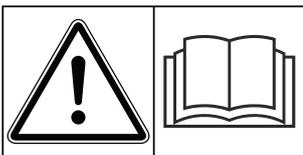




## Operator's manual



**Please read carefully  
before using the  
machine!**

### Keep for future use

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

100.1

**AXENT**

5903077-**C**-en-0325

Original instructions

## Foreword

Dear customer,

By purchasing the large area spreader of the series AXENT, you have shown confidence in our product. Thank you very much! We want to justify this confidence. You have purchased a powerful and reliable machine.

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



**Please read this operator's manual carefully before commissioning the large area 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 cannot be covered by warranty claims.



Please enter your model type and serial number, together with the year of manufacture of your machine here.

These data are provided on the machine nameplate or on the frame.

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

Type:

Serial number:

Year of manufacture:

## Technical improvements

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

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

Yours sincerely

RAUCH Landmaschinenfabrik GmbH

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# 1 Intended use

The large area spreaders of the series AXENT may only be used in accordance with the stipulations of the present operator's manual.

The large area spreaders of the series AXENT are constructed in accordance with their intended use and may be exclusively used for the points listed below:

- AXENT series large area spreaders are equipped with a fertilizer spreading unit for spreading dry, granular, and crystalline fertilizers, seeds, and slug pellets.
- AXENT series large area spreaders are equipped with a universal spreading unit for spreading dry, organic fertilizers and pulverized lime.

The machine is intended to be used by one person and be attached to a tractor that meets the requirements of this operator's manual.

In the following chapters, the large area spreader is referred to as "machine."

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

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

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

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

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

## ■ **Foreseeable misuse**

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

## 2 User instructions

### 2.1 About this operator's manual

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

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

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

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

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

- Operation,
- Maintenance and cleaning,
- Troubleshooting.

In particular, the following is to be observed:

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

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

### 2.2 Structure of the operator's manual

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

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

## 2.3 Notes on text descriptions

### 2.3.1 Instructions and procedures

Steps that must be performed by operating staff are displayed as follows

- ▶ Instructions step 1
- ▶ Instructions step 2

### 2.3.2 Lists

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

- Property A
- Property B

### 2.3.3 References

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

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

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

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

## 3 Safety

### 3.1 General information

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

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

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

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

### 3.2 Meaning of warnings

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

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

---

Symbol + **signal word**

Explanation

---

#### Level of danger of warnings

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

#### **DANGER!**

##### **Type and source of danger**

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

Ignoring these warnings will result in severe injury or death.

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

#### **WARNING!**

##### **Type and source of danger**

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

Ignoring these warnings leads to severe injury.

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

**⚠ CAUTION!****Type and source of danger**

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

Ignoring these warnings leads to injury.

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

**NOTICE!****Type and source of danger**

This warning warns of material and environmental damage.

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

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



This is an instruction:

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

### 3.3 General information on the safety of the machine

The machine is state-of-the-art and is compliant with the applicable technical regulations. However, during its use and maintenance, risks to the health and life of the user or third parties or damage to the machine and other objects can still occur.

For this reason, the machine may only be operated:

- In a flawless and roadworthy condition,
- Taking into account safety and risks.

This requires you to have read and understood the contents of this operator's manual. You must be aware of the relevant accident prevention regulations as well as the generally acknowledged safety, occupational health and traffic regulations and be able to apply them.

### 3.4 Instructions for the operator

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

#### 3.4.1 Qualifications of personnel

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

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

### 3.4.2 Instruction

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

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

### 3.4.3 Accident prevention

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

The following instructions must also be observed:

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

## 3.5 Information on operational safety

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

### 3.5.1 Parking the machine

Only park the machine with an empty hopper on level, firm ground.

Prior to decoupling, check that the machine is secured against tilting and rolling.

- Is the parking brake engaged?
- Is the support stand folded down?
- Are the wheels secured with wheel chocks?

For further information, refer to chapter *7.7 Parking and unhitching the machine*

### 3.5.2 Filling the machine

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

### 3.5.3 Checks before commissioning the machine

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

- Is all safety equipment at the machine installed and functioning?
- Are all fasteners and load-bearing connections tightly installed and in good condition?
- Are all locking mechanisms securely engaged?
- Are there **no** persons in the danger zone of the machine?
- Is the universal drive shaft cover in good condition?

### 3.5.4 Hazard zone

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

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

The following figure displays the hazard zones of the machine.

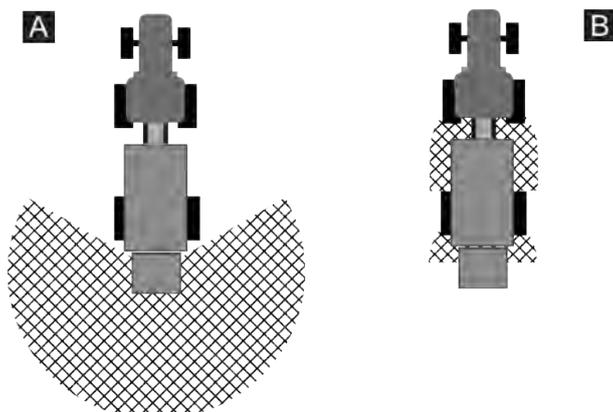


Fig. 1: Hazard zone when devices are pulled

[A] Hazard zone in spreading operation

[B] Hazard zone when coupling/decoupling the machine

- Ensure that no persons are present in the spreading range [A] of the machine.
- Immediately stop the machine and the tractor if persons are present in the hazard zone of the machine.
- When coupling/decoupling the machine at the tractor or attaching/detaching the spreading unit, make sure that no one is present in the hazard zones [B].

### 3.5.5 Running operation

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

### 3.5.6 Wheels and brakes

Due to the high overall weight and the terrain, the chassis of the towed machine is subject to extreme loads. To ensure operational safety, the following points are to be considered:

- All wheels and tires must comply with the technical requirements specified by the manufacturer.
- Wheels must not be bent or have inadmissible bumps.
- Check the wheels at their sides on the inside and outside. In case of damage (bumps, scratches), replace them immediately.
- Prior to every use, check the tire pressure and the function of the brakes.
- Have the brake pads replaced in time. All brake pads must comply with the technical requirements specified by the manufacturer.
- To prevent contamination of the wheel bearings, they must always be covered by dust covers.
- If a Certificate of Conformity for EU type approval (as per EU directive 167/2013) was issued for the machine, the wheels specified in the Certificate of Conformity are permissible.
- Always observe the specification of the approved wheels (load bearing capacity, tire pressure).
- Check the brake pads when changing the tires and when using tires other than those approved by the manufacturer. See *9.16.5 Checking the brake lever length*
- **Do not use the tractor joystick for braking** This way, trailers with pneumatic brakes cannot be stopped.

### 3.6 Use of fertilizer, slug pellets, and lime

Improper selection or use of fertilizer and lime may cause serious injury or environmental damage.

- When selecting the fertilizer, inform yourself of its effects on humans, the environment and the machine. When using slug pellets, observe the specific national plant protection directives.
- When selecting the fertilizer or lime, inform yourself of its effects on humans, the environment and the machine.
- Always follow the instructions of the fertilizer or lime manufacturer.

### 3.7 Hydraulics system

The hydraulic system is under high pressure.

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

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

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

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

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

### 3.8 Maintenance and service

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

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

### 3.8.1 Qualifications of maintenance personnel

- Only specialist workshops or approved brake repair service providers may perform adjustment or repair work on the brake system.
- Only qualified personnel may perform repair work on wheels and tires. They must use appropriate mounting tools for this.
- Welding and work on the electrical and hydraulic systems is to be carried out by qualified technicians only.

### 3.8.2 Wear parts

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

### 3.8.3 Maintenance and service tasks

- **Always switch off the tractor engine** before any cleaning, maintenance, service, and troubleshooting. **Wait until all rotating parts of the machine have come to a standstill.**
- Make sure that no unauthorized person can start the machine. Remove the ignition key of the tractor.
- Disconnect the power supply between the tractor and the machine before performing any maintenance and service tasks or before working on the electrical system.
- Check that the tractor with the machine is correctly parked. Park the spreader with an empty hopper on level, solid ground and secure it to prevent it from moving.
- Release the pressure from the hydraulic system before any maintenance and repair work.
- If work is to be carried out while the PTO shaft is rotating, make sure that nobody is near the PTO or the universal drive shaft.
- Never clear blockages in the spreader hopper by hand or with the foot: always use a suitable tool.
- 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.
- After driving the first 5 km, check the tightening torque of each individual wheel nut. See *9.16.4 Changing wheels*

## 3.9 Safety in traffic

Driving on public roads with the towed machine without attached spreading unit is prohibited (underride protection).

When traveling on public roads and tracks, the tractor with the towed machine and attached spreading unit must comply with the traffic regulations of the country in which it is operating. The owner and driver are responsible for compliance with these regulations.

### 3.9.1 Checks before driving

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

- Is the admissible overall weight complied with? Observe the admissible towing load and static load of the trailer unit as well as the admissible axle load.
- Check the tire pressures and the function of the machine brake system. Observe the admissible brake load and tire payload.
- Does the brake system setting correspond to the machine's load? See *Setting the manual brake force regulator*.
- Is the machine coupled correctly?
- Can fertilizer be lost while traveling?
  - Observe the filling level of the spreading material in the hopper.
  - The metering slides must be closed.
  - Switch off the electronic control unit.
- Is the hopper cover closed and secured against accidental opening?
- Do the lighting and labeling on the machine comply with the national regulations for operation on public roads? Make sure that warning signs, rear reflectors, and auxiliary lights are correctly placed.

### 3.9.2 Road travel with the machine

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

- Adapt your driving to the modified driving characteristics.
- When driving, always ensure that there is sufficient visibility. If vision is restricted (e.g., when reversing), another person is required to direct the driver.
- Observe the admissible maximum speed.
- Avoid sudden turns when driving uphill or downhill or across a slope. The change in the center of gravity may increase the danger of tipping. Special care is to be particularly applied when driving on uneven, soft ground (e.g., when entering fields, curbs).
- Passengers are prohibited on the machine during transport and operation.
- If necessary, attach a front weight at the tractor. For further information, please refer to the operator's manual of the tractor.

- Kingpin steering (optional equipment):
  - **TRAIL-Control must always be deactivated or switched off** on public streets and roads.
  - Before driving on a street, **TRAIL-Control must always be calibrated**. Otherwise, there is the risk of an accident since the machine can drive with an offset from the tractor's track if TRAIL-Control is not calibrated.

## 3.10 Safety equipment, warnings and instructions

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



The safety equipment is not available in all countries and depends on the regulations that apply where the machine is used.

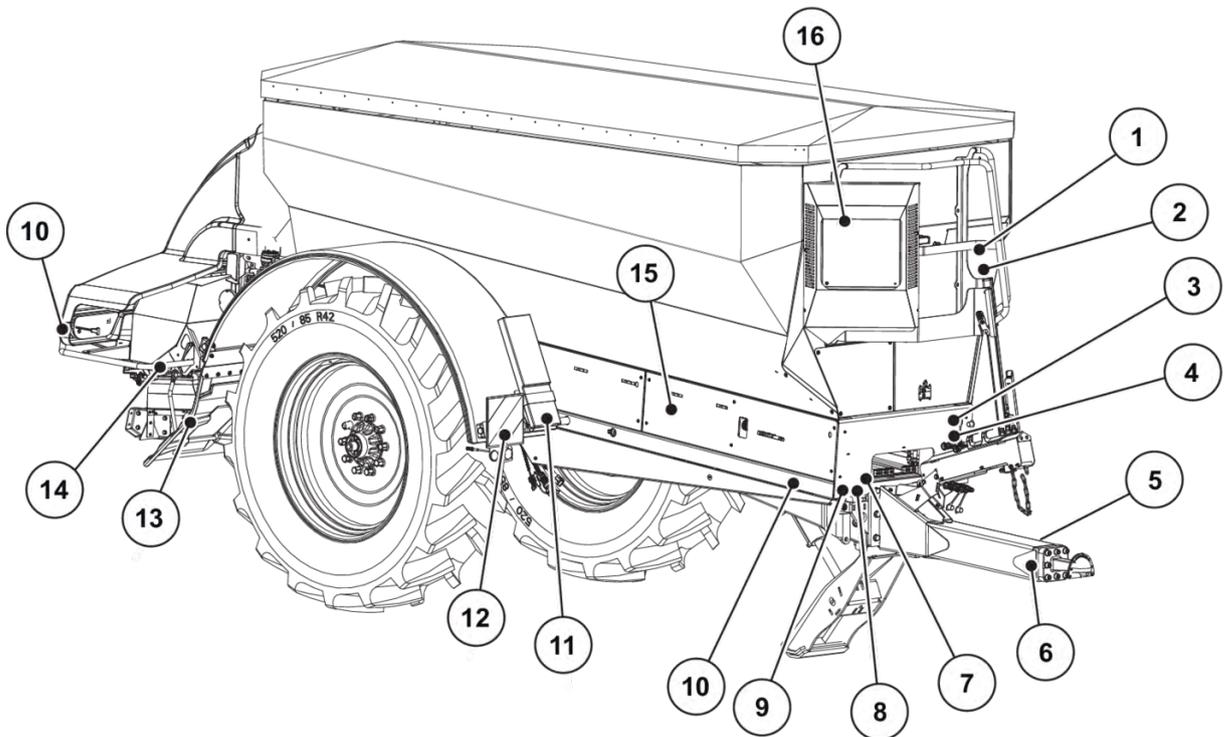
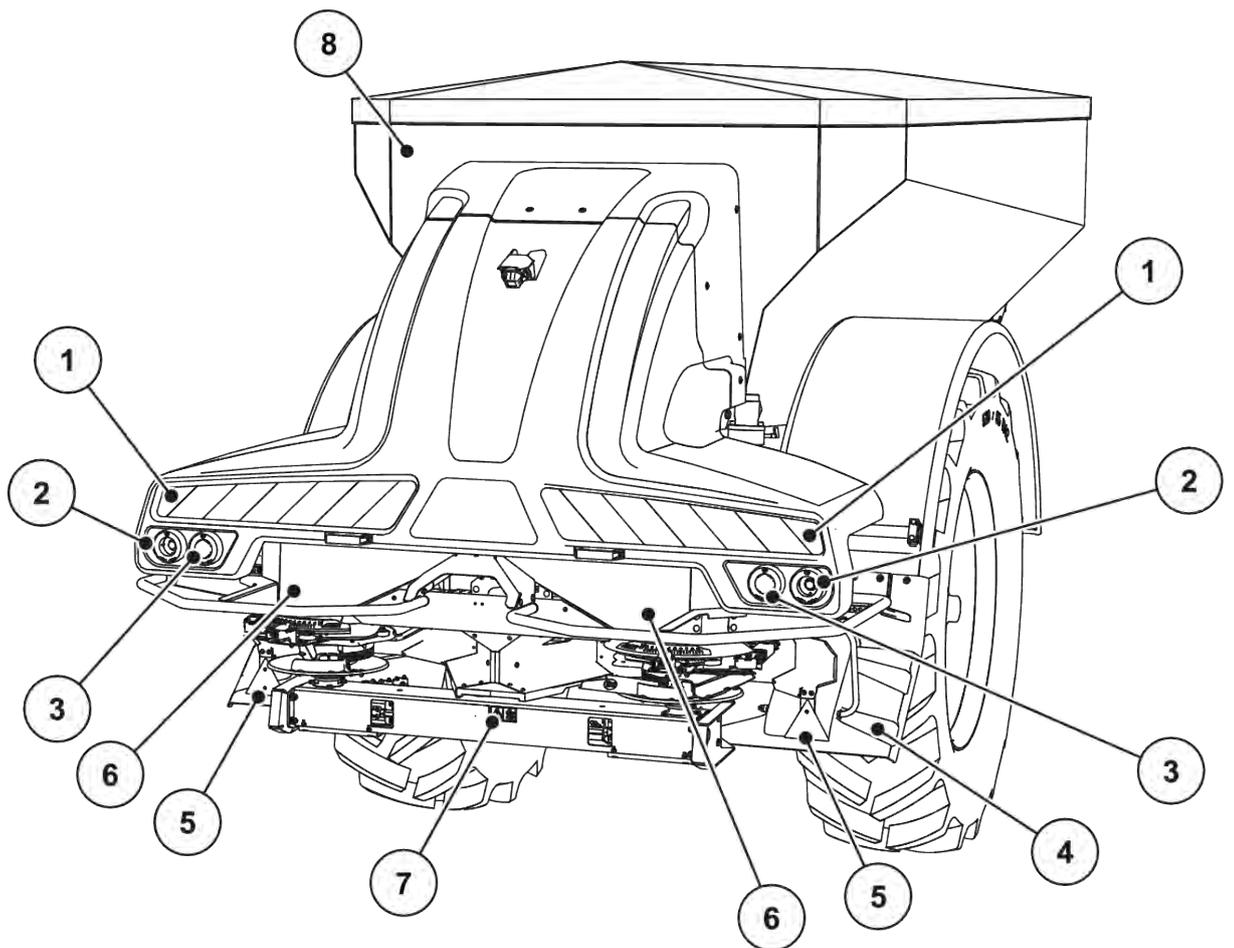


Fig. 2: Safety equipment, warning and instruction stickers, front

- |  |   |
|--|---|
| [1] Warning: passenger transport prohibited      | [10] Yellow side reflectors                               |
| [2] Warning: high-voltage electrical power lines | [11] Warning: Wheel chocks                                |
| [3] Warning: read operator's manual              | [12] Front lighting with warning sign                     |
| [4] Warning: remove ignition key                 | [13] Mud guard extension                                  |
| [5] Instructions: PTO speed                      | [14] Spreading unit nameplate                             |
| [6] Trailer unit nameplate                       | [15] Protective sheet for guide rollers and conveyor belt |
| [7] Nameplate and homologation sign              | [16] Warning: Hot surfaces                                |
| [8] Serial number AXENT 100.1                    |   |
| [9] White reflectors                             |   |



*Fig. 3: Safety equipment, warning and instruction stickers, rear*

- |  |  |
|--|--|
| [1] Warning sign                       | [6] Warning: Moving parts<br>Warning: Risk of crushing |
| [2] Tail light, brake light, indicator | [7] Warning: Ejection of material                      |
| [3] Tail light, brake light            | [8] Admissible maximum speed                           |
| [4] Mud guard extension                |  |
| [5] Red rear reflectors                |  |

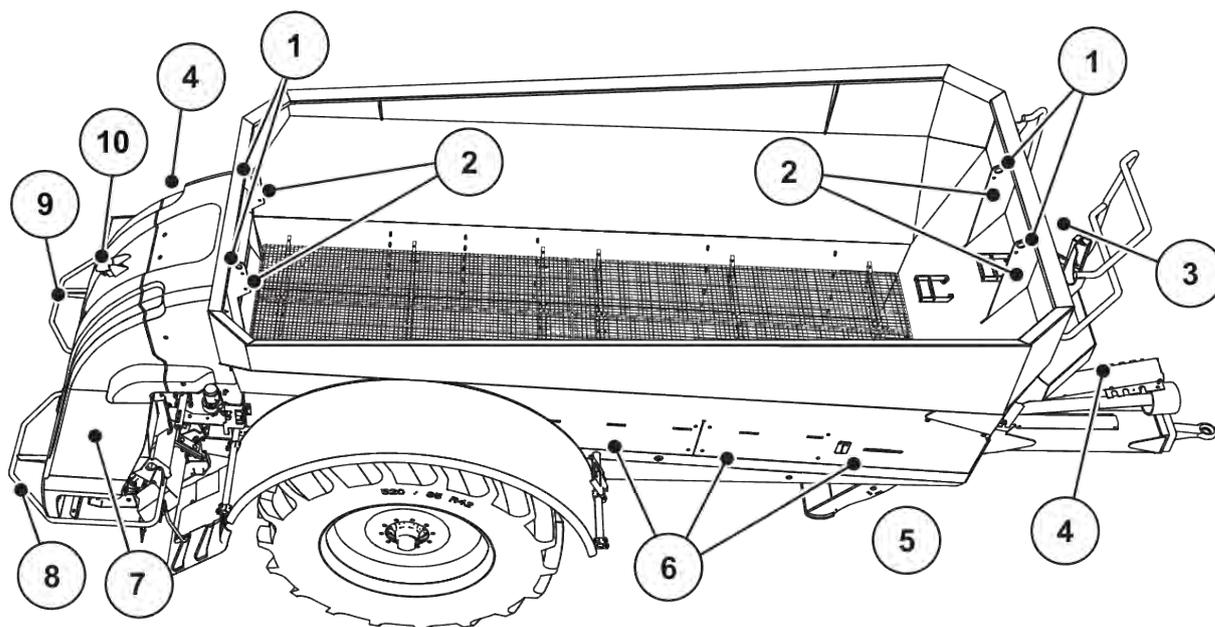


Fig. 4: Safety equipment, warning and instruction stickers, top

- |   |   |
|---|---|
| [1] Eyelets   | [7] Safety hood   |
| [2] Instructions: eyelet in hopper                            | Warning: crushing hazard between the tractor and the machine (behind the safety hood on the AXIS-PowerPack) |
| [3] Instructions: cleaning flap                               | Warning: remove ignition key  |
| [4] Warning: danger from hydraulic system                     | [8] Deflector bracket   |
| [5] Warning: risk of explosion under hopper (not illustrated) | [9] Warning: do not climb onto the machine  |
| [6] Warning: Moving parts (behind folding side covers)        | [10] Rear view camera   |

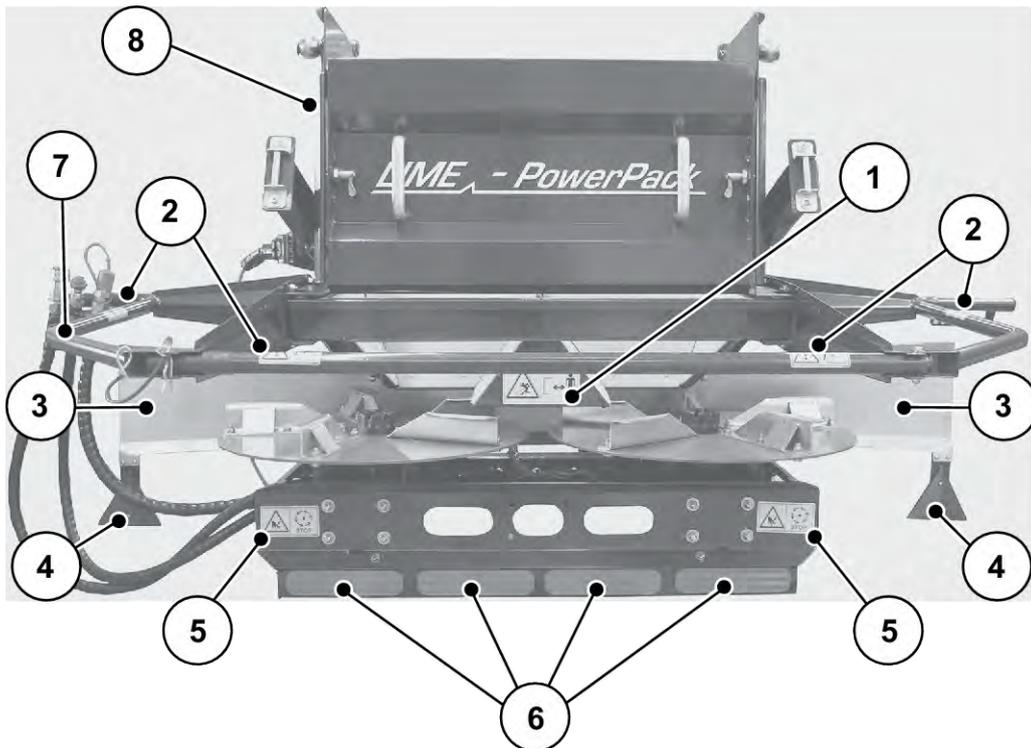


Fig. 5: Position of safety equipment, warnings and instruction stickers, on UNIVERSAL-PowerPack

- |  |  |
|--|--|
| [1] Warning: ejection of material          | [7] Deflector bracket  |
| [2] Warning: do not climb onto the machine | [8] Warning: Danger from hydraulic system                    |
| [3] Spreading disc cover                   | Warning: remove ignition key                                 |
| [4] Reflectors                             | Warning: crushing hazard between the tractor and the machine |
| [5] Warning: Moving parts                  |  |
| [6] Red reflectors                         |  |

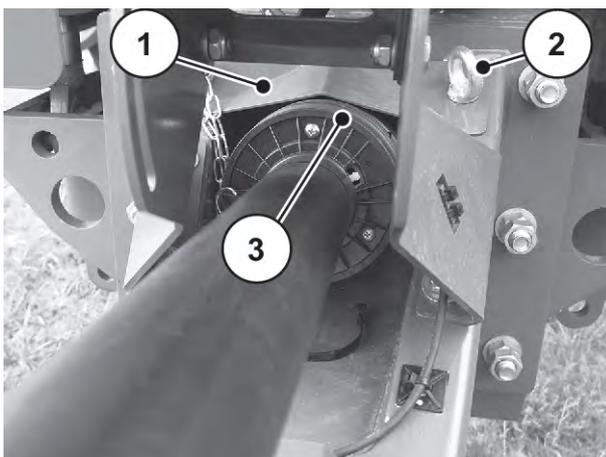


Fig. 6: Universal drive shaft

- |                      |                                 |
|----------------------|---------------------------------|
| [1] Protective sheet | [3] Universal drive shaft cover |
| [2] Eyelet           |                                 |

### 3.10.2 Function of safety equipment

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

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

Designation	Function
Universal drive shaft guard	Prevents body parts and clothing from being pulled into the rotating universal drive shaft.
Wheel chock	Prevents rolling of the machine
Safety hood	Prevents body parts from being caught and cut off by the comb roller Prevents body parts from being crushed by the pre-metering slides Prevents body parts from being caught by the agitator Contains the lighting system for the rear lighting with warning sign, tail light, brake light, warning indicator and direction indicator
Rear view camera	Supports reversing and prevents accidents due to insufficient view from the tractor cabin
Mud guard extension	Prevents persons from entering between the wheel and the spreading unit. See 3.5.4 <i>Hazard zone</i>
Side cover	Prevents body parts from being cut off by the conveyor belt and caught by the guide rollers.
Spreading disc cover	Prevents the ejection of fertilizer to the front (direction of tractor/workplace).
Deflector bracket	Protection against getting caught by the rotating spreading discs from behind and from the side.

### 3.11 Warning and instruction stickers

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

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

- ▶ Replace missing or illegible warning and instruction stickers immediately.

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



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

### 3.11.1 Warning stickers

Illustration	Description
	<p>Read the operator's manual and warnings. Read and observe the operator's manual and warnings before commissioning the machine. The operator's manual explains in detail how to operate the spreader and contains valuable information on operation, care and maintenance.</p>
	<p>Remove the ignition key. Switch off the engine and remove the key before carrying out maintenance and repair work. Disconnect the power supply</p>
	<p>Passenger transport prohibited Risk of slipping and injury. Do not climb on the machine during spreading and transport.</p>
	<p>Climbing prohibited Climbing on the deflector bracket is prohibited.</p>
	<p>Danger due to ejection of material Danger of injury to the whole body caused by ejected spreading material Before commissioning, instruct all people to leave the hazard zone (spreading range) of the machine.</p>
	<p>Danger due to moving parts Danger of cutting off body parts It is prohibited to reach into the hazard zone of rotating parts. Switch off the engine and remove the key before carrying out maintenance, repair and adjustment work.</p>

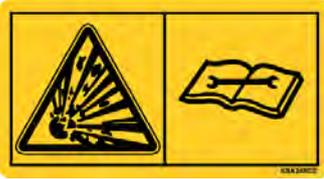
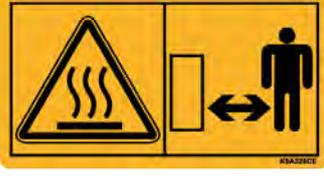
Illustration	Description
	<p>Crushing hazard Risk of crushing a hand. It is prohibited to reach into the hazard zone.</p>
	<p>Danger between the tractor and the machine There is a crushing hazard that may result in fatal injury for persons standing between the tractor and the machine when the tractor approaches or the hydraulic system is actuated. The tractor may brake too late or not at all because of carelessness or incorrect operation. Ensure that nobody is present in the hazard zone between the tractor and the machine.</p>
	<p>Danger from hydraulic system Hot fluid escaping under high pressure may cause serious injury. It may also penetrate the skin and cause infection. De-pressurize the hydraulic system before maintenance work. When checking for leakage, wear protective goggles and protective gloves at all times. In the event of injury caused by hydraulic oil, seek medical attention immediately! Observe the manufacturer documentation.</p>
	<p>Risk of explosion The nitrogen tank is located under the hopper behind the support stand cylinder The nitrogen tanks are under high pressure. Maintenance and repair only by authorized and qualified personnel.</p>
	<p>Risk of death due to live overhead lines Never park the machine under live overhead lines. Keep safety distance.</p>
	<p>Wheel chock When parking the machine, secure it with wheel chocks against rolling.</p>
	<p>Risk of injury due to hot surfaces Machine parts can become hot during operation. Stay away from hot surfaces during operation. Before maintenance, repair and adjusting work, switch the engine off and wait until the machine cools down.</p>

Illustration	Description
	<p>Ban on splash water</p> <p>It is prohibited to splash water into the housing of the job computer and other electronic components.</p>

### 3.11.2 Instruction stickers

Illustration	Description
	<p>Rated speed of the PTO shaft</p> <p>The rated speed of the PTO shaft is 750 rpm.</p>
	<p>Eyelet in the hopper</p> <p>Labeling of the bracket for fixing the hoisting gear</p>
	<p>Lubrication point</p>

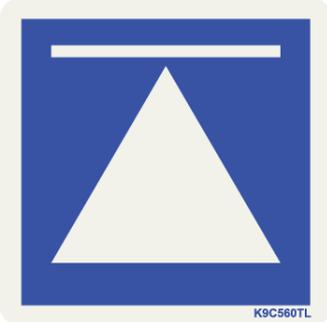
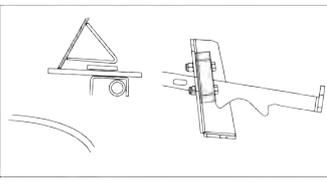
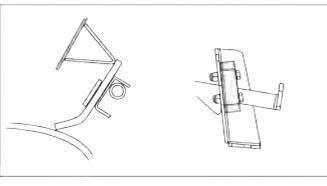
Illustration	Description
	Application point for the lifting jack
	Color assignment at the handles of the hydraulic hoses Gray: Hydraulic hoses for the machine and hopper tarpaulin drive Red: Support stand.
	The cleaning flap is open.
	The cleaning flap is closed.
	Admissible maximum speed
	Admissible maximum speed

Illustration	Description
	Admissible maximum speed
	Trailer unit nameplate
	AXIS-PowerPack nameplate
	UNIVERSAL-PowerPack nameplate

### 3.12 Name plate and machine marking



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

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

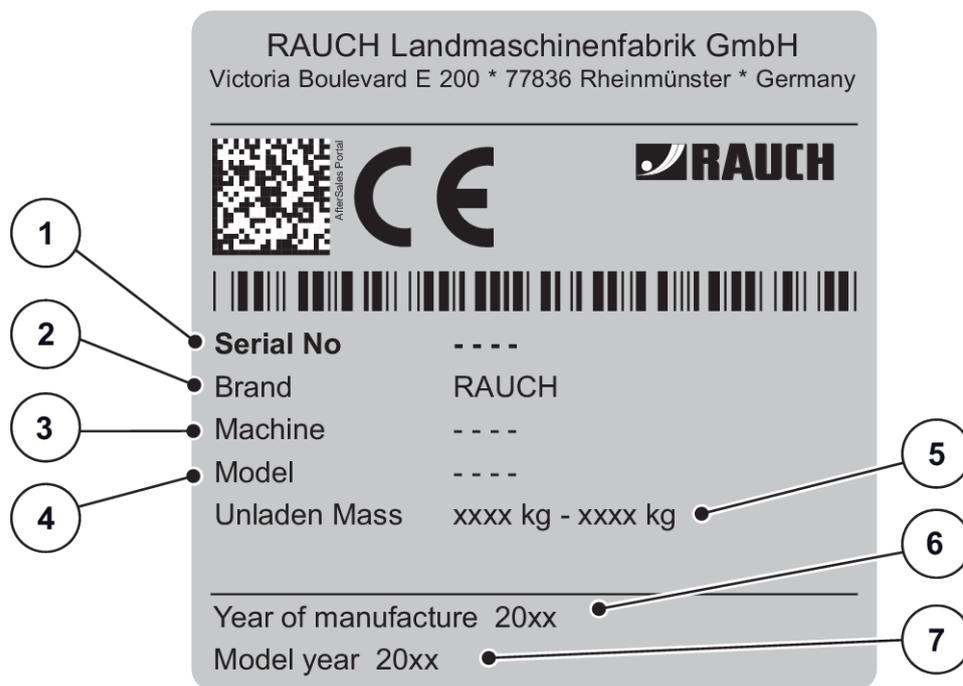


Fig. 7: Nameplate

- [1] Serial number
- [2] Manufacturer
- [3] Machine
- [4] Type

- [5] Empty weight
- [6] Year of construction
- [7] Model year

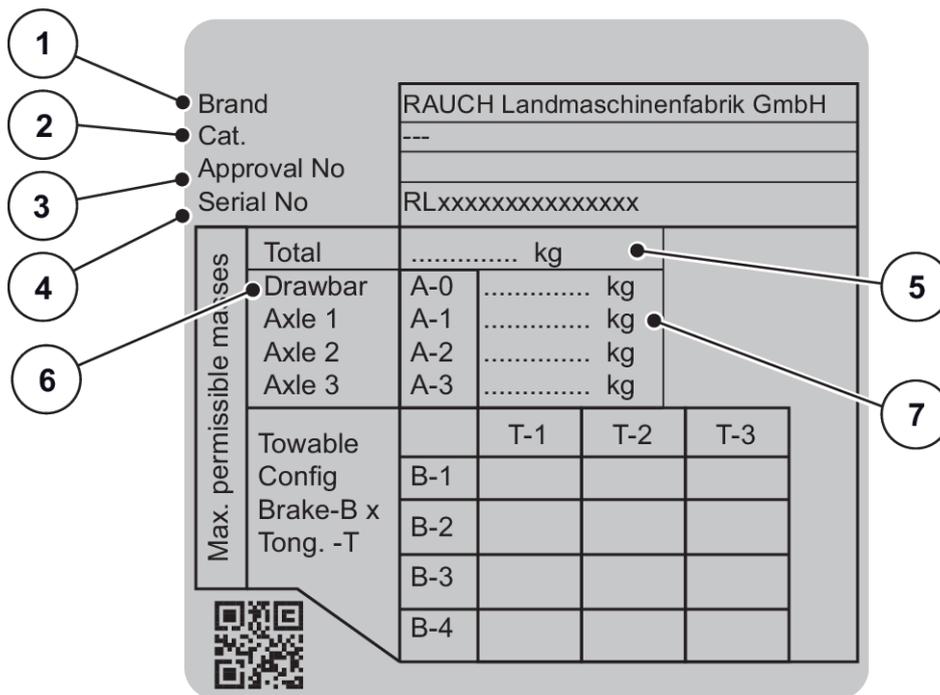


Fig. 8: Homologation sign

- [1] Manufacturer
- [2] Category
- [3] EU type approval number
- [4] Serial number
- [5] Admissible overall weight
- [6] Admissible static load
- [7] Admissible axle load

### 3.13 Lighting system, front, side, and rear reflectors

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

The machine is factory-equipped with a lighting system and front, rear, and side lighting (for attachment to the machine, please refer to *Fig. 3 Safety equipment, warning and instruction stickers, rear*).

