the tractor.
2. Pull lubrication nipple at universal drive shaft guard.

3. Rotate the plastic ring with bayonet lock of the universal drive shaft guard by means of a screw driver.
4. Open the universal drive shaft guard backwards.
5. Hold the universal drive shaft guard and the clamp in an open position with your hand.



Figure 6.1: Open the universal drive shaft guard

6. Grease the transmission spigot. Mount the transmission spigot at the drive shaft.

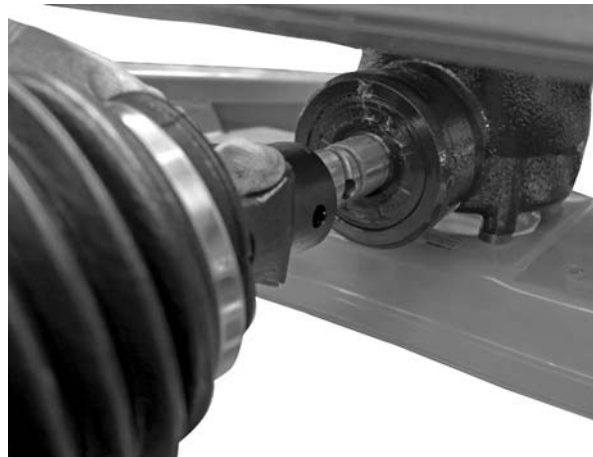


Figure 6.2: Push the universal drive shaft onto the transmission spigot

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



Figure 6.3: Connect the universal drive shaft

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

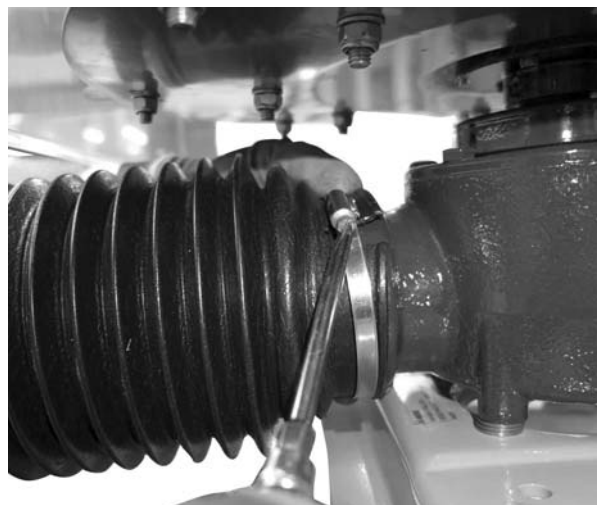


Figure 6.4: Mount the universal drive shaft guard

10. Rotate the plastic ring until it reaches its locking position.
11. Press the lubrication nipple at the universal drive shaft guard into a closed position.



Figure 6.5: Secure the universal drive shaft guard

Instructions for dismounting:

- Dismount the universal drive shaft in reverse order of mounting.
- Do not use the suspension chain for suspending the universal drive shaft.
- Always store the uncoupled universal drive shaft on the bracket provided.
 - See chapter [4.2: Description of the machine. page 24.](#)

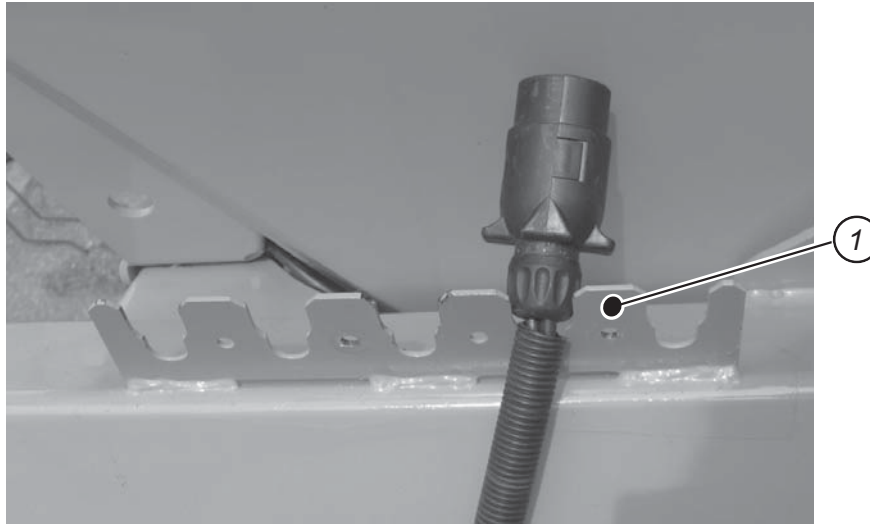


Figure 6.6: Storage of cables and hydraulic hoses

[1] Bracket for hoses and cables

6.4 Installing the machine on the tractor

6.4.1 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.
- ▶ Use the vehicle's documentation to check if your tractor is suitable for the machine.

Check the following specific requirements:

- Are both the tractor and the machine in a reliable condition?
- Does the tractor comply with the mechanical, hydraulic, and electrical requirements (see [“Requirements for the tractor” on page 34](#))?
- Do the mounting categories of the tractor and the spreader 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 (see [“Axle load calculation” on page 119](#))?

6.4.2 Attaching the machine

⚠ DANGER



Danger to life due to inattention or faulty 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 inattention or faulty 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. This poses a danger to life for the persons involved.

- ▶ Fasten the machine to a pallet.

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

Installation instructions:

- The AXEO 2.1/6.1 is **only** to be connected to a category II tractor with category I clearance and using reducing sleeves.
- AXEO 18.1 is only to be connected to a category III tractor with category II clearance and using reducing sleeves.
- AXEO 2.1 is only to be connected to a category 1N tractor using an adapter.
 - The maximum payload is reduced to 300 kg.
- The lower and upper link pins must be secured with lynch pins or spring clips.
- Always install the machine horizontally.
- To ensure correct cross-distribution of the spreading material, the machine must be mounted as specified in the fertiliser chart.
- In order to avoid sideways movements during spreading, make sure that the machine does not have too much sideways play.
 - The lower link arms of the tractor are to be braced by means of stabilising struts or chains.

NOTICE

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

Definition of 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 mounting height (dimension **A**) is **55 cm**.

- Measure the distance between the lower edge of the frame and the ground.
 - A clearance of **33 cm** is required (dimension **B**).

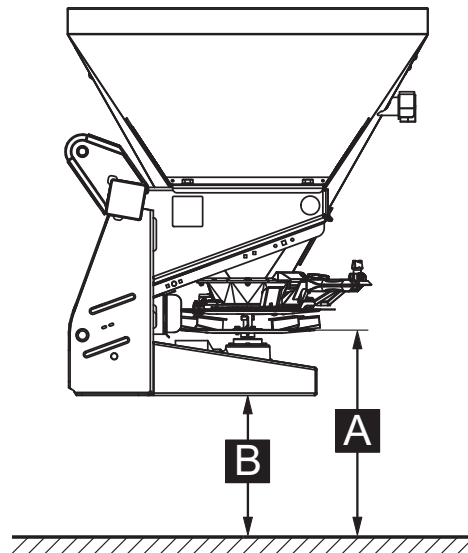


Figure 6.7: Setting the mounting height

[A] = 55 cm

[B] = 33 cm

NOTICE

Maximum mounting height

In order to prevent accidental contact with the spreading disc, 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**).

1. Start the tractor.
 - The PTO shaft is switched off.
2. 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.
3. Switch off the tractor engine. Remove the ignition key.
4. Pull the hand brake of the tractor.
5. Mount the drive shaft to the tractor.
6. Connect the electrical and hydraulic metering slide actuators and the lightning.

7. From the tractor cab, connect the lower link hooks and the upper link to the designated coupling points, as described in the operator's manual of your tractor.

NOTICE

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

8. Check the tight seat of the machine.
9. Carefully raise the machine to the desired lifting height.

⚠ CAUTION



Material damages due to excessively long drive shaft

When the machine is lifted up, the universal drive shaft halves can come into contact inside each other. This can cause damage to the drive shaft, the transmission or the machine.

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

10. Shorten the universal drive shaft, if required.

NOTICE

Have the universal drive shaft shortened by your dealer or your expert workshop **only**.

NOTICE

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

6.5 Connecting the hydraulic drive (Version H-100/200, Q-100/200, C-100/200, Q-100/200-HC)

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

A single-acting control valve and a free return flow are needed on the tractor. In addition, a non-return valve is fitted in the return line.

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

NOTICE

- Connect the connector with the red protection cap to the pressure line.
- Connect the connector with the blue protection cap to the return line.
- Uncoupled hydraulic hoses must not get into contact with the ground.
- Always put a dust cap on the uncoupled hydraulic hoses.
- Secure the uncoupled hydraulic hoses only at the bracket provided for hoses and cables. Refer to [figure 3.5](#).

Adjusting the hydraulic drive (H-100/200, Q-100/200, C-100/200)

The single-disc spreader is driven by a hydraulic motor with a displacement of 100 cm³ or 200 cm³.

- Adjust the agitator speed to your spreading material as specified in the fertiliser chart.
- Set the agitator speed at the hand wheel of the flow control valve.

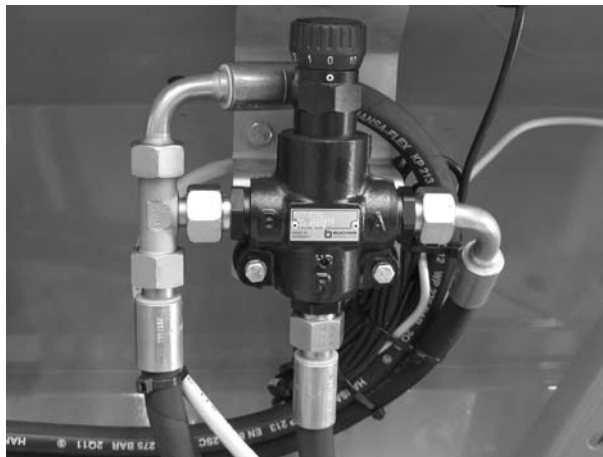


Figure 6.8: Flow control valve

NOTICE

Spreading disc and agitator drive for machines with HydroControl (model Q-100/200-HC) is realised automatically at the QUANTRON-K2 control unit.

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

6.6 Connecting the metering slide actuator

6.6.1 Connecting the hydraulic metering slide actuator (Version H)

The AXEO single-disc spreader uses an single-acting hydraulic cylinder with re-
turn spring: Oil pressure closes, spring force opens

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

A single-acting control valve is required at the tractor.

Instructions on connection of the hydraulic metering slide actuator

▲ WARNING



Risk of crushing and shearing in the area of the application rate adjustment unit

When untightening the setscrew of the application rate limit stop,
the slide lever may move unexpectedly against the end of the
guide slot and cause severe injuries to the fingers.

- ▶ Only untighten the setscrew of the application rate limit stop
if the metering slide is closed.
- ▶ Do not place fingers in the guide slot of the application rate
adjustment unit.
- ▶ If the machine is parked on its own (without tractor), fully
open the metering slide. Hydraulic cylinder at limit stop,
return spring still tensioned.

Attachment

1. Depressurise the hydraulic system.
 2. Remove the hoses from the brackets attached to the frame of the machine.
 3. Insert the hoses into the corresponding couplings on the tractor.
- Secure the uncoupled hydraulic hoses only at the bracket provided for hoses
and cables. Refer to [figure 3.5](#).
 - Always put a dust cap on the uncoupled hydraulic hoses.
 - Uncoupled hydraulic hoses must not get into contact with the ground.
 - Before uncoupling, fully open the metering slide (see chapter [6.10: Parking
and unhitching the machine, page 47](#)).

6.6.2 Connecting the electronic metering slide actuator: AXEO, Version Q

NOTICE

The machine version Q is equipped with an electronic metering slide actuator.

The electronic metering slide actuator is described in a separate operator's
manual for the QUANTRON-K2 control unit. This operator's manual is supplied
with the QUANTRON-K2 control unit.

6.6.3 Connecting the electrical metering slide actuator: Version C

NOTICE

The machine version C is equipped with an electronic metering slide actuator and spreading width limiter.

The electrical metering slide actuator is described in a separate operator's manual for the **E-CLICK for Winter Service** control unit. This operator's manual is an integral part of the control unit.

6.7 Connecting the actuator for the spreading width limiter (Version H)

Depending on the version, the machine is equipped with an actuator for electrical spreading width adjustment.

Connection

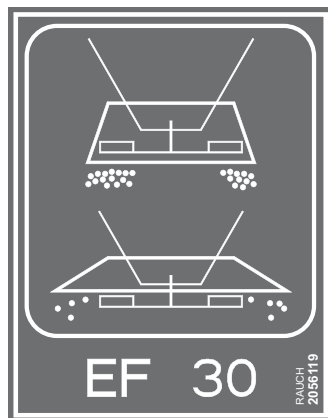


Figure 6.9: Marking of the spreading width limiter control units

- Connect the actuator connector to the control unit.

6.8 Connecting the lighting

Lighting system:

- Mounted at the single-disc spreader AXEO 18.1 as a standard.
- Optionally available for the single-disc spreader AXEO 2.1/6.1. Refer to [“BLO 18 lighting” on page 116](#).
- Connect the lighting via 7-pin connector to the tractor.

6.9 Filling the machine

⚠ DANGER



Danger of injury due to running engine

Working on the machine while the motor is running may result in serious injury caused by mechanical components and escaping spreading material.

- ▶ **Never** fill the machine while the tractor motor is running.
 - ▶ Switch off the tractor engine.
 - ▶ Remove the ignition key.
 - ▶ Send third persons out of the danger area. Refer to [“Hazard zone“ on page 10](#).
-

⚠ CAUTION



Inadmissible overall weight

If the permissible total weight is exceeded, this will affect the operating and road safety of the vehicle (machine and tractor) and may cause serious damage to the machine and the environment.

- ▶ Before you start filling, calculate the amount you can load.
 - ▶ Comply with the permissible overall weight.
-

Instructions on filling the machine

- Close the metering slide.
- **Only** fill the machine when it is attached to the tractor. Make sure that the tractor is standing on level and solid ground.
- When determining the maximum admissible loading amount, consider the specific weight of the spreading material (kg/l).
 - The weight of the spreading material depends on the type of spreading material (e. g. grit, sand, fertiliser) and its state (dry, wet).
 - see chapter [13: Axle load calculation, page 119](#)
- Secure the tractor against rolling away. Apply the handbrake.
- Use suitable auxiliary equipment for filling: e.g. front-end loader, auger, silo.
- When manually filling it (e.g. loading it with big bags), use suitable steps.
- Fill the machine up to the edge maximally.

6.10 Parking and unhitching the machine

You can securely place the machine onto the frame.

⚠ DANGER



Crushing hazard between the tractor and the machine

Persons standing between the tractor and the machine while they are being parked or unhitched 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 even and firm 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.

Instructions on hydraulic metering slide actuator

Please observe the following instructions on switching off the machine equipped with hydraulic metering slide actuator.

⚠ WARNING



Risk of crushing and shearing in the area of the application rate adjustment unit

When untightening the setscrew of the application rate limit stop, the slide lever may move unexpectedly against the end of the guide slot and cause severe injuries to the fingers.

- ▶ Only untighten the setscrew of the application rate limit stop if the metering slide is closed.
- ▶ Do not place fingers in the guide slot of the application rate adjustment unit.
- ▶ If the machine is parked on its own (without tractor), fully open the metering slide. Hydraulic cylinder at limit stop, return spring still tensioned.



Figure 6.10: Metering slide open, hydraulic cylinder at limit stop

Opening the metering slide:

1. Fully close the metering slide at the control valve
 2. Set the adjustment rate limit stop to maximum.
 3. Fully open the metering slide at the control valve
- ▷ **Hydraulic cylinder is at limit stop.**
 - ▷ **The return spring is still tensioned.**

7 Machine settings

⚠ DANGER



Danger from running motor

Setting the machine while the motor is running may result in serious injuries caused by mechanical components and escaping spreading material.

- ▶ Wait until all rotating parts have come to a complete stop before making any adjustments.
- ▶ Switch off the tractor engine.
- ▶ Remove the ignition key.

7.1 Setting options overview

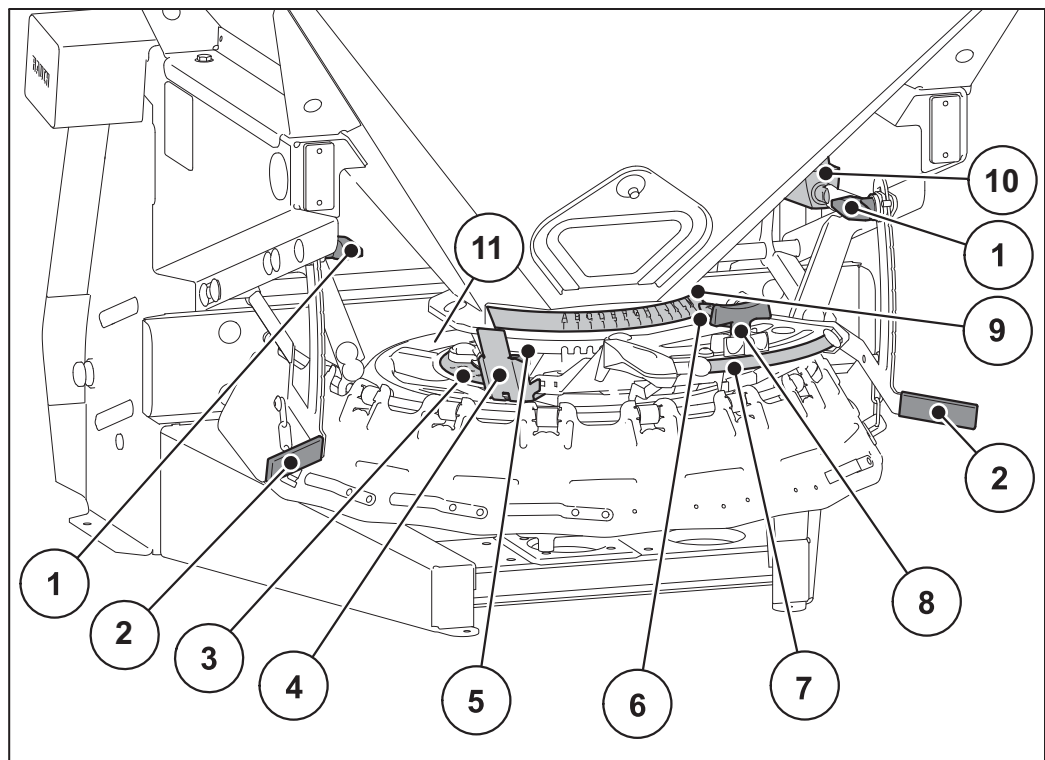


Figure 7.1: Adjustment elements at AXEO

- | | |
|--|--|
| [1] Adjustment screw for mechanical spreading width limitation | [7] Numeric scale for adjustment of the application rate |
| [2] Spreading width limiter adjustment lever | [8] Setscrew with indicator element for setting the application rate |
| [3] Numeric scale for adjustment of the half-side slide | [9] Alphabetic scale for drop point adjustment |
| [4] Half-side slide | [10] Actuator (only with electrical spreading width limiter) |
| [5] Half-side slide setscrew | [11] Spreading vanes of the spreading disc |
| [6] Drop point indication/setting | |

The machine spreading parameters are set at the adjustment elements.

Parameters	Meaning	Description
Spreading quantity	Adjustment of the application rate by metering slide opening adjustment	Page 53
Spreading pattern position	Working width and spreading pattern adjustment by: <ul style="list-style-type: none">● Drop point adjustment● Spreading width limiter adjustment● Half-side slide adjustment● Spreading vane adjustment	Page 55 Page 57 Page 61
Spreading width	Spreading width adjustment in a range of approx. 1 - 8 m (depending on spreading material).	Page 57

7.2 Spreading disc and agitator speed adjustment

7.2.1 PTO drive

For the speed to be set at the spreading disc or the agitator, please refer to the fertiliser chart

NOTICE

If drop point adjustment is not sufficient for setting a symmetric spreading pattern, adjust the vanes on the spreading disc. Refer to [7.8: Setting the spreading vanes, page 61](#).

NOTICE

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

7.2.2 Drive with hydraulic motor (Version H-100/200, Q-100/200, C-100/200)

At machines with hydraulic drive, the speed is set at the flow control valve. For the values to be set, refer to the following table.

NOTICE

If drop point adjustment is not sufficient for setting a symmetric spreading pattern, adjust the vanes on the spreading disc. Refer to [7.8: Setting the spreading vanes, page 61](#).

▲ CAUTION



Possible spreading errors and property damage

Incorrectly set spreading disc or agitator speed may lead to increased wear or spreading errors.

- For the speed to be set for the respective spreading material, please refer to the fertiliser chart.

Setting values for 100 cm³ hydraulic motor

Position of the hand wheel at the flow control valve	Speed in rpm	Spreading material
3	65	
3.5	110	
4	160	
4.5	200	Grit
5	250	Salt and sand
6	325	Fertiliser
7	390	Fertiliser
8	445	Fertiliser
9	510	
10	570	

Setting values for 200 cm³ hydraulic motor

Position of the hand wheel at the flow control valve	Speed in rpm	Spreading material
3	30	
4	75	
5	120	
6	155	
7	195	Grit
8	225	Salt and sand
9	250	
10	290	

NOTICE

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

7.3 Adjusting the application rate

NOTICE

The Q winter spreader is fitted with an electronic metering slide actuator for setting the application rate.

The electronic metering slide actuator is described in a separate operator's manual for the QUANTRON-K2 control unit. This operator's manual is supplied with the QUANTRON-K2 control unit.

▲ WARNING



Risk of crushing and shearing in the area of the spreading quantity adjustment!

When untightening the setscrew of the application rate limit stop, the slide lever may move unexpectedly against the end of the guide slot and cause severe injuries to the fingers.

- ▶ Only untighten the setscrew of the application rate limit stop if the metering slide is closed.
- ▶ Do not place fingers in the guide slot of the application rate adjustment unit.
- ▶ If the machine is parked on its own (without tractor), fully open the metering slide. Hydraulic cylinder at limit stop, return spring still tensioned.

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

For this purpose, move the pointer to the position specified beforehand in the fertiliser chart or from a calibration test. This is the **Open** stop position the slide is hydraulically or electrically positioned at (depending on the version).

- Adjusting in the direction of higher values opens the metering slider.
- Adjusting in the direction of lower values closes the metering slider.

▲ CAUTION



Material damage caused by an insufficient metering slide opening

Insufficient opening of the metering slide can cause blockages and can damage the spreading material. Agitator wear increases.

- ▶ Always select an adequate opening for the metering slide, at which the spreading material flows out in an unobstructed manner.

1. Close the metering slide completely.
2. Determine the position for the scale setting in the fertiliser chart or based on the calibration test.
3. Untighten setscrew [2] at the stop.
4. Move the pointer [1] of the stop to the determined position.
5. Tighten the setscrew.

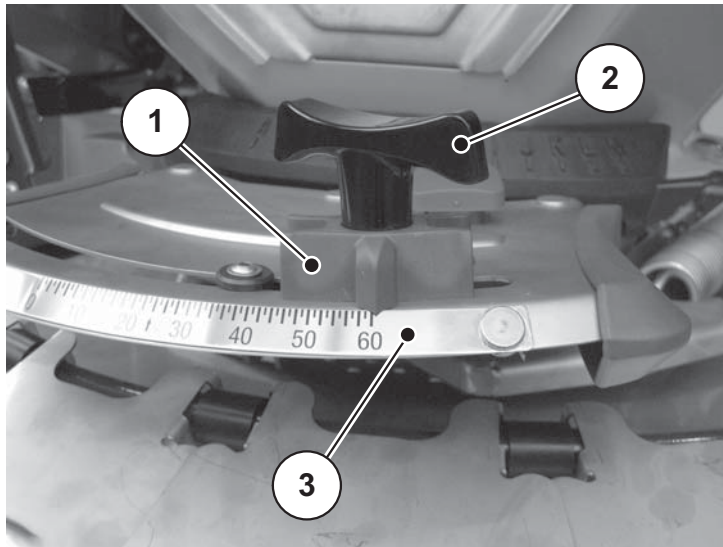


Figure 7.2: Scale for adjustment of the application rate

- [1] Stop pointer
- [2] Setscrew
- [3] Numeric scale of the scale plate

7.4 Adjusting the drop point

Altering the drop point is used for adapting to different spreading materials and spreading patterns.

The drop point is set at the alphabetic scale of the scale plate. For this purpose, set the stop to the position determined according to the fertiliser chart.

- Adjustment towards **A**: The centre of gravity of the spreading pattern is shifted towards the left (in direction of travel).
- Adjustment towards **M**: The centre of gravity of the spreading pattern is shifted towards the right (in direction of travel).