## 4 Machine data

### 4.1 Manufacturer

RAUCH Landmaschinenfabrik GmbH  
Victoria Boulevard E 200  
77836 Rheinmünster  
Germany

Phone: +49 (0) 7229 8580-0

Fax: +49 (0) 7229 8580-200

#### **Service Center, Technical Customer Service**

RAUCH Landmaschinenfabrik GmbH  
PO box 1162  
Email: [service@rauch.de](mailto:service@rauch.de)  
Fax: +49 (0) 7229 8580-203

### 4.2 Description of the machine

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

The machine consists of the following assemblies.

- Hopper with frame
- Conveyor belt and outlet elements
- Towing eye or ball coupling
- Wheels and brake system
- Coupling points for spreading unit attachment
- Fertilizer spreading unit or universal spreading unit
- Safety equipment - See 3.10.1 *Position of safety equipment as well as warning and instruction stickers*



Some models are not available in all countries.

## 4.2.1 Assembly overview

### ■ Basic machine

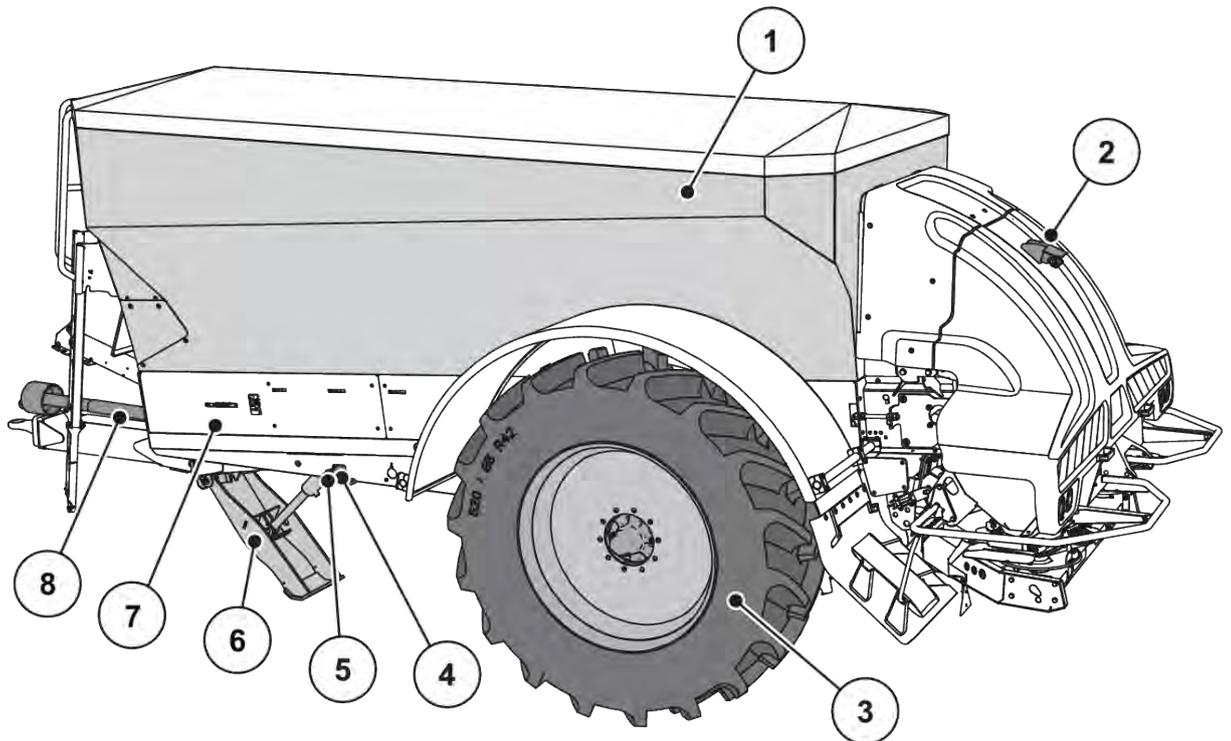
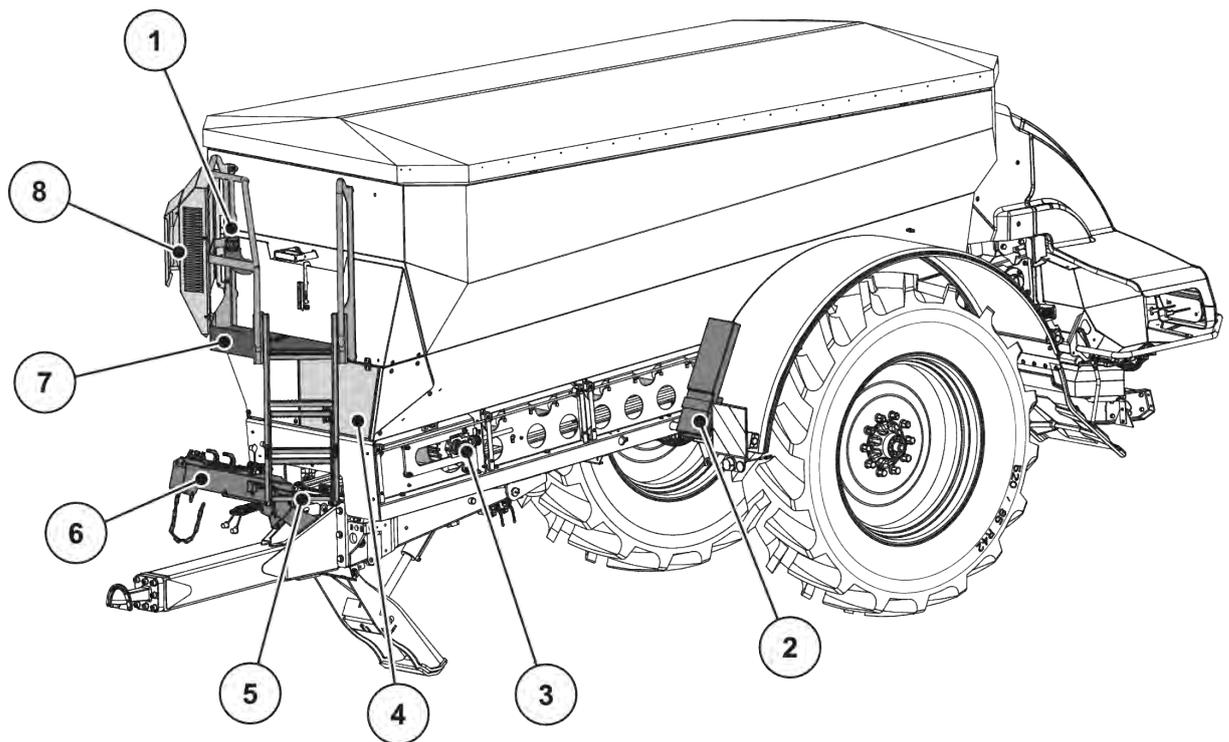


Fig. 9: Assembly overview: Front

- |                      |                           |
|----------------------|---------------------------|
| [1] Hopper           | [5] Operating brake       |
| [2] Rear view camera | [6] Support stand         |
| [3] Wheel            | [7] Folding side cover    |
| [4] Parking brake    | [8] Universal drive shaft |



*Fig. 10: Assembly overview: Front*

- |                                   |                         |
|-----------------------------------|-------------------------|
| [1] Oil tank filling screw        | [5] Steps               |
| [2] Wheel chock transport bracket | [6] Hose and cable tray |
| [3] Conveyor belt                 | [7] Platform            |
| [4] Maintenance flap              | [8] Oil chiller         |

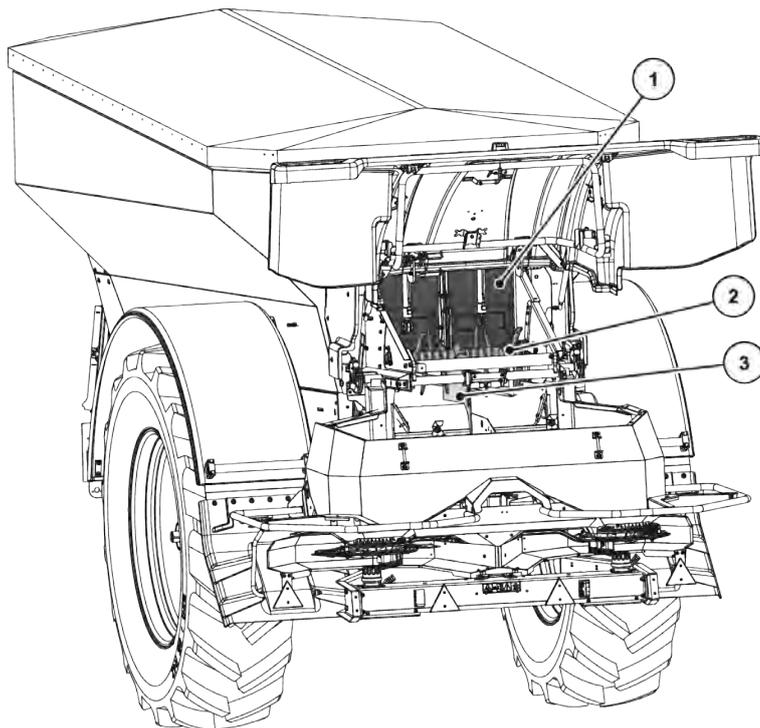


Fig. 11: Assembly overview: Rear

[1] Pre-metering slide  
[2] Comb roller

[3] Removable partition plate



This assembly is available as standard or as an option depending on the machine and the market.

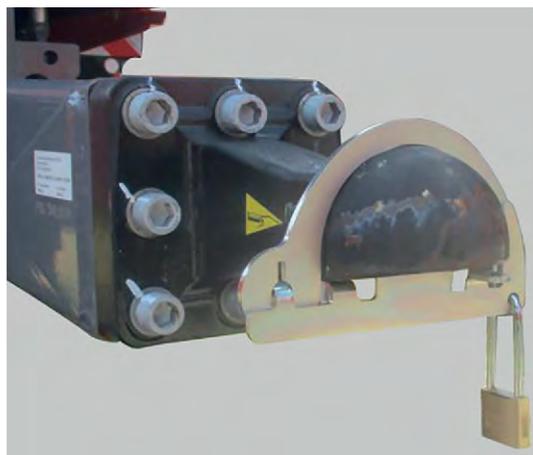
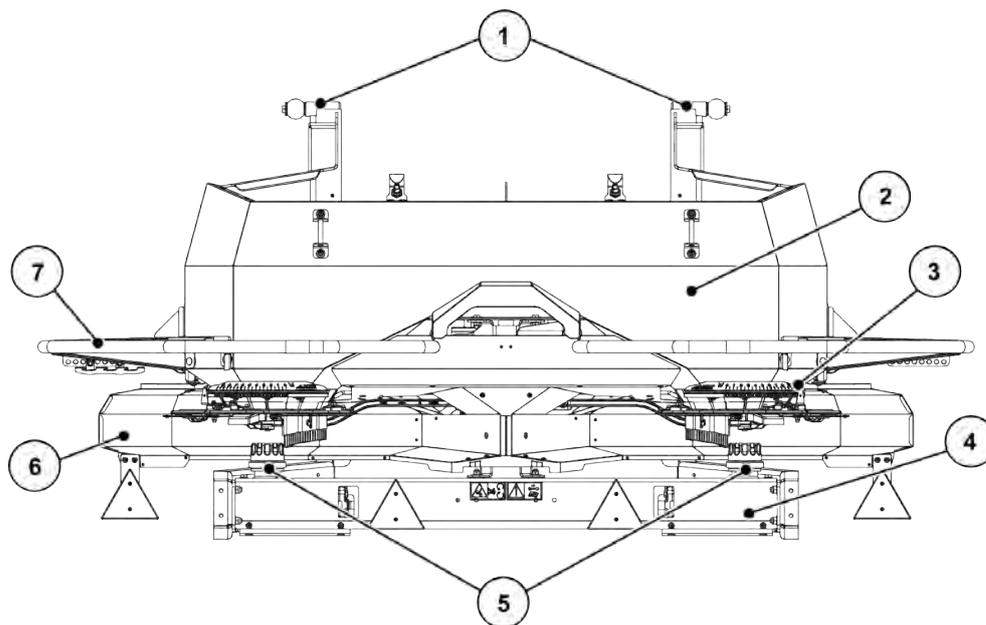


Fig. 12: Securing to prevent unauthorized use on trailer units

■ Spreading unit AXIS PowerPack



*Fig. 13: Assembly overview of the AXIS-PowerPack fertilizer spreading unit*

- |                                  |                          |
|----------------------------------|--------------------------|
| [1] Coupling points              | [5] Cap nuts             |
| [2] Hopper                       | [6] Spreading disc cover |
| [3] Drop point adjustment center | [7] Deflector bracket    |
| [4] Spreading disc drive         |                          |

### ■ Spreading unit UNIVERSAL PowerPack

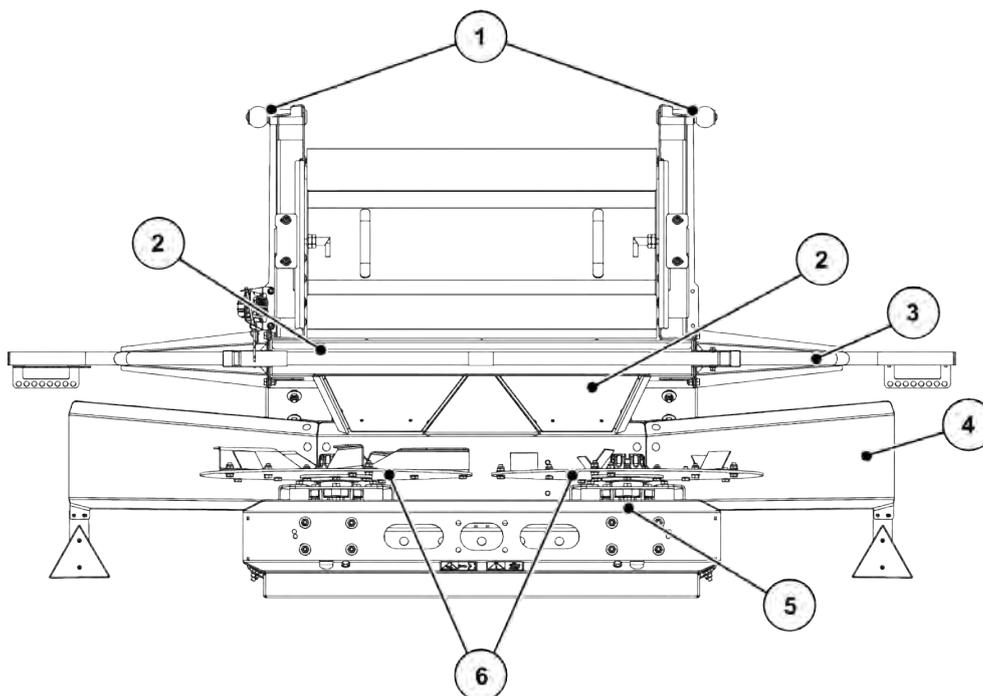


Fig. 14: Overview of UNIVERSAL-PowerPack universal spreading unit components

- |                          |                          |
|--------------------------|--------------------------|
| [1] Coupling points      | [4] Spreading disc drive |
| [2] Funnel               | [5] Spreading discs      |
| [3] Spreading disc cover | [6] Deflector bracket    |

## 4.3 Technical specifications



Some models are not available in all countries.

Version	Steering axle	Rigid axle
Track width 2 m to 2.25 m	x	x
Track width 2.4 m		x
With towing bar for bottom hitching	x	x
With towing bar for top hitching	x	x
3m axle for bottom hitching <sup>1</sup>		x

<sup>1)</sup> The following applies to machines without EU type approval

The large area spreader can be equipped with the following spreading units:

- AXIS-PowerPack for fertilizer spreading
- UNIVERSAL-PowerPack for spreading dry, organic fertilizers and lime

### 4.3.1 Technical data for the basic equipment

#### ■ Dimensions

Data	AXENT 100.1
Total width	2.55 m <sup>2</sup>
Height	3.15 m
Clearance (to frame bottom edge)	0.75 m
Hopper capacity	9400 l
Filling level	2.95 cm
Length of trailer unit to vehicle end (with attached fertilizer spreader)	Approx. 7.70 m depending on attached spreading unit
Length of trailer unit to axle	
With towing bar for top hitching	4.60 m
With towing bar for bottom hitching	5.00 m
PTO speed	
min.	750 RPM
max.	1000 RPM
Conveying rate (conveyor belt) <sup>3</sup>	max. 1600 kg/min
Hydraulic pressure	max. 280 bar
Hydraulic oil volume	max. 100 l/min
Track width <sup>4</sup>	2.00 m to 2.40 m depending on equipment variant
Standard tires <sup>5</sup>	520/85 R42

<sup>2)</sup> Depending on the tires and axle type, up to 3.0 m (EU type approval) or up to 3.70 m (without EU type approval) on the wheels

<sup>3)</sup> Max. conveying rate depending on fertilizer type

<sup>4)</sup> Different track width on request

<sup>5)</sup> Other tires are available as an option

Data	AXENT 100.1
Sound pressure level <sup>6</sup> (measured in the closed driver's cab of the tractor)	75 dB(A)

### ■ Weights and loads



The empty weight (mass) of the machine varies depending on the working width, the equipment and extension combination.



Only for machines with EU type approval.

The technical specifications of the Certificate of Conformity (CoC) apply.

Data	AXENT 100.1 With EU type approval	AXENT 100.1 Without EU type approval
<b>Admissible overall weight = admissible axle load</b> For towed machines with one axle in the EU	10000 kg	-
<b>Admissible overall weight</b>		
For top hitching trailer unit and front axle position	-	12000 kg
For bottom hitching trailer unit and front axle position	-	15000 kg
For bottom hitching trailer unit and rear axle position	-	13000 kg
AXIS-PowerPack fertilizer spreading unit weight	approx. 350 kg	approx. 350 kg
UNIVERSAL-PowerPack universal spreading unit weight	approx. 300 kg	approx. 300 kg
<b>Empty weight AXENT 100.1 (without spreading unit)</b>	4250 kg	4250 kg
<b>Fertilizer payload<sup>7</sup></b>		
For top hitching trailer unit and front axle position	-	7400 kg

<sup>6)</sup> Since the sound pressure level of the machine can only be determined when the tractor is running, the actual measured value is greatly dependent on the type of tractor being used.

<sup>7)</sup> The exact payload depends on the machine's equipment (steering axle and rigid axle, brake system, etc.).

Data	AXENT 100.1 With EU type approval	AXENT 100.1 Without EU type approval
For bottom hitching trailer unit and front axle position	-	10400 kg
For bottom hitching trailer unit and rear axle position	-	8400 kg
<b>Admissible static load</b> of the trailer unit during top hitching	2000 kg	2000 kg
<b>Admissible static load</b> of the trailer unit during bottom hitching	3000 kg	3000 kg

■ Center of gravity



The position of the center of gravity depends on the coupling type, the axle position as well as the filling level in the hopper.

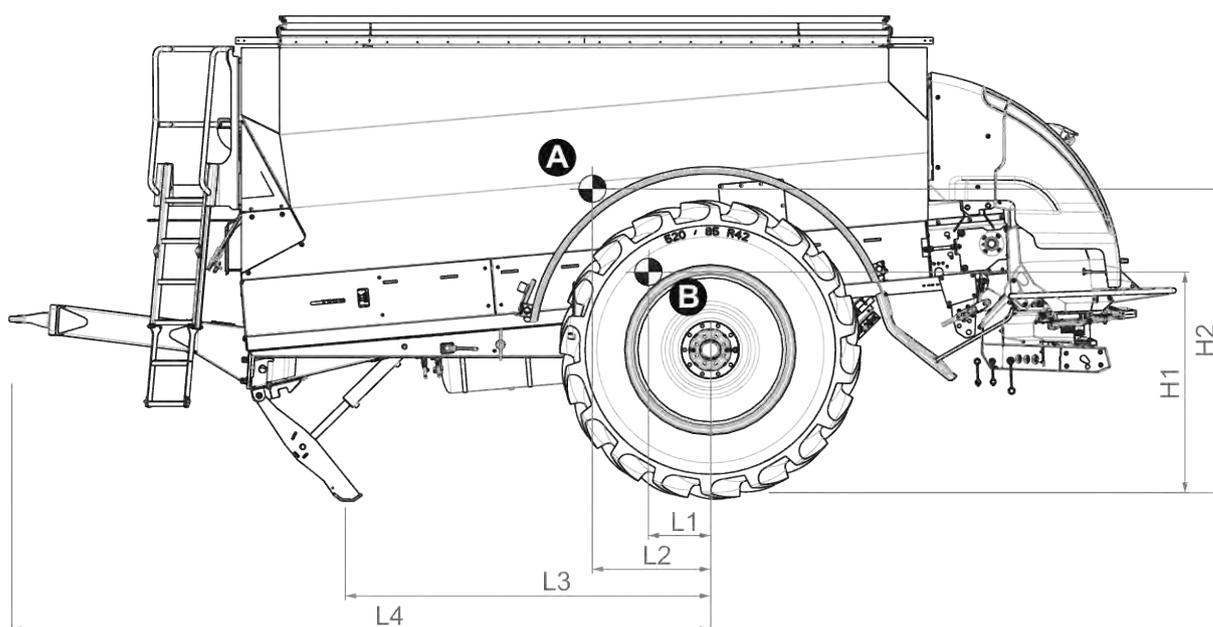


Fig. 15: Center of gravity during top hitching

[A] Center of gravity with full hopper

[B] Center of gravity with empty hopper

Length	Bottom hitching (mm)
L1	337
L2	721
L3	2390

Length	Bottom hitching (mm)
L4	4590
H1	1460
H2	2010

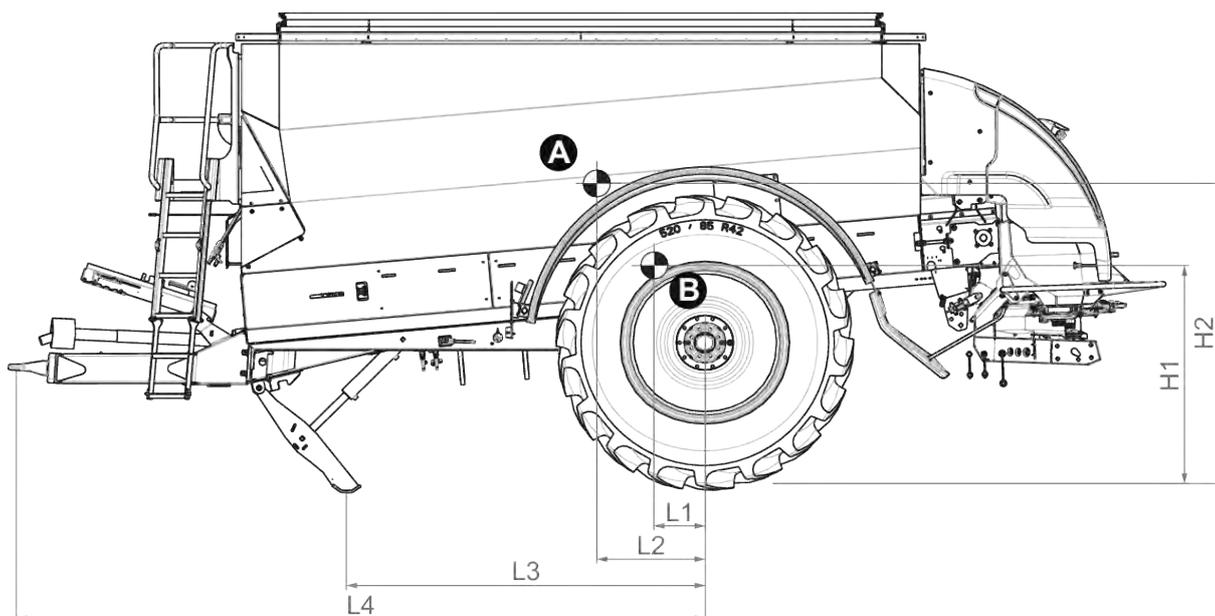


Fig. 16: Centre of gravity position for bottom hitching, front axle position

[A] Center of gravity with full hopper

[B] Center of gravity with empty hopper

Length	Bottom hitching (mm)
L1	337
L2	721
L3	2390
L4	4590
H1	1460
H2	2010

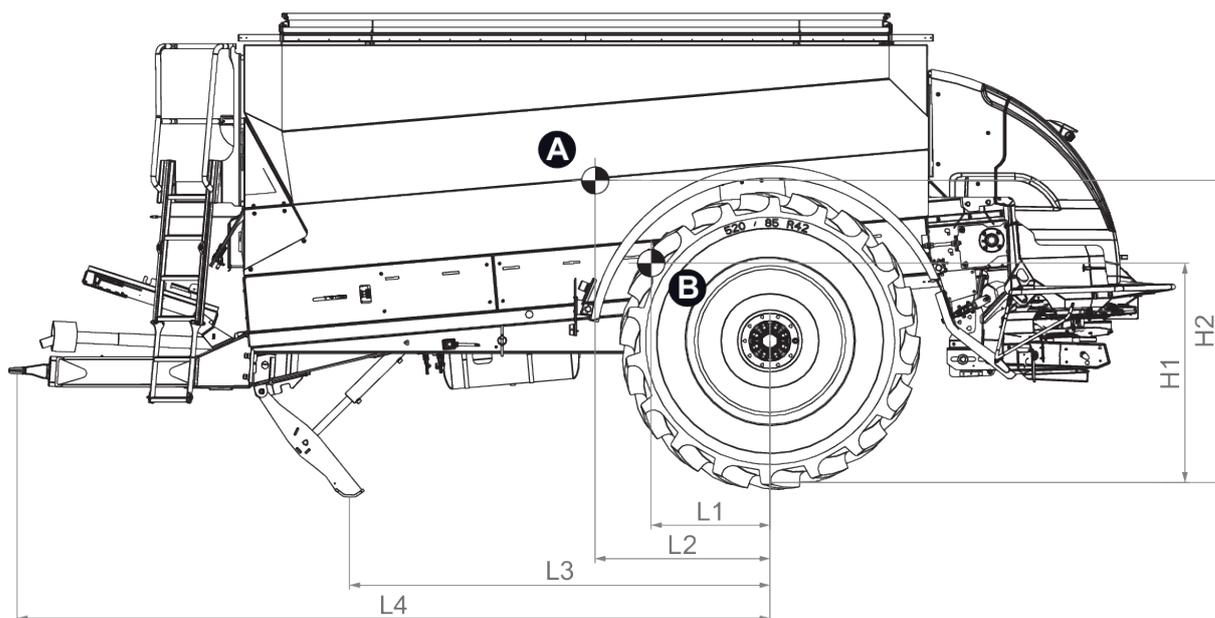


Fig. 17: Centre of gravity position for bottom hitching, rear axle position

[A] Center of gravity with full hopper

[B] Center of gravity with empty hopper

Length	Bottom hitching (mm)
L1	727
L2	1111
L3	2780
L4	4980
H1	1460
H2	2020

### 4.3.2 Technical data of fertilizer spreading unit

Data	AXIS-PowerPack
Overall width with deflector bracket	2.55 m
Working width <sup>8</sup>	18 - 50 m
Hopper capacity	Approx. 200 l
Mass flow <sup>9</sup>	500 kg/min

<sup>8</sup>) Working width depending on fertilizer type

<sup>9</sup>) Max. mass flow depending on fertilizer type

Data	AXIS-PowerPack
Hydraulic pressure	200 bar
Hydraulic performance	60 l/min

### 4.3.3 Technical data of universal spreading unit

Data	UNIVERSAL PowerPack
Overall width with deflector bracket	2.50 m
Working width <sup>10</sup>	Up to 18 m
Spreading disc speed	700 rpm
Comb roller speed	50 rpm
Mass flow <sup>11</sup>	1600 kg/min
Hydraulic pressure	250 bar
Hydraulic performance	60 l/min

### 4.3.4 Wheels and tires



Some models are not available in all countries.

The load index indicates the load bearing capacity for tires.

The speed category indicates the maximum permissible road speed for tires.

The equipment on the machine determines the speed category and load bearing capacity required for the tires.

The load bearing capacity of a tire varies depending on the operating road speed and inflation pressure of the tire.

For machines with air brakes and a 10 t axle load:

- Speed category
  - A8 for 40 km/h
- Load index (Li)
  - min. 164 (for load bearing capacity 5000 kg per wheel)

<sup>10)</sup> Working width depending on fertilizer type and lime type

<sup>11)</sup> Max. mass flow depending on fertilizer and lime type

<b>Speed category</b>	A5	A6	A7	A8
<b>Maximum speed in km/h</b>	25	30	35	40

<b>Load Index</b>	164	165	166	167	168	169	170	171	172	173
<b>Tire load bearing capacity in kg</b>	5000	5150	5300	5450	5600	5800	6000	6150	6300	6500



The air pressure can vary widely by manufacturer.

- Observe the air pressure depending on the tire manufacturer's load bearing capacity.