Symmetric spreading pattern

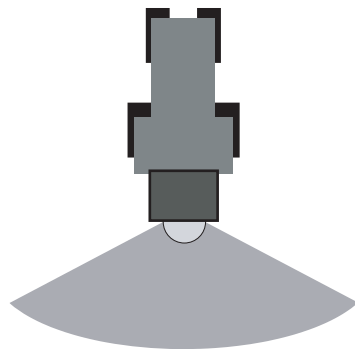


Figure 7.3: Symmetric spreading pattern

Asymmetric spreading pattern

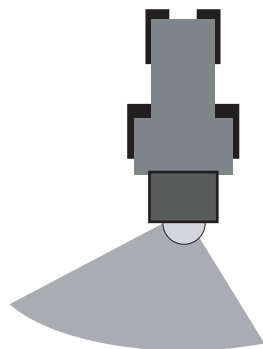


Figure 7.4: Spreading to the left
(viewed in the direction
of travel)

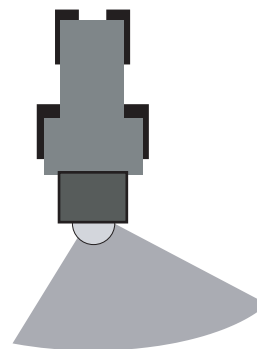


Figure 7.5: Spreading to the right
(viewed in the direction
of travel)

NOTICE

The following positions serve as reference for a symmetric spreading pattern determined by RAUCH for different spreading materials:

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

Please refer to the fertiliser chart as of [Page 63](#).



Figure 7.6: Adjustment centre for drop point

1. Determine the position for the drop point according to the fertiliser chart.
2. Grip the left and right handle.
3. Press the pointer unit.
 - ▷ The lock is released. The adjustment centre can be moved.
4. Move the adjustment centre with the pointer to the calculated position.
5. Release the pointer unit.
 - ▷ The adjustment centre is locked.
6. Ensure that the adjustment centre is locked.

NOTICE

If drop point adjustment is not sufficient for setting a symmetric spreading pattern, adjust the vanes on the spreading disc.

- Refer to [7.8: Setting the spreading vanes, page 61](#).
-

7.5 Adjusting the spreading width limiter

By means of different positions, the spreading width limiter enables spreading widths of approx. **1 m - 8 m** with a mounting height of **approx. 55 cm** (see specification of the mounting height [Page 41](#)).

Depending on the machine equipment, 4 different spreading widths can be set.

Type of spreading width adjustment	Characteristics
Mechanically, can be set separately on the left and right.	Enables symmetric and asymmetric spreading patterns.
Electrically, with an actuator on the right side. Both sides are connected by a coupling rod (optional).	Enables adjustment of the symmetric spreading pattern while spreading.
Electrically, with separate actuators on the left and right side (optional).	Enables switching from a symmetric to an asymmetric spreading pattern while spreading.
Electrically, with an actuator on the left or right side (optional).	Enables single-side adjustment of the symmetric spreading pattern while spreading.

NOTICE

Check the proper condition of the spreading width limiter. Damaged or bent elements of the spreading width limiter affect the spreading pattern.

Setting:

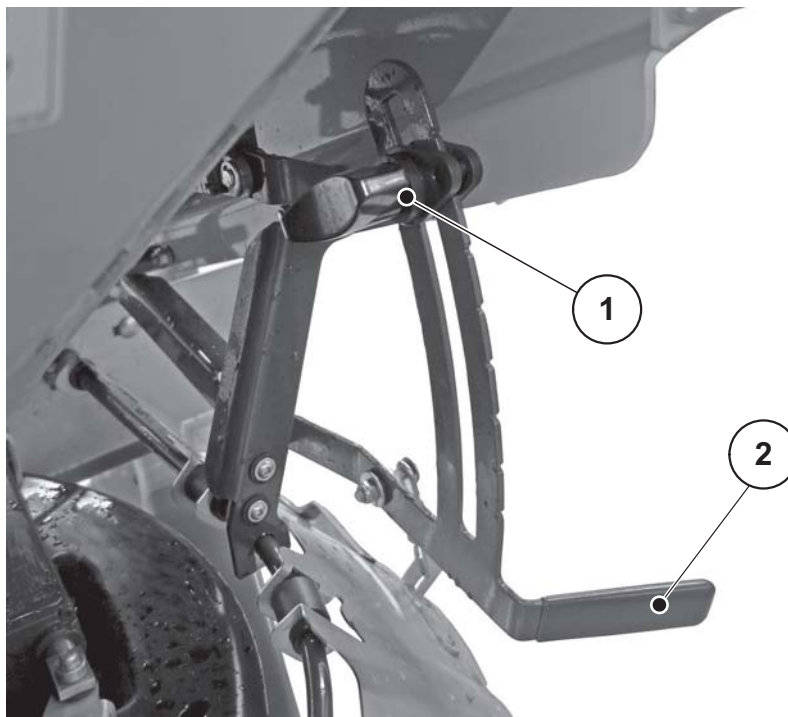


Figure 7.7: Spreading width limiter

- [1] Setscrew
- [2] Adjustment lever with scale

1. Untighten the setscrew [1] at the lower end of the spreading width limiter.
2. Move the adjustment lever [2] to the desired position.
 - Adjustment lever to the **top**: The spreading width is **increased**.
 - Adjustment lever to the **bottom**: The spreading width is **decreased**.
3. Tighten the setscrew [1]
 - ▷ The new spreading width is set.
4. Check the spreading pattern (visual inspection or measurement) and correct the settings as necessary.

7.6 Adjustment options with HydroControl (Version Q-100/200-HC)

NOTICE

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

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

7.7 Adjusting the half-side slide

For sharp-edged limitation at the **right** edge of the path, the spreading pattern has to be set to asymmetric spreading on the left side in direction of travel.

To enable an even spreading pattern, the half-side slide has to be adjusted additionally.

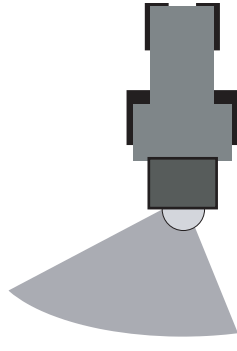


Figure 7.8: Sharp-edged limitation to the right (spreading to the left)

Half-side slide adjustment

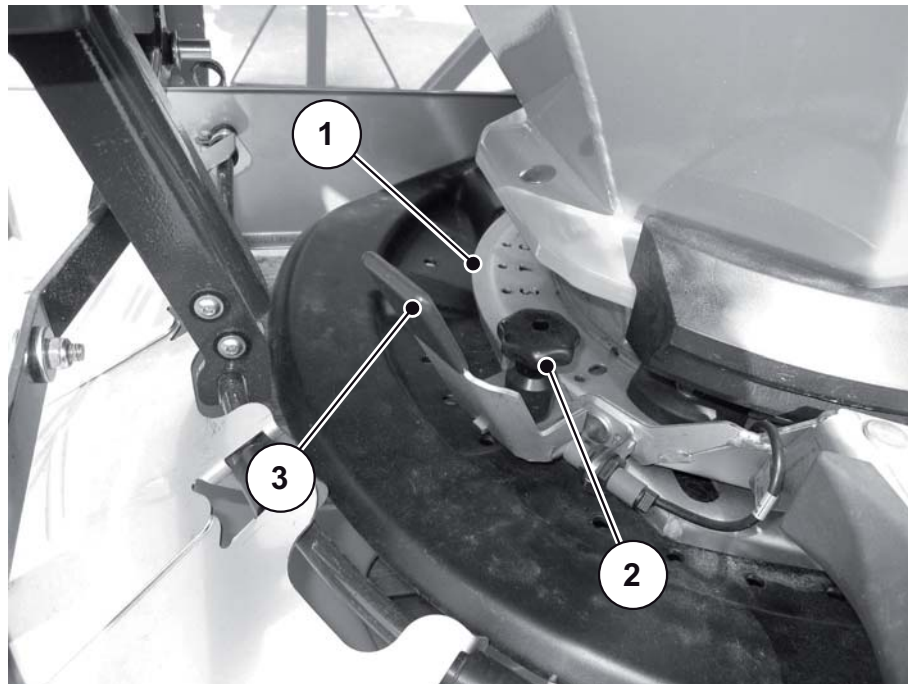


Figure 7.9: Half-side slide adjustment

- [1] Numeric scale of the scale plate
- [2] Setscrew
- [3] Adjustment lever

1. Untighten the setscrew [2] at the half-side slide.
2. Slide the adjustment lever [3] to the desired position.
 - Adjustment lever towards **higher** numeric values: Slide is **closed**.
 - Adjustment lever towards **lower** numeric values: Slide is **opened**.
3. Tighten the setscrew [2].
4. Check the spreading pattern (visual inspection or measurement) and correct the settings as necessary.

Information on adjustment

For sharp-edged limitation of the spreading pattern at the right edge of the path with application rate balancing and even spreading material distribution:

- Determine the adjustment values for the spreading material (fertiliser chart).
- Lower the right spreading width limiter and close the half-side slide (refer to [figure 7.9](#)).

7.8 Setting the spreading vanes

NOTICE

If drop point adjustment is not sufficient for setting a symmetric spreading pattern, additionally adjust the vanes on the spreading disc.

7.8.1 Increasing the spreading density on the right-hand side in the direction of travel

1. Observe the rotational direction of the spreading discs.

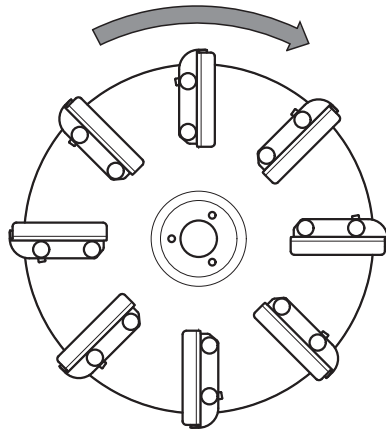


Figure 7.10: Rotational direction of the spreading disc

2. Disassemble the screws of the spreading vanes including the corresponding nuts and washers.

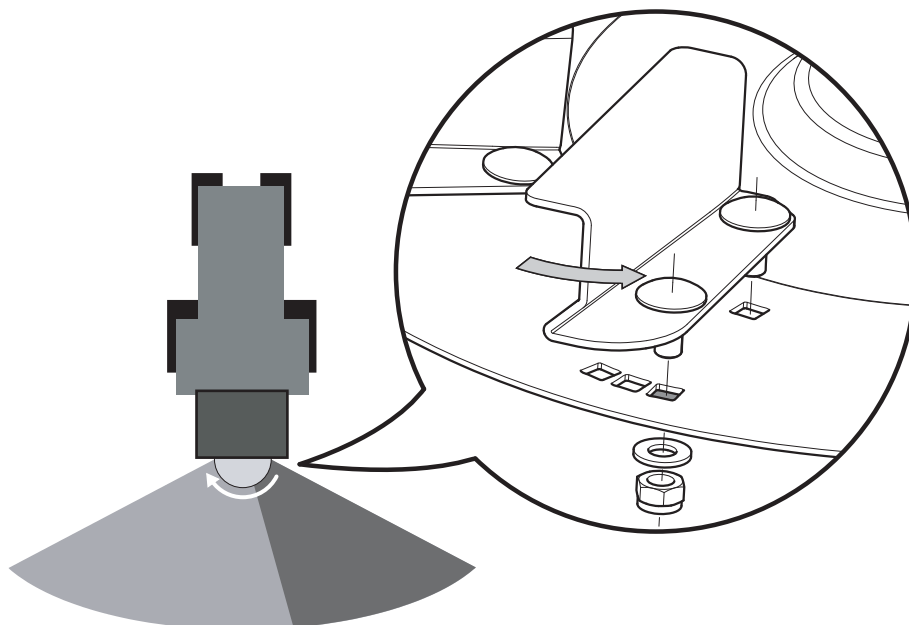


Figure 7.11: Spreading density on the right-hand side in the direction of travel

White arrow: Rotational direction of spreading disc

Grey arrow: Adjustment of the spreading vanes against the rotational direction of the spreader disc

3. Reset the spreading vanes against the rotary direction of the spreading disc.
 - ▷ With this setting, the spreading material is ejected earlier.
4. Screw on the spreading vane (tightening torque: approx. 18 Nm). **Always use new self-locking** nuts when screwing on the vane.
- ▷ **The spreading density on the right-hand side viewed in the direction of travel is increased.**

7.8.2 Increasing the spreading density on the left-hand side in the direction of travel

1. Observe the rotational direction of the spreading discs. Refer to [figure 7.10](#).
2. Disassemble the screws of the spreading vanes including the corresponding nuts and washers.

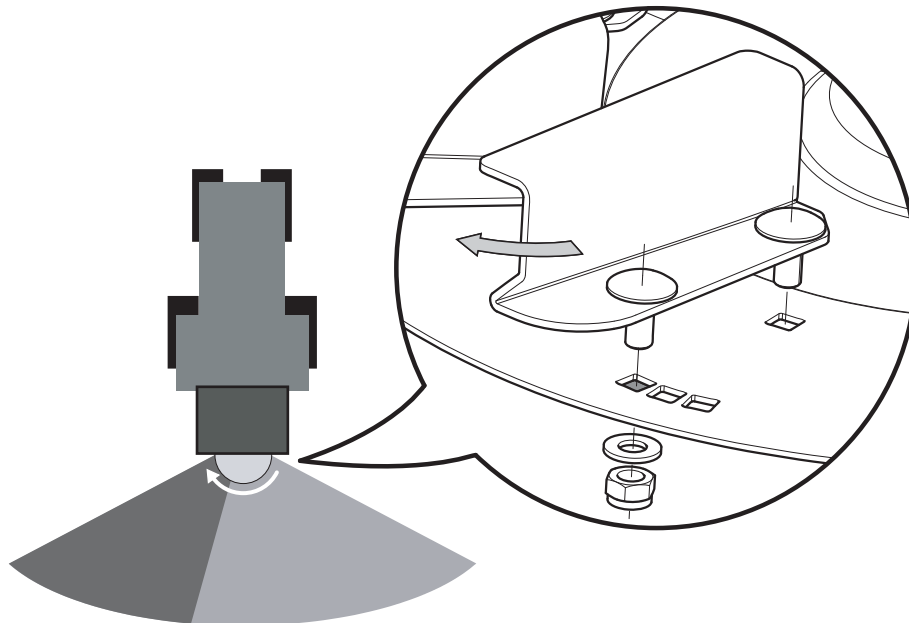


Figure 7.12: Spreading density on the left in the direction of travel

White arrow: Rotational direction of the spreading disc

Grey arrow: Adjustment of the spreading vanes in the rotational direction of the spreader disc

3. Set the spreading vanes in the rotary direction of the spreading disc.
 - ▷ Using this setting, the spreading material will be ejected **later**.
4. Screw on the spreading vane (tightening torque: approx. 18 Nm). **Always use new self-locking** nuts when screwing on the vane.
- ▷ **The spreading density on the left-hand side viewed in the direction of travel is increased.**

7.9 Use the fertiliser chart

7.9.1 Information on the fertiliser chart

The values in the fertiliser chart have been determined using the spreading material test system.

The spreading material used has been purchased from the manufacturer or from dealers. Experience shows that due to storage and transport, your spreading material – even with identical specifications – might exhibit a different spreading behaviour.

This means that the settings specified in the fertiliser charts may result in a different spreading quantity and a poorer spreading material distribution.

- Always check the actual application rate by means of calibration (see chapter [7.10: Calibration, page 84](#)).
- Observe the setting values exactly. Even a slightly incorrect setting may adversely affect the spreading pattern.
- Adjustments for spreading materials not listed in the fertiliser chart can be determined by means of calibration.

NOTICE

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

NOTICE

The operating staff is responsible for making the correct spreader adjustments according to the spreading material used.

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

7.9.2 List of fertiliser charts

NOTICE

Further fertiliser charts can be found on the fertiliser chart CD provided or online at www.rauch.de.

Chart	Page
Fertiliser chart for grit (3/5 mm)	Page 65
Fertiliser chart for sand	Page 66
Fertiliser chart for rock salt	Page 67
Fertiliser chart for refined salt	Page 68
Fertiliser chart for fertiliser	
Basatop Sport, COMPO	Page 69
Cornufera NPK, Günther	Page 70
ENTEC avant, COMPO	Page 72
Floranid N32, COMPO	Page 74
Floranid permanent, COMPO	Page 76
Calcium-ammonium nitrate, Floral	Page 77
Kornkali, K + S GmbH	Page 79
Grass Floranid NPK, COMPO	Page 81
Thomaskali, K + S GmbH	Page 82

7.9.3 Fertiliser chart for grit (3/5 mm)

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

Spreading width [m]		1					2				
Spreading density [g/m ²]		100	150	200	250	300	100	150	200	250	300
Forward 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/m ²]		100	150	200	250	300	100	150	200	250	300
Forward 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/m ²]		100	150	200	250	300	100	150	200	250	300
Forward 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	–	–	–	–	–	–	–	–	–	–

7.9.4 Fertiliser chart for sand

- PTO 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 **metering slide stop**:

Spreading width [m]		1					2				
Spreading density [g/m ²]		100	150	200	250	300	100	150	200	250	300
Forward 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/m ²]		100	150	200	250	300	100	150	200	250	300
Forward 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/m ²]		100	150	200	250	300
Forward speed [km/h]	3	27	32	35	39	43
	6	35	43	56	–	–
	10	45	–	–	–	–
	15	–	–	–	–	–
	20	–	–	–	–	–
	25	–	–	–	–	–
	30	–	–	–	–	–

7.9.5 Fertiliser chart for rock salt

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

Spreading width [m]		1					2				
Spreading density [g/m ²]		5	10	20	30	40	5	10	20	30	40
Forward 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/m ²]		5	10	20	30	40	5	10	20	30	40
Forward 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/m ²]		5	10	20	30	40	5	10	20	30	40
Forward 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

7.9.6 Fertiliser chart for refined salt

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

Spreading width [m]		1					2				
Spreading density [g/m ²]		5	10	20	30	40	5	10	20	30	40
Forward 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/m ²]		5	10	20	30	40	5	10	20	30	40
Forward 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/m ²]		5	10	20	30	40
Forward 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

7.9.7 Fertiliser chart for fertiliser

Basatop Sport, COMPO

- NPK: 20 - 5 - 10
- Fertiliser density: 1.10 kg/l
- Half-side slide: 5
- Application rate in kg/ha
- Agitator type: RWK AX 140

Spreading width		5			6			7			8		
PTO speed (rpm)		540			540			750			1000		
Disc speed (rpm)		230			230			325			430		
Mounting height		33			33			33			33		
Drop point		H			H			I			I		
Metering slide stop	Flow rate (kg/s)	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	24.0	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	29.0	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
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

- NPK: 20 - 5 - 8
- Fertiliser density: 1.10 kg/l
- Half-side slide: 5
- Application rate in kg/ha
- Agitator type: RWK AX 140

Spreading width		5			6			7			8		
PTO speed (rpm)		540			750			750			1000		
Disc speed (rpm)		230			325			325			430		
Mounting height		33			33			33			33		
Drop point		J			K			K			K		
Metering slide stop	Flow rate (kg/s)	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	22.0	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
33	33.8	507	406	338	423	338	282	362	290	241	317	254	211
32	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	38.0	570	456	380	475	380	317	407	326	271	356	285	238
36	40.0	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
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

Spreading width		5			6			7			8		
PTO speed (rpm)		540			750			750			1000		
Disc speed (rpm)		230			325			325			430		
Mounting height		33			33			33			33		
Drop point		J			K			K			K		
Metering slide stop	Flow rate (kg/s)	km / h			km / h			km / h			km / h		
		8	10	12	8	10	12	8	10	12	8	10	12
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

- NPK: 12 - 7 - 6
- Fertiliser density: 1.13 kg/l
- Half-side slide: 5
- Application rate in kg/ha
- Agitator type: RWK AX 140

Spreading width		5			6			7			8		
PTO speed (rpm)		540			540			750			1000		
Disc speed (rpm)		230			230			325			430		
Mounting height		33			33			33			33		
Drop point		I			I			I			I		
Metering slide stop	Flow rate (kg/s)	km / h			km / h			km / h			km / h		
		8	10	12	8	10	12	8	10	12	8	10	12
20	12.0	180	144	120	150	120	100	129	103	86	113	90	75
21	14.0	210	168	140	175	140	117	150	120	100	131	105	88
22	16.0	240	192	160	200	160	133	171	137	114	150	120	100
23	18.0	270	216	180	225	180	150	193	154	129	169	135	113
24	20.0	300	240	200	250	200	167	214	171	143	188	150	125
25	22.0	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	36.0	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
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	62.0	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

Spreading width		5			6			7			8		
PTO speed (rpm)		540			540			750			1000		
Disc speed (rpm)		230			230			325			430		
Mounting height		33			33			33			33		
Drop point		I			I			I			I		
Metering slide stop	Flow rate (kg/s)	km / h			km / h			km / h			km / h		
		8	10	12	8	10	12	8	10	12	8	10	12
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

- 32 % N
- Fertiliser density: 0.52 kg/l
- Half-side slide: 5
- Application rate in kg/ha
- Agitator type: RWK AX 140

Spreading width		3			4			5			6		
PTO speed (rpm)		540			750			1000			1000		
Disc speed (rpm)		230			325			430			430		
Mounting height		33			33			33			33		
Drop point		L			M			M			K		
Metering slide stop	Flow rate (kg/s)	km / h			km / h			km / h			km / h		
		8	10	12	8	10	12	8	10	12	8	10	12
15	3.0	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
19	6.0	149	119	99	112	89	75	89	72	60	75	60	50
18	5.2	131	104	87	98	78	65	78	63	52	65	52	44
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
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

Spreading width		3			4			5			6		
PTO speed (rpm)		540			750			1000			1000		
Disc speed (rpm)		230			325			430			430		
Mounting height		33			33			33			33		
Drop point		L			M			M			K		
Metering slide stop	Flow rate (kg/s)	km / h			km / h			km / h			km / h		
		8	10	12	8	10	12	8	10	12	8	10	12
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	31.0	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	33.0	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	34.0	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	35.0	875	700	583	656	525	438	525	420	350	438	350	292

Floranid permanent, COMPO

- NPK: 16 - 7 - 15
- Fertiliser density: 1.01 kg/l
- Half-side slide: 5
- Application rate in kg/ha
- Agitator type: RWK AX 140

Spreading width		5			6			7			8		
PTO speed (rpm)		540			750			750			1000		
Disc speed (rpm)		230			325			325			430		
Mounting height		33			33			33			33		
Drop point		L			L			L			I		
Metering slide stop	Flow rate (kg/s)	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	21.0	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	46.0	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
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	58.0	870	696	580	725	580	483	621	497	414	544	435	363

Calcium-ammonium nitrate, Floral

- 27 % N
- Fertiliser density: 1.07 kg/l
- Half-side slide: 5
- Application rate in kg/ha
- Agitator type: RWK AX 140

Spreading width		5			6			7			8			9		
PTO speed (rpm)		540			750			1000			1000			1000		
Disc speed (rpm)		230			325			430			430			430		
Mounting height		33			33			33			33			33		
Drop point		G			G			H			H			H		
Metering slide stop	Flow rate (kg/s)	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	11.0	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	24.0	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
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	53.0	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

7 Machine settings

Spreading width		5			6			7			8			9		
PTO speed (rpm)		540			750			1000			1000			1000		
Disc speed (rpm)		230			325			430			430			430		
Mounting height		33			33			33			33			33		
Drop point		G			G			H			H			H		
Metering slide stop	Flow rate (kg/s)	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
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	65.0	975	780	650	813	650	542	696	557	464	609	488	406	542	433	361

Kornkali, K + S GmbH

- 40 % K, 6 % MgO
- Fertiliser density: 1.15 kg/l
- Half-side slide: 5
- Application rate in kg/ha
- Agitator type: RWK AX 140

Spreading width		4			5			6			7		
PTO speed (rpm)		540			540			850			1000		
Disc speed (rpm)		230			230			370			430		
Mounting height		33			33			33			33		
Drop point		L			L			L			L		
Metering slide stop	Flow rate (kg/s)	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	17.0	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	29.0	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	36.0	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
36	42.3	793	634	529	634	507	423	529	423	352	453	362	302
37	44.0	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	49.0	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

7 Machine settings

Spreading width		4			5			6			7		
PTO speed (rpm)		540			540			850			1000		
Disc speed (rpm)		230			230			370			430		
Mounting height		33			33			33			33		
Drop point		L			L			L			L		
Metering slide stop	Flow rate (kg/s)	km / h			km / h			km / h			km / h		
		8	10	12	8	10	12	8	10	12	8	10	12
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

Grass Floranid NPK, COMPO

- NPK: 20 - 5 - 8
- Fertiliser density: 0.90 kg/l
- Half-side slide: 5
- Application rate in kg/ha
- Agitator type: RWK AX 140

Spreading width		5			6			7		
PTO speed (rpm)		540			750			100		
Disc speed (rpm)		230			325			430		
Mounting height		33			33			33		
Drop point		L			M			M		
Metering slide stop	Flow rate (kg/s)	km / h			km / h			km / h		
		8	10	12	8	10	12	8	10	12
20	12.5	188	150	125	156	125	104	134	107	89
21	14.6	218	175	146	182	146	121	156	125	104
22	16.6	249	199	166	208	166	139	178	142	119
23	18.7	280	224	187	234	187	156	200	160	133
24	20.7	311	249	207	259	207	173	222	178	148
25	22.8	342	274	228	285	228	190	244	195	163
26	25.3	380	304	253	317	253	211	272	217	181
27	27.9	418	335	279	349	279	232	299	239	199
28	30.4	456	365	304	380	304	254	326	261	217
29	33.0	494	396	330	412	330	275	353	283	235
30	35.5	533	426	355	444	355	296	380	304	254
31	37.9	568	454	379	473	379	316	406	325	270
32	40.2	603	483	402	503	402	335	431	345	287
33	42.6	639	511	426	532	426	355	456	365	304
34	44.9	674	539	449	562	449	375	482	385	321
35	47.3	710	568	473	591	473	394	507	405	338
36	49.8	747	597	498	622	498	415	533	427	356
37	52.3	784	627	523	653	523	436	560	448	373
38	54.7	821	657	547	684	547	456	587	469	391
39	57.2	858	687	572	715	572	477	613	490	409
40	59.7	896	716	597	746	597	498	640	512	426

Thomaskali, K + S GmbH

- 10 % P - 15 % K
- Fertiliser density: 1.35 kg/l
- Application rate in kg/ha
- Agitator type: RWK AX 140

Spreading width		5			6			7			8		
PTO speed (rpm)		540			750			1000			1000		
Disc speed (rpm)		230			325			430			430		
Mounting height		33			33			33			33		
Drop point		J			J			K			K		
Metering slide stop	Flow rate (kg/s)	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	33.0	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	47.0	705	564	470	588	470	392	504	403	336	441	353	294
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

Spreading width		5			6			7			8		
PTO speed (rpm)		540			750			1000			1000		
Disc speed (rpm)		230			325			430			430		
Mounting height		33			33			33			33		
Drop point		J			J			K			K		
Metering slide stop	Flow rate (kg/s)	km / h			km / h			km / h			km / h		
		8	10	12	8	10	12	8	10	12	8	10	12
41	65.0	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	74.0	1110	888	740	925	740	617	793	634	529	694	555	463

7.10 Calibration

For precise control of the application rate, we recommend running a new calibration every time you change spreading material types.