## 4.4 Special equipment



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



Some models are not available in all countries.



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

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

### 4.4.1 Optional equipment for the large area spreader

- Towing bar for towing bar (2,000 kg static load)
- Ball-type coupling device with 80 FI ball for high and low drawbar
- FI-D 50 towing eye for low drawbar
- FI-D 40 towing eye for high drawbar
- Universal drive shaft 1 3/8", 6-piece; universal drive shaft 1 3/8", 21-piece; universal drive shaft 1 3/4", 6-piece; universal drive shaft 1 3/4", 20-piece
- Weighing unit
- Kingpin steering

#### 4.4.2 Optional equipment for the universal spreading unit

- UNIVERSAL-PowerPack universal spreading unit with comb roller
- Granulate disc parts set for UNIVERSAL-PowerPack with S4 spreading disc set
- Vibrator motor for better sliding when spreading

The UNIVERSAL-PowerPack universal spreading unit is factory-equipped with U2 spreading discs. These spreading discs enable dry organic fertilizers and lime to be spread over a working width of 15 m.

#### 4.4.3 Optional equipment for the fertilizer spreading unit

##### ■ AXMAT

The AXMAT optional equipment is used to monitor fertilizer spreading during spreading operation. The cross-distribution on the spreading side is optimized based on control values by adjusting the respective drop point.



Fig. 18: AXMAT optional equipment

##### ■ Practical test set (PPS 5)

For checking the distribution across the field.

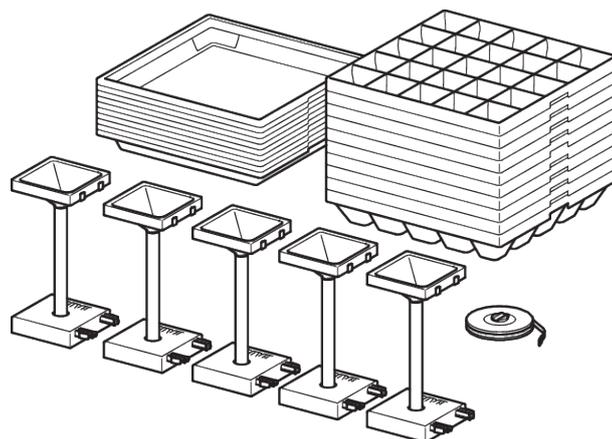
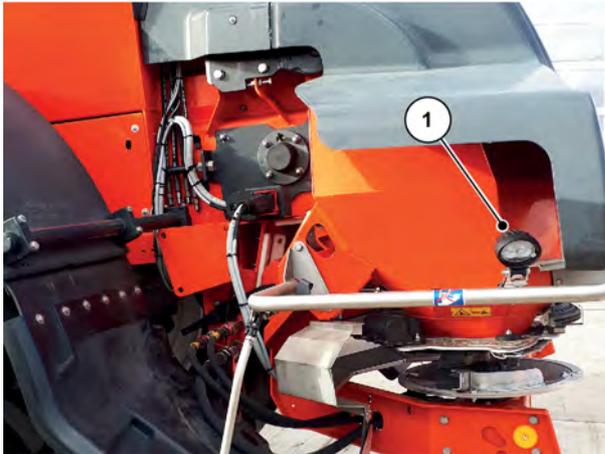


Fig. 19: PPS 5 optional equipment

### ■ Operating lights



*Fig. 20: SpreadLight optional equipment*

SpreadLight [1] optional equipment supports the user in visually checking the individual spreading functions during spreading operation in the dark.

The SpreadLight special equipment consists of an intensive LED light and is targeted onto the spreading fans. Potential incorrect settings or blocks in the metering slides are immediately recognized.

Additionally, they allow the user to more quickly react to objects or danger zones in the external spreading area which are hard to detect, especially in the event of large working widths, when it is dark.

### ■ GSE 60 limited border spreading unit

The GSE 60 optional equipment limits the spreading width (either right or left) to the range between approx. 0 m and 3 m from the center of the tractor track to the outer field edge. The metering slide that points to the field border is closed.

- Fold the limited border spreading system downwards for limited border spreading.
- The limited border spreading unit must be folded up again before two-sided spreading.

## 5 Transport without tractor

### 5.1 General safety instructions

#### **NOTICE!**

##### **Property damages caused by incorrect transport**

The eyelets in the hopper are **not** suitable for lifting the overall machine. They are only intended for transport of the hopper during production and assembly.

Non-compliance leads to damage at the machine.

- ▶ Make sure to observe the manufacturer's transport instructions.

##### **Read the following instructions before transporting the machine:**

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

### 5.2 Loading and unloading, parking

- ▶ Determine the weight of the machine.
  - ▷ Check the information on the nameplate and in chapter 4.3 *Technical specifications*.
  - ▷ If applicable, also take the weight of mounted optional equipment into account.
- ▶ Carefully move the machine on or off the loading platform with a suitable tractor.
- ▶ Carefully place the machine on the loading platform of the transportation vehicle or on solid ground.

## 6 Commissioning

### 6.1 Accepting the machine

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

The standard equipment includes:

- 1 AXENT 100.1 large area spreader
- 1 AXENT 100.1 operator's manual
- 1 ISOBUS cable
- 1 feeder mesh in hopper
- 2 wheel chocks
- 1 AXIS-PowerPack fertilizer spreading unit or 1 UNIVERSAL-PowerPack universal spreading unit
- 1 wide-angle universal drive shaft (including operator's manual)
- 2 levers for the ball valves of the towing bar suspension
- 1 AXENT ISOBUS electronic machine control unit (including operator's manual)

Please also check any additionally ordered optional equipment.

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



When receiving the machine, check that attached components are correctly and tightly positioned. The right-hand and left-hand spreading discs must be mounted facing the direction of travel.

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

#### **DANGER!**

##### **Risk of accident without spreading unit**

If the machine is driven on public roads without spreading unit, there is a risk of an accident.

Severe personal or fatal injury may occur.

- ▶ The spreading unit serves as rear underride protection.
- ▶ Drive the machine on public roads **only** with the spreading unit attached.

### 6.2 Information on registration and operating licence

Please observe the applicable road traffic regulations of the respective country or the location of use of the machine. If required, the importing body registers the machine at the respective registration office for traveling on public roads.

- For additional identification (warning sign, lighting) please contact your dealer or importer.

## 6.3 Tractor requirements

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

- Tractor engine power: At least 180 HP
- Admissible static load:
  - Top hitching: 2,000 kg, ball coupling K80 or towing eye (diameter 40)
  - Bottom hitching: 3,000 kg, ball coupling K80 or hitch coupling
- 1 double-acting control unit for the support stand
- 1 double-acting control unit for the hopper cover
- Universal drive shaft connection:
  - 1 3/8 inches, 6-part, 1000 rpm or
  - 1 3/4 inches, 20-part
- Operating voltage: 12 V, must be ensured even when there are multiple consumers
- ISOBUS connection to ISO 11 783
- 7-pin socket for the lighting system
- Connections for the pneumatic brake system (control line and supply line) depending on equipment variant
- 1 hydraulic connection as per ISO 5676 depending on equipment variant

## 6.4 Adjusting the end stop of the steering axle to the wheel size

The steering axle of the machine is factory-equipped with the correct number of distance washers. Therefore, the steering angle stop is preset.



If you want to equip your machine with a different track or wheel size, the number of distance washers must be adapted.

- Please consult your specialist workshop.
- Only the specialist workshop is permitted to perform retrofitting work on the steering axle.

## 6.5 Mounting the universal drive shaft on the machine

### **WARNING!**

#### **Risk of injury and damage to property if an unsuitable universal drive shaft is used**

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

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

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

- ▶ Check the mounting position.  
The drive shaft end that is marked with a tractor symbol must point to the tractor.
- ▶ Untighten the eyelet [1] and bolt [2] of the protective sheet at the universal drive shaft panel with the adjustment lever.
  - ▷ Adjustment lever position, see 1 *Adjustment lever (left in direction of travel, hose bracket)*
- ▶ Disassemble the protective sheet.

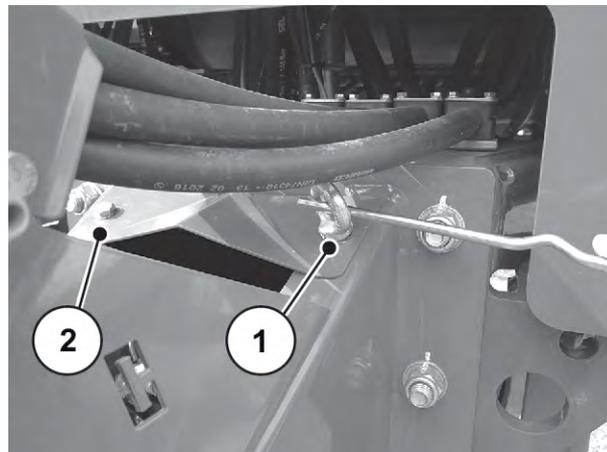


Fig. 21: Removing the protective sheet

- ▶ Remove the spigot protection and grease the transmission spigot.

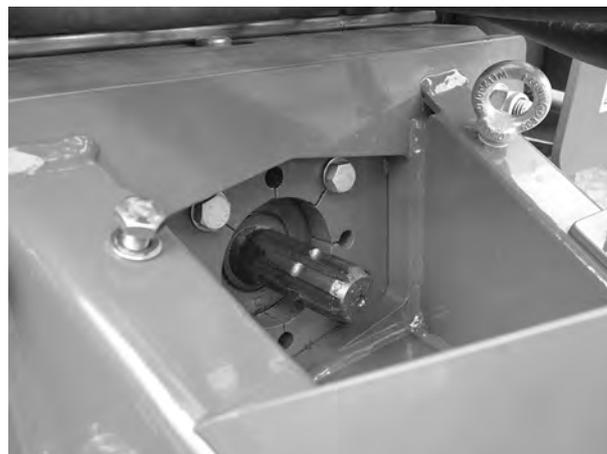


Fig. 22: Greasing the transmission spigot

- ▶ Press the sliding pin [1].
- ▶ Slide the universal drive shaft on the transmission spigot until the sliding pin engages in the annular groove.
- ▶ Release the sliding pin.

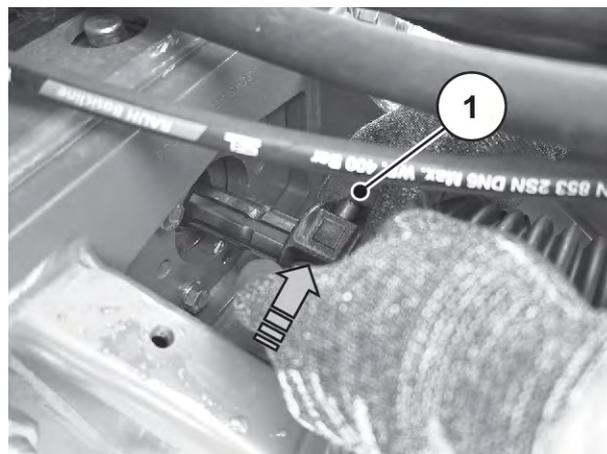


Fig. 23: Pushing the universal drive shaft onto the transmission spigot

- ▶ Apply the protective sheet [1].
- ▶ Apply 2 washers.
- ▶ Tighten the eyelet, screw with the adjustment lever at the protective sheet.

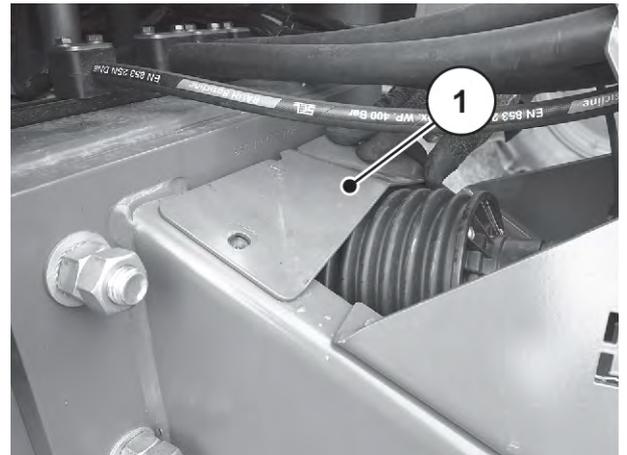


Fig. 24: Assemble the protective sheet

- ▶ Secure the safety chain through the bore of the eyelet.



Fig. 25: Securing the safety chain

**Instructions for dismounting:**

- Dismount the universal drive shaft in reverse order of mounting.

## 6.6 Installing the machine at the tractor

### 6.6.1 Preconditions

**⚠ DANGER!**

**Danger to life due to unsuitable tractor**

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

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

 **DANGER!**

**Danger to life due to carelessness or incorrect operation**

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

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

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

 **WARNING!**

**Risk of injury and property damage due to excessive static load**

Exceeding the maximum admissible static load of the drawbar compromises the steering and braking function of the machine and the tractor.

Persons may be injured. This may lead to severe damage at the machine, the tractor or to the environment.

- ▶ Observe the admissible static load of the tractor.
- ▶ Observe the admissible static load of the trailer equipment.

**Check the following specific preconditions:**

- Are both the tractor and the machine safe to operate?
- Does the tractor comply with the mechanical, hydraulic, and electrical requirements?
- Does the tractor comply with the requirements defined by the technical data of the towed machine (towed load, static load, etc.)?
- Is the machine securely positioned on level and solid ground?
- Is the machine properly secured against rolling?
- Is the ISOBUS terminal installed in the tractor and functional?
- Is the combination of the connection equipment (towing eye - pin coupling or coupling bracket - ball coupling) admissible?

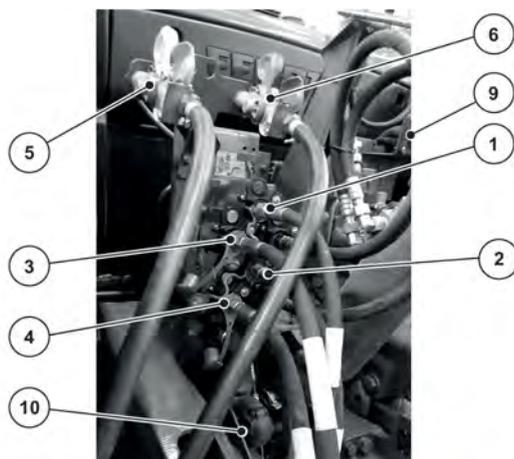


Fig. 26: Order of connecting the machine lines to the tractor

- |   |  |
|---|--|
| [1] Support stand hydraulic line                                | [7] Hydraulic line (hydraulic brake) - not illustrated                   |
| [2] Support stand hydraulic line                                | [8] Breakaway coupling release chain (hydraulic brake) - not illustrated |
| [3] Hopper cover hydraulic line                                 | [9] ISOBUS connector   |
| [4] Hopper cover hydraulic line                                 | [10] Lighting connector  |
| [5] Pneumatic control line (pneumatic brake)                    |  |
| [6] Pneumatic line of the compressed air tank (pneumatic brake) |  |

- ▶ Position the tractor at the machine.
- ▶ Switch off the tractor engine. Remove the ignition key.

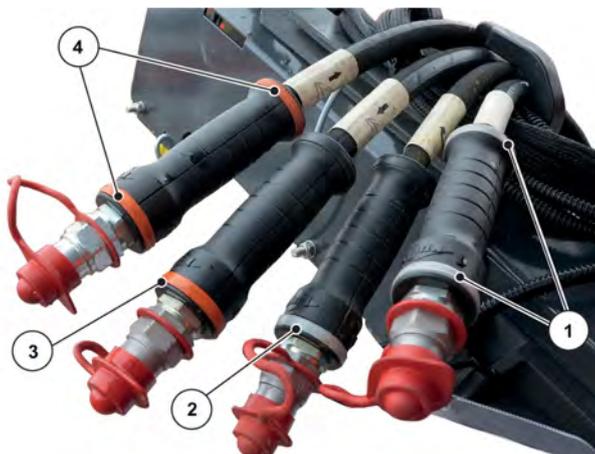


Fig. 27: Marking of the hydraulic hoses

- |  |  |
|--|--|
| [1] Hose with 2 gray rubber bands on the handle: Open hopper cover | [3] Hose with 1 gray rubber band on the handle: Fold out support stand |
| [2] Hose with 1 gray rubber band on the handle: Close hopper cover | [4] Hose with 2 red rubber bands on the handle: Fold in support stand  |

- ▶ Connect hydraulic lines [3] and [4] of the support stand to the hydraulic control unit of the tractor. See Fig. 26
- ▶ Connect hydraulic lines [1] and [2] of the hopper cover to the hydraulic control unit of the tractor.

## 6.6.2 Ball coupling

### Variant A

- ▶ Start the tractor.
- ▶ Position the tractor at the machine.
- ▶ Precisely position the ball coupling of the tractor under the coupling bracket of the machine.
- ▶ Pull the hand brake of the tractor.
- ▶ Operate the control valve at the tractor until the ball coupler is resting on the ball head.
- ▶ Operate the control valve at the tractor until the support stand is fully retracted.
- ▶ Switch off the tractor engine. Remove the ignition key.
- ▶ Close the holding down clamp.
  - ▷ Please refer to the instructions of the tractor manufacturer.

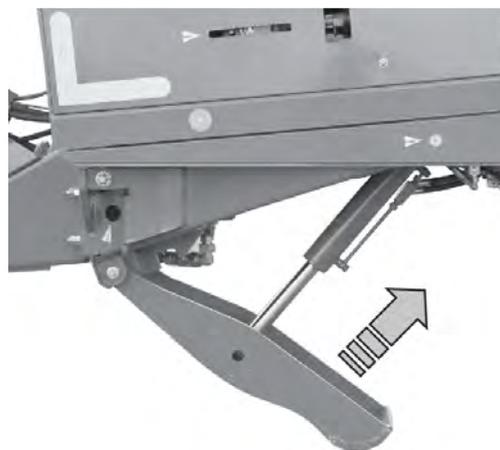


Fig. 28: Retracting the support stand

*The connection is secured.*

## 6.6.3 Hitch coupling

### Variant B

- ✓ The PTO shaft is switched off.
- ✓ The hydraulic system is switched off.
- ✓ The pin coupling is open.
- ▶ Start the tractor.
- ▶ Position the tractor at the machine.
- ▶ Set the height of the hydraulic support stand to ensure that the hitch ring grasps the hitch hook of the tractor.
- ▶ Pull the hand brake of the tractor.
- ▶ Switch off the tractor engine. Remove the ignition key.
- ▶ Close the coupling pin.

*The connection is secured.*

## 6.6.4 Eye Ø40

### Version C

- ✓ The PTO shaft is switched off.
- ✓ The hydraulic system is switched off.
- ✓ The pin coupling is open.
- ▶ Start the tractor.
- ▶ Position the tractor at the machine.
- ▶ Set the height of the hydraulic support stand to ensure that the towing eyelet grasps the pin coupling of the tractor.
- ▶ Pull the hand brake of the tractor.
- ▶ Switch off the tractor engine. Remove the ignition key.
- ▶ Close the coupling pin.

*The connection is secured.*

### 6.6.5 Gyroscope assembly for kingpin steering

#### ■ *Special equipment*



*Fig. 29: Gyroscope and bracket*



Mount the gyroscope and its bracket at the tractor

- Please observe the assembly instructions specified in the **ISOBUS TRAIL Control Midi** operator's manual by Müller Elektronik.
- The operator's manual is an integral part of the electronic control unit.

## 6.6.6 Fitting the universal drive shaft at the tractor

### **NOTICE!**

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

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

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



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

- ▶ Mount the universal drive shaft on the tractor.
  - ▷ At initial commissioning, adjust the universal drive shaft to the tractor.
- ▶ Shorten the universal drive shaft, if required.



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

## 6.6.7 Braking

### ■ Pneumatic brake system

The machine is equipped with a pneumatic braking system as a standard.

In connection with the braking system, also observe the applicable national regulations of the country, in which the machine is used.

As a standard, the machine is equipped with a manually operated, pneumatic parking brake.

The double release valve actuates or releases the parking brake and the operating brake.

**Button position when the machine is parked:** Red button [1] pulled out and black button [2] pushed in.

**Button position when the machine is in operation:** Red button [1] pushed in and black button [2] pulled out.



Fig. 30: Pneumatic brake

[1] Parking brake      [2] Operating brake

Parking brake function	Operating brake function
The parking brake brakes the machine in parking position. If the red button [1] is pulled out, the parking brake is applied. If the red button is pushed in, the parking brake is released.	The black button [2] releases or actuates the machine's operating brake. If the black button is pulled out, the operating brake is applied and the emergency brake function is active. If the black button is pushed in, the operating brake is released and the emergency brake function is not active.

### ! WARNING!

#### Risk of injury due to the unsecured machine

Until the machine is fully coupled, it may still roll and cause personal injury.

When coupling the machine, always observe the following sequence for the pneumatic lines:

- ▶ Ensure that nobody is present in the hazard zone.
- ▶ First, couple the yellow coupling head (brake line).
- ▶ Afterwards, couple the red coupling head (supply).

For commissioning, please observe the following instructions:

- ▶ Prior to coupling, clean the seal rings and coupling heads of the pneumatic lines.
- ▶ Observe the connection order: See *Fig. 26 Order of connecting the machine lines to the tractor*
- ▶ After coupling and prior to travel, check the braking system for tightness and proper function. To do so, engage the operating brake of the tractor.
- ▶ Do not drive with the coupled machine before the pressure gage in the tractor cabin indicates the correct operating pressure of the tractor.



For further information, please refer to the operator's manual of the tractor.

### Setting the manual brake force regulator

 **DANGER!**

**Risk of death due to defective braking system**

There is a risk of death if the braking system is improperly operated or defective.

The machine may accidentally roll or tilt and cause severe injury.

- ▶ Prior to use, make sure that the pressure gage in the driver cabin indicates the minimum pressure of 6.6 bar specified by the tractor manufacturer.
- ▶ Check routing of the hose lines. The hose lines must not be in contact with other components.

The brake force regulator is located on the frame under the manual parking brake, to the left on the side in the direction of travel.

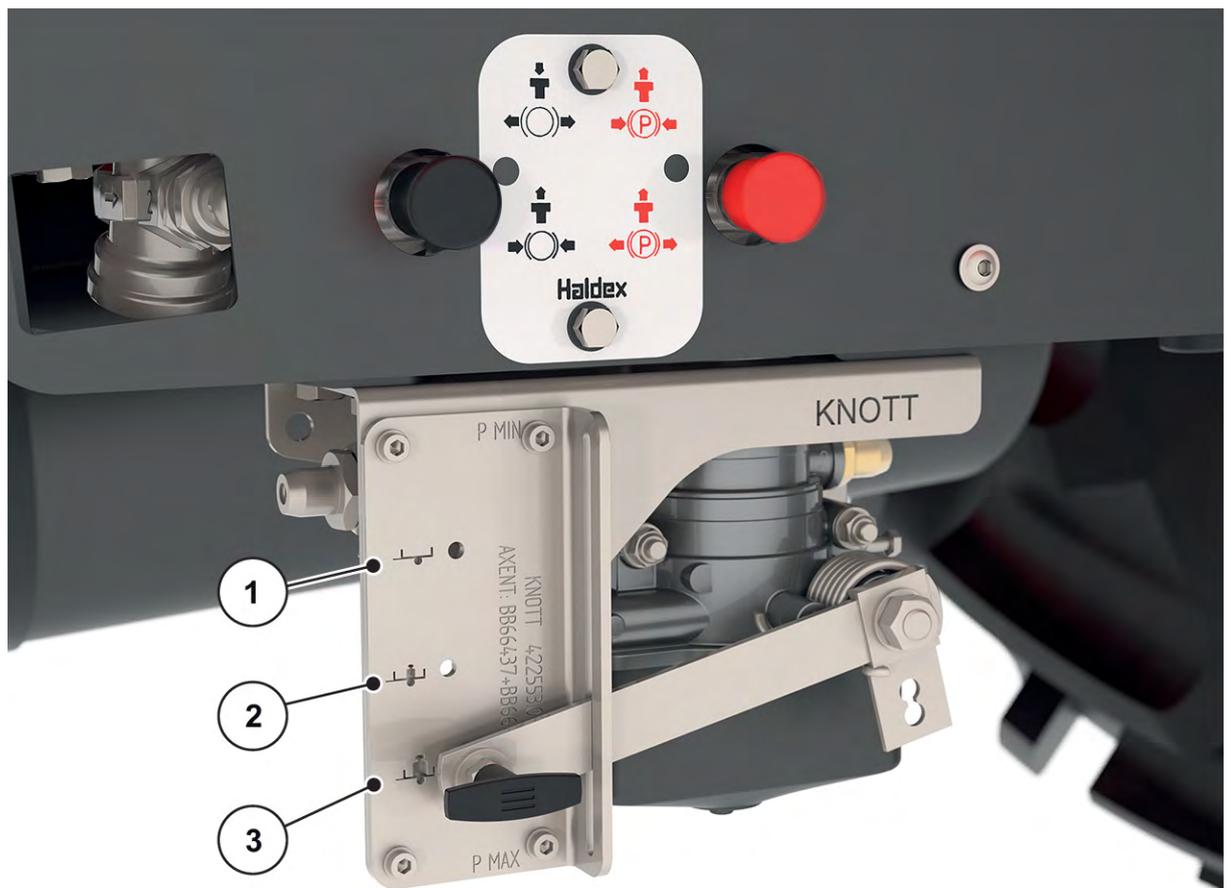


Fig. 31: Brake force regulator setting

- [1] Empty  
[2] Half load

- [3] Full load

### **⚠ DANGER!**

#### **Risk of death due to incorrectly adjusted brake system**

If the brake force regulator setting does not correspond to the machine load, the braking effect during an emergency stop can be too low or too high.

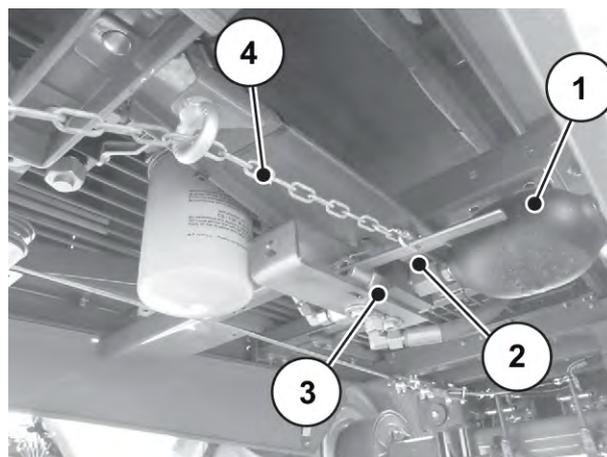
The machine may tilt and cause severe injury.

- ▶ Adjust the brake force regulator in accordance with the actual load of the machine to FULL - HALF FULL - EMPTY.
- ▶ Adjust the brake force regulator settings to the filling level of the machine.

#### **■ Hydraulic braking**

The hydraulic brake system is equipped with a manual parking brake and a release chain. The release chain is for breakaway protection in the event that the machine decouples from the tractor unintentionally.

- ▶ Observe the order for connecting the components: See *Fig. 26 Order of connecting the machine lines to the tractor*
- ▶ Ensure that the release chain is connected to the tractor.



*Fig. 32: Breakaway protection of the hydraulic brake system*

- |                        |                   |
|------------------------|-------------------|
| [1] Pressure reservoir | [3] Safety valve  |
| [2] Actuating lever    | [4] Release chain |

### 6.6.8 Disengaging the parking brake

#### ■ Pneumatic brake system

Disengage the parking brake [1] only once the machine is coupled to the tractor and the pneumatic lines are connected.

- ▶ Remove the wheel chocks and insert them into the transport bracket.
- ▶ Press the button [1].

*The parking brake is disengaged.*



*Fig. 33: Disengaging the parking brake*

- |                   |                     |
|-------------------|---------------------|
| [1] Parking brake | [2] Operating brake |
|-------------------|---------------------|

#### ■ Hydraulic braking

Only disengage the parking brake after the machine is hooked onto the tractor and the hydraulic lines are connected.

- ▶ Turn the hand crank of the parking brake counter-clockwise.

*The parking brake is disengaged.*

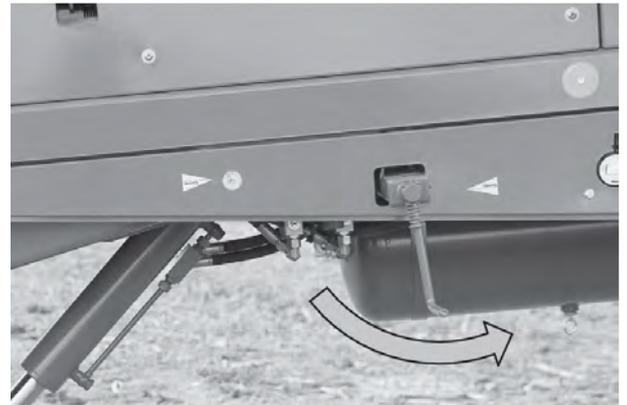


Fig. 34: Releasing the manual parking brake

### 6.6.9 Establishing other connections

- ▶ Connect the lighting.
  - ▷ See Fig. 26 Order of connecting the machine lines to the tractor.
- ▶ Always check the lighting system prior to travel.
- ▶ Connect the ISOBUS cable to the ISOBUS connector of the tractor.



Observe the operator's manual for the electronic machine control unit.

### 6.6.10 Hydraulics system

The machine is equipped with an on-board hydraulic system. Via the universal drive shaft, an axial piston pump is driven. The axial piston pump supplies the following functions:

- Belt drive
- Pre-metering slide
- AXIS-PowerPack
- UNIVERSAL-PowerPack with comb roller (optional equipment)
- Steering axle (optional equipment)

The axial piston pump ensures a constant operating pressure at a universal drive shaft speed of 650 to 1300 rpm.



Observe chapter 7 *Spreading operation* as well as the separate AXENT ISOBUS operator's manual for the electronic machine control unit.

The hydraulically folding support stand and the hydraulic towing bar damping are connected to the tractor control valve.

Towing bar damping system contains nitrogen tanks.

**! WARNING!****Risk of injury due to hot surfaces**

The accumulator body may heat up. There is a risk of burning.

- ▶ Only qualified personnel may perform work on the hydraulic parts and plug connectors.

## 6.7 Fitting the spreading unit at the machine

### 6.7.1 Preconditions

- **Disassemble the feeder mesh and the partition plate** at the machine outlet prior to installing the UNIVERSAL-PowerPack spreading unit . See 6.7.2 *Feeder mesh disassembly*.
- The machine is empty.
- The machine is coupled to the tractor.
- The machine and the tractor are secured against rolling.
- The safety hood is folded-up.

**! DANGER!****Danger of injury due to running engine**

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

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

For disassembly and assembly of specific components at the machine, the adjustment lever is required as tool. It is located at the front of the machine.

- [1] Adjustment lever (left in direction of travel, hose bracket)

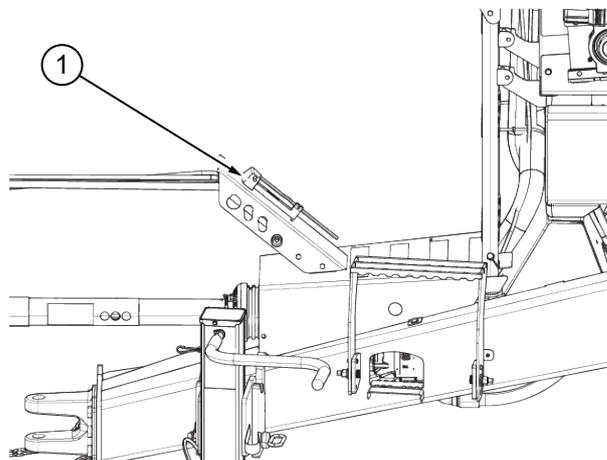


Fig. 35: Adjustment lever

## 6.7.2 Feeder mesh disassembly

### ■ UNIVERSAL-PowerPack

Disassemble the feeder mesh if the UNIVERSAL-PowerPack universal spreading unit is used. This prevents the fertilizer or lime from bridging in the hopper.

#### Requirements:

- Position an empty pallet at the height of the hopper edge using a forklift truck.
- Secure the forklift truck against rolling.
- Put all components of the feeder mesh down on the pallet securely.