Carry out calibration:

- Before spreading for the first time.
- If the quality of the spreading material has changed significantly (moisture, high dust content, cracked grain).
- If a new type of spreading material is used.

The calibration must be conducted with engaged PTO at a standstill or during travel over a test track.

NOTICE

Execute the calibration test for single-disc spreader version **Q** at the **QUANTRON-K2** control unit.

The calibration 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.

7.10.1 Determining the nominal output rate

Calculate the nominal output rate before starting the calibration test.

To calculate the nominal output rate per minute you will require the following information:

- The forward speed,
- the working width,
- The 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** and the application rate shall amount to **50 g/m²**.

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

$$\text{Nominal output rate (kg/min)} = \frac{\text{Forward speed (km/h)} \times \text{working width (m)} \times \text{application rate (g/m}^2\text{)}}{60}$$

Example:
$$\frac{3 \text{ km/h} \times 4 \text{ m} \times 50 \text{ g/m}^2}{60} = 10 \text{ kg/min}$$

7.10.2 Implementing the calibration

▲ WARNING



Risk of injury due to chemicals

Discharged spreading material may cause injury to eyes and nasal mucous membranes.

- ▶ Wear protective goggles during the calibration test.
- ▶ 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 unauthorised starting.
- An adequately sized hopper is ready for collecting the discharged spreading material. The empty weight of the hopper is known.
- Using the fertiliser chart, the pre-set values for the metering slide stop are determined and known.

NOTICE

Select the calibration time to obtain the maximum spreading material quantity. The greater the quantity, the greater the precision of the measurement (e. g.: Target output volume: 10 kg/min, calibration test time: 3 min, used spreading material quantity: 30 kg).

Proceed as follows:

▲ WARNING



Risk of injury due to rotating machine components.

Contact with rotating machine components (universal drive shaft, spreading discs and agitators) may cause bruises, abrasions and crushing injuries. Body parts or objects may be caught and pulled in.

- ▶ Keep clear from rotating hubs while the machine is running.
- ▶ Before running the calibration test, ensure that all people leave the hazard zone of the machine.

1. Mount the agitator indicated in the fertiliser chart for the respective spreading material. Refer to [7.9: Use the fertiliser chart, page 63](#).
2. Fill the machine.
3. Place a foil or a hopper for collecting the spreading material under the machine.
4. Set the adjustment lever of the spreading width limiter to the lower stop (lowest spreading width).

5. Set the drop point to the position indicated in the fertiliser chart for the respective spreading material.
6. Set the half-side slide to the position indicated in the fertiliser chart for the respective spreading material.
7. Set the metering slide stop to the scale value specified in the fertiliser chart.
8. Activate the tractor and the drive of the machine.
9. Open the metering slide for the calibration test time stipulated before (e.g. 60 seconds). Close the metering slide when this time has elapsed.
10. Deactivate the drive of the machine and the tractor. Remove the ignition key.
11. Determine the collected weight.
12. Compare the actual quantity with the target quantity.
 - ▷ **Actual quantity = target quantity: Application rate stop is set correctly. End calibration test.**
 - ▷ **Actual quantity < target quantity: Set the application rate stop to a higher position and repeat the calibration test.**
 - ▷ **Actual quantity > target quantity: Set the application rate stop to a lower position and repeat the calibration test.**

8 Spreading work

8.1 General information

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

Our machines are manufactured with utmost diligence. However, deviations in the application rate or possible faults cannot be excluded, even when complying with the intended use.

The reasons for this may be:

- Changes in the physical characteristics of the spreading material due to the running agitator during transportation (e.g. varying fractional composition, varying density, grain form and surface, humidity).
- Clumping and moist spreading material.
- Wind drift: In the case of excessive wind speed, cancel the spreading work.
- Blockages or bridge formation, e. g. due to foreign bodies, bag residue or moist spreading material ...
- Uneven ground.
- Abrasion of wear parts, e.g. agitator, spreading vanes, outlet.
- Damage from external causes.
- Inadequate cleaning and care to prevent 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 adjustments.

NOTICE

Cleaning after each use of the machine prevents deposits at the bottom of the hopper. 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 minor deviation from the correct setting may significantly affect the spreading pattern. Therefore, before each operation and during operation, check the correct functioning of your machine and ensure that the application accuracy is sufficient. Carry out a calibration test.

Select the PTO speed and/or the spreading disc speed in such a way that the desired spreading width can be achieved and no deposits form on the spreading disc. A low PTO speed/spreading disc speed reduces the wear on the agitator and spreading disc.

Particularly hard spreading material, e.g. grit, increases the wear on the spreading vanes.

For spreading, select the PTO speed and/or the spreading disc speed with which you have carried out the calibration test.

Always use the supplied protective grid to prevent blockages, e.g. caused by foreign objects or spreading material clumping.

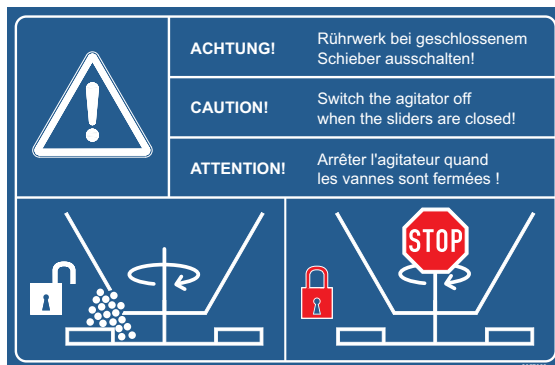
Claims for damages other than for damage to the machine itself will not be accepted.

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

8.2 General information on the agitator

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

Agitator type	Application/spreading material	Page
RWK AX 140	Granulated fertiliser	Page 93
RWK AX 160	Grit	Page 90
RWK AX 180	Sand and moist salt	Page 91
RWK AX 220	Dry salt	Page 92
RWK AX 240	Grit-salt mixtures	Page 92



⚠ CAUTION

Possible material or 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.

8.3 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 and pulled in.

- ▶ **Only** spread with the protective grid being mounted.

- Carry out spreading operations as described below.

⚠ CAUTION



Risk of injury due to ejected spreading material

Only for machines with electronic control unit

In the event of faults, the metering slide could open unexpectedly on the way to the spreading location. There is a danger of slipping and injury due to leaking spreading material.

- ▶ **Before leaving for the place of spreading**, the electronic QUANTRON-K2 or E-CLICK control unit must always be **switched off**.

Preparation

- Installing the spreader at the tractor
- Close metering slide
- Presetting the mounting height
- Fill in the spreading material
- Adjusting the drop point
- Carry out the calibration test
- Adjust the spreading width limiter

Page

- [Page 39](#)
- [Page 41](#)
- [Page 46](#)
- [Page 55](#)
- [Page 85](#)
- [Page 53](#)

Spreading

- Travel to the spreading location
- Engage the drive
- Open the slide and start spreading
- Finish spreading operations and close the slide
- Disengage the drive
- Discharging residual material

[Page 95](#)

Cleaning/maintenance	Page
<ul style="list-style-type: none">● Open the metering slide● Remove spreader from tractor● Cleaning and maintenance	Page 97

8.4 Spreading grit

▲ WARNING



Risk of injury caused by spreading material

Ejected spreading material may lead to injuries.

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

When spreading grit, please observe the following:

- Using agitator **RWK AX 160**. Refer to [11.6.2: RWK AX 160, page 114](#).
- 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 is to 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 distances, switch off the machine drive.
- Open the metering slide until unobstructed discharge of grit at the agitator.

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

- Ensure that the spreading material cannot freeze in the hopper.
- Do not leave filled machines outside over night.
- Keep spreading materials dry.

8.5 Spreading of sand or moist salt

▲ WARNING



Risk of injury caused by spreading material

Ejected spreading material may lead to injuries.

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

When spreading sand or moist salt, please observe the following:

- Using agitator **RWK AX 180**. Refer to [11.6.3: RWK AX 180, page 115](#).
- The maximum PTO speed of 540 rpm and/or a spreading disc speed of 230 rpm is to be observed.
- Before each transportation drive, the drive is to be disengaged.
- With a closed metering slide, even for short distances, switch off the machine drive.
- Open the metering slide until unobstructed discharge of sand or moist salt at the agitator.
- 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.
- Please observe the information on assembly and disassembly of the **RWK AX 180** agitator in the respective assembly manual. See also chapter [9.5.1: Dismounting the agitator, page 101](#).
- Due to the hygroscopic effect of salt, only use the machine with a hopper cover.
- Avoid a longer storage of salt in the hopper.

NOTICE

Depending on the quality and under ideal conditions, agitator RWK AX 140 may also be applied for spreading of rock salt.

NOTICE

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

8.6 Spreading of salt

▲ WARNING



Risk of injury caused by spreading material

Ejected spreading material may lead to injuries.

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

When spreading dry salt, please observe the following:

- Using agitator **RWK AX 220**. Refer to [11.6.4: RWK AX 220, page 115](#).
- The maximum PTO speed of 540 rpm and/or a spreading disc speed of 230 rpm is to be observed.
- Before each transportation drive, the drive is to be disengaged.
- With a closed metering slide, even for short distances, switch off the machine drive.
- Open the metering slide until unobstructed discharge of dry salt at the agitator.
- 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.
- Please observe the information on assembly and disassembly of the **RWK AX 220** agitator in the respective assembly manual. See also chapter [9.5.1: Dismounting the agitator, page 101](#).
- Due to the hygroscopic effect of salt, only use the machine with a hopper cover.
- Avoid a longer storage of salt in the hopper.

NOTICE

Depending on the quality and under ideal conditions, agitator **RWK AX 140** may also be applied for spreading of dry salt.

NOTICE

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

NOTICE

If the performance of the agitator is insufficient, lock the central finger with a M6 screw.

8.7 Spreading granulated fertiliser

▲ WARNING



Risk of injury caused by spreading material

Ejected spreading material may lead to injuries.

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

When spreading granulated fertiliser, please observe the following:

- Using agitator **RWK AX 140**. Refer to [11.6.1: RWK AX 140, page 114](#).
- The maximum PTO speed of 1000 rpm and/or a spreading disc speed of 430 rpm is to be observed.
- Before each transportation drive, the drive is to be disengaged.
- With a closed metering slide, even for short distances, switch off the machine drive.
- Open the metering slide until unobstructed discharge of fertiliser at the agitator.
- 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.
- Please observe the information on assembly and disassembly of the **RWK AX 140** agitator in the respective assembly manual. See also chapter [9.5.1: Dismounting the agitator, page 101](#).

NOTICE

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

8.8 Spreading grit-salt mixtures

▲ WARNING



Risk of injury caused by spreading material

Ejected spreading material may lead to injuries.

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

When spreading grit-salt mixtures, please observe the following:

- Using agitator **RWK AX 240**. Refer to [11.6.5: RWK AX 240, page 116](#).
- The maximum PTO speed of 450 rpm and/or a spreading disc speed of 200 rpm is to be observed.
- Before each transportation drive, the drive is to be disengaged.
- With a closed metering slide, even for short distances, switch off the machine drive.
- Open the metering slide until unobstructed discharge of grit-salt mixture at the agitator.
- 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.
- Please observe the information on assembly and disassembly of the **RWK AX 240** agitator in the respective assembly manual. See also chapter [9.5.1: Dismounting the agitator, page 101](#).

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

- Ensure that the spreading material cannot freeze in the hopper.
- Do not leave filled machines outside over night.
- Keep spreading materials dry.