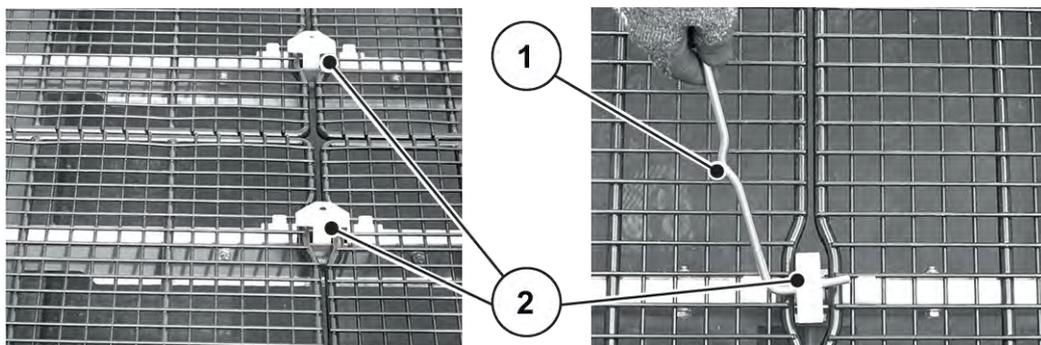


Fig. 36: Unlocking the bracket

[1] Adjustment lever

[2] Locking the mesh support

- ▶ Unlock all 4 mesh supports with the adjustment lever.

*The components of the feeder mesh are free.*

- ▶ Remove the components of the feeder mesh and position them on the pallet.
- ▶ Remove the mesh supports and position them on the pallet.
- ▶ Remove the pallet and store it in a safe place.

*The feeder mesh is disassembled.*

## 6.7.3 Partition plate disassembly

### ■ UNIVERSAL-PowerPack



The partition plate is **not** suitable for distribution of dry, organic fertilizer and lime and has to be dismantled.

- ▶ Turn the plastic locking mechanism [1] with the adjustment lever by 90 degrees.  
*The partition plate [3] is unlocked.*
- ▶ Pull the partition plate out of the guide at the handle [2].

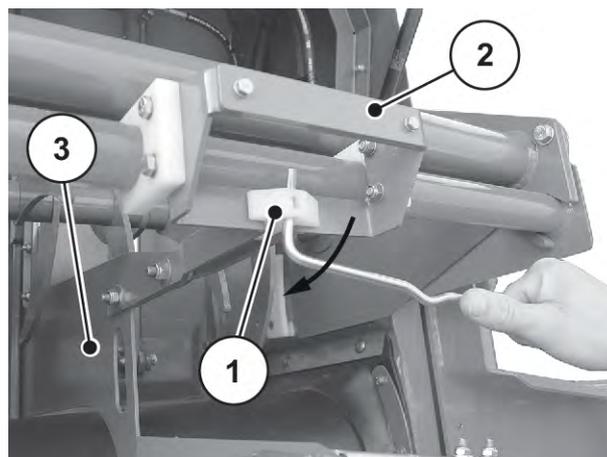


Fig. 37: Disassembling the partition plate

- ▶ Swivel the partition plate slightly to the side and take it out between the bracket and the spreading unit hopper.

*The partition plate is disassembled.*

#### 6.7.4 Assembling the partition plate

##### ■ **AXIS-PowerPack**

The partition plate is assembled at the factory to ensure even distribution of the fertilizer in both parts of the AXIS-PowerPack spreading unit hopper.

If the spreading unit is changed regularly, re-mount **the partition plate and the feeder mesh** (6.7.5 *Feeder mesh assembly*) to the machine outlet prior to installing the AXIS-PowerPack spreading unit.

- ▶ Assemble the partition plate [1] horizontally between the bracket and the spreading unit hopper [2].
- ▶ Vertically set the partition plate.

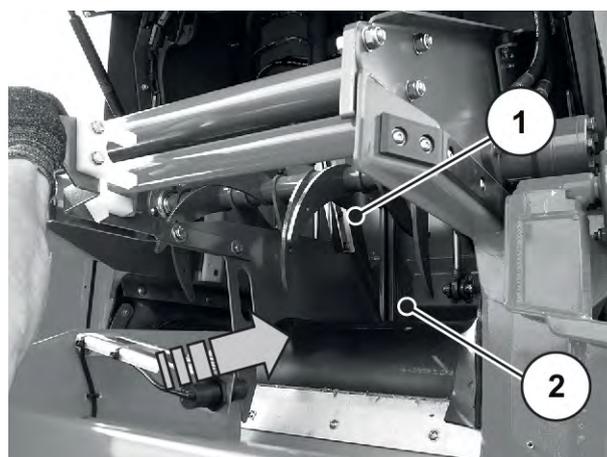


Fig. 38: Assembling the partition plate

- ▶ Slide the partition plate inwards until the sheet guide is engaged into the guide holder at the partition plate.

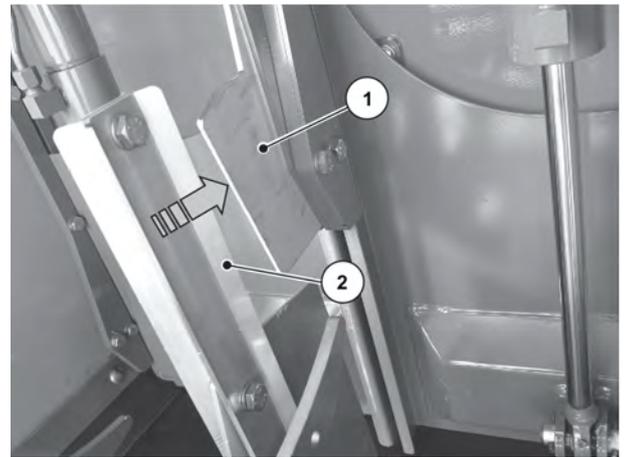


Fig. 39: Inserting the partition plate into the guide

[1] Metal sheet guide [2] Guide holder

- ▶ With the handle [1], slide open the fork [2] at the tube.
- ▶ Turn the locking mechanism [3] with the adjustment lever by 90 degrees.

*The partition plate is assembled.*

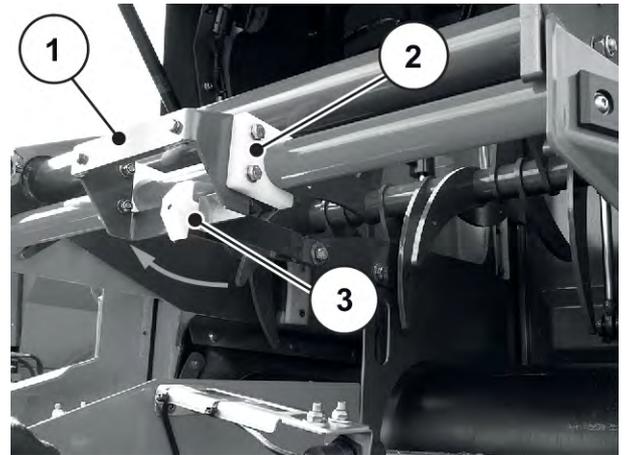


Fig. 40: Securing the partition plate

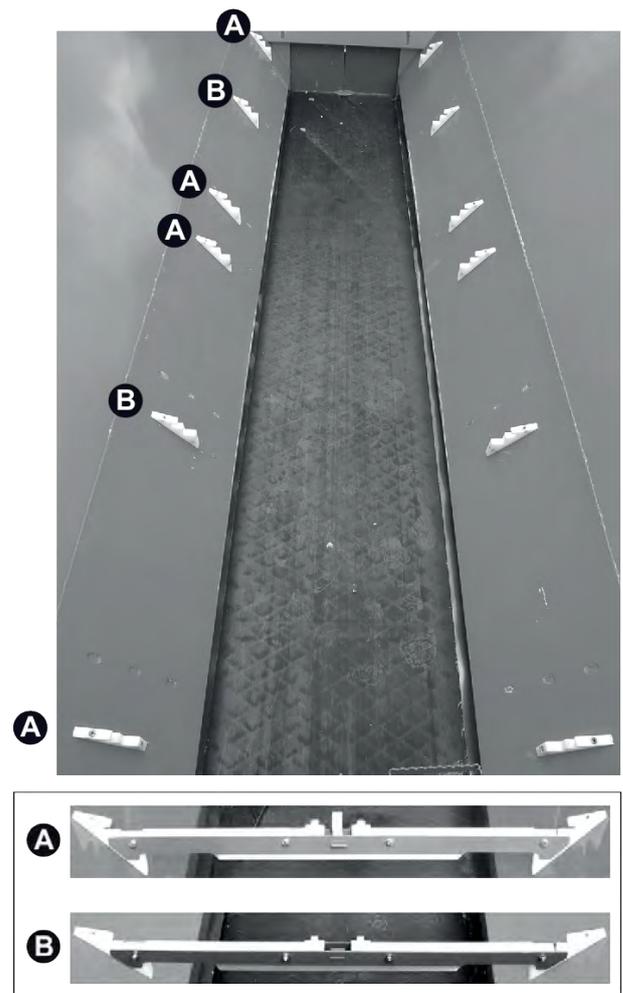
### 6.7.5 Feeder mesh assembly

#### ■ **AXIS-PowerPack**

Mount the feeder mesh prior to installing the AXIS-PowerPack spreading unit. This prevents faults during spreading caused by lumps in the spreading material, large stones, or other large objects (screening effect).

- ▶ At positions [A], mount mesh supports (4x) with locking mechanisms.
- ▶ At positions [B], mount mesh supports (2x) with positioning elements.

*The 6 brackets are mounted horizontally and flexibly in the hopper.*



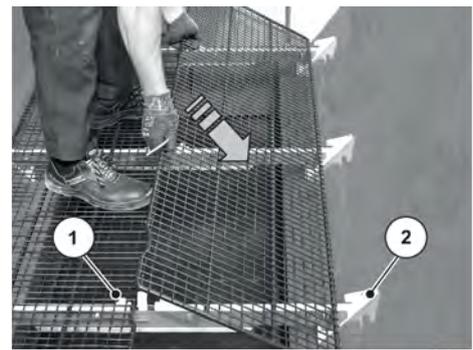
*Fig. 41: Installing the bracket of the feeder mesh*

- |   |  |
|---|--|
| [A] Mesh support with locking mechanism | [B] Mesh support with positioning elements |
|---|--|

- ▶ Put the component of the feeder mesh down on the mesh supports and slide it into the plastic catch [2].

*The positioning elements [1] engage exactly into the feeder mesh.*

- ▶ Install all components (total of 4).



1



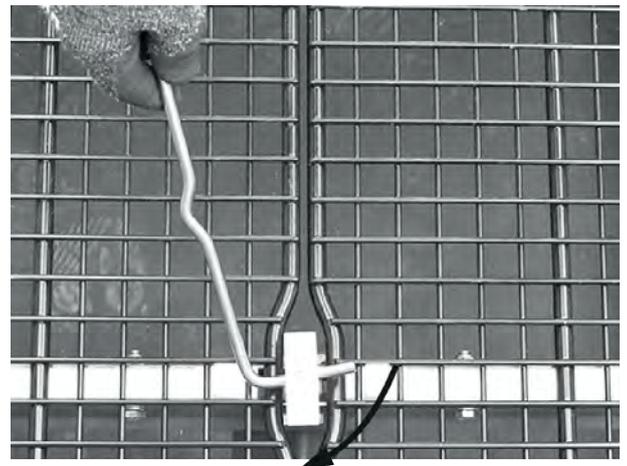
2

*Fig. 42: Feeder mesh assembly*

[1] Positioning element

[2] Plastic catch element

- ▶ Turn the locking mechanisms by 90° with the adjustment lever.



*Fig. 43: Feeder mesh locking*

[1] Adjustment lever

[2] Locking mechanisms

- ▶ Check that all components of the feeder mesh are assembled securely.

*The feeder mesh is assembled.*



*Fig. 44: Feeder mesh in hopper*

### 6.7.6 Fitting of the spreading unit

**⚠ DANGER!**

**Danger to life due to carelessness or incorrect operation**

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

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

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

**Requirements:**

- The safety hood is open.
- The catches and quick-release clamps on each side of the machine are open.

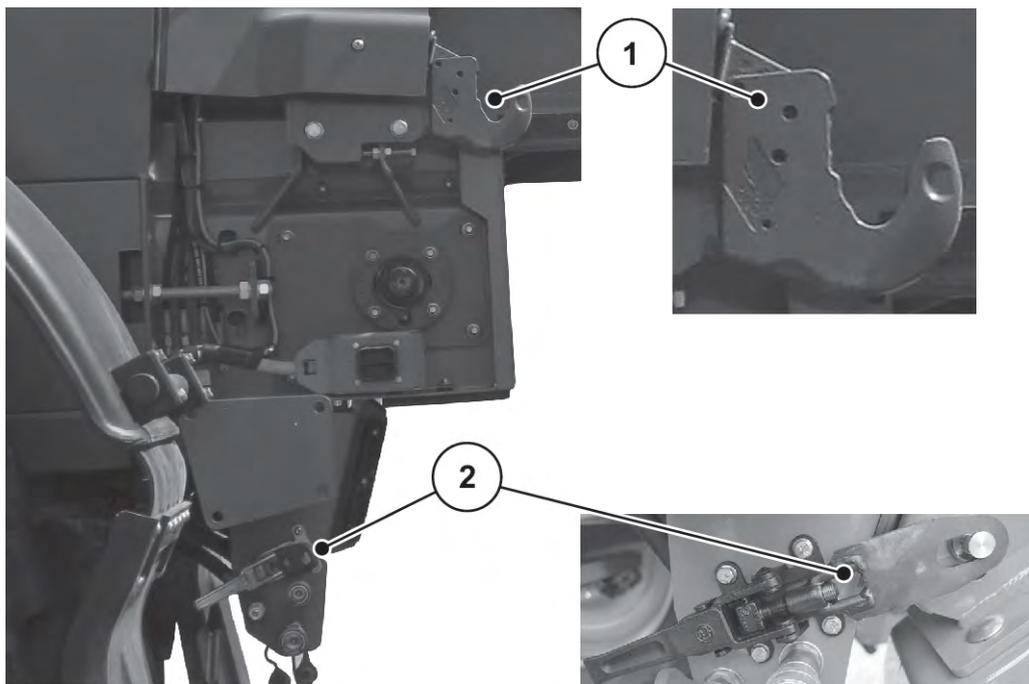


Fig. 45: AXENT 100.1 coupling points

[1] Catches

[2] Bottom quick-release clamps

- ▶ Position the spreading unit on a pallet.
- ▶ Lift the spreading unit and the pallet with a forklift truck.
- ▶ Drive the forklift truck to the machine.
- ▶ Mount the spreading unit in the top catch.
- ▶ Check that the spreading unit is securely mounted at the catches.
- ▶ Drive away the forklift truck.
- ▶ Close the catches.



Fig. 46: Positioning the forklift truck

- ▶ Insert the lower pin of the spreading unit into the slot of the quick-release clamp [1] on each side.
- ▶ Tighten the quick-release clamp at the handle [2].
- ▶ **Check that the machine is secured.**

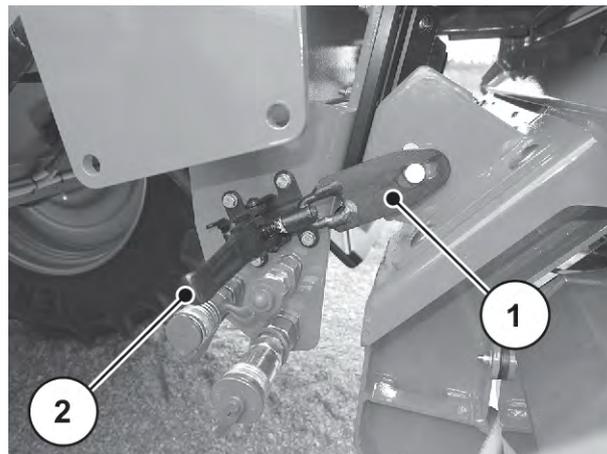


Fig. 47: Securing the spreading unit at the base

### 6.7.7 Establishing connections

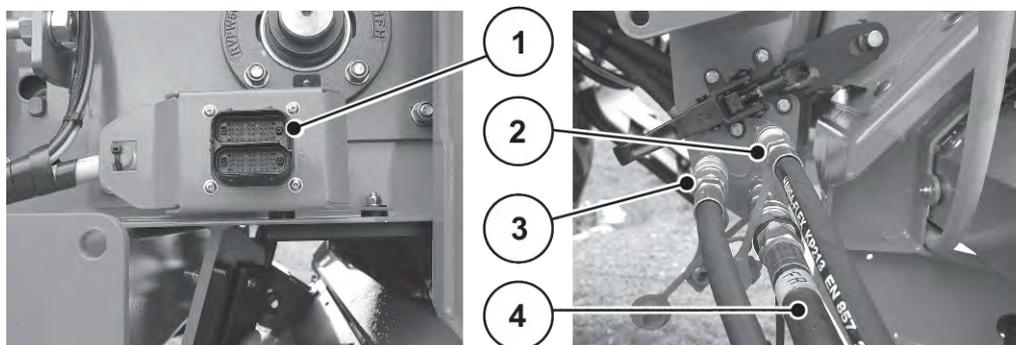


Fig. 48: Connections

- |  |  |
|--|--|
| [1] Connection of the electrical lines of the spreading unit | [3] Hydraulic line of the spreading disc drive, left |
| [2] Hydraulic line of the spreading disc drive, right        | [4] Free reflux                                      |

- ▶ Connect the electric and hydraulic lines.
- ▶ Suspend and attach the mud guard extension [1] at the metal latch at the deflector bracket.

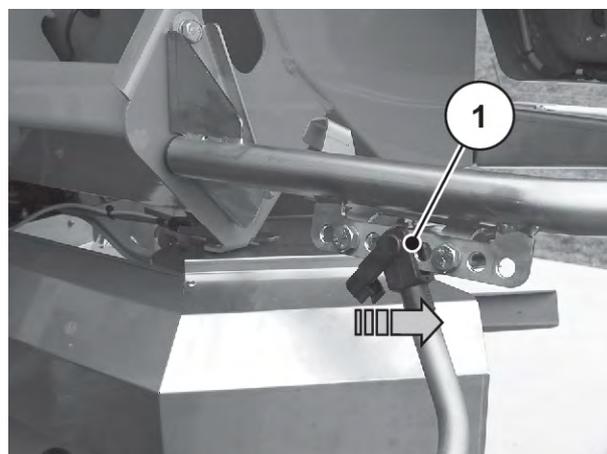


Fig. 49: Mount the mud guard extension

## 6.8 Spreading unit refitting

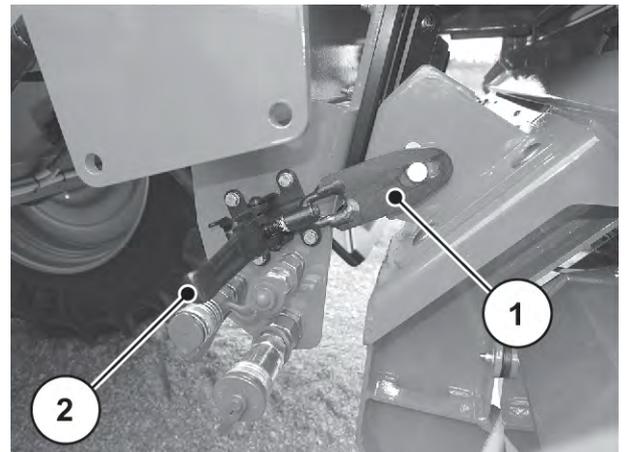
Detachment of the spreading unit is realized in reverse order of connection.

- The safety hood is open.
- The mud guard extension is disassembled from the deflector bracket.
- The electric and hydraulic lines are disconnected from the AXENT connections.

- ▶ Loosen the quick-release clamp [1] at the handle [2].

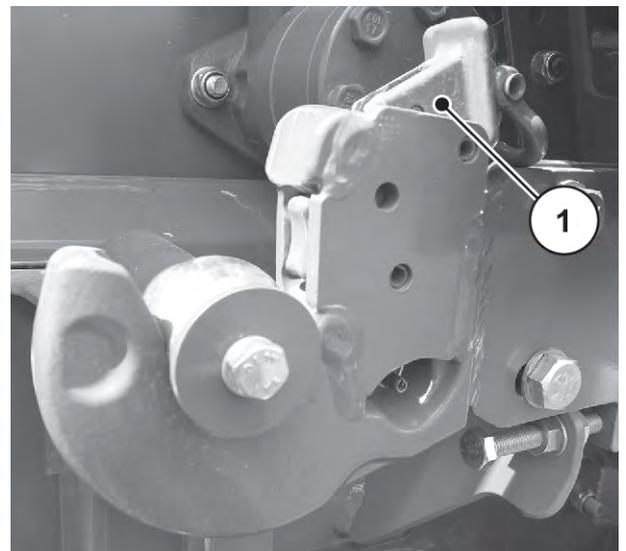
- ▶ Pull out the quick-release clamp.

*The lower pin of the spreading unit is free.*



*Fig. 50: Releasing the spreading unit at the bottom*

- ▶ Open the locking mechanism [1] of the top catches on each side.



*Fig. 51: Releasing the coupling points*

- ▶ Position a forklift truck with a pallet under the spreading unit.
- ▶ Lift the spreading unit until the coupling points are free.
- ▶ Drive the forklift truck away and store the spreading unit on the pallet at a suitable location.

Prior to attachment of the other spreading unit, assembly or disassembly steps are required according to the specific spreading unit type.

Observe the following sections.

- When refitting to the AXIS-PowerPack fertilizer spreading unit:
    - 6.7.4 *Assembling the partition plate*
    - 6.7.5 *Feeder mesh assembly*
  - When refitting to the UNIVERSAL-PowerPack universal spreading unit:
    - 6.7.2 *Feeder mesh disassembly*
    - 6.7.3 *Partition plate disassembly*
- ▶ Install the spreading unit as described in chapters 6.7.6 *Fitting of the spreading unit* and 6.7.7 *Establishing connections*.

## 6.9 Filling the machine

### DANGER!

#### Risk of tilting and rolling

During filling, the unsecured machine may tilt or roll and cause severe personal injury and property damage.

- ▶ Only fill the machine on even and firm ground.
- ▶ Make sure that the machine is coupled to the tractor prior to filling.
- ▶ Ensure that the parking brake is engaged.

### DANGER!

#### Danger due to inadmissible overall weight

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

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

- ▶ Always observe the information in chapter 4.3 *Technical specifications*.
- ▶ Prior to filling, determine the maximum quantity to be loaded.
- ▶ Observe the admissible overall weight.



Prior to filling, make sure that the pre-metering slides and cleaning flap are closed.



Fig. 52: Pre-metering slide in closed position

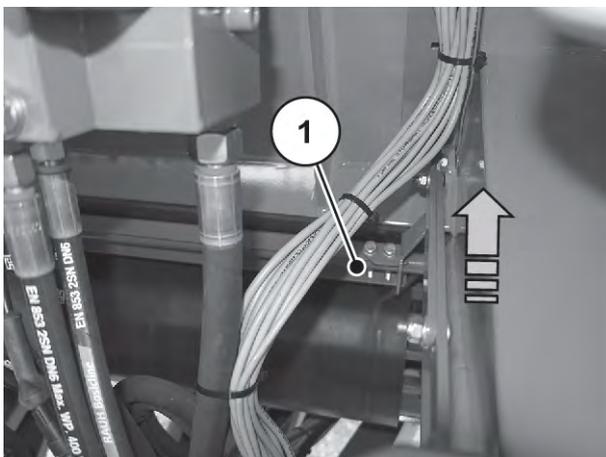


Fig. 53: Cleaning flap in closed position, front in direction of travel

**Requirements:**

- The hydraulic system is switched on.
- ▶ Hydraulically open the hopper cover of the machine.
- ▶ Evenly fill the machine. For this purpose, use a front-end loader or a screw conveyor.
- ▶ Visually check the filling level in the hopper.
- ▶ After filling is completed, close the hopper cover.

*The machine is filled.*

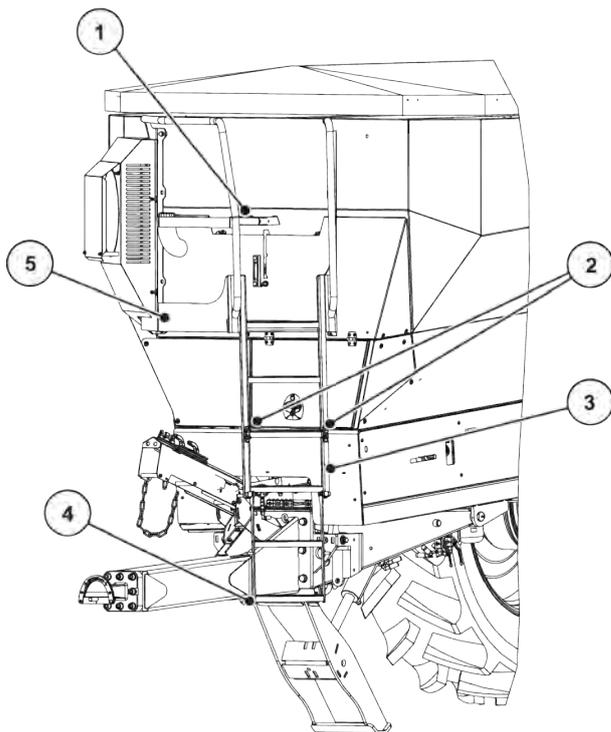
## 6.10 Checking the filling level

### **! WARNING!**

#### **Risk of injury due to falling from the platform**

The platform has a height of more than 1.50 m above ground. There is a risk of falling on the side of the steps. Severe injury may result.

- ▶ Move with care on the platform.
- ▶ Always keep the platform clean.



*Fig. 54: Filling level check*

- |   |                                   |
|---|-----------------------------------|
| [1] Step (only for maintenance inside the hopper) | [3] Adjustable steps              |
| [2] Snap locking mechanism                        | [4] Snap pin of the folding steps |
|   | [5] Platform                      |

#### ■ **Operating the steps**

- ▶ Push the adjustable steps upwards and push the catches [1] forward by hand until the pin [2] is free.

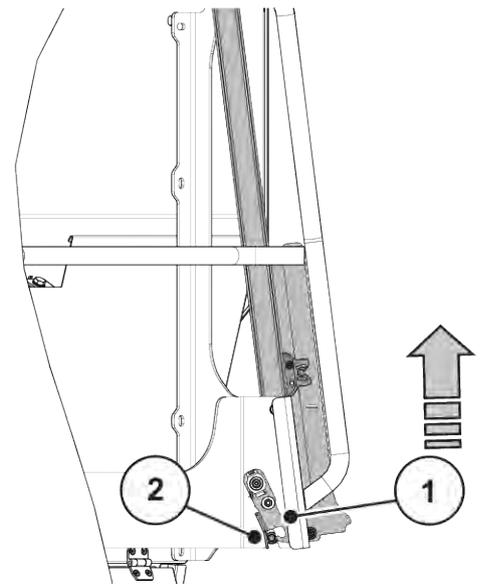


Fig. 55: Lowering the top of the steps

- ▶ Slowly lower the adjustable steps.
- ▶ Pull at the folding steps until the snap pins [1] engage.
- ▶ Fold down the steps.

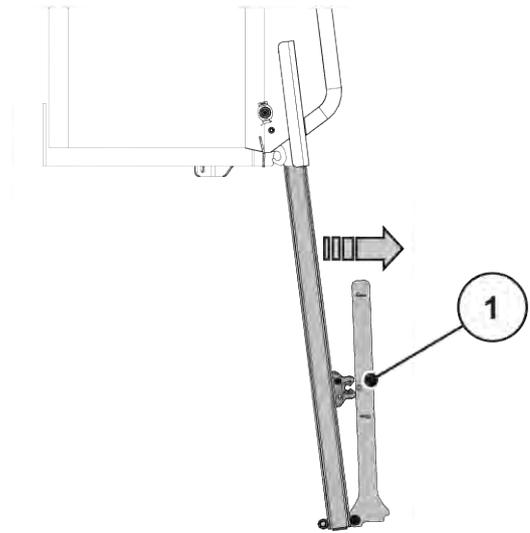


Fig. 56: Folding out the bottom part of the steps



Only step up it if the following preconditions are fulfilled:

- The steps were lowered to the lowest position.
- The folding steps are folded out downwards.

■ **Folding in the steps in transport position**

- ▶ Fold up the bottom part of the steps.
- ▶ Snap pin [1] for engaging in the groove of the snap locking mechanisms.

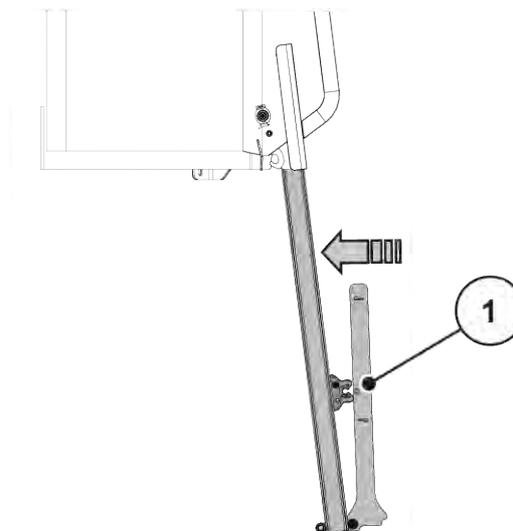


Fig. 57: Folding in the steps

- ▶ Slide the adjustable steps by hand upwards on the rail until the pin [1] engages in the catch.

*The steps are secured.*

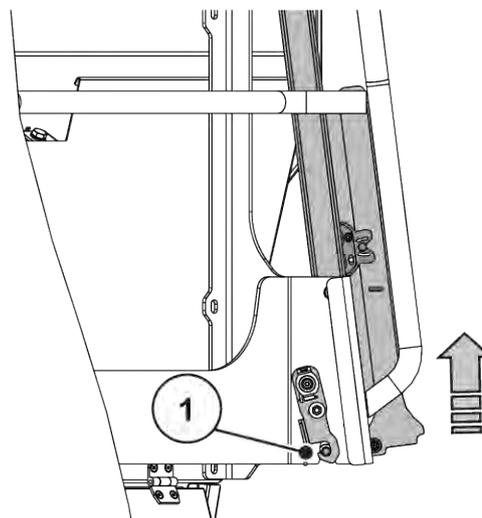


Fig. 58: Securing the sliding element

## 6.11 Camera for rear view monitoring

The rear view camera offers free view on the area behind the machine.

Check the correct setting of the camera at the ISOBUS terminal.



The lower third of the rear view camera has to show the deflector bracket.

If necessary, adjust the monitored section. This requires the support by a second person observing the current view of the camera at the ISOBUS terminal in the tractor cabin.

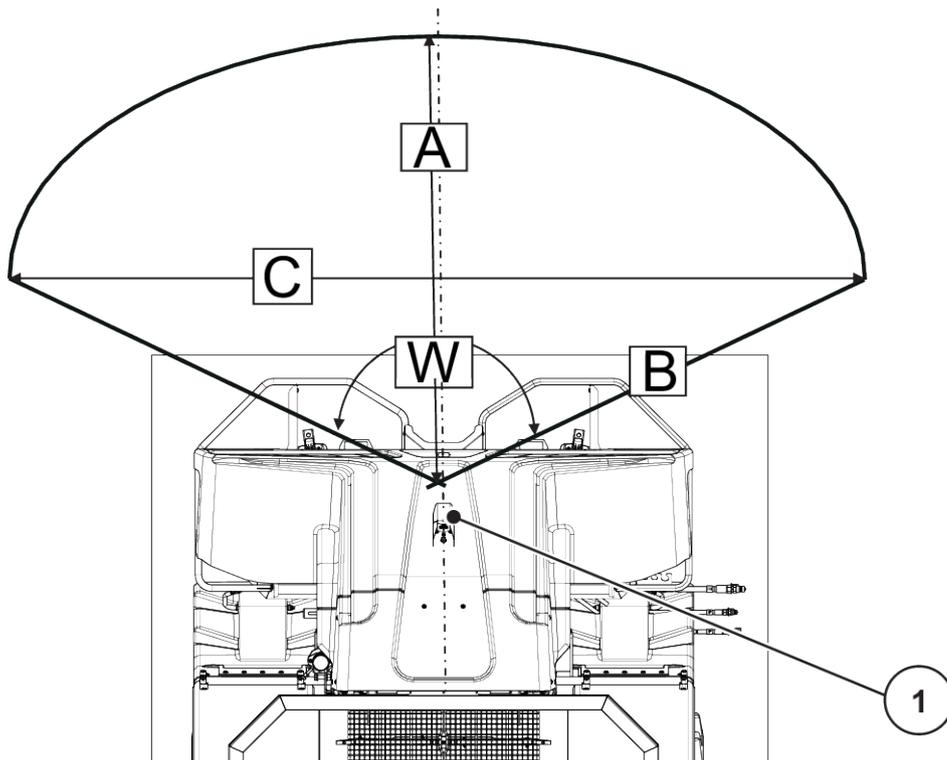


Fig. 59:

- [A] [A] Rear visibility range: approx. 7 m      [W] Viewing angle: 120°  
 [B] Radius: 5.80 m      [1] Rear view camera  
 [C] Field of vision diameter to the left and right:  
 10 m

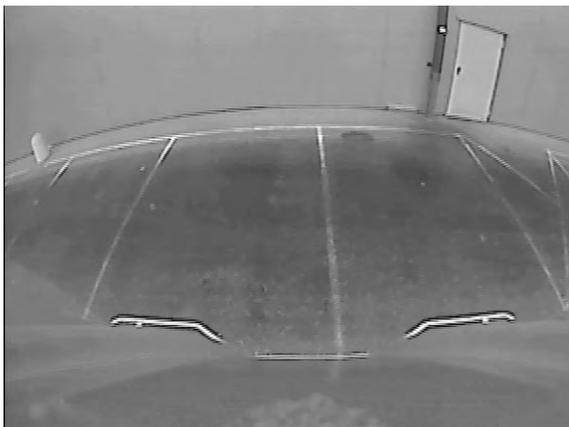


Fig. 60: Rear view camera screenshot

## 7 Spreading operation

### 7.1 General information



Please note that the service life of the machine mainly depends on your driving behavior.

- ▶ Pay close attention to the machine settings. Even a slightly incorrect setting may adversely affect the scatter pattern.
- ▶ Check that your machine is working properly and that the application is sufficiently precise before every use of the spreader and during work (carry out a calibration test).
- ▶ Reduce the speed on uneven ground.
- ▶ Special care is to be particularly taken when driving on uneven, soft ground (e.g., when entering fields, curbs).
- ▶ Drive with care through the headlands.
- ▶ Avoid sudden and rapid turns when driving uphill or downhill or across a slope.
  - ▷ The change in the center of gravity may increase the danger of tipping.

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

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

Reasons for this may be:

- Changes in the physical properties of the fertilizer or lime (such as variable grain size distribution, variable density, grain size and surface, treatment, coating, moisture).
- Increased wear from particularly hard fertilizer varieties (e.g. calcium ammonium nitrate, kieserite)
- Clumping and damp fertilizer or lime
- Wind drift: stop spreading at high wind speeds.
- Blockages or bridge formation (e.g., due to foreign objects, bag residue, wet fertilizer, etc.).
- Uneven ground
- Deterioration of wear parts
- Damage from external causes
- Poor cleaning and care for preventing corrosion
- Incorrect drive speeds and forward speeds
- Neglecting to carry out the calibration test.
- Incorrect machine settings

### Spreading unit

- ▶ **ALWAYS use the feeder mesh** in combination with the AXIS-PowerPack fertilizer spreading unit to prevent clogging, e.g., due to foreign objects or lumps in the fertilizer.
- ▶ **ALWAYS remove the feeder mesh** in combination with the UNIVERSAL-PowerPack universal spreading unit to prevent bridge formation.

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

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

## 7.2 Closing the safety hood

The safety hood is important safety equipment for safe machine operation; see 3.10.2 *Function of safety equipment*. Overloading cannot be realized if the safety hood is open.

The safety hood is equipped with a safety switch. The safety switch reports the open or closed position of the safety hood to the machine control unit. If the safety hood is open, all actuators controlled via the machine control unit are stopped (conveyor belt, pre-metering slide, comb roller, hopper cover, spreading discs).

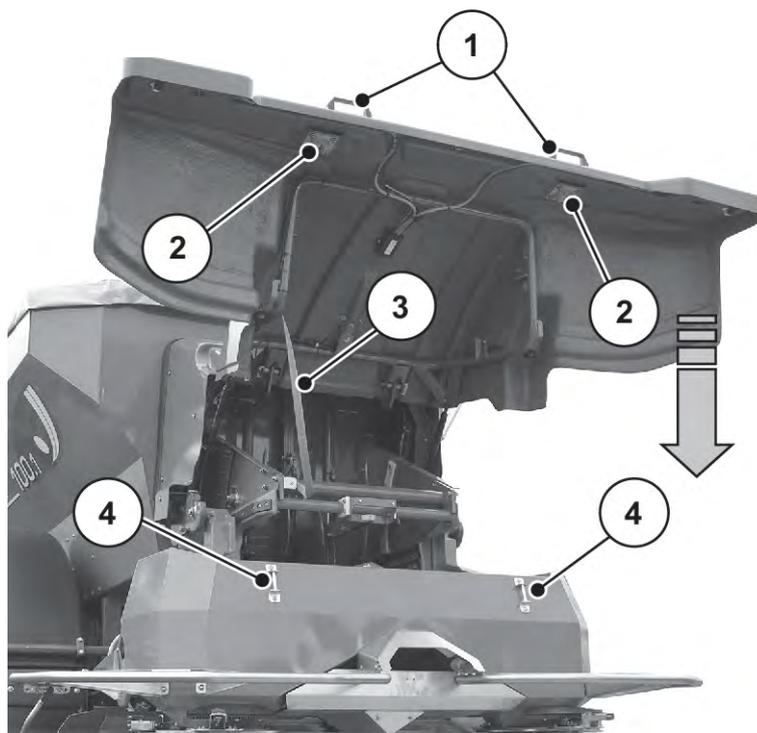


Fig. 61: Safety hood components

- |                   |               |
|-------------------|---------------|
| [1] Handles       | [3] Tie cable |
| [2] Plastic clips | [4] Pin       |

- ▶ Pull the tie cable by hand.  
*The safety hood closes downwards.*



Fig. 62: Pull the tie cable

- ▶ Grip the safety hood at the handles [1] and slowly lower it.

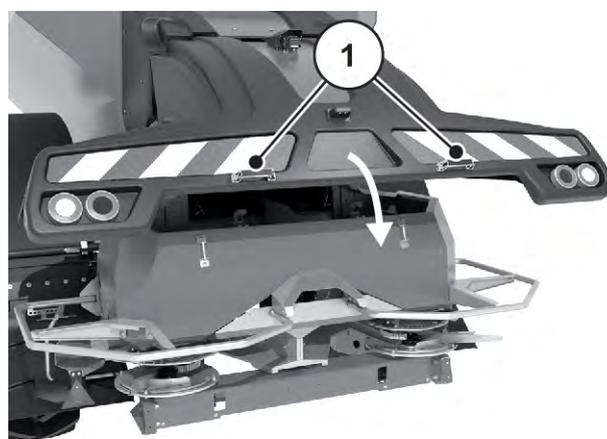


Fig. 63: Closing the safety hood

- ▶ Push the safety hood with the handles [1] onto the spreading unit until the plastic clips engage.
  - ▷ The safety switch is operated.

*The machine is ready for operation.*



For further information on machine control and indication of the safety hood position, refer to the separate AXENT ISOBUS operator's manual.

## 7.3 Conveyor belt speed adjustment

The conveyor belt is started up and stopped automatically. Via the machine control unit, the status of the conveyor belt can be checked at the screen.



The electronic conveyor belt control is described in a separate operator's manual for the electronic machine control unit. This separate operator's manual is an integral part of the AXENT ISOBUS machine control unit.



If the speed of the conveyor belt is too low in comparison with the application rate set at the spreading unit, there is no notification that the spreading unit hopper is full. This may lead to spreading errors or underfertilization in the spread fields as the hopper may be emptied.

- Increase the speed of the conveyor belt.

## 7.4 Fertilizer spreading

### ■ *AXIS-PowerPack*

### 7.4.1 Spreading operation sequence

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**.

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

#### **Preparation**

- ▶ Couple the machine to the tractor, *Chapter 6.6 - Installing the machine at the tractor - Page 49.*
- ▶ Assemble the feeder mesh, *Chapter 6.7.5 - Feeder mesh assembly - Page 63*
- ▶ Assemble the partition plate, *Chapter 6.7.4 - Assembling the partition plate - Page 62*
- ▶ Mount the fertilizer spreading unit to the machine, *Chapter 6.8 - Spreading unit refitting - Page 69.*
- ▶ Close the pre-metering slide.
- ▶ Pour in fertilizer, *Chapter 6.9 - Filling the machine - Page 70.*
- ▶ Adjust machine settings (working width, application rate, etc.).
  - ▷ See operator's manual of the machine control unit

### Spreading

- ▶ Travel to the spreading location
- ▶ Activate the PTO.
- ▶ Open the pre-metering slide and start spreading
  - ▷ See operator's manual of the machine control unit
- ▶ Start spreading.
- ▶ Finish spreading operations and close the pre-metering slide.
- ▶ Disengage the PTO shaft.

### Cleaning/maintenance

- ▶ Empty the remaining quantity.
- ▶ Park the machine, *Chapter 7.7 - Parking and unhitching the machine - Page 96.*
- ▶ Clean and maintain the machine, *Chapter 9 - Maintenance and service - Page 103.*

## 7.4.2 Information on the fertilizer chart

The values in the fertilizer chart have been determined using the manufacturer's test system.

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

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

#### The following instructions should therefore be observed:

- Always check the actual application rate discharged by performing a calibration test.
- Check the working width of the fertilizer distribution with a practice test kit (*4.4.3.2 Practical test set (PPS 5)* optional equipment).
- Use only fertilizers listed in the fertilizer chart.
- Contact us if you do not find a particular fertilizer type in the fertilizer chart.
- Observe the adjustment values exactly. Even a slightly incorrect setting may adversely affect the spreading pattern.

#### When using urea, particular attention is to be paid to the following:

- Because of fertilizer imports, urea is available in widely varying qualities and particle sizes. It may therefore be required to adjust the spreader.
- Urea is more sensitive to wind and absorbs more moisture than other fertilizers.



The operator is responsible for the correct adjustments for the fertilizer in use.

The machine manufacturer shall not assume any liability for any damage due to incorrect spreader settings.

### 7.4.3 Setting the machine via ISOBUS terminal

The necessary settings for fertilizer spreading are made at the ISOBUS terminal.

#### ■ *Example of field spreading during normal fertilizing:*

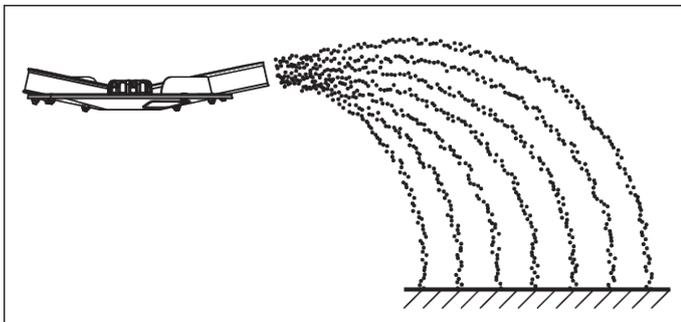


Fig. 64: Field spreading during normal fertilizing

During field spreading in normal fertilizing mode, a symmetrical spreading pattern is produced. If the spreader is correctly set (see information in the fertilizer chart), the fertilizer is evenly spread over the field.

- ▶ Enter the values from the fertilizer chart in the Fertiliser settings menu:
  - ▷ Application rate
  - ▷ Working width
  - ▷ Drop point
  - ▷ Normal disc speed
- ▶ Follow the instructions of the separate AXENT ISOBUS operator's manual.

#### ■ *Example of limited border spreading during normal fertilizing*

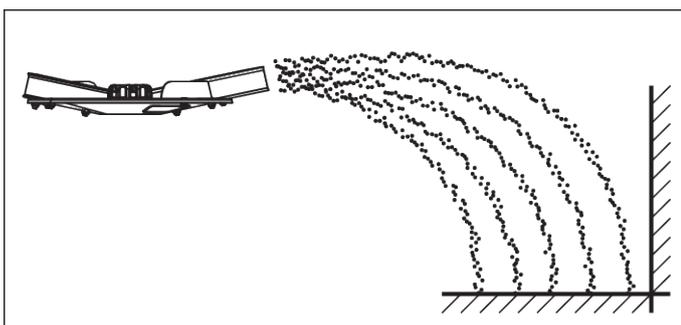


Fig. 65: Limited border spreading during normal fertilizing

During limited border spreading in normal fertilizing mode, almost no fertilizer crosses the field border. Underfertilization at the field boundary must be accepted in this case.

- ▶ Enter the values from the fertilizer chart in the Fertiliser settings menu: .
  - ▷ Application rate
  - ▷ Working width
  - ▷ Drop point
  - ▷ Bound. sprd.type: select Limited bd
  - ▷ Applic. rate (%)



The display at the screen may vary depending on the configured software version.

- Observe the separate operator's manual of the AXENT ISOBUS machine control unit.



- ▶ In the main menu, activate the limited border spreading function.

*The settings in the Fertiliser settings menu are applied.*

*The currently selected mode is displayed in the top of the operating screen.*

- ▶ Follow the instructions of the separate AXENT ISOBUS operator's manual.

■ **Example of full border spreading during normal fertilizing**

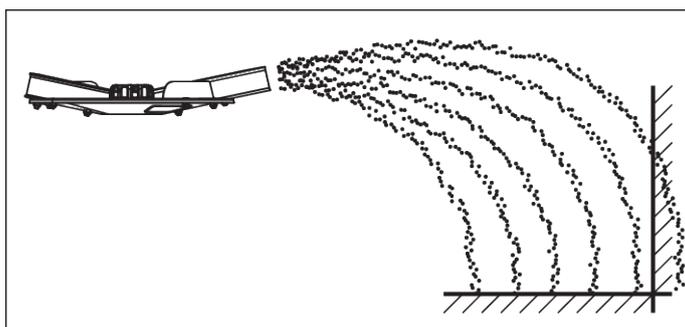


Fig. 66: Full border spreading during normal fertilizing

Full border spreading in normal fertilizing mode refers to a spreading technique in which a bit more fertilizer lands beyond the border of the field. Therefore, there is just a slight underfertilization at the field boundary.

- ▶ Enter the values from the fertilizer chart in the Fertiliser settings menu:
  - ▷ Application rate
  - ▷ Working width
  - ▷ Drop point
  - ▷ Bound. sprd.type: select Full bord..
  - ▷ Applic. rate (%)



The display at the screen may vary depending on the configured software version.

- Observe the separate operator's manual of the AXENT ISOBUS machine control unit.



- ▶ In the main menu, activate the full border spreading function.  
*The settings in the Fertiliser settings menu are applied.*  
*The currently selected mode is displayed in the top of the operating screen.*
- ▶ Follow the instructions of the separate AXENT ISOBUS operator's manual.

#### 7.4.4 Setting the working width

##### ■ Selecting the correct spreading disc

Various spreading discs are available for implementation of the working width depending on the fertilizer type.

Spreading disc type	Working width
S4	20 m - 28 m
S6	27 m - 33 m
S8	32 m - 36 m
S10	32 m - 48 m
S12	36 m - 45 m

There are two different, permanently installed spreader vanes on every spreading disc. The spreader vanes are labeled in accordance with their type.

#### ! WARNING!

##### Risk of injury from rotating spreading discs

The distribution unit (spreading discs, spreading vanes) may catch and pull in body parts or objects. Contact with the distribution unit may injure, crush or cut off body parts.

- ▶ Maximum admissible mounting heights at front (V) and rear (H) are to be complied with at all times.
- ▶ Ensure that nobody is present in the hazard zone of the machine.
- ▶ Do not remove deflectors mounted on the hopper.

Spreading disc type	Left-hand spreading disc	Right-hand spreading disc
S4	S4-L-200 S4-L-270	S4-R-200 S4-R-270
S4 VxR	S4-L-200 VxR S4-L-270 VxR	S4-R-200 VxR S4-R-270 VxR
S6 VxR plus (coated)	S6-L-255 VxR S6-L-360 VxR	S6-R-255 VxR S6-R-360 VxR

Spreading disc type	Left-hand spreading disc	Right-hand spreading disc
S8 VxR plus (coated)	S8-L-390 VxR S8-L-380 VxR	S8-R-390 VxR S8-R-380 VxR
S10 VxR plus (coated)	S10-L-340 VxR S10/S12-L-480 VxR	S10-R-340 VxR S10/S12-R-480 VxR
S12 VxR plus (coated)	S12-L-360 VxR S12-L-480 VxR	S12-R-360 VxR S12-R-480 VxR

### ■ Dismounting and mounting spreading discs

#### **⚠ DANGER!**

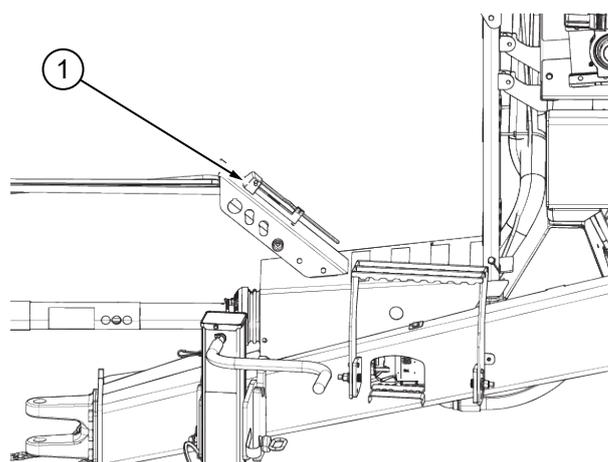
##### **Danger of injury due to running engine**

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

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

For disassembly and assembly of specific components at the machine, the adjustment lever is required as tool. It is located at the front of the machine.

- [1] Adjustment lever (left in direction of travel, hose bracket)



*Fig. 67: Adjustment lever*

**⚠ DANGER!****Danger of injury due to running engine**

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

- ▶ **Never** mount or dismount spreading discs while the engine is running or the PTO shaft of the tractor is rotating.
- ▶ Switch off the tractor engine.
- ▶ Remove the ignition key.

**Dismounting the spreading discs**

- ▶ Use the adjustment lever to loosen the cap nut of the spreading disc.



Fig. 68: Loosen the cap nut

- ▶ Unscrew the cap nut.
- ▶ Remove the spreading disc from the hub.
- ▶ Put the adjustment lever back into the designated bracket. See *1 Adjustment lever (left in direction of travel, hose bracket)*



Fig. 69: Unscrew the cap nut

### Mounting the spreading discs

- ✓ The tractor engine is switched off and locked to prevent unauthorized starting.
  - ✓ Mount the left spreading disc on the left side in the direction of travel and the right spreading disc on the right side in the direction of travel.
    - Make sure that the left and right spreading discs are not confused.
    - The following procedure is for mounting the left-hand spreading disc.
    - Mount the right-hand spreading disc according to these instructions as well.
- ▶ Put the left spreading disc on the left spreading disc hub.
- The spreading disc must be placed level on the hub (if required, remove dirt).



The pins on the spreading disc holders have different positions on the left and right side. The correct spreading disc is the one that fits precisely into the spreading disc holder.

- ▶ Carefully position the cap nut (do not tilt).
- ▶ Tighten the cap nut with approx. 38 Nm.



The cap nuts have an internal locking mechanism that prevents them from coming loose. The locking mechanism must be noticeable while tightening, otherwise, the cap nut is worn and must be replaced.

- ▶ Check that there is clearance between the spreading vanes and the outlet by turning the spreading discs by hand.

### 7.4.5 Adjusting the drop point



The machine has an electronic drop point adjustment. The electronic drop point adjustment is described in a separate operator's manual for the machine control unit. This separate operator's manual is supplied with the machine control unit.

With selection of the spreading disc type, a particular range for the working width is defined. By altering the drop point, the working width can be accurately set and adjustments to different fertilizer types can be made.

The drop point adjustment can be seen on the scale plate on the side.

- **Adjustment towards smaller numbers:** The fertilizer is dropped earlier. This results in spreading patterns for smaller working widths.
- **Adjustment towards larger numbers:** The fertilizer is dropped later and is spread more towards the outside in the overlap zones. This results in spreading patterns for larger working widths.



Fig. 70: Drop point display (example)

### 7.4.6 Setting the application rate



The machine has an electronic slide actuator for setting the application rate on the fertilizer spreading unit.

The electronic metering slide actuator is described in a separate operator's manual for the electronic machine control unit.



Fig. 71: Scale for displaying the application rate

### 7.4.7 Spreading at the headlands

In order to achieve good fertilizer distribution in headlands, a precise arrangement of the tramlines is essential.

#### Limited border spreading

Spreading at the headlands in limited border spreading mode (reduced speed, drop point adjustment, and reduced quantity).

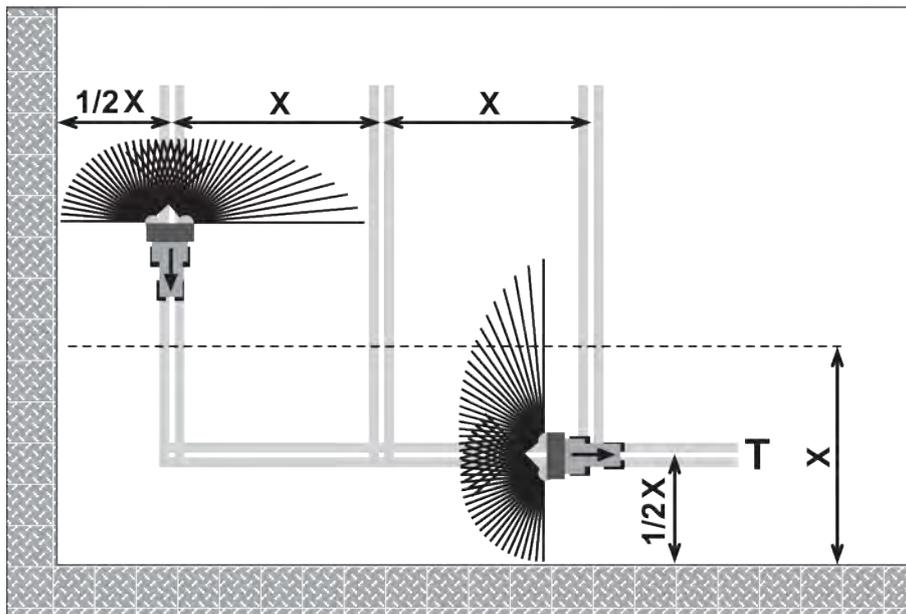


Fig. 72: Limited border spreading

[[T]] Headland track

[[X]] Working width

- Place the headland track [T] half the working width [X] away from the border of the field.

When continuing spreading in the field after headland track spreading note the following:

- Switch off the limited border spreading system.

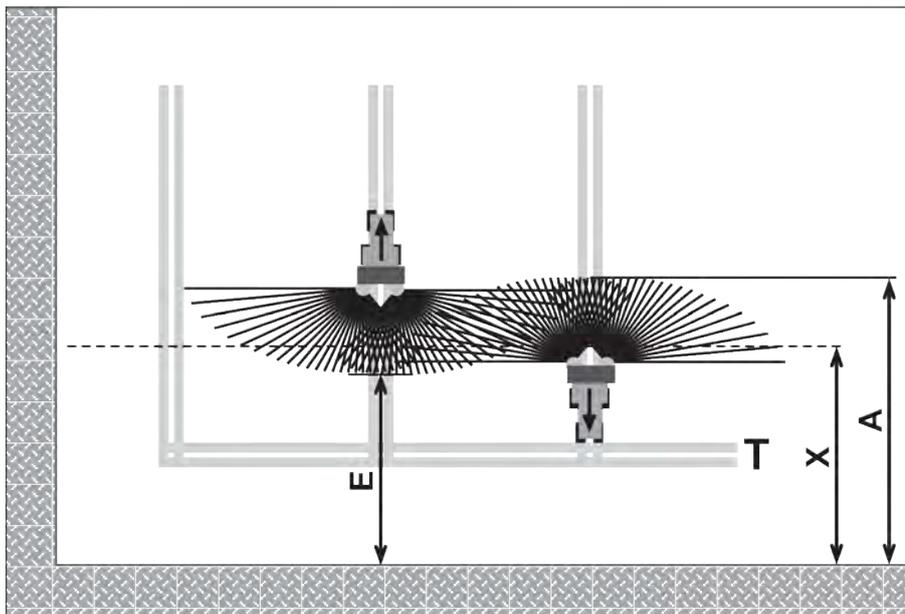


Fig. 73: Normal spreading

- |   |                      |
|---|----------------------|
| [[A]] End of spreading fan when spreading in the headland track | [[T]] Headland track |
| [[E]] End of spreading fan when spreading in the field          | [[X]] Working width  |

The metering slides open or close at different distances to the field border of the headlands when traveling backwards and forwards.

#### Driving out of the headland track

- ▶ **Open** the metering slides if the following condition is met:
  - ▷ The end of the spreading fan on the field [E] is at approx. half of the working width + 4 to 8 m from the field boundary of the headland.

The tractor is then located at different distances in the field, depending on the spreading width of the fertilizer.

#### Driving into the headland track

- ▶ Close the metering slides **as late as possible**.
  - ▷ The end of the spreading fan should ideally lie on the field [A] at a distance of approx. 4 to 8 m wider than the working width [X] of the headlands.
  - ▷ This cannot always be achieved depending on the spreading distance of the fertilizer and the working width.
- ▶ Alternatively, the headland track can be passed or a 2nd headland track can be prepared.

Follow these instructions in order to ensure an environmentally friendly and economical working method.

### 7.4.8 Spreading sideways to the slope

When driving on the side of the slope, the machine may drift. Kingpin steering (optional equipment) may be applied to compensate sloping grounds. Use the steering computer for this.



For operation of the steering computer, please observe the kingpin steering operator's manual. **TRAIL-Control** by Müller Elektronik.

**TRAIL-Control** helps you as follows:

- The steering computer keeps the machine in the tractor track.
- When working on a hill, the **TRAIL-Control** steers the machine upwards to prevent it from sliding out of the tractor track.

#### **WARNING!**

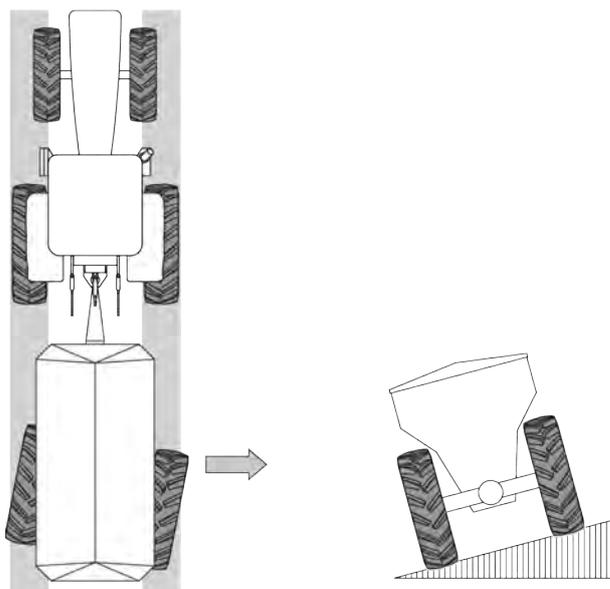
##### **Risk of an accident if the TRAIL-Control is not calibrated**

If the middle position is not calibrated, the machine can drive with an offset to the tractor track.

This can result in a traffic accident.

Before driving on a street, always observe the following:

- ▶ Calibrate the TRAIL-Control; to do this, please refer to the TRAIL-Control operator's manual by Müller Elektronik.
- ▶ When you are driving straight ahead, make sure that the machine is towed in a line behind the trailer.
- ▶ Switch off the TRAIL-Control.



*Fig. 74: Kingpin steering (optional equipment)*



**TRAIL-Control** Use only during spreading operation.

## 7.5 Spreading dry organic fertilizer and lime

### ■ UNIVERSAL-PowerPack

#### 7.5.1 Spreading operation sequence

##### Preparation

- ▶ Couple the machine to the tractor, see *Chapter 6.6 - Installing the machine at the tractor - Page 49*.
- ▶ Remove the feeder mesh, see *Chapter 6.7.2 - Feeder mesh disassembly - Page 61*.
- ▶ Remove the partition plate, see *Chapter 6.7.3 - Partition plate disassembly - Page 61*.
- ▶ Mount the UNIVERSAL-PowerPack spreading module to the machine, see *Chapter 6.7 - Fitting the spreading unit at the machine - Page 60*.
- ▶ Close the pre-metering slide.
- ▶ Pour in fertilizer or lime, see *Chapter 6.9 - Filling the machine - Page 70*.
- ▶ Machine settings (density, forward speed, working width, application rate, etc.).
  - ▷ See operator's manual of the machine control unit

##### Spreading

- ▶ Travel to the spreading location.
- ▶ Activate the PTO.
- ▶ Open the pre-metering slide and start spreading:
  - ▷ Start spreading.
  - ▷ Finish spreading operations and close the pre-metering slide.
  - ▷ Disengage the PTO shaft.

##### Cleaning/maintenance

- ▶ Empty the remaining quantity.
- ▶ Park the machine, see *Chapter 7.7 - Parking and unhitching the machine - Page 96*.
- ▶ Clean and maintain the machine, see *Chapter 9 - Maintenance and service - Page 103*.

## 7.5.2 Adjusting the drop point

### DANGER!

#### Danger of injury due to running engine

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

- ▶ Never carry out the operations for discharging the residual quantity while the motor/drive shaft is switched on.
- ▶ Switch off the tractor engine.
- ▶ Remove the ignition key.
- ▶ Ensure that nobody is present in the **hazard zone**.

The universal spreading unit is set by default to the neutral position in the factory for even distribution of fertilizer and lime.



Fig. 75: Normal spreading pattern, drop point in the neutral position

Both markings are centered for the neutral position.

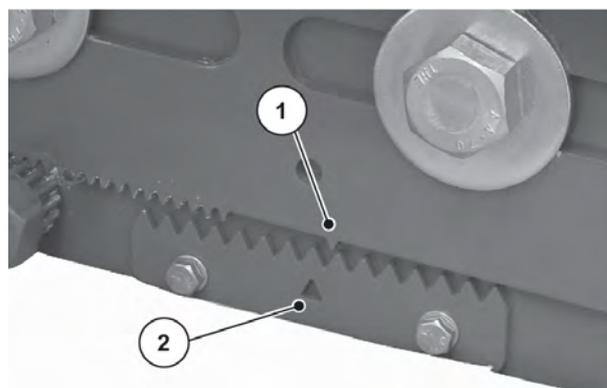


Fig. 76: Drop point in the neutral position

- [1] Marking notch      [2] Marking of neutral position



Tightening torque of the mounting screws: 300 Nm

### ■ Optimization of the spreading pattern depending on the properties of the fertilizer and lime type

Manually adjust the drop point by setting the moving part of the universal spreading unit forward or back.

- ▶ Release the mounting screws [1] on either side with a screw wrench of size SW 36.

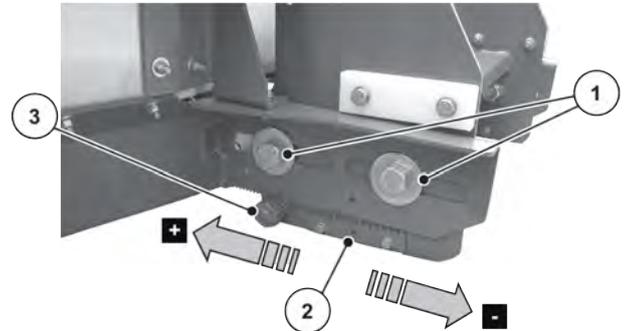


Fig. 77: Adjusting the drop point

- [1] Mounting screws
- [2] Marking of neutral position
- [3] Adjustment screw

#### Too little fertilizer in the center:

- ▶ Turn the adjustment screw [3] with a screw wrench of size SW 36 to set the moving part back in the direction of travel [+].