NOTICE

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

NOTICE

When spreading grit-salt mixtures, bridging may occur above the agitator.

- In this case, reduce the salt content and use dry spreading material.
-

8.9 Discharging residual material

We recommend emptying the machine immediately after every use to maintain its value and to ensure a fault-free spreading operation.

1. Deactivate the drive and switch off the tractor motor.
2. For collecting the spreading material, place a foil under the machine or position a sufficiently sized hopper beneath the outlet.

▲ WARNING



Risk of crushing and shearing in the area of the application rate adjustment unit

When untightening the setscrew of the application rate limit stop, the slide lever may move unexpectedly against the end of the guide slot and cause severe injuries to the fingers.

- ▶ Only untighten the setscrew of the application rate limit stop if the metering slide is closed.
- ▶ Do not place fingers in the guide slot of the application rate adjustment unit.
- ▶ If the machine is parked on its own (without tractor), fully open the metering slide. Hydraulic cylinder at limit stop, return spring still tensioned.

▲ WARNING



Risk of injury due to rotating machine components and spreading material

Contact with rotating machine components (universal drive shaft, spreading disc) may cause bruises, abrasions and crushing injuries. Body parts or objects may be caught and pulled in.

Ejected spreading material may lead to injuries.

- ▶ Stay out of the range of the rotating machine components while the machine is running.
- ▶ Direct all persons out of the danger zone of the machine before discharging the residue.

3. Lower the spreading width limiter completely.
4. Open the metering slide fully.
5. Deactivate the tractor motor and the drive of the machine and empty the hopper until no spreading material is discharged.
6. Deactivate the drive of the machine and switch off the tractor motor. Remove the ignition key of the tractor.
7. While the metering slide is open, move the drop point back and forth until the last spreading material residues have fallen out.

9 Maintenance and service

9.1 Safety

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

NOTICE

Arrange for your dealer to carry out major servicing work.

Any maintenance and service work is to be conducted with increased alertness at all times. Work very carefully and with awareness of danger.

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. Secure the machine using suitable supports.
- There is a **risk of crushing and shearing** at automatically operated components (adjustment lever, metering slide). 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 requirements specified by the manufacturer. This is assured by using RAUCH original spare parts.
- Before starting any cleaning, maintenance, or repair work, and when troubleshooting, switch off the tractor's engine and wait until all rotating parts of the machine have come to a stop.
- Repairs may only be carried out by instructed and authorised specialists.

NOTICE

Please also refer to the warning notes in chapter [3: Safety, page 5](#). Take particular note of the instructions in section [3.8: Maintenance and service, page 13](#).

9.2 Wear parts and screw connections

9.2.1 Checking wear parts

Wear parts include: **Spreading vane, Agitator, Hopper base and thrust ring.**

- Checking wear parts.

If these parts show visible signs of wear, deformation or holes, any worn parts must be replaced; otherwise the spreading pattern will not be correct.

The durability of wear-prone parts depends in part on the spreading material used.

9.2.2 Checking screw connections

Bolted joints have been tightened to the specified torque and locked at the factory. Vibrations and shocks, in particular during the initial operating hours, can loosen bolted joints.

- With new machines, all screw connections are to be checked for their tight seat after approx. 30 operating hours.
- Check all the bolted joints regularly for tightness, and definitely before the start of the spreading season.

Some components, e.g. spreading vanes or maintenance covers, are mounted with self-locking nuts. When mounting these components always **use new self-locking** nuts.

9.3 Cleaning

We recommend cleaning the machine with a soft jet of water immediately after every use in order to maintain its value.

The following instructions must be observed for cleaning:

- Only clean oiled machines at washing points fitted with an oil separator.
- When cleaning with high-pressure water, **never** aim the jet directly at warning signs, electrical equipment, hydraulic components, and sliding bearings.

After cleaning, we recommend treating the **dry** machine, **especially stainless steel parts**, with an environmentally friendly anti-corrosion agent.

9.4 Metering slide adjustment

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

⚠ DANGER



Risk of crushing and shearing!

There is a risk of crushing and shearing while working at automatically operated components (adjustment lever, metering slide).

Pay attention to the shear points at metering opening and the metering slide during adjustment.

- ▶ Switch off the tractor engine. Remove the ignition key.
- ▶ Open the metering slide fully.
- ▶ During adjustment, do not operate the hydraulic metering slide.

Disengage the return spring and adjustment cylinder:

In order to check the metering slide adjustment, the mechanism must be freely movable.

1. Disengage the return spring with the adjustment lever.
2. Disengage the electric or hydraulic cylinder.

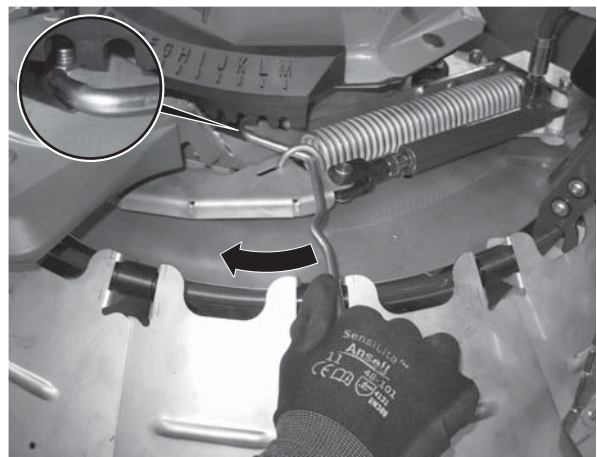


Figure 9.1: Disengage the return spring

Check:

3. Open maintenance cover.
4. Dismounting the agitator.

5. Take a pin [1] with a diameter of **25 mm**.
6. Insert the pin into the metering opening.

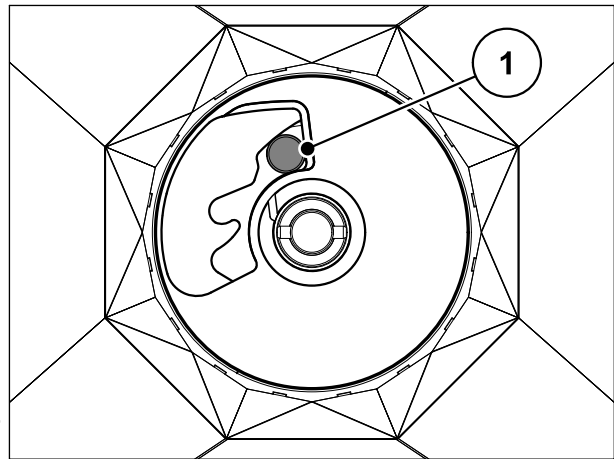


Figure 9.2: Pin in metering opening

7. Push the metering slide against the pin.
8. Tighten the setscrew.
 - ▷ The secured pin.
 - ▷ **The stop at the lower scale plate (metering scale) is at scale value 24. If the position is not correct, the scale must be reset.**

Adjustment:

The metering slide is in the position of step 7 (lightly pressed against the pin).

9. Untighten the mounting screws [1] at the scale plate.

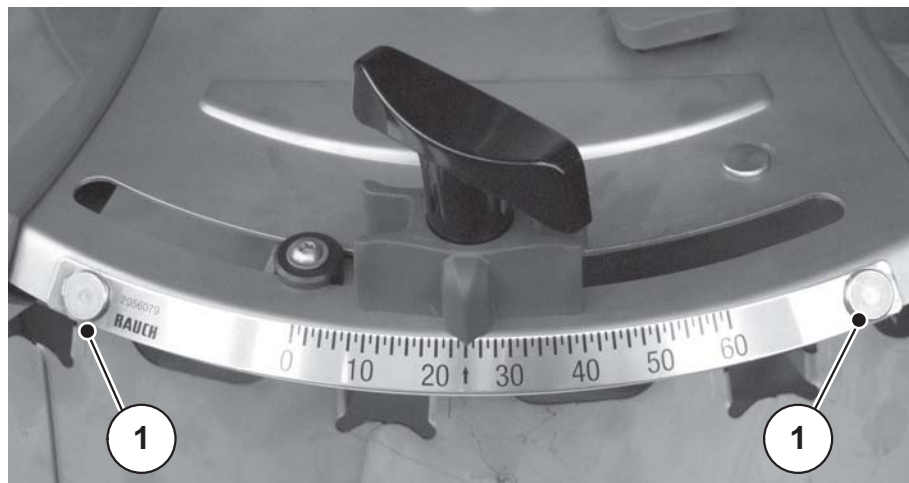


Figure 9.3: Adjustment scale of metering slide

10. Adjust the scale plate in such a way that the **scale value 24** lies exactly under the pointer element.
11. Tighten the scale plate with a mounting screw.
12. Remove the pin.
13. Engage the electric or hydraulic cylinder.
14. Engage the return spring.
15. Assemble agitator and close maintenance cover.

9.5 Checking the agitator for wear

9.5.1 Dismounting the agitator

The agitator is fixed with a bayonet lock.

1. Open maintenance cover.
2. Turn the agitator clockwise until it reaches the stop.
3. Lift the agitator out in an upwards direction.

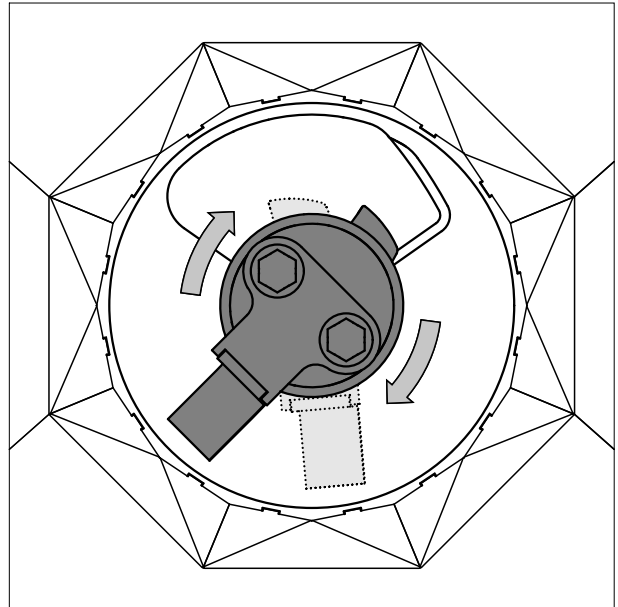


Figure 9.4: Dismounting the agitator

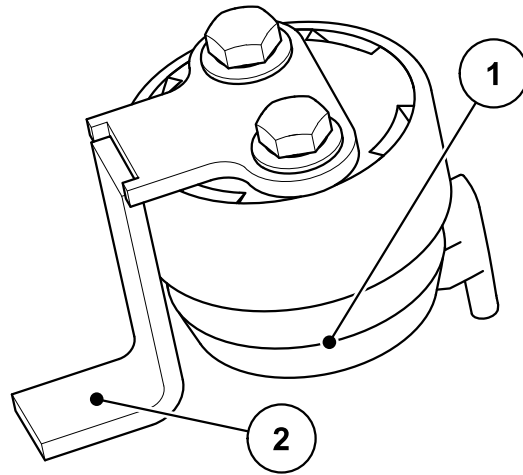
NOTICE

Install the agitator in reverse order. Ensure that the bayonet lock of the agitator engages safely.

- Grease the bayonet lock and the agitator.

9.5.2 Checking agitator RWK AX 140 for wear

If the spreading material no longer flows equally out of the metering opening, the agitator finger is to be replaced.

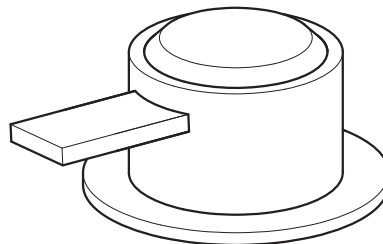


- [1] Plastic element
- [2] Agitator fingers

Figure 9.5: Agitator RWK AX 140

- 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.
 - ▷ The agitator finger must not be bent.

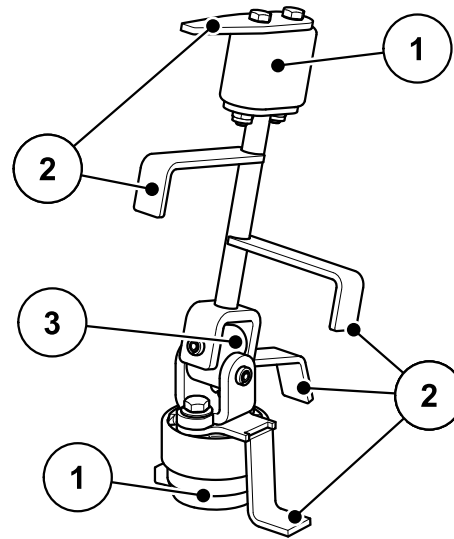
9.5.3 Checking agitator RWK AX 160 for wear



- Check the agitator for damage and wear.