*The drop point moves forward.*

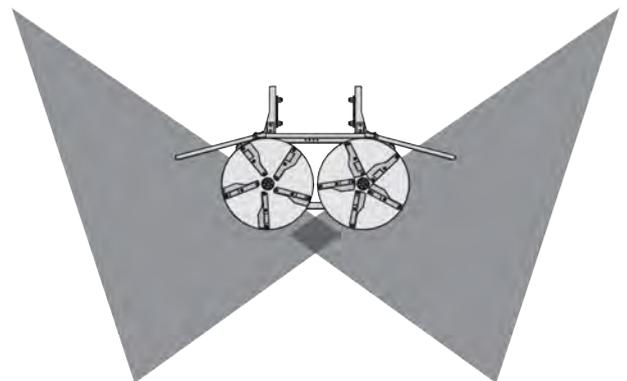


Fig. 78: Not enough fertilizer or lime in the center

#### Too much fertilizer or lime in the center:

- ▶ Turn the adjustment screw [3] with a screw wrench of size SW 36 to set the moving part forward in the direction of travel [-].

*The drop point moves back.*



Fig. 79: Too much fertilizer or lime in the center

### 7.5.3 Setting the machine for lime spreading

The pre-metering slides and the conveyor belt speed depending on the forward speed define the application rate for lime spreading.

- ▶ In the AXENT ISOBUS electronic machine control unit, activate the Calc AUTO km/h operating mode.



The overloading function of the machine in combination with the universal spreading unit is described in the separate operator's manual of the machine control unit. This separate operator's manual is an integral part of the AXENT ISOBUS machine control unit.

- ▶ Settings to be carried out:

- ▷ Working width
- ▷ Application rate
- ▷ Spreading disc type
- ▷ Flow factor

For the settings, refer to the table.

- ▶ Spreading is started by the AXENT ISOBUS machine control unit.

*The conveyor belt starts up.*

*The comb roller starts.*

#### ■ **Flow factor for lime type (UNIVERSAL-PowerPack)**

- Application rates at 10 km/h and 30 cm pre-metering slide opening

Lime type	Density (kg/m <sup>3</sup> )	Grinding stage	Flow factor	Dry substance (%)	Working width (m)	Application rate max. (kg/ha)
Burnt lime, ground	1100	1	0.88	100	10	9700
Burnt lime, granulated	1100	-	0.88	100	18	5380
Converter lime	1300	2	1.04	90	15	7640
Carbonated lime	1000	-	0.80	72	12	7340
Mixed lime	1100	2	0.88	88	12	8080
Calcium carbonate	1200	2	0.96	92	12	8810
Magnesium lime	1100	1	0.88	94	10	10580
Black lime	900	1	0.72	83	12	6610

For lime types which do not appear in the list, it is possible to calculate the flow factor with the following formula.

- Flow factor (FF) = Density (kg/liter) x 0.8

## 7.6 Discharging residual material

Empty the machine daily after use. This prevents corrosion and clogging and the properties of the fertilizer and lime are maintained.

### 7.6.1 Safety instructions

#### **DANGER!**

##### **Risk of injury due to rotating spreading discs**

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

- ▶ Prior to discharge of residual material, disassemble the spreading discs.
- ▶ Ensure that nobody is present in the hazard zone.

##### **Also ensure the following specific preconditions:**

- The machine is parked on even and solid ground and secured against tilting and rolling.
- During discharge of residual material, the machine is coupled to the tractor.
- Nobody is present in the hazard zone.
- AXIS-PowerPack:
  - The spreading discs are disassembled. See 7.4.4.2 *Dismounting and mounting spreading discs*
- UNIVERSAL-PowerPack: The universal spreading unit is detached.



The AXIS-PowerPack fertilizer spreading unit is connected to an electronic control unit. A message indicates that the drop point is temporarily set to drop point position 0 during discharge of residual material.

Observe the separate AXENT ISOBUS operator's manual.

### 7.6.2 Emptying the machine

Residual material is discharged by opening the pre-metering slides and activating the conveyor belt.

#### **AXIS-PowerPack**

- ▶ Position a collection vessel under the AXIS-PowerPack fertilizer spreading unit.
- ▶ The discharge of residual material is started via the AXENT ISOBUS machine control unit.
- ▶ Simultaneously, start discharging residual material at the spreading unit via the AXENT ISOBUS machine control unit.
- ▶ Follow the instructions on the screen.
- ▶ After completely emptying the spreading material hopper, clean the machine. See 9.2 *Cleaning the machine*.

**UNIVERSAL-PowerPack**

- ▶ At the end of the field, discharge the lime or return it to the lime deposit.
- ▶ The discharge of residual material is started via the AXENT ISOBUS machine control unit.
- ▶ Move the tractor forward to prevent contact between the lime deposit and the conveyor belt.
- ▶ After completely emptying the spreading material hopper, clean the machine. See chapter 9.2 *Cleaning the machine*.

**7.7 Parking and unhitching the machine****! WARNING!****Risk of tilting**

The machine is a single-axle vehicle. One-sided loading in the rear may lead to tilting of the machine.

This may cause personal injury and property damage.

- ▶ Park the machine on even and solid ground.
  - ▶ In case of uneven loading of the machine in the rear, never decouple it from the tractor.
- Only park the **machine when it is empty**.
  - ▶ Park the vehicle train on even and solid ground.
  - ▶ Turn the tractor engine off and remove the ignition key.

**■ Pneumatic brake system**

- ▶ Pull the button [1] of the parking brake.  
*The parking brake is engaged.*



*Fig. 80: Engaging the manual parking brake*

[1] Parking brake      [2] Operating brake

- ▶ Take out the wheel chocks from the transport bracket at the mud guard.
- ▶ Press the sliding pin [1] and fold open the wheel chucks.

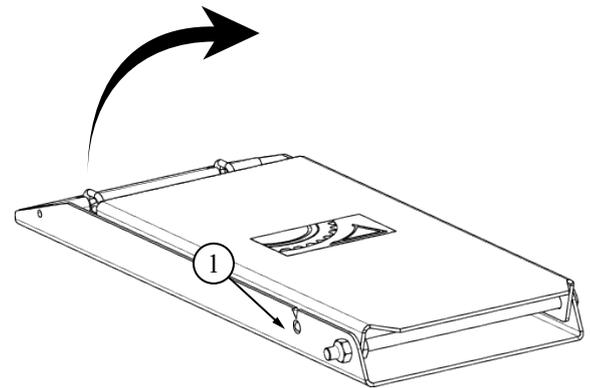


Fig. 81: Fold out the wheel chock

- ▶ Apply wheel chocks at both wheels.



Fig. 82: Positioning the wheel chock

- ▶ Extend the hydraulic support stand.
- ▶ When decoupling the machine, **always decouple the first red coupling head** (supply) and then the **yellow** coupling head of the pneumatic braking system.
- ▶ Disconnect the electrical connections from the tractor.
- ▶ Protect all connectors with dust caps.
- ▶ Decouple the universal drive shaft from the tractor.
- ▶ Depressurize the hydraulic system of the tractor (**floating position**).
- ▶ Disconnect the hydraulic connections from the tractor.
- ▶ Decouple the machine from the tractor.
- ▶ Disassemble the steering axle gyroscope (optional equipment) and engage it into the designated bracket.

- ▶ Place all cables and hoses at the panel over the towing bar in the designated bracket.

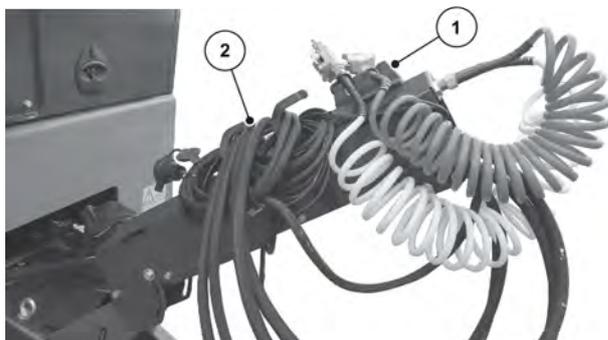


Fig. 83: Transport bracket for cables, hydraulic hoses and pneumatic lines

- [1] Holder for hydraulic hoses and electric cables    [2] Holder for pneumatic lines of the brake system

*The machine is decoupled and parked.*

#### ■ **Hydraulic brake system**

- ▶ Turn the hand crank of the parking brake clockwise.

*The parking brake is engaged.*



Fig. 84: Engaging the manual parking brake

- ▶ Take out the wheel chocks from the transport bracket at the mud guard.
- ▶ Press the sliding pin [1] and fold open the wheel chocks.



Fig. 85: Fold out the wheel chock

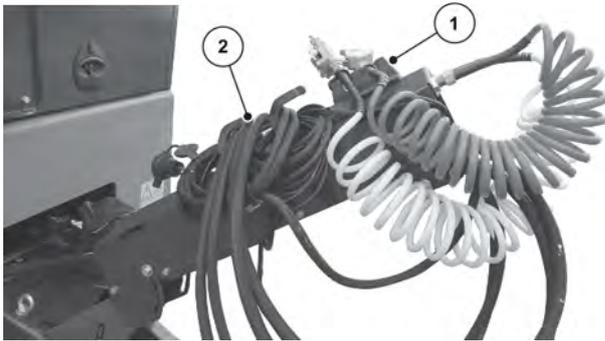
- ▶ Apply wheel chocks at both wheels.



*Fig. 86: Positioning the wheel chock*

- ▶ Extend the hydraulic support stand.
- ▶ When decoupling the machine, **always decouple the first red coupling head** (supply) and then the **yellow** coupling head of the pneumatic braking system.
- ▶ Disconnect the electrical connections from the tractor.
- ▶ Protect all connectors with dust caps.
- ▶ Decouple the universal drive shaft from the tractor.
- ▶ Depressurize the hydraulic system of the tractor (**floating position**).
- ▶ Disconnect the hydraulic connections from the tractor.
- ▶ Disconnect the hydraulic braking system (optional equipment) as follows:
  - ▷ Decouple hydraulic couplings.
  - ▷ Disconnect the release chain of the safety valve from the tractor.
- ▶ Decouple the machine from the tractor.
- ▶ Disassemble the steering axle gyroscope (optional equipment) and engage it into the designated bracket.

- ▶ Place all cables and hoses at the panel over the towing bar in the designated bracket.



*Fig. 87: Transport bracket for cables, hydraulic hoses and pneumatic lines*

- [1] Holder for hydraulic hoses and electric cables      [2] Holder for pneumatic lines of the brake system

*The machine is decoupled and parked.*

## 8 Faults and possible causes

### ! WARNING!

#### Risk of injury due to incorrect troubleshooting

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

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

#### Troubleshooting requirements

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



Please take particular note of the warnings in chapter 3 *Safety* and 9 *Maintenance and service*.

Fault	Possible cause	Measure
The conveyor belt does not convey any fertilizer into the hopper of the fertilizer spreading unit.	<ul style="list-style-type: none"> <li>• The universal drive shaft is not connected or switched on.</li> <li>• The machine control unit is not switched on.</li> <li>• The AXENT hopper is empty.</li> <li>• The fertilizer spreading unit is filled completely.</li> <li>• The level sensors in the AXIS-PowerPack are contaminated or defective.</li> <li>• The pre-metering slides are not opened.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Check connections and connectors.</li> <li>▶ Check the function of the sensors or clean them.</li> </ul>
The conveyor belt conveys insufficient fertilizer.	<ul style="list-style-type: none"> <li>• The PTO speed is set too low.</li> <li>• The pre-metering slides are not fully opened.</li> <li>• The consistency of the spreading material is not suitable for spreading with the machine.</li> </ul>	

Fault	Possible cause	Measure
Slippage at the conveyor belt.	<ul style="list-style-type: none"><li data-bbox="667 315 1050 383">• The tension of the conveyor belt is incorrectly set.</li></ul>	▶ Retension the conveyor belt.

## 9 Maintenance and service

### 9.1 Safety



Please note the warnings in the chapter 3 *Safety*

Take **particular note of the instructions** in the section. 9 *Maintenance and service*

Observe the following instructions in particular:

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

#### **DANGER!**

##### **Danger of injury due to running engine**

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

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

- There are two nitrogen tanks in the hydraulic circuit. These also remain under pressure after system shutdown. Slowly and carefully open the screw connections of the hydraulic circuit.

#### ■ **Maintenance plan**

This maintenance plan applies for vehicles subject to normal stress and wear. In case of increased stress and wear, reduce the maintenance intervals accordingly. This helps you prevent damage to the tractor, the machine, or the spreading unit.



For further information, please refer to the operator's manual of the tractor.

Task	before first use	Before operation	After operation	After the first X hours	Every X hours	Daily	Weekly	Every X weeks	Quarterly	Yearly	Every X years	Every X years	At the beginning of the season	At the end of the season										
	Value (X)			10	30	50	100	20	40	50	100	200	500	1000			2			2	6			
<b>Cleaning</b>																								
<i>Cleaning</i>			X																					
<i>Bearings of the guide rollers</i>			X																					X
<i>Draining of cleaning water</i>			X																					X
<i>Dirt deflector and wheels</i>		X	X																					X
<i>Air tank</i>															X									
<b>Lubrication</b>																								
<i>Machine components</i>										X														X
<i>Brake camshaft bearing</i>												X												X
<i>Wheel hub bearing</i>														X										X
<i>Slack adjuster</i>												X							X					
<i>Steering king pin bearing</i>								X																
<i>Metering slide</i>																							X	X
<i>Spreading disc hub</i>																							X	X
<i>Joints, bushes</i>									X														X	X

Task	before first use	Before operation	After operation	After the first X hours	Every X hours	Daily	Weekly	Every X weeks	Quarterly	Yearly	Every X years	Every X years	At the beginning of the season	At the end of the season									
				10	30	50	100	20	40	50	100	200	500	1000			2			2	6		
Drop point adjustment										X												X	X
Universal spreading unit cotter pin										X												X	X
<b>Check</b>																							
Wear parts											X												
Screw connections		X		X																		X	
Trailer coupling												X						X					
Towing bar												X						X					
Wheel nut													X						X				
Electric fuses				X								X										X	
Electric lines		X			X							X										X	
Lighting equipment								X							X								
Electronic control unit		X			X							X										X	
Hydraulic hoses		X								X												X	
Nitrogen tank		X																		X		X	
Hydraulic control block		X																					
Hydraulic cylinders		X														X							
Conveyor belt drive		X														X							
End stop of the steering axle	X																						
Axle angle sensor		X									X												
Trailer unit		X								X												X	
Conveyor belt position		X													X								
Conveyor belt tension				X																			

Task	before first use	Before operation	After operation	After the first X hours	Every X hours	Daily	Weekly	Every X weeks	Quarterly	Yearly	Every X years	Every X years	At the beginning of the season	At the end of the season									
	Value (X)			10	30	50	100	20	40	50	100	200	500	1000			2			2	6		
Belt cleaner		X																	X				
Braking system		X																	X				
Slack adjuster																			X				
Brake pad														X			X					X	
Tires		X															X					X	
Wheels		X																				X	
Bearing clearance of the wheel hub						X					X												
Brake lever length												X										X	
<b>Replacement</b>																							
Hydraulic hoses																						X	
Axial piston pump transmission						X														X			
Belt drive transmission						X														X			
On-board hydraulic system							X													X			

## 9.2 Cleaning the machine

### ■ Cleaning



Spreading material and dirt promote corrosion. Although the machine components are made from corrosion-free material, we recommend that you clean the machine immediately after each use to maintain its value.

- ▶ Only clean oiled machines at washing points fitted with an oil separator.
- ▶ When cleaning with high-pressure, never aim the water jet directly at warning signs, electrical equipment, hydraulic components, and sliding bearings.
- ▶ After cleaning, treat the **dry** machine, **especially the stainless steel parts**, with an environmentally friendly anti-corrosion agent.
  - ▷ A suitable polishing kit can be ordered from authorized dealers for treating rust spots.

## 9.2.1 Cleaning the bearings of the guide rollers

### ■ *Bearings of the guide rollers*

During spreading, dust and dirt accumulate at the guide rollers of the conveyor belt.

- ▶ Clean the guide rollers. For this purpose, open the side covers.

Below, opening the side cover is described. Proceed respectively for all side covers. On every side of the machine, the guide rollers are covered by 3 side covers.

- ▶ Insert the adjustment lever through the side cover into the sheet metal guide.

- ▶ Lift the adjustment lever.

*The locking mechanism is disengaged.*

*The side cover is unlocked.*

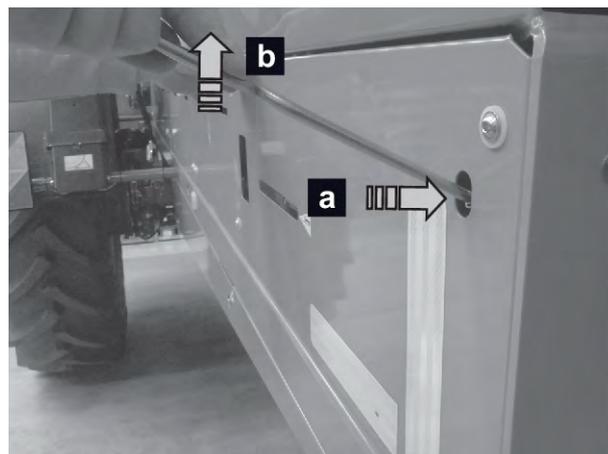


Fig. 88: Using the adjustment lever

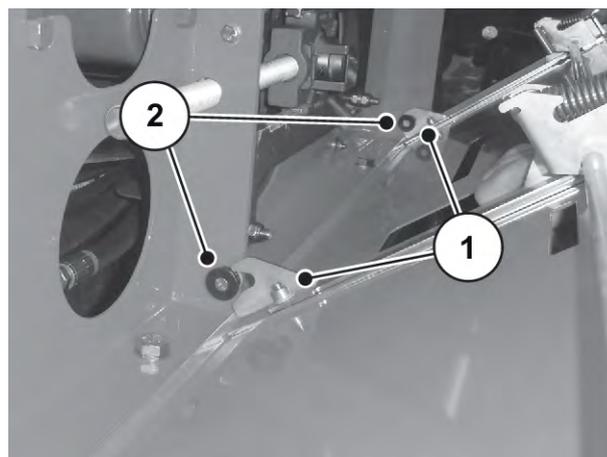
- ▶ Fold open the side cover and remove it.



Fig. 89: Folding open the side cover

- ▶ **Clean the guide rollers with a soft jet of water.**
- ▶ Insert the side cover with the lower metal hook [1] into the brackets [2] on the frame.
- ▶ Close the side cover upwards by hand.

*The side cover is closed and secured.*



*Fig. 90: Assembling the side cover*

## 9.2.2 Draining of cleaning water

### ■ *Draining of cleaning water*

**After cleaning**, there may still be water in the hopper of the machine.

- Cleaning flap position and lever adjustment: See 3.11.2 *Instruction stickers*

- ▶ Open the front maintenance flap in direction of travel.
- ▶ Pull the cleaning flap lever [1].

*The cleaning flap is opened.*

*Water is drained.*



*Fig. 91: Cleaning flap lever*

- ▶ Slide in the cleaning flap lever.

*The cleaning flap is closed.*

## 9.2.3 Clean mud guards and wheels

### ■ *Dirt deflector and wheels*

- ▶ Clean the dirt deflector and the wheels on a regular basis, but at least before driving on public roads every time.

## 9.3 Lubrication plan

Lubrication points are distributed across the entire machine and are sometimes marked with a notice plate.

- ▶ Always keep the notice plates clean and in a legible state.



Fig. 92: Lubrication points notice plate

### 9.3.1 Basic machine lubrication points

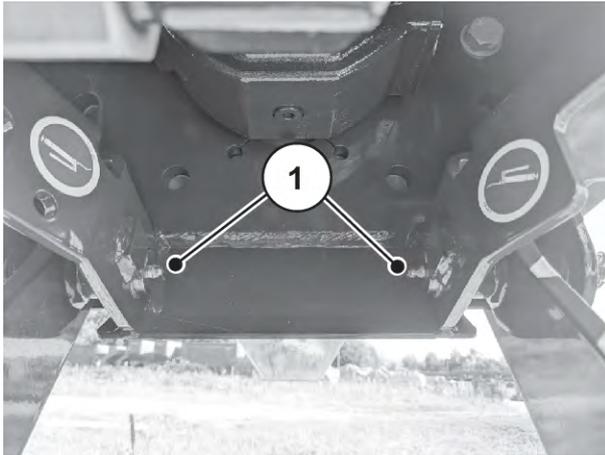
#### ■ Machine components

Lubrication intervals: every 50 operating hours or in shorter intervals under extreme spreading conditions.



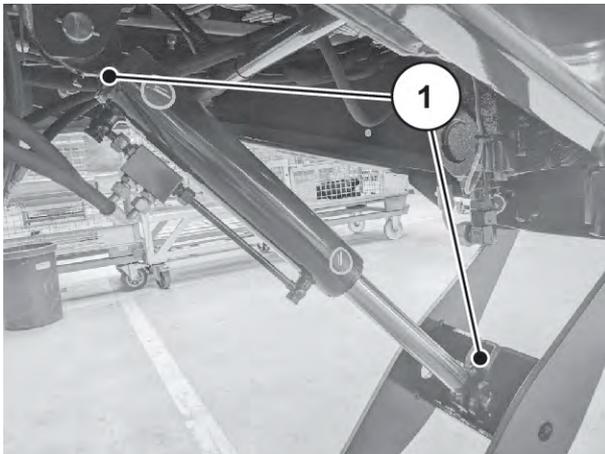
Fig. 93: Ball coupling

[1] Ball coupling lubrication point



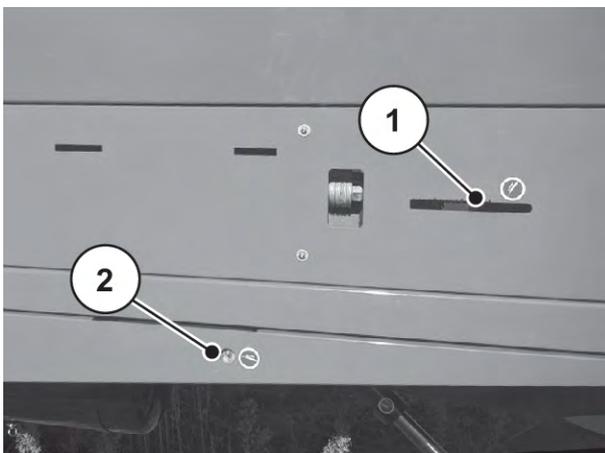
*Fig. 94: Support stand*

[1] Support stand lubrication point



*Fig. 95: Support stand hydraulic cylinder*

[1] Hydraulic cylinder lubrication point



*Fig. 96: Belt drive*

[1] Pulley lubrication point

[2] Towing bar lubrication point

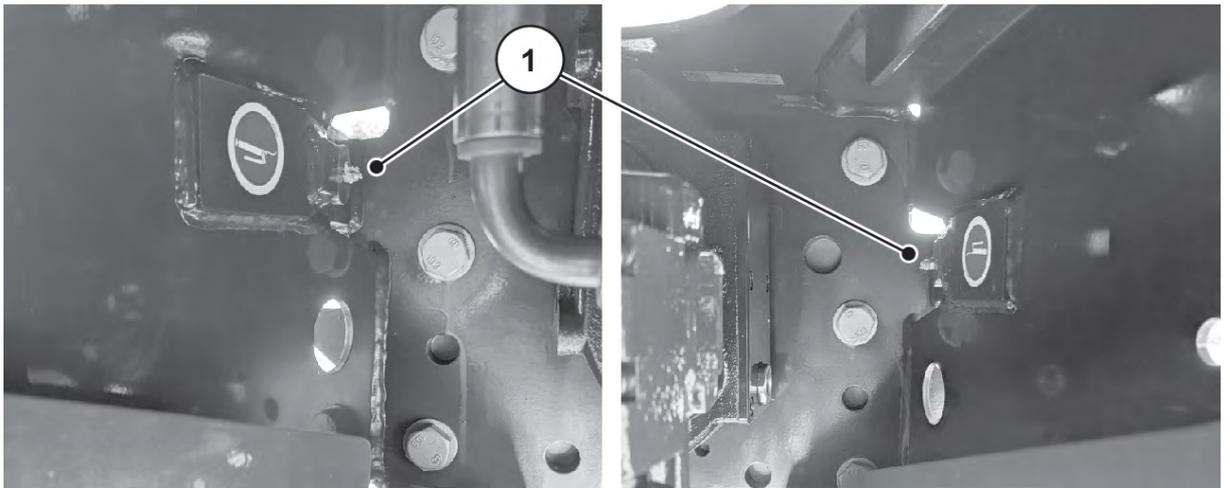


Fig. 97: Towing bar

[1] Towing bar lubrication point

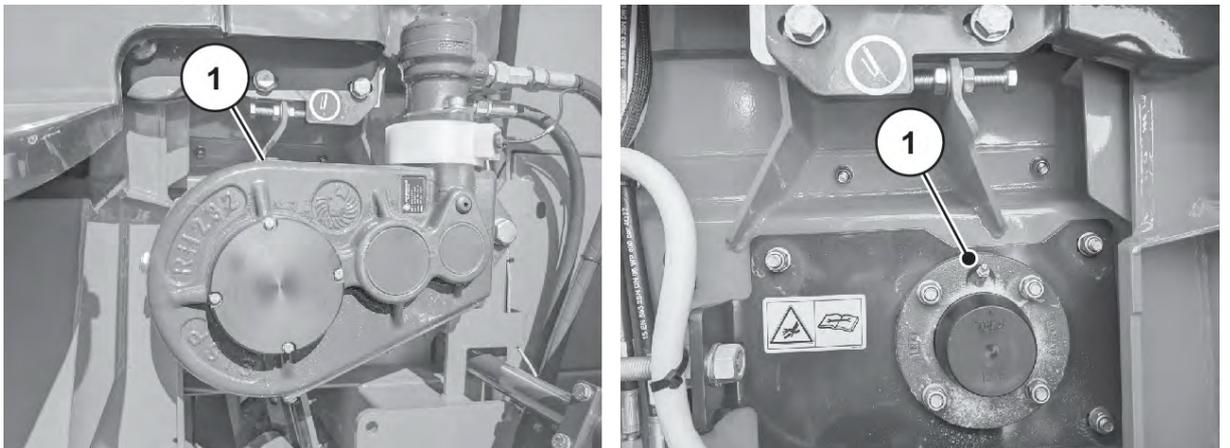


Fig. 98: Belt drive

[1] Conveyor belt drive roller lubrication point

### 9.3.2 Brake camshaft bearing lubrication points

#### ■ Brake camshaft bearing

Lubrication interval: every 200 operating hours and prior to re-commissioning after a long downtime.



Please observe the operator's manual and the axle manufacturer's instructions.



Fig. 99: Rigid axle brake camshaft bearing

[1] Rigid axle lubrication point

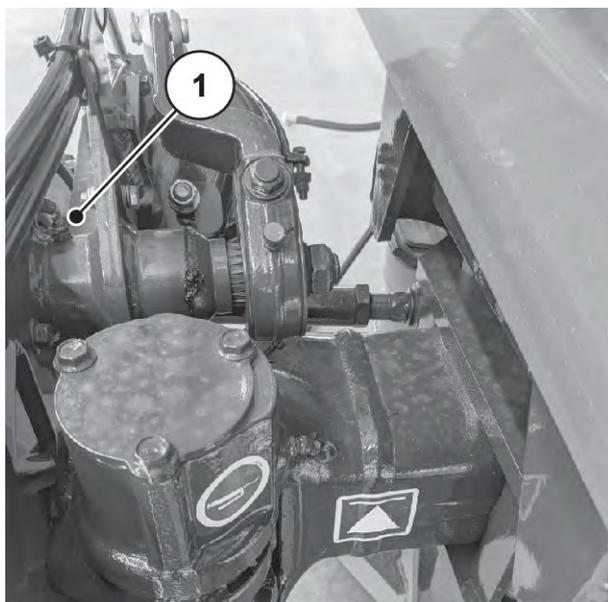


Fig. 100: Steering axle brake camshaft bearing

[1] Brake camshaft bearing lubrication point

### 9.3.3 Wheel hub bearing lubrication points

#### ■ Wheel hub bearing

Lubrication interval: every 1,000 operating hours, at least annually.



Please observe the operator's manual and the axle manufacturer's instructions.

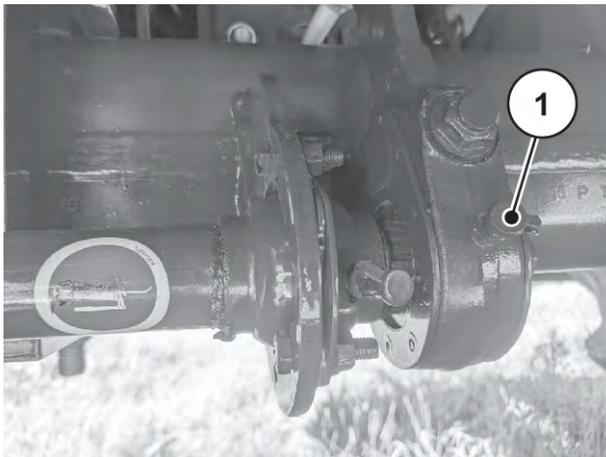
### 9.3.4 Slack adjuster lubrication points

#### ■ *Slack adjuster*

Lubrication intervals: every 500 operating hours, annually at least.

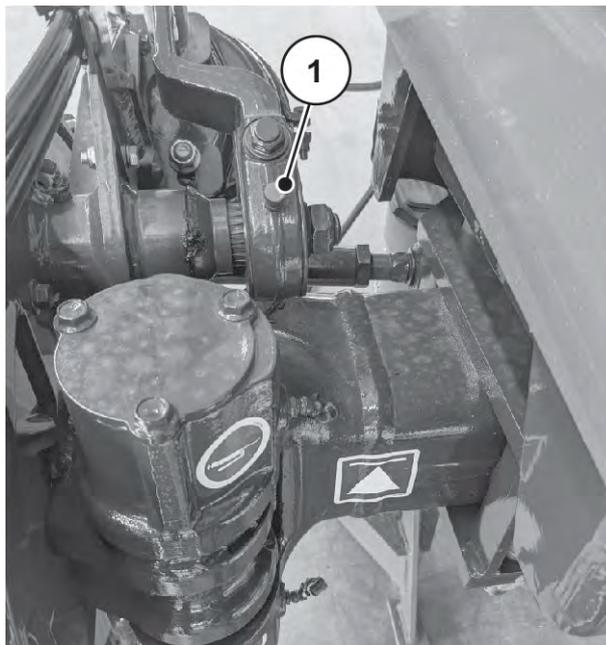


Please observe the operator's manual and the axle manufacturer's instructions.



*Fig. 101: Rigid axle slack adjuster*

[1] Slack adjuster lubrication point



*Fig. 102: Steering axle slack adjuster*

[1] Slack adjuster lubrication point

### 9.3.5 Steering axle lubrication points

#### ■ *Steering king pin bearing*

Lubrication interval: every 40 operating hours.



Please observe the operator's manual and the axle manufacturer's instructions.

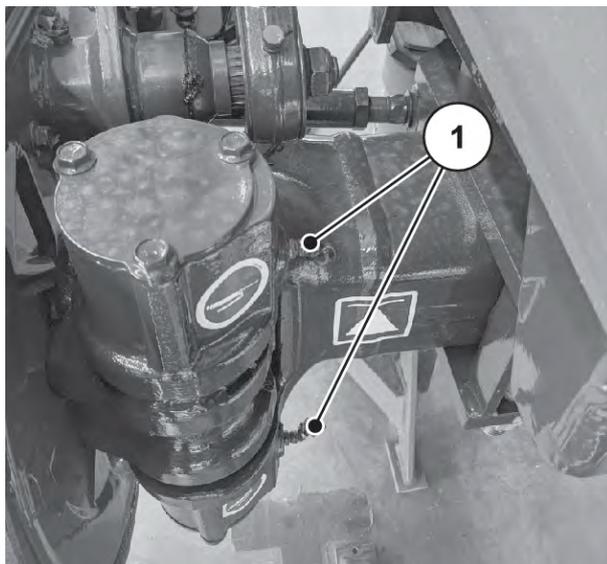


Fig. 103: Steering axle

[1] Steering king pin bearing lubrication point

### 9.3.6 Fertilizer spreading unit lubrication points

#### ■ Lubricating the metering slide

#### ■ *Metering slide*

Keep the metering slide functioning smoothly and lubricate it regularly.

- Lubricant: Grease, oil

#### ■ Lubricating the spreading disc hub

#### ■ *Spreading disc hub*

Keep the pivot and sliding surfaces functioning smoothly and lubricate them regularly.