Figure 9.6: Agitator RWK AX 160

9.5.4 Checking agitator RWK AX 180 for wear

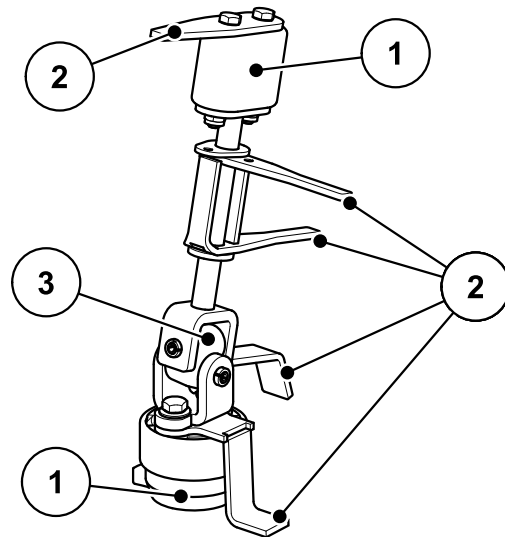


- [1] Plastic element
- [2] Agitator finger
- [3] Universal joint

Figure 9.7: Agitator RWK AX 180

- 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.
 - ▷ The agitator fingers must not be bent.
- Check the universal joint [3] for free movement.

9.5.5 Checking agitator RWK AX 220 for wear

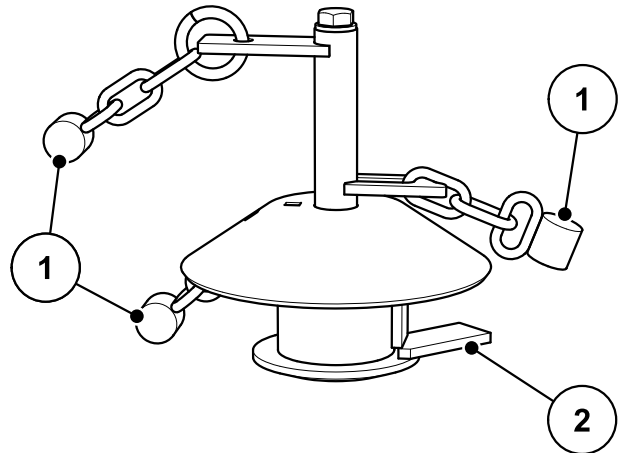


- [1] Plastic element
- [2] Agitator fingers
- [3] universal joint

Figure 9.8: Agitator RWK AX 220

- 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.
 - ▷ The agitator fingers must not be bent.

9.5.6 Checking agitator RWK AX 240 for wear

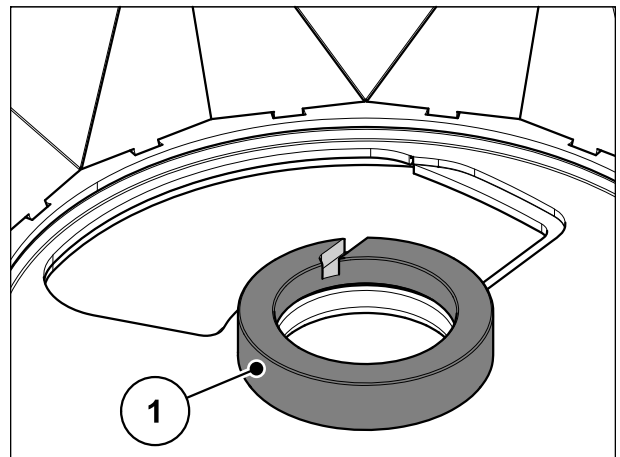


- [1] Chains
- [2] Agitator fingers

Figure 9.9: Agitator RWK AX 240

- 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.
 - ▷ The agitator fingers must not be bent.

9.5.7 Checking the thrust ring for wear



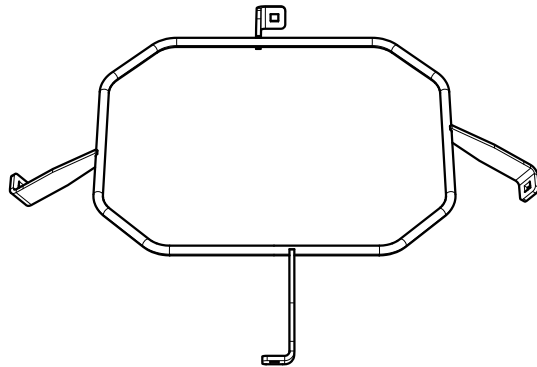
- Checking the thrust ring for damage and wear.

Figure 9.10: Thrust ring

Information on thrust ring assembly:

- Align the notch to the metering opening.
- The thrust ring is to be supported by the base plate.

9.5.8 Checking the stop ring in the hopper for wear



- Checking the stop ring in the hopper for damage and wear.

Figure 9.11: Stop ring in the hopper

9.6 Replacing the spreader vanes

Worn spreading vanes can be replaced.

Determination of the spreading vane type:

▲ CAUTION



Conformity of the spreading vane types

The type and size of the spreading vanes are adapted to the spreading disc.

- ▶ Only mount spreading vanes approved for the corresponding spreading disc.

Spreading vane replacement:

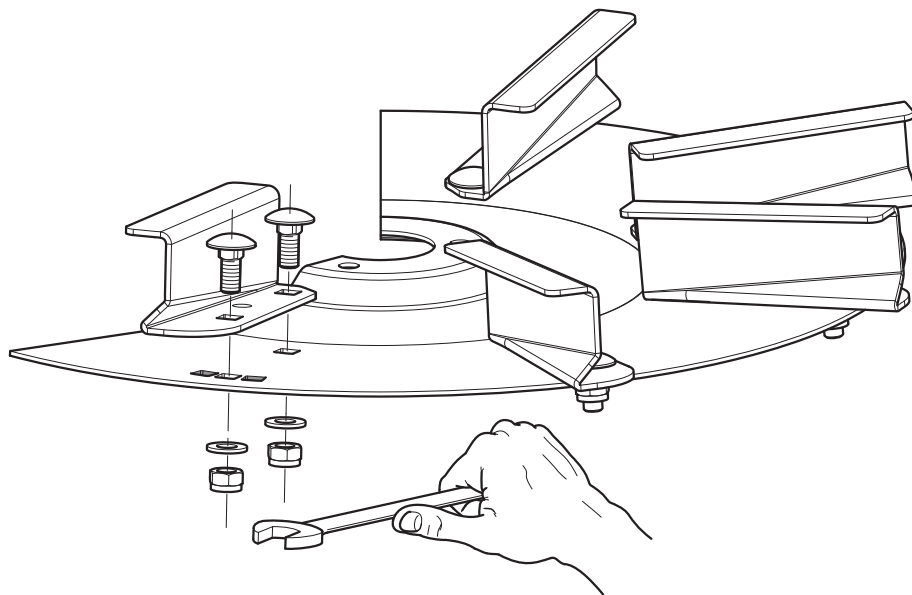


Figure 9.12: Untighten the screws on the spreading vane

1. Loosen the self-locking nuts at the spreading vane and take them off the spreading vane.
2. Install the new spreading vane onto the spreading disc. Make sure you use the correct spreading vane type.

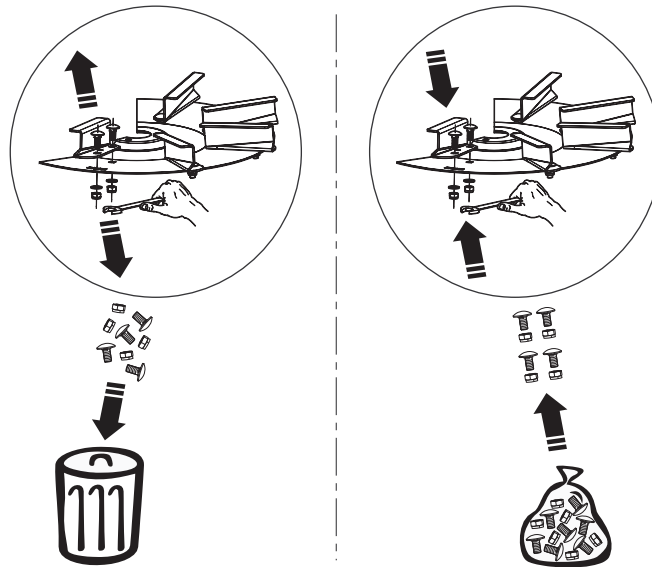


Figure 9.13: Use new self-locking nuts

3. Screw on the spreading vanes. **Always use new self-locking** nuts when screwing on the vane.

9.7 Transmission oil

9.7.1 Quantity and types

The transmission is filled with approx. **0.35 l** transmission oil.

All oils that meet the requirements of SAE 85W-90 API GL-5 are suitable for filling the transmission. Some of these oils are listed in the following table:

Manufacturer	Type of oil
Aral	HYP 85W-90 transmission oil
Esso	Gear Oil GX-D 85W-90

NOTICE

Only use one type of oil.

- **Never** mix different oil types.

9.7.2 Checking the oil level

The transmission is maintenance-free and does not have to be lubricated under normal circumstances.

Requirements:

- The machine must be in a horizontal position to check the oil and to fill the oil.
- Switch off the PTO shaft and motor of the tractor and remove the tractor's ignition key.

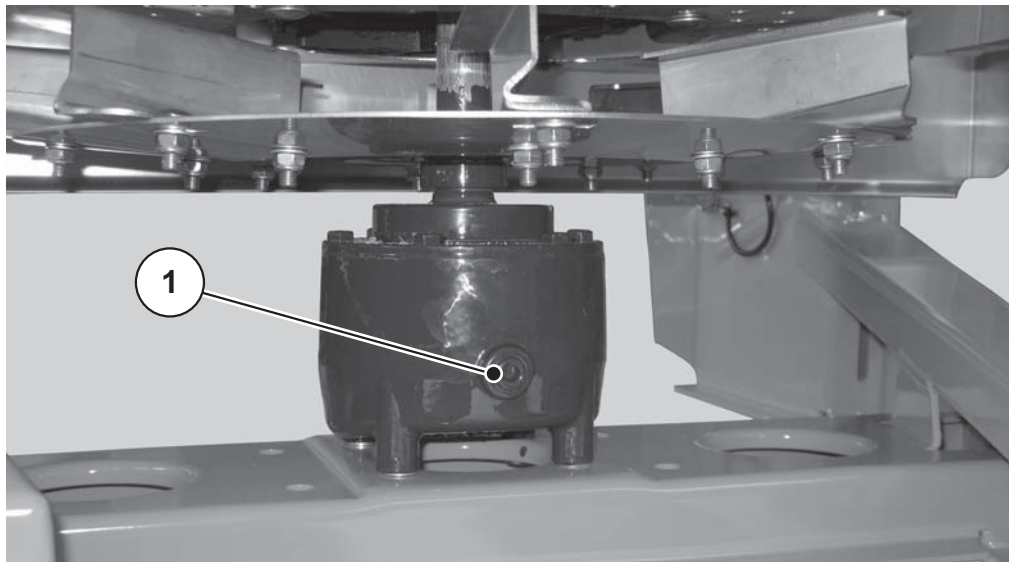


Figure 9.14: Oil level checking screw, transmission oil

[1] Oil level checking screw, transmission oil

Checking the oil level

- Open the oil level checking screw.
 - ▷ The oil level is alright if the oil reaches the lower edge of the bore hole.

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 bore hole.
- Close the checking screw.

9.8 Lubrication plan

Lubrication points	Lubricant	Description
Drive shaft	Grease	See operator's manual of the manufacturer.
Metering slide Half-side slide	Grease, oil	Ensure smooth movement and grease regularly.
Balls of upper and Lower link	Grease	Grease regularly.
Joints, bushes	Grease, oil	They are designed for dryness but can be slightly lubricated.
Drop point adjustment, ad- justable base	Oil	Ensure smooth movement and grease regularly. Grease at end of season.
Bayonet, basic agitator	Grease	Ensure smooth movement and grease regularly. Grease at end of season.
universal joint Agitators RWK AX 180/220	Grease, oil	Ensure smooth movement and grease regularly. Grease at end of season.

10 Faults and possible causes

⚠ DANGER



Risk of injury and accident from omitted or inadequate troubleshooting

Delayed or incorrect repairs by unqualified persons may result in incalculable risks with negative consequences for persons, the machine, and the environment.

- ▶ Any faults are to be rectified **immediately**.
- ▶ Only carry out repairs yourself if you have the appropriate qualifications.

Fault	Possible cause/action
Uneven distribution of spreading material	<ul style="list-style-type: none"> ● Remove spreading material deposits from spreading disc, spreading vanes and outlet. ● Worn spreading vanes. Exchange spreading vanes. ● Metering slide does not open completely. Check function of opening slide. ● Drop point incorrectly adjusted. Correct the setting.
Irregular spreading material feed to spreading disc	<ul style="list-style-type: none"> ● Check agitator and replace it, if required. ● Clear blockages.
Spreading disc flutters.	<ul style="list-style-type: none"> ● Check for tight seat.
Metering slide does not open.	<ul style="list-style-type: none"> ● Metering slide does not move easily. Check slide, lever and joints for smooth movement and improve if necessary. ● Check the extension spring. ● The reducing plate at the hose connection of the plug-in connector is contaminated. ● Power supply to actuator interrupted.
The metering slide opens too slowly.	<ul style="list-style-type: none"> ● Clean orifice plate. The plate is located at the hose connection of the plug-in connector.
Agitator not working.	<ul style="list-style-type: none"> ● Check for wear. ● Check clamping pins for damage and wear.

Fault	Possible cause/action
<p>Blockage of the metering openings due to: lumps of spreading material, damp spreading material, other impurities (leaves, straw, sack residues)</p>	<ul style="list-style-type: none"> ● Clear blockages. Proceed as follows: <ol style="list-style-type: none"> 1. Park the tractor, remove the ignition key, 2. Open metering slide, 3. Place collecting vessel underneath, 4. Clean the outlet from below with a wooden pole or the adjustment lever and push through the metering opening. 5. Remove any foreign objects in the hopper. 6. Close the metering slide. ● Or carry out fast emptying at the QUANTRON-K2 control unit while the agitator is running.
<p>The spreading disc does not rotate or stops suddenly after being turned on.</p>	<p>When using an universal drive shaft with shear pin protection:</p> <ul style="list-style-type: none"> ● Check the shear pin protection, replace the shear pin as necessary (refer to the operator's manual of the universal drive shaft manufacturer). <p>For hydraulic drive (H and HydroControl):</p> <ul style="list-style-type: none"> ● Check the plug connector of the hydraulic hoses. ● Check the connector of the machine cable.

11 List of available accessories

11.1 Electrical remote control (metering slide and spreading width limiter)

Using the electric remote control, the spreading width limiter and the metering slide can be operated from the tractor.

For the electric remote control you will need a 12 V connection (2-pin socket) on the tractor.

11.2 Hydraulic remote control (metering slide)

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

11.3 Extensions

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

The extensions are bolted to the standard hopper.

NOTICE

For an overview of extensions and extension combinations, see chapter [4.5: Technical data of extensions and extension combinations, page 30](#).

11.4 Hopper cover

A hopper cover can be fitted to protect the spreading material against rain and moisture.

The hopper covers are screwed both to the standard unit as well as to the additionally mounted hopper extensions.

Hopper cover	Application
AP-X 2, foldable	<ul style="list-style-type: none"> ● Standard unit: AXEO 2.1 ● Extension: AX 100
AP-X 6, foldable	<ul style="list-style-type: none"> ● Standard unit: AXEO 6.1
AP-XL 18, foldable	<ul style="list-style-type: none"> ● Standard unit: AXEO 18.1 ● Extensions: AX 250, AX 500, AX 750

11.5 Spreader apron

Spreader apron	Dimensions in cm (W x H)	Application
STS 2	120 x 100	<ul style="list-style-type: none"> • Standard unit AXEO 2.1 • Standard unit AXEO 6.1
STS 6	150 x 100	<ul style="list-style-type: none"> • Standard unit AXEO 2.1 • Standard unit AXEO 6.1
STS 18	180 x 125	<ul style="list-style-type: none"> • Standard unit AXEO 18.1
STS 20	190 x 140	<ul style="list-style-type: none"> • Standard unit AXEO 18.1

11.6 Agitators

11.6.1 RWK AX 140

Agitator RWK AX 140 is intended for granulated fertiliser.

In individual cases, RWK AX 140 may also be suitable for spreading of dry salt with good flow properties.



Figure 11.1: Agitator RWK AX 140

11.6.2 RWK AX 160

Agitator RWK AX 160 is intended for grit.

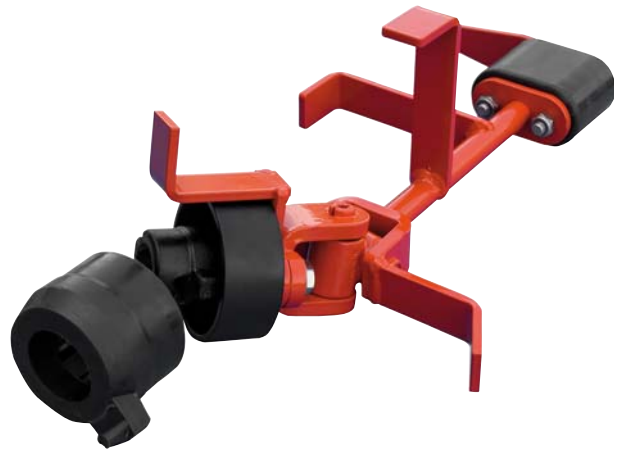


Figure 11.2: Agitator RWK AX 160

▲ CAUTION**Material damage due to incorrect pairing of agitator/spreading material**

Spreading grit with agitator RWK AX 180 or RWK AX 220 may cause damage at the transmission and the hydraulic motors.

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

11.6.3 RWK AX 180

Agitator RWK AX 180 is intended for sand and moist salt.

Figure 11.3: Agitator RWK AX 180

11.6.4 RWK AX 220

Agitator RWK AX 220 is intended for dry salt.

Figure 11.4: Agitator RWK AX 220

11.6.5 RWK AX 240



Agitator RWK AX 240 is intended for grit.

Figure 11.5: Agitator RWK AX 240

11.7 Adapter for attachment at category 1N

This adapter is intended for AXEO 2.1 for attachment of the machine at a category 1N tractor.

NOTICE

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

11.8 BLO 18 lighting

AXEO 18.1 features lighting as a standard. AXEO 2.1 and AXEO 6.1 may be equipped with lighting.

Lighting	Application
BLO 18	<ul style="list-style-type: none">• Rear lighting• without warning sign

NOTICE

Attachments are subject to the lighting regulations specified in the traffic regulations. Observe the traffic regulations of your country.

11.9 Universal drive shaft with ratchet clutch

The ratchet safety clutch limits the torque in case of overloads.

12 Disposal

12.1 Safety

▲ WARNING



Environmental pollution due to unsuitable disposal of hydraulic and gear oil

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

- ▶ Collect/dam escaped oil with sand, earth or other absorptive material.
- ▶ Collect hydraulic and gear oil in a suitable container provided for the purpose, and dispose of it in accordance with the local statutory requirements.
- ▶ Oil must be prevented from spilling and draining into the sewers.
- ▶ The ingress of oil into the sewage system must be prevented by building dams made of sand and/or earth or by other suitable damming means.

▲ WARNING



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.

▲ WARNING



Environmental pollution caused by inappropriate disposal of components

The incorrect disposal of ingredients and materials is a threat to the environment.

- ▶ Only authorised companies may be commissioned with the disposal.

12.2 Disposal

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

1. All components, auxiliary and operating materials from the machine must be removed by specialist staff.

Hereby, these components and substances must be cleanly separated into categories.

2. All waste products are then to be disposed of in accordance with local regulations and directives for recycling or special refuse categories by authorised companies.

13 Axle load calculation

▲ CAUTION



Risk of overload

Mounted units on the front or rear three-point linkage must not cause the approved total weight to be exceeded. The front axle of the tractor must be loaded with a minimum weight of 20 % of the empty weight of the tractor at all times.

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

Calculation of total weight, axle loads and tyre load capacity as well as of the required minimum ballast weights.

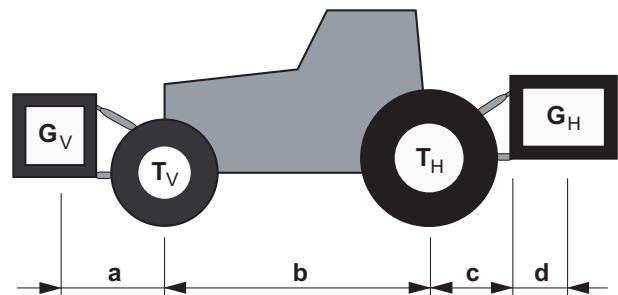


Figure 13.1: Loads and weights

You will need the following data for the calculation:

Character [unit]	Meaning	Calculation by (table footer)
T_L [kg]	Empty weight of the tractor	[1]
T_V [kg]	Front axle load of the empty tractor	[1]
T_H [kg]	Rear axle load of the empty tractor	[1]
G_V [kg]	Total weight of front-mounted unit/front ballast	[2]
G_H [kg]	Total weight of rear-mounted unit/rear ballast	[2]
a [m]	Distance between centre of gravity of front-mounted unit / front ballast and centre of front axle	[2], [3]
b [m]	Wheel base of the tractor	[1], [3]
c [m]	Distance between centre of rear axle and centre of lower link ball	[1], [3]
d [m]	Distance between centre of lower link ball and centre of gravity of rear-mounted unit / rear ballast	[2]

[1] See operator's manual of the tractor

[2] See price list and/or operator's manual of the unit

[3] To be measured

Rear-mounted unit and/or front-rear combinations

Calculation of the minimum ballast front $G_{V \min}$

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

Enter the calculated minimum ballast requirement in the table.

Front-mounted unit

Calculation of the minimum ballast rear $H_{H \min}$

$$G_{H \min} = \frac{(G_V \cdot a - T_H \cdot b + 0,45 \cdot T_L \cdot b)}{b + c + d}$$

Enter the calculated minimum ballast requirement in the table.

If the front-mounted unit (G_V) is lighter than the minimum ballast at the front ($G_{V \min}$), the weight of the front-mounted unit must be increased to at least the weight of the minimum front ballast.

Calculation of the actual front axle load $T_{V \text{tat}}$

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

Enter the calculated actual front axle load as well as the admissible front axle load specified in the tractor's operator's manual in the table.

If the rear-mounted unit (G_H) is lighter than the minimum ballast at the rear ($G_{H \min}$), the weight of the rear-mounted unit must be increased to at least the weight of the minimum rear ballast.

Calculation of the actual total weight G_{tat}

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

Enter the calculated actual total weight as well as the admissible total weight specified in the tractor's operator's manual in the table.

Calculation of the actual rear-axle load $T_{H \text{tat}}$

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

Enter the calculated actual rear axle load as well as the admissible rear axle load specified in the tractor's operator's manual in the table.

Tyre load capacity

Enter double the value (two tyres) of the admissible tyre load capacity (for example, see the tyre manufacturer's documentation) in the table.

Axle loads table:

	Actual value according to calculation	Admissible value according to operator's manual	Twice the admissible tyre load capacity (two tyres)
Minimum ballast front / rear	<input type="text"/> kg	—	—
Total weight	<input type="text"/> kg	\leq <input type="text"/> kg	—
Front axle load	<input type="text"/> kg	\leq <input type="text"/> kg	\leq <input type="text"/> kg
Rear axle load	<input type="text"/> kg	\leq <input type="text"/> kg	\leq <input type="text"/> kg

The minimum ballast must be mounted on the tractor as an attachment or as ballast weight.

The calculated values must be less than or equal to the admissible values.

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Terms/conditions of warranty

RAUCH units are manufactured with modern production methods and with the greatest care and are subject to numerous inspections.

Therefore RAUCH offers a 12-month warranty subject to the following conditions:

- The warranty begins on the date of purchase.
- The warranty covers material and manufacturing faults. Our liability for third-party products (hydraulic system, electronics) is limited to the warranty of the manufacturer of the equipment. During the warranty period, manufacturing and material faults are corrected free of charge by replacement or repair of the affected parts. Other rights extending beyond the above, such as claims for conversion, reduction or replacement for damages that did not occur in the object of supply are explicitly excluded. Warranty services are provided by authorised workshops, by RAUCH factory representatives or the factory.
- The following are excluded from coverage by the warranty: natural wear, dirt, corrosion and all faults caused by improper handling and external causes. The warranty is rendered void if the owner carries out repairs or modifications to the original state of the supplied product. Warranty claims are rendered void if RAUCH original spare parts were not used. Therefore, the directions in the operating manual must be observed. In all cases of doubt contact our sales representatives or the factory directly. Warranty claims must be submitted to the factory by 30 days at the latest after occurrence of the problem. The date of purchase and the serial number must be indicated. If repairs under the warranty are required, they must be carried out by the authorised workshop only after consultation with RAUCH or the company's appointed representatives. The warranty period is not extended by work carried out under warranty. Shipping faults are not factory faults and therefore are not part of the warranty obligation of the manufacturer.
- No claims for compensation for damages that are not part of RAUCH machines themselves will be accepted. This also means that no liability will be accepted for damage resulting from spreading errors. Unauthorised modifications of RAUCH machines may result in consequential damage, for which the manufacturer will not accept any liability. The manufacturer's liability exclusion will not apply in case of wilful 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. It will also not apply in the event that assured properties are absent, if the purpose of the assured properties was to protect the purchaser against damage that does not involve the supplied product itself.



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