- Lubricant: Grease

- **Lubricating links and bushes**

- ***Joints, bushes***

The joints and bushes on the agitator drive are designed for dry operation but can be lightly greased.

- Lubricant: Grease, oil

- **Lubricating the drop point adjustment**

- ***Drop point adjustment***

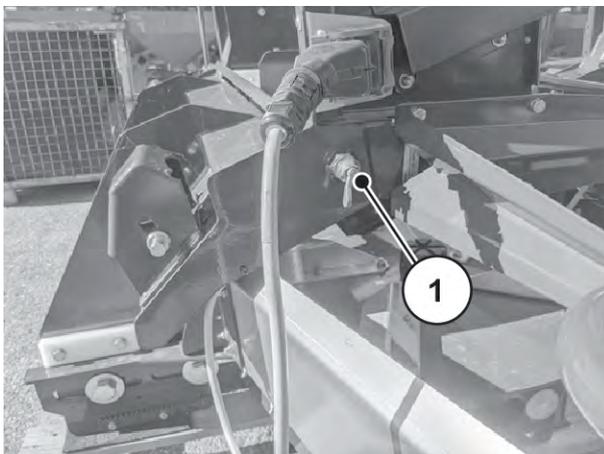
Keep the drop point adjustment on the adjustable floor functioning smoothly and oil it regularly, from the edge inwards and from the ground outwards

- Lubricant: Oil

### 9.3.7 Universal spreading unit lubrication points

- ***Universal spreading unit cotter pin***

Lubrication intervals: every 50 operating hours or in shorter intervals under extreme spreading conditions.



*Fig. 104: Universal spreading unit lubrication point*

- [1] Outlet cotter pin lubrication point (illustration only shows the right side)

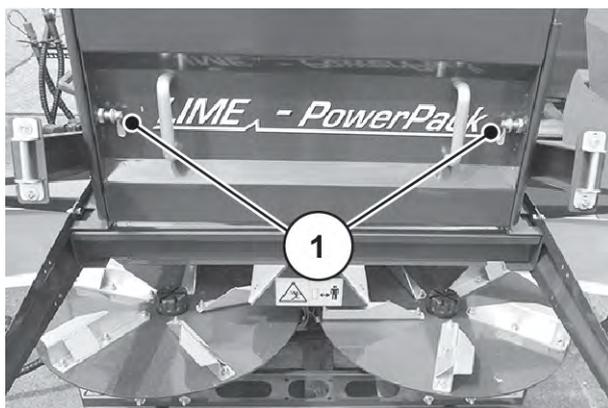


Fig. 105: Universal spreading unit lubrication point

- [1] Lubrication point for comb roller protective cover cotter pin

## 9.4 Wear parts and screw connections

### 9.4.1 Checking wear parts

#### ■ *Wear parts*

Wear parts include: the cleaner at the AXENT outlet, the belt sealing in the AXENT hopper, the sealing profile at the maintenance flap, and all plastic components.

- ▶ Inspect wear parts on a regular basis.
  - ▶ Replace these parts if they show signs of wear, deformation, holes, or aging. Otherwise, the spreading pattern will not be correct.
    - ▷ The durability of wear parts depends, among other things, on the material being spread.
  - ▶ Have the condition of the machine and particularly the attached components, hydraulic system, metering elements, and conveyor belt checked by your specialist dealer after each season.
  - ▶ Replace worn parts in time to prevent consequences resulting from damage.
- 
- All connection elements between the towed machine and the tractor are also subject to wear. This particularly applies for the coupling bracket of the ball coupling or the towing eye of the pin coupling.
  - Spare parts must at least comply with the technical standards specified by the manufacturer. This is assured for example with genuine spare parts.

### 9.4.2 Checking the bolted connections

#### ■ *Screw connections*

The screw connections are tightened with the necessary torque and secured at the factory. Oscillations and vibrations, particularly during the initial hours of operation, can cause screw connections to become loose.

- ▶ Check that all screw connections are tight.



Some of the components have self-locking nuts.

Always use new self-locking nuts when assembling these components.



Observe the tightening torques for the standard screw connections.

- See 12.1 *Table of tightening torque*

#### ■ **Trailer coupling**

- ▶ Check all screw connections for tightness.
- ▶ If necessary, retighten the screw connection of the trailer coupling with 560 Nm.

#### ■ **Towing bar**

- ▶ Check all screw connections for tightness.
- ▶ If necessary, retighten the screw connection of the towing bar with 440 Nm.

#### ■ **Wheel nut**

- ▶ Check the wheel nuts for tightness.
  - ▷ Every 500 operating hours **or after 8,500 km**
- ▶ If necessary, retighten the screw connection with 510 Nm.

## 9.5 **Electrics, electronic system**

#### ■ **Electric fuses**

The power supply of the machine is fuse-protected via the ISOBUS cable of the tractor.

The ISOBUS cable features a **60 ampere** and a **30 ampere** fuse for overload protection. The fuses are located behind the maintenance flap.

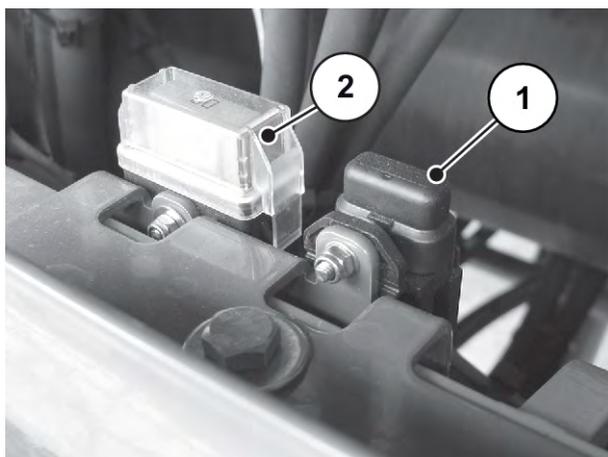


Fig. 106: Fuses at the ISOBUS cable

[1] 30 A fuse

[2] 60 A fuse

#### ■ **Electric lines**

- ▶ Visually inspect all electric lines for wear.
  - ▷ Check particularly for outside damage or breaks.

#### ■ **Lighting equipment**

- ▶ Check that the lighting equipment is in perfect condition every day.
- ▶ Replace damaged parts immediately.
- ▶ Clean dirty parts immediately.

#### ■ **Electronic control unit**

### **! WARNING!**

#### **Risk of injury**

The electronic control unit is checked in real time. This means, the selected function is directly executed by the machine components.

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

Check the following functions of the electronic control unit:

- Conveyor belt start-up
- Pre-metering slide opening
- Check the forward speed sensor
- Checking the filling level sensors



Check the function of the sensors and actuators with the AXENT ISOBUS electronic machine control unit.

- Observe the operator's manual of the AXENT ISOBUS electronic machine control unit.

## 9.6 Hydraulics system

The hydraulic system of the towed machine consists of a hydraulic circuit.

- Control block with oil supply from the on-board axial piston pump.

In the operating mode, the hydraulic system of the machine is subject to high pressure. In the operating mode, the temperature of the oil in the system is approx. 90°C.

### **WARNING!**

#### **Danger due to high pressure and high temperature in the hydraulic system**

Hot fluid escaping under high pressure may cause serious injury.

- ▶ Depressurize the hydraulic system before carrying out any work.
- ▶ Switch off the tractor engine and secure it against restarting.
- ▶ Let the hydraulic system cool down.
- ▶ When checking for leakage, wear protective goggles and protective gloves at all times.

### **WARNING!**

#### **Danger of infection due to hydraulic oil**

Hydraulic oil escaping under high pressure may penetrate the skin and cause infection.

- ▶ In the event of injury caused by hydraulic oil, seek medical attention immediately!

### **WARNING!**

#### **Environmental pollution due to unsuitable disposal of hydraulic and transmission oil**

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

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

### 9.6.1 Checking the hydraulic hoses

#### ■ *Hydraulic hoses*

Hydraulic hoses are subject to high loads. They have to be checked regularly and are to be replaced immediately when damaged.

- ▶ Check the hydraulic hoses for damage on a regular basis or at least before the start of the spreading season, by means of a visual inspection.
- ▶ Before the start of the spreading season, check the age of the hydraulic hoses. Replace the hydraulic hoses when the prescribed period for storage and usage has been exceeded.
- ▶ Replace the hydraulic hoses if they show one or several of the following types of damage:
  - ▷ Damages to the external layer up to the insert
  - ▷ Embrittlement of the external layer (crack formation)
  - ▷ Deformation of the hose
  - ▷ Hose moving out of the hose fitting
  - ▷ Damages to the hose fitting
  - ▷ Resistance and function of the hose fitting reduced due to corrosion

### 9.6.2 Replacing hydraulic hoses

#### ■ *Hydraulic hoses*

Hydraulic hoses are subject to aging. They may only be used for a maximum of 6 years, including a storage period of a maximum of 2 years.



The manufacturing date of a hose line is indicated in one of the hose fittings as year/month (e.g., 2012/04).

#### **Preparation**

- ▶ Ensure that the hydraulic system is depressurized and has cooled down.
- ▶ Provide collection trays for leaking hydraulic oil below the separation points.
- ▶ Have suitable plugs ready in order to prevent a leaking of the hydraulic oil out of the lines which cannot be replaced.
- ▶ Provide suitable tools.
- ▶ Put on your protective gloves and glasses.
- ▶ Ensure that the new hydraulic hose corresponds to the type of hydraulic hose to be replaced. In particular, observe the correct pressure range and hose length.

There are two nitrogen tanks in the hydraulic circuit. These also remain under pressure after system shutdown.

- ▶ Slowly and carefully open the screw connections of the hydraulic circuit.



Observe the different maximum pressure specifications on the hydraulic lines to be replaced.

**Implementation:**

- ▶ Loosen the hose fitting at the end of the hydraulic hose to be replaced.
- ▶ Discharge the oil from the hydraulic hose.
- ▶ Loosen the other end of the hydraulic hose.
- ▶ Put the loose hose end into the oil collection tray immediately and plug the connection.
- ▶ Loosen the hose fixtures and remove the hydraulic hose.
- ▶ Connect the new hydraulic hose. Tighten the hose fittings.
- ▶ Fix the hydraulic hose by means of the hose fixtures.
- ▶ Check the position of the new hydraulic hose.
  - ▷ The hose routing must correspond to the one of the old hydraulic hose.
  - ▷ Friction points are to be excluded.
  - ▷ The hose may not be twisted or tensioned.

*The hydraulic hoses have been replaced successfully.*

### 9.6.3 Nitrogen tank

■ ***Nitrogen tank***

There are two maintenance-free nitrogen tanks for towing bar damping in the hydraulic circuit.

- ▶ Check the external condition of the nitrogen tank every 2 years at the latest.
- ▶ Prior to travel, check the nitrogen tank and all connections for damage.

### 9.6.4 Hydraulic block

■ ***Hydraulic control block***

Via the control block, all drive and adjustment functions controlled by the electronic control unit are supplied.



Fig. 107: Control block

The hydraulic block is used to control the following drives:

- Hydraulic motors of the attached spreading unit.
- Hydraulic motor of the conveyor belt.
- Hydraulic cylinder of pre-metering slides
- Hydraulic cylinder for the steering axle (optional).
- Hydraulic motor of the comb roller (optional).

All other functions are controlled directly by the hydraulic control units of the tractor:

- Support stand
- Hopper cover
- Hydraulic towing-bar suspension

- ▶ Prior to starting the journey, check the control block for damage/leakage .

## 9.6.5 Hydraulic cylinders for adjustment functions

### ■ *Hydraulic cylinders*

- ▶ Regularly check the adjustment functions of all hydraulic cylinders and at least prior to every spreading operation.
- ▶ Check the components for external damages and leaks.

Adjustment functions: Hydraulic cylinder [1] of pre-metering slides

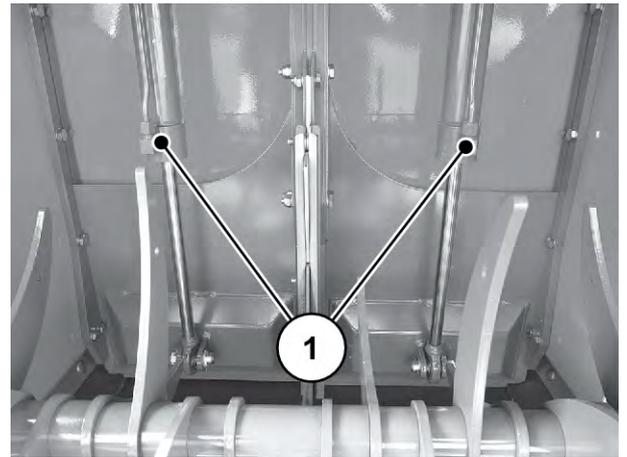


Fig. 108: Pre-metering slide hydraulic cylinder

Adjustment functions: Hydraulic cylinders [1] for hopper cover (front and rear)

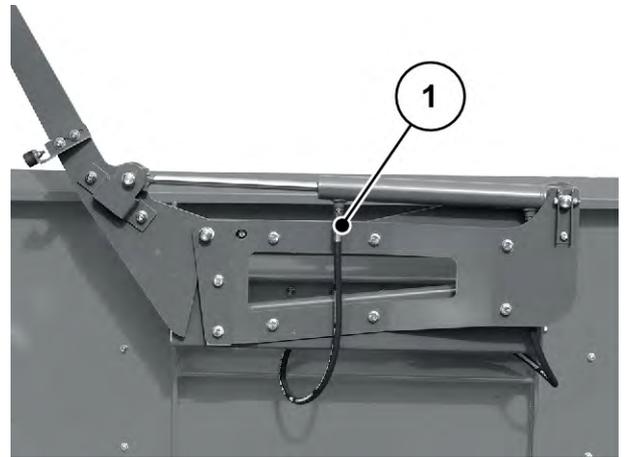


Fig. 109: Hopper cover hydraulic cylinder

## 9.6.6 Checking the conveyor belt drive

### ■ Conveyor belt drive

- ▶ Check the **motor** of the conveyor belt on a regular basis, however, at least prior to every spreading operation.
- ▶ Check the components for external damage and leakage.

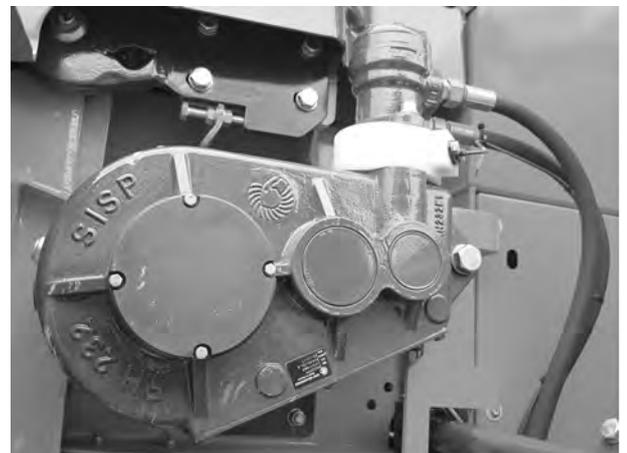


Fig. 110: Checking the conveyor belt motor

### 9.6.7 Oil change and oil filter replacement

#### ■ *Axial piston pump transmission*

Component	Oil volume	Oil designation
Transmission	0.6 l	SAE 75W-90



**Do not mix different types of oil and do not use bio-oils.**

- **Never** mix oils.

#### ■ *Belt drive transmission*

Component	Oil volume	Oil designation
Transmission	2.5 l	SAE 80W-90



**Do not mix different types of oil and do not use bio-oils.**

- **Never** mix oils.

#### ■ *On-board hydraulic system*

Component	Oil volume	Oil designation
On-board hydraulic system (Vario drive)	approx. 60 l	HLVP 32-330



**Do not mix different types of oil and do not use bio-oils.**

- ▶ Prior to draining the oil, position a sufficiently sized collection tray (at least **60 l**) under the hopper. The valve for draining the oil is located under the hopper between the filter cartridge and the towing bar suspension adjustment unit.

- ▶ Open the hydraulic valve [1].
- ▶ Drain any residual oil into the collection tray.

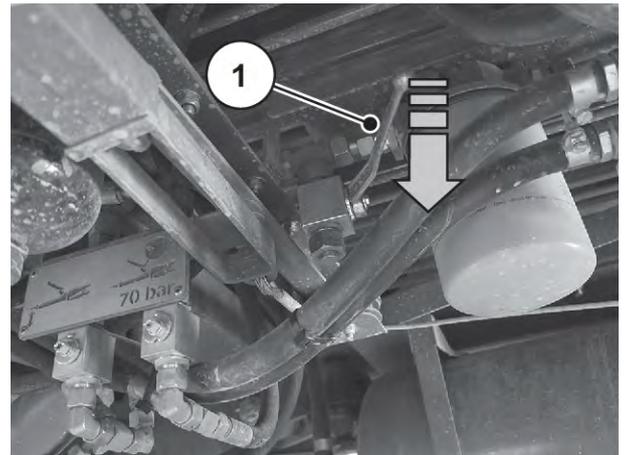


Fig. 111: Draining oil

- ▶ Close the hydraulic valve.
- ▶ Disassemble the oil filter at the control block.

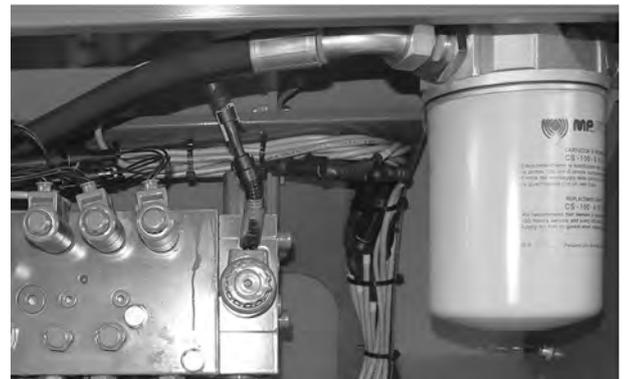
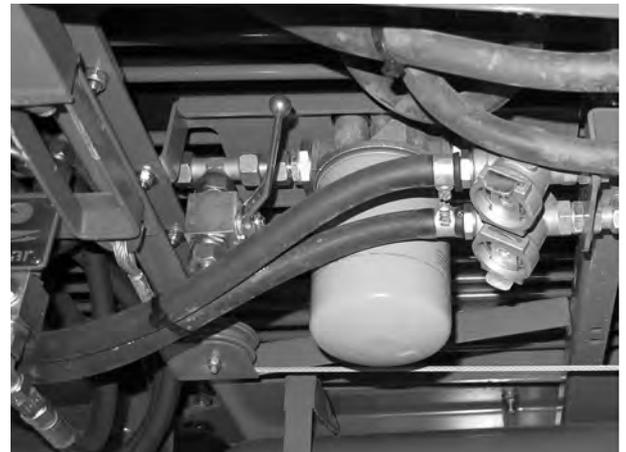


Fig. 112: Control block oil filter

- ▶ Disassemble the oil filter under the hopper.



- ▶ Attach **the new oil filters**.
- ▶ Fold out the steps and climb on the platform.

See *Operating the steps*

### **NOTICE!**

#### **Property damages due to incorrect oil type**

An incorrect type of oil or mixing different types of oil may lead to damage at machine hydraulics and machine components connected to the hydraulic system.

- ▶ Only use the types of oil specified in this operator's manual.
- ▶ **Do not mix** different types of oil. Always carry out a complete oil change.

- ▶ Unscrew the filling screw.
- ▶ Fill in oil.

*The oil level is correct if the filling level indicator is between the maximum and minimum values.*

*Oil changed and oil filter successfully replaced.*

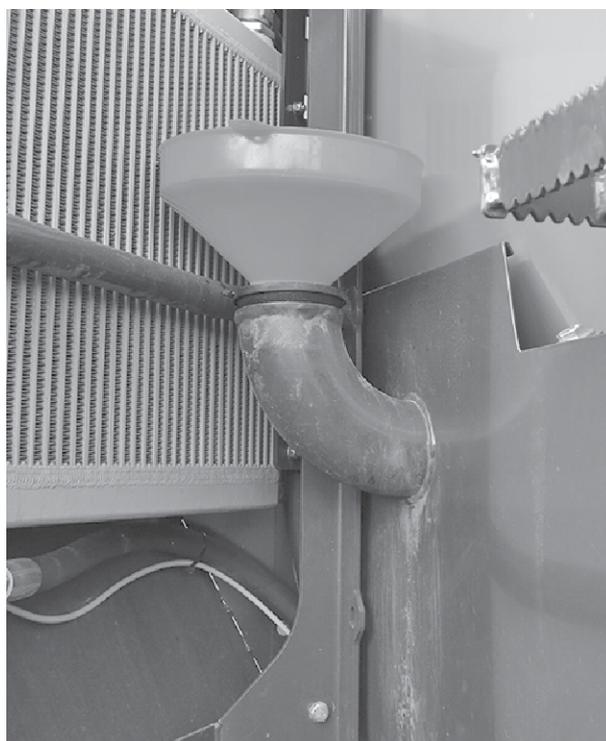


Fig. 113: Filling in oil

## **9.7 Adapting the end stop of the steering axle to the wheel size**

### **■ End stop of the steering axle**

The steering axle of the machine is factory-equipped with the correct number of distance washers [1]. Therefore, the mechanical steering angle stop is preset.



If you want to equip your machine with a different track or wheel size, the number of distance washers must be adapted. To do this, please consult your specialist workshop.

- Only the specialist workshop is permitted to perform retrofitting work on the steering axle.
- You can find information on the calibration of the steering axle in the operator's manual of the **TRAIL-Control** steering computer by **Müller Elektronik**.

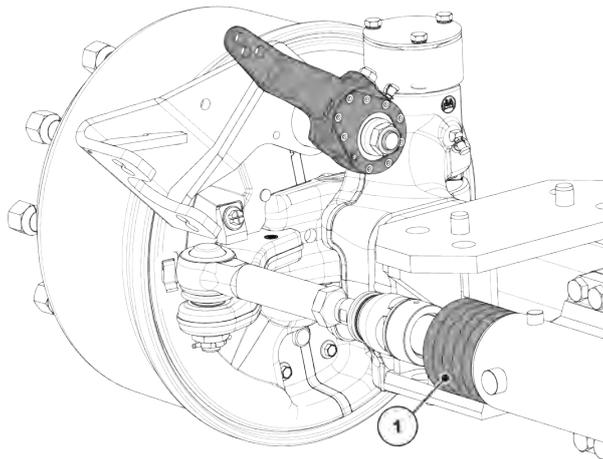


Fig. 114: Distance washers of the steering axle

## 9.8 Checking the function of the axle angle sensor

### ■ Axle angle sensor

#### ⚠ WARNING!

##### Risk of injury due to incorrect angle information

If the angle sensor is defective, programmed incorrectly, or not calibrated/configured, the electronic system can transmit incorrect angle information. There is a risk of injury and tipping.

- ▶ Always check prior to all spreading operations to make that the sensor cable is **not** broken.
- ▶ **Only the specialist workshop** is authorized to replace and position the sensor.

The axle angle sensor is located on the axle to the left in the direction of travel.

- ▶ Check the leak tightness and condition of the sensor [1].
- ▶ Check the retaining screw [2] prior to all spreading operations for tightness or retighten it.

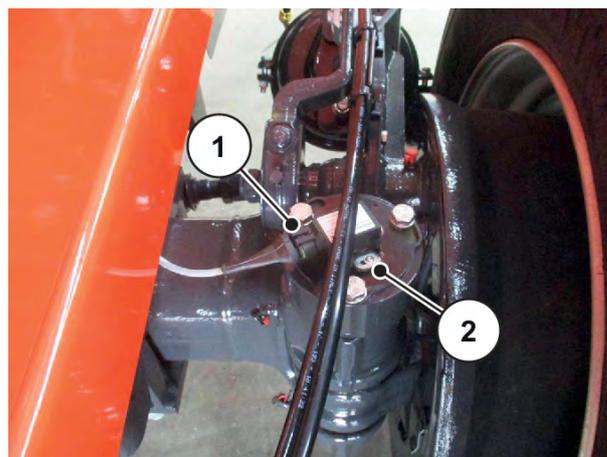


Fig. 115: Axle angle sensor

## 9.9 Replacing the fertilizer spreading unit spreading discs



The work sequence for replacing the spreading discs can be found in section 7.4.4.2 *Dismounting and mounting spreading discs*

## 9.10 Replacing the universal spreading unit spreading discs

### 9.10.1 Dismounting the spreading discs

#### **DANGER!**

##### **Danger of injury due to running engine**

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

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

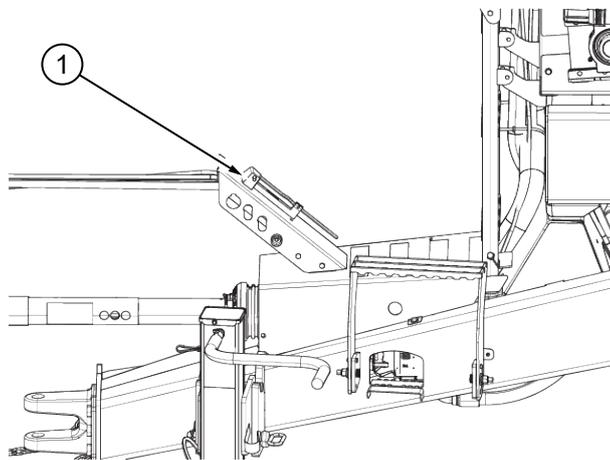
**⚠ DANGER!****Danger of injury due to running engine**

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

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

For disassembly and assembly of specific components at the machine, the adjustment lever is required as tool. It is located at the front of the machine.

[1] Adjustment lever (left in direction of travel, hose bracket)



*Fig. 116: Adjustment lever*

### 9.10.2 Mounting the spreading discs

**Requirements:**

- The engine and the AXENT ISOBUS control unit are switched off and locked to prevent accidental starting.
- ▶ Mount the left spreading disc on the left side in the direction of travel and the right spreading disc on the right side in the direction of travel.

The pin for the left spreading disc is located at the top left to the vertical axle of the holder pin.

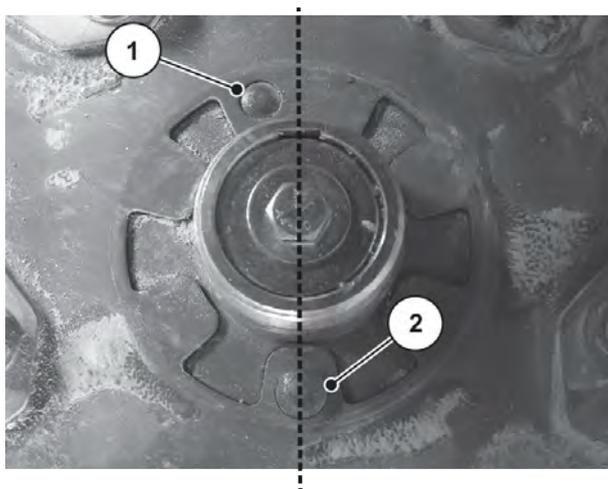


Fig. 117: Observe the different sides of the spreading discs

- [1] Pin for definition of the assembly side of the spreading disc      [2] Holder pin

The following procedure is for mounting the left-hand spreading disc. The right-hand spreading disc is to be mounted according to these instructions as well.

- ▶ Position the left spreading disc on the left spreading disc hub.
  - ▷ Make sure that the spreading disc is placed level on the hub.
  - ▷ If necessary, remove any dirt.
- ▶ Carefully position the cap nut (do not tilt).
- ▶ Well tighten the cap nut, not with the adjustment lever.



The cap nuts have an internal locking mechanism that prevents them from coming loose. The locking mechanism must be noticeable while tightening, otherwise, the cap nut is worn and must be replaced.

- ▶ Check that there is clearance between the spreading vanes and the outlet by turning the spreading discs by hand.

## 9.11 Hitch

### ■ Trailer unit

- ▶ Check the towing eye/ball coupling for wear on a regular basis.

## 9.12 Setting of the towing bar suspension

To ensure correct function of the attached spreading unit, the AXENT hopper has to be in a horizontal position independent from the operating conditions.

The towing bar suspension is preset at the company and suitable for most application conditions. To prevent accidental incorrect adjustment, both levers of the shut-off valves are disassembled and supplied separately with the machine.

Depending on the properties of the tractor, the height of the coupling points may vary (e.g., small wheels, low coupling points, etc.). For this reason, the position and the spring properties of the towing bar can be adjusted.

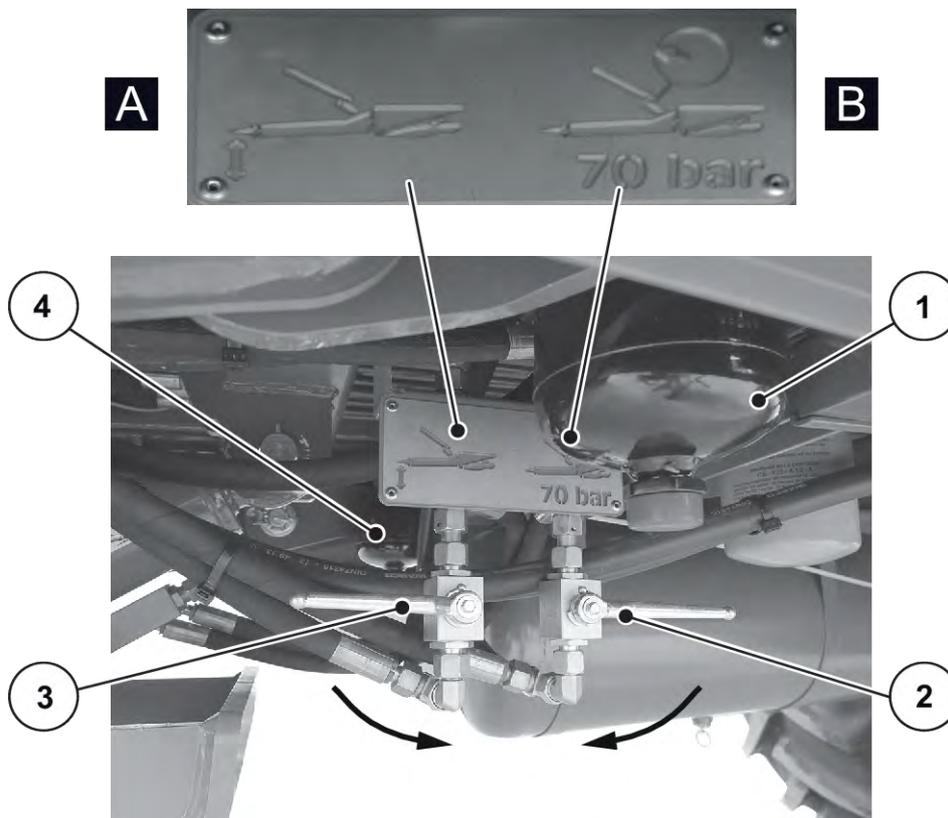


Fig. 118: Setting the towing bar suspension

- |  |   |
|--|---|
| [A] Towing bar height adjustment                     | [2] Towing bar damping shut-off valve, closed         |
| [B] Pressure spring adjustment                       | [3] Towing bar height shut-off valve, closed          |
| [1] Nitrogen tank at left towing bar spring cylinder | [4] Nitrogen tank at right towing bar spring cylinder |

**Requirements:**

- The machine is parked on even and solid ground and secured against tilting and rolling.
- The machine is attached to the tractor.
- Nobody is present in the hazard zone.

### Checking the machine inclination

- ▶ Measure the clearance to the ground at the front [V] and rear [H] bottom edge of the hopper frame.

In case of a deviation of more than 40 mm between both dimensions, adjust the height of the towing bar accordingly.

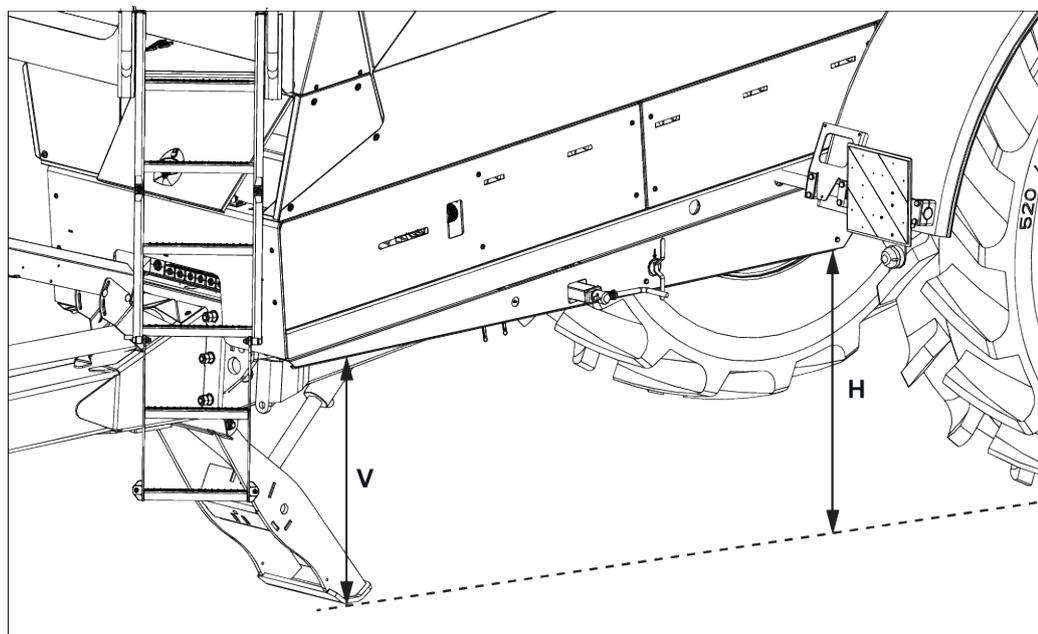


Fig. 119: Checking the machine inclination

- |  |   |
|--|---|
| [H] Clearance between hopper frame bottom edge/floor, rear | [V] Clearance between hopper frame bottom edge/floor, front |
|--|---|

### Setting the towing bar height

- ▶ Assemble levers at the shut-off valves.
- ▶ Open both shut-off valves.

*The hydraulic circuit for towing bar suspension and the support stand is open.*

*The hydraulic circuit of both towing bar cylinders is connected to the hydraulic circuit of the support stand.*

- ▶ With the hydraulic control unit of the tractor, retract the support stand until the towing bar cylinders are completely retracted.
- ▶ With the hydraulic control unit of the tractor, extract the support stand until the machine is in horizontal position ( $[V] = [H]$ ).

- ▶ Close the left shut-off valve.

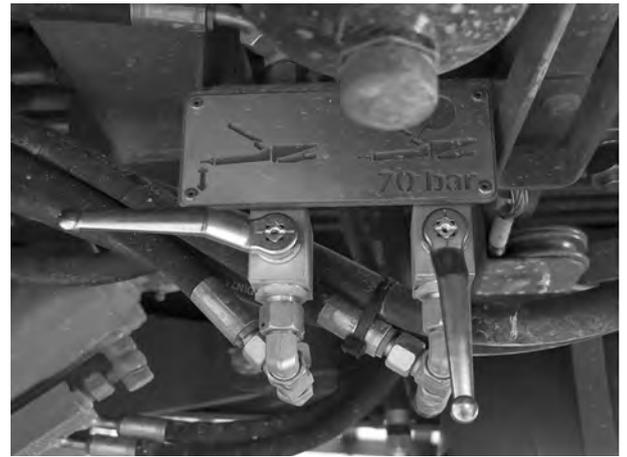


Fig. 120: Close the left shut-off valve.

- ▶ Check the towing bar suspension cylinder.  
The piston rod has to be extended by 50 mm to 140 mm.

$$50 \text{ mm} < x < 140 \text{ mm}$$

*The towing bar height is set.*

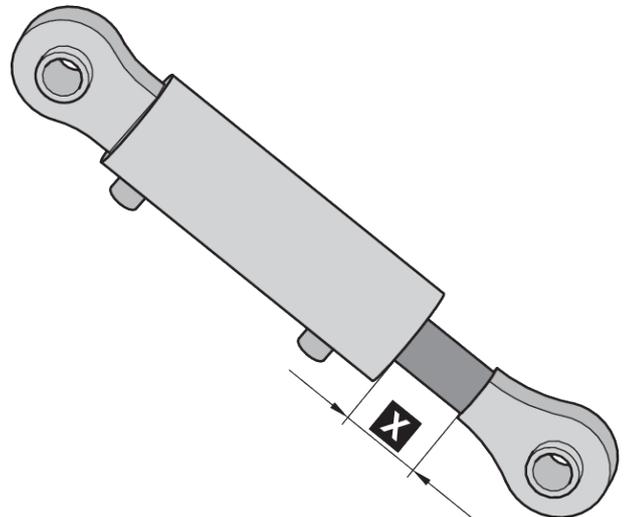


Fig. 121: Extending the piston rod



If the required towing bar height is not achieved with these settings, please contact your dealer.

#### Setting the towing bar damping

- ▶ With the hydraulic control unit of the tractor, retract the support stand.

- ▶ Set the pressure to 70 bar.  
*The support stand is retracted.*  
*The machine is slightly lowered at the front.*



*Fig. 122: Pressure gage at cable guide via towing bar*

- ▶ Close the right ball valve.
- ▶ Disassemble both handles of the ball valves and store them in a safe place.

## **9.13 Setting the conveyor belt**

### **9.13.1 Adjusting the conveyor belt position**

#### **■ Conveyor belt position**

For correct distribution of the spreading material in the spreading unit hopper, the conveyor belt has to be centered on its drive rollers.

- ▶ Measure the clearance between the conveyor belt and the hopper walls on both sides.

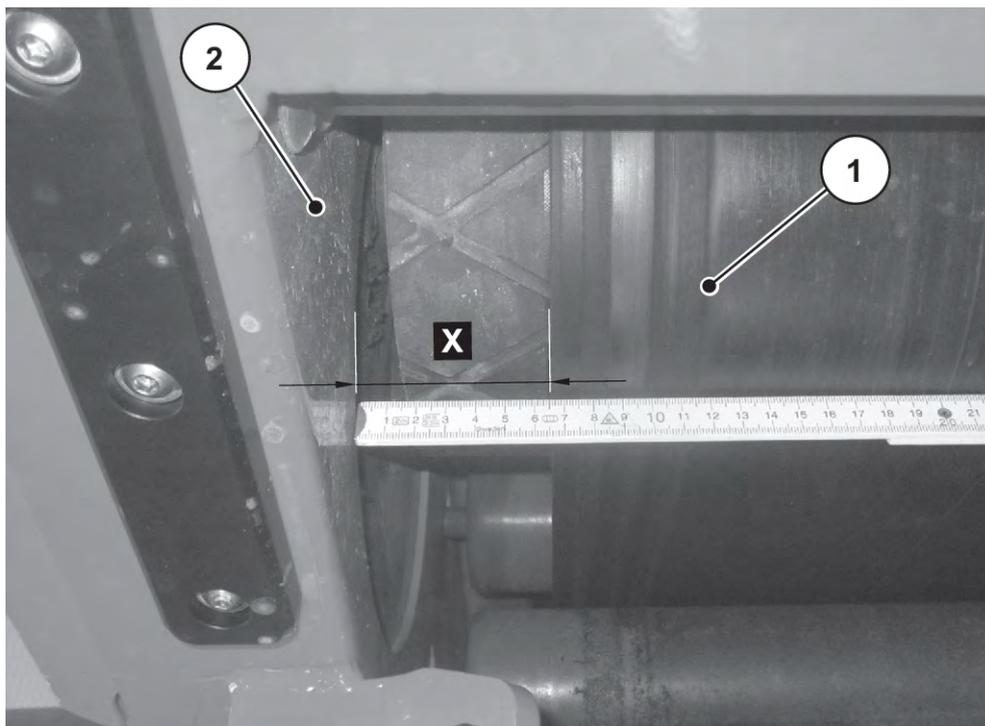


Fig. 123: Checking the position of the conveyor belt

[1] Conveyor belt  
[2] Hopper walls

[X] Measure the clearance between the conveyor belt and the left/right hopper walls

- ▶ If the deviation between both sides **exceeds 20 mm**, adjust the drive roller.

The bearings of the drive rollers are located in the rear in the direction of travel on each side of the spreading unit coupling points.

- ▶ At the side with the larger clearance, unscrew the nuts [1] of the drive roller by approx. 2 turns.
- ▶ Unscrew the adjustment screw with nuts [3] until the clearance is identical on both sides.
- ▶ Retighten the nuts [1] and [3].

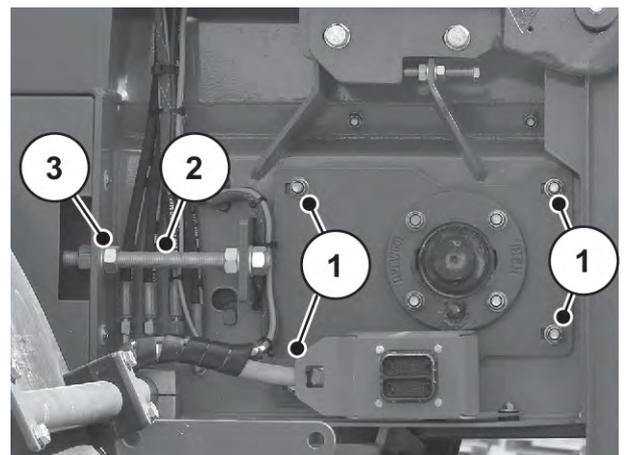


Fig. 124: Drive roller position

- ▶ Adjust the position of the belt cleaner at the conveyor belt.  
See 9.14 *Adjusting the belt cleaner*
- ▶ Start the conveyor belt via the AXENT ISOBUS machine control unit.
- ▶ Stop the conveyor belt after one minute.
- ▶ Check the position of the conveyor belt at the tension roller and adjust, if necessary.

### 9.13.2 Setting the conveyor belt tension

#### ■ Conveyor belt tension

- ▶ Check the tension of the conveyor belt after the initial operating hours or if you detect a slipping conveyor belt.

The tension rollers of the conveyor belt are located in front in the direction of travel between the hopper and the frame.

- ▶ Check the position of the disc spring assemblies [2].

Nominal dimension in the pre-tensioned installation position of all disc springs = 56 mm

Half of the disc spring assemblies are flush to the positioning plate [1] on both sides.

28 mm +/- 1 mm,  
10 disc springs

- ▶ If necessary, retighten the disc springs.

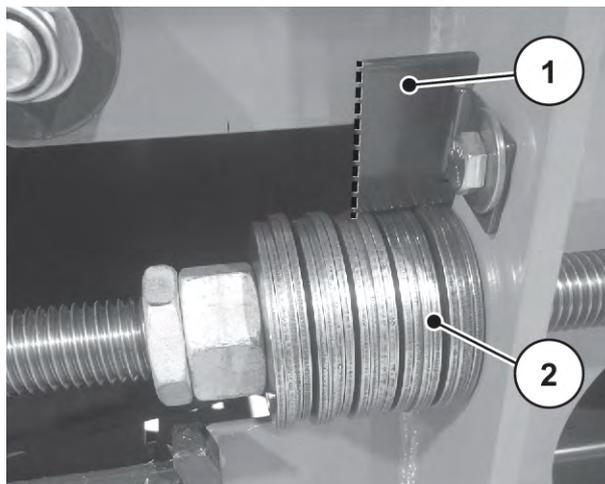


Fig. 125: Retightening the disc spring assemblies

#### Checking the deflection roller position

The deflection roller has to be positioned in a right angle over the entire length.

- ▶ Check the position of the marking plate [2] on each side.

*The marking plate should be in the range of the same marking notch [A] on both sides.*

*The scale [1] of the deflection roller should also be identical on each side.*

- ▶ **If the position of the markings deviate, adjust the disc spring assemblies accordingly.**

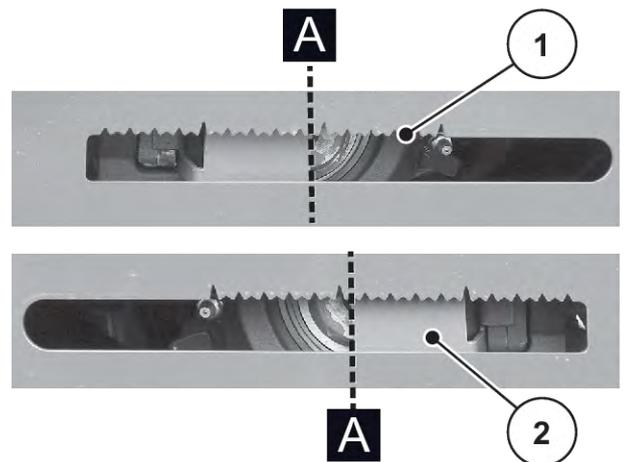


Fig. 126: Setting the disc spring assemblies

- ▶ Adjust the disc spring assemblies [1] by +/- 2 mm.

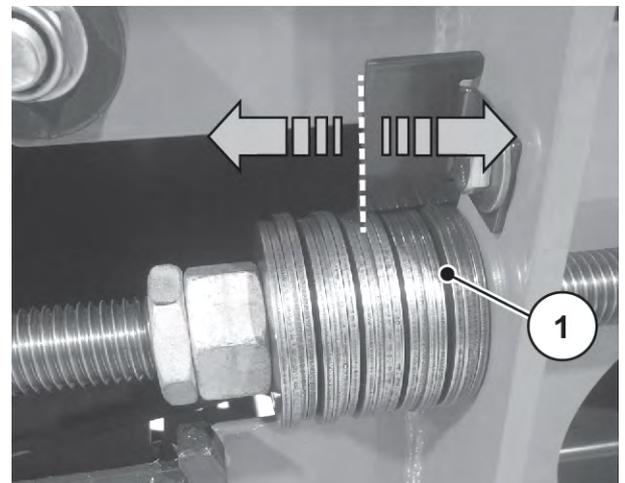


Fig. 127: Adjusting the disc spring assemblies

## 9.14 Adjusting the belt cleaner

### ■ Belt cleaner

#### Disassembling the belt cleaner

- ▶ Loosen the 5 screws [3] of the clamping plate [1].
- ▶ Remove the belt cleaner [2].

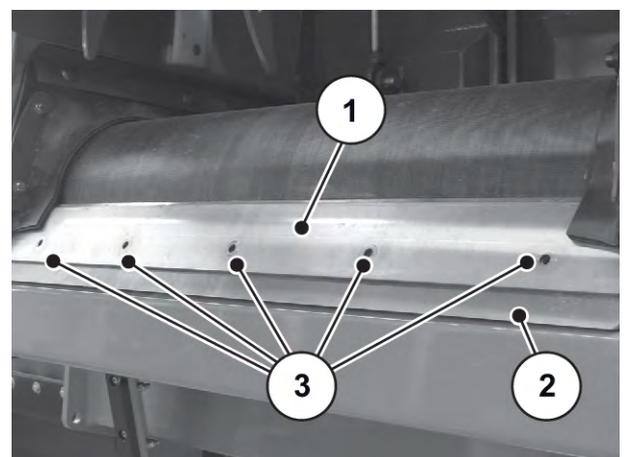


Fig. 128: Disassembling the clamping plate

### Readjusting the belt cleaner bracket

- ▶ Use a 4 mm gage.
- ▶ Check for an even clearance to the conveyor belt.



Fig. 129: Checking the clearance

- ▶ Loosen the 4 screws [1] under the conveyor belt.
- ▶ Readjust the position of the bracket at the slots.
- ▶ Retighten the screws [1].

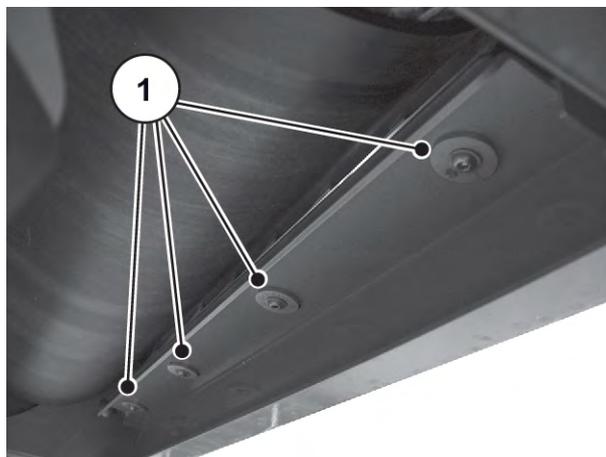


Fig. 130: Adjusting the position of the bracket

### Tightening the belt screener

- ▶ Reattach the belt cleaner [1].  
Observe the position of the cleaner.
- ▶ Tighten the clamping plate with the screws at the cleaner.

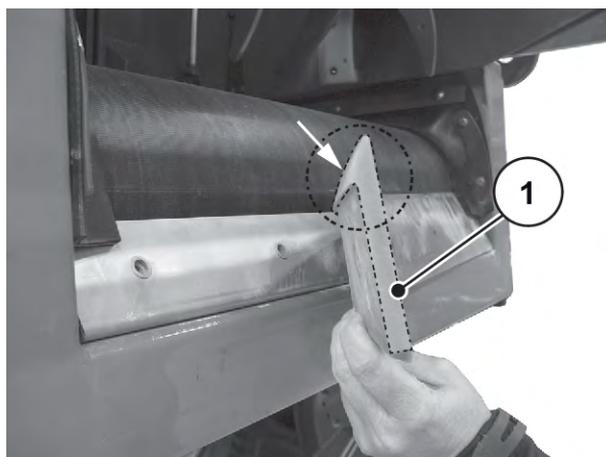


Fig. 131: Attaching the clamping plate

## 9.15 Chassis and brakes

The machine is equipped with a two-circuit pneumatic braking system. Chassis and brakes are decisive for the operational safety of the machine.

**! WARNING!****Risk of accident due to improperly carried out work**

Work improperly carried out at the chassis and the braking system compromises the operational safety of the machine and may lead to severe accidents with personal injury and property damage.

- ▶ Settings and repairs at the braking system may only be carried out by specialist workshops or approved brake repair services.

### 9.15.1 Checking the condition and function of the braking system

#### ■ *Braking system*



The operator is responsible for proper condition of the system.

Proper function of the braking system is essential for the safety of your machine.

Have the braking system regularly, at least once a year, checked by a specialist workshop.

- ▶ Regularly check the braking system for damage and leakage and at least prior to every travel.
- ▶ Check the braking system in a dry condition, **not when the vehicle is wet or during rain**.
- ▶ Check the brake lever and linkage for smooth operation.
- ▶ Replace the brake pad in time.
  - ▷ Only use the brake pads designated for the axles.

### 9.15.2 Checking the free travel of the slack adjuster

#### ■ *Slack adjuster*

##### Checking the free travel

- ▶ Secure the machine against moving.
- ▶ Release the parking brake and the operating brake.
- ▶ Push in both buttons [1] and [2].
- ▶ Operate the slack adjuster by hand.



Fig. 132: Pneumatic brake

[1] Parking brake      [2] Operating brake

If the braking effect is reduced and the free travel exceeds 10 - 15% of the brake lever length [d], the slack adjuster must be adjusted by your specialist workshop.

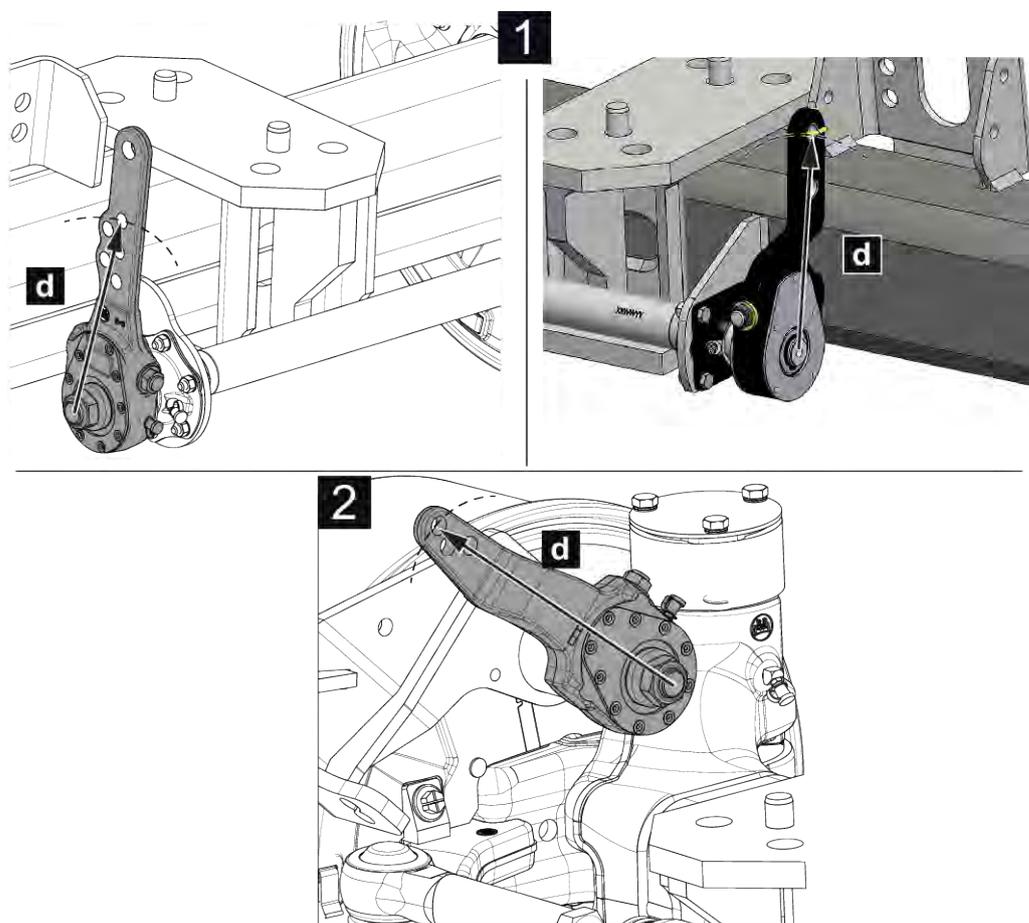


Fig. 133: Checking the free travel

[1] Rigid axle

[d] Brake lever length

[2] Steering axle



Only the specialist workshop is permitted to perform retrofitting work on the brakes.

### 9.15.3 Draining the air tank

■ **Air tank**

Condensation may occur in the pneumatic braking system of the brake circuit and accumulate in the air tank. To prevent corrosion-related damage at the pneumatic braking system, drain the air tank every day.

- ▶ Pull the operation pin [1] with a finger.  
*The tilt valve is opened.*
- ▶ Fully drain the condensation water.
- ▶ Release the operation pin [1].

*The air tank is drained.*

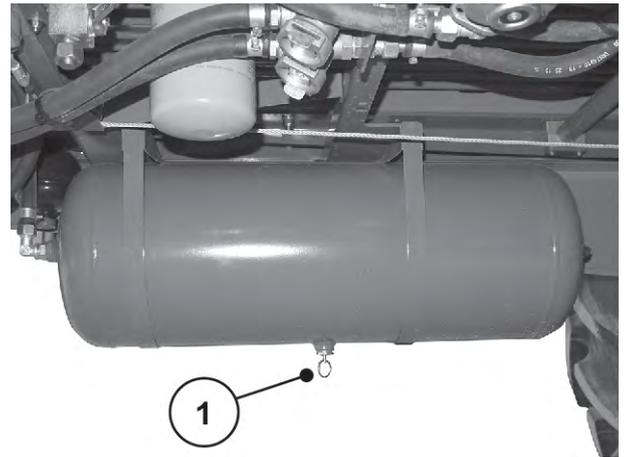


Fig. 134: Draining the air tank

#### 9.15.4 Checking the brake pad

##### ■ Brake pad

- ▶ Check the brake pad for wear.
- ▶ If necessary, renew the brake pads.

### 9.16 Wheels and tires

The condition of the wheels and tires is crucial for the operational safety of the machine.

#### ! WARNING!

##### Risk of accident due to improperly carried out work

Work improperly carried out at the wheels and tires compromises the operational safety of the machine and may lead to severe accidents with personal injury and property damage.

- ▶ Repairs at wheels and tires may only be carried out by **qualified personnel** with appropriate assembly tools.
- ▶ **Never** weld cracked rims or wheel disks. Due to the dynamic load during travel, the weld spots would break quickly.

#### 9.16.1 Checking the tires

##### ■ Tires

- ▶ Regularly check the tires for wear, damage, and foreign objects.
- ▶ Check the pressure of the cold tires in intervals of two weeks. Observe the manufacturer instructions.

## 9.16.2 Checking the condition of the wheels

### ■ *Wheels*

- ▶ Regularly check the wheels for deformation, corrosion, cracks and breaks.

Corrosions may lead to tension cracks at wheels and damage at tires.

- ▶ Keep the contact surface to the tire and the wheel hub free from corrosion.
- ▶ Immediately replace torn or deformed wheels or wheels that are damaged otherwise.
- ▶ Replace wheels with cracked or deformed bolt openings.

## 9.16.3 Checking the bearing clearance of the wheel hub

### ■ *Bearing clearance of the wheel hub*

- ▶ Check the bearing clearance of the wheel hub.

## 9.16.4 Changing wheels

The condition of the wheels and tires is crucial for the operational safety of the machine.

### **WARNING!**

#### **Risk of accident due to improperly carried out change of wheels**

Improper change of wheels at the machine may lead to severe accidents and personal injury.

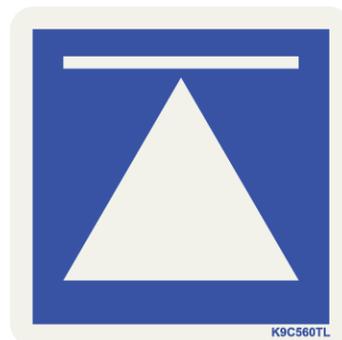
- ▶ Change wheels only if the machine is empty and coupled to the tractor.
- ▶ For wheel change, the machine has to be parked on even and solid ground.

#### **Requirements:**

- Use a jack with a minimum load rating of **5 tons**.
- Use a torque wrench to tighten the wheel nuts.

#### **Lifting jack positioning:**

- The correct lifting jack application points are marked with an illustration.
- Position the lifting jack in such a way that the support surface cannot slip under any circumstances (e.g. by means of a fitting piece of wood or rubber block).



- ▶ Additionally secure the lifting chuck against slipping.
- ▶ For a wheel change on the right side in direction of travel, position the lifting jack on the right [1] under the axle attachment or directly on the axle - on the outside right.
- ▶ For a wheel change on the left side in direction of travel, position the lifting jack on the left [2] under the axle at the height of the spring link.

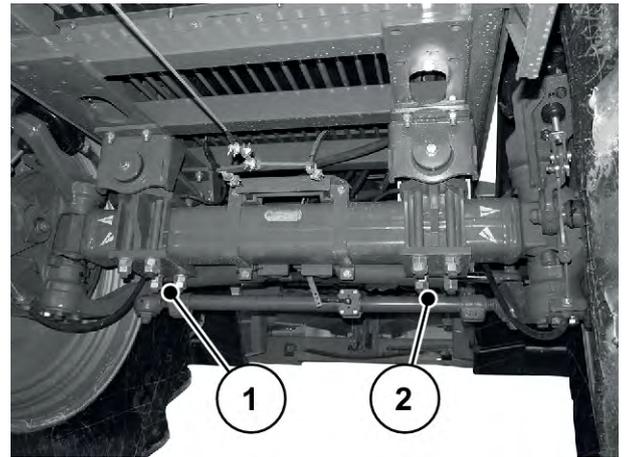


Fig. 135: Lifting jack application points

### Wheel assembly

- ▶ Prior to assembly, clean the contact surface of the wheel at the hub.
- ▶ Prior to assembly, check the wheel nuts and bolts. Replace damaged, stuck or corroded wheel nuts or bolts.
- ▶ Tighten all wheel nuts in steps and diagonally with a torque wrench.
  - ▷ Tighten the wheel nuts with a tightening torque of **510 Nm**.
  - ▷ Screw on all **10** wheel nuts per wheel and tighten them.

Due to setting, the wheel nuts become loosened during the first kilometers of travel of the new machine or after a wheel change.

- ▶ Retighten all wheel nuts after 50 km with the specified tightening torque.



Observe the instructions and required tasks specified by the axle manufacturer for wheel assembly.

### 9.16.5 Checking the brake lever length

#### ■ Brake lever length



#### Only required when changing the wheel sizes

The correct brake lever length is adjusted in the factory on your machine corresponding to the factory-installed wheels.

**! WARNING!**

**Risk of an accident due to an incorrect brake lever length**

The brake lever length used depends on the wheel type. During braking, an incorrect brake lever length can lead blocking of the wheels or to insufficient braking action.

- ▶ Check the brake lever length in accordance with the specification in the **supplied tire table** and adjust it, if necessary.
- ▶ **Only the specialist workshop** is authorized to perform retrofitting and conversion work on the brakes.

If you are using new wheels or a new type of wheel, or if the track width of your machine has changed, you must check the brake lever length, and have it adjusted as necessary. See 9.15.2 *Checking the free travel of the slack adjuster*



**Only the specialist workshop** is authorized to perform retrofitting and conversion work on the brakes.

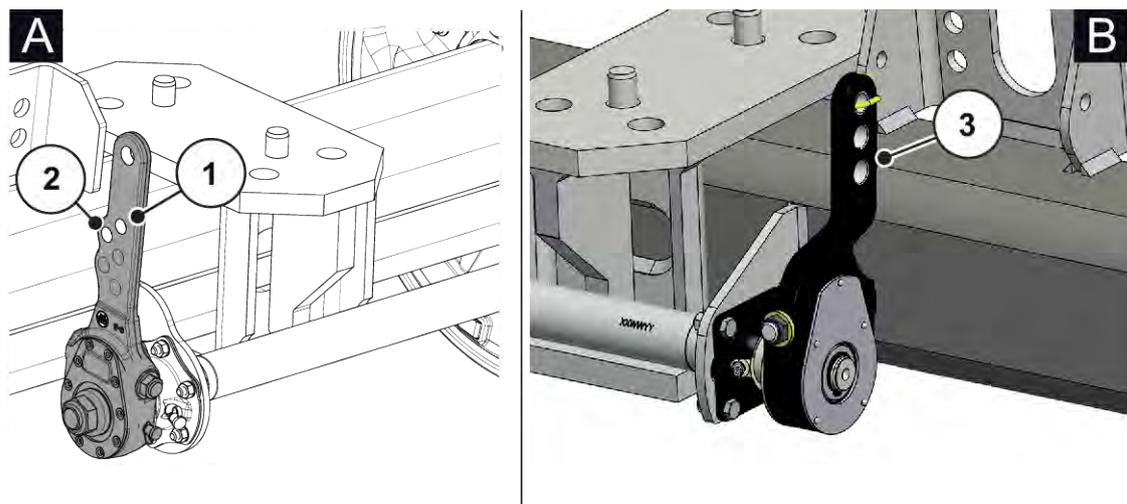


Fig. 136: Position of the brake lever/brake cylinder connection – rigid axle

- |  |  |
|--|--|
| [A] BPW Rigid axle   | [2] Position 2 of the brake lever - BPW rigid axle: 165 mm |
| [B] ADR Rigid axle   | [3] Position of the brake lever - ADR rigid axle: 152 mm   |
| [1] Position 1 of the brake lever - BPW rigid axle: 180 mm |  |

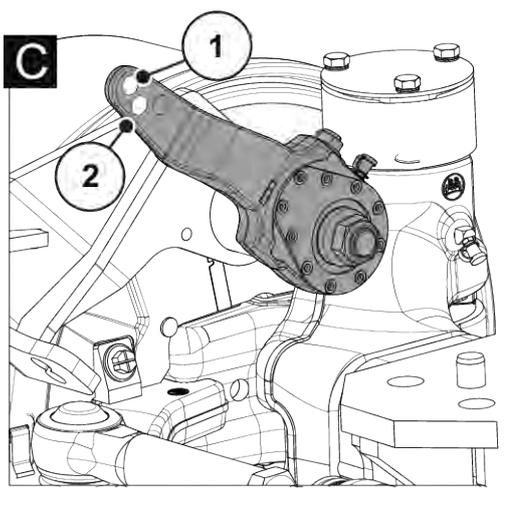


Fig. 137: Position of the brake lever/brake cylinder connection – steering axle

[C] BPW steering axle

[2] Position 2 of the brake lever – BPW steering

[1] Position 1 of the brake lever – BPW steering  
axle: 182 mm

axle: 165 mm

Position	Axle type	Brake lever length	Max. permissible free travel
1	BPW steering axle/rigid axle	180 mm	22 mm
2	BPW steering axle/rigid axle	165 mm	20 mm
3	ADR rigid axle	152 mm	18 mm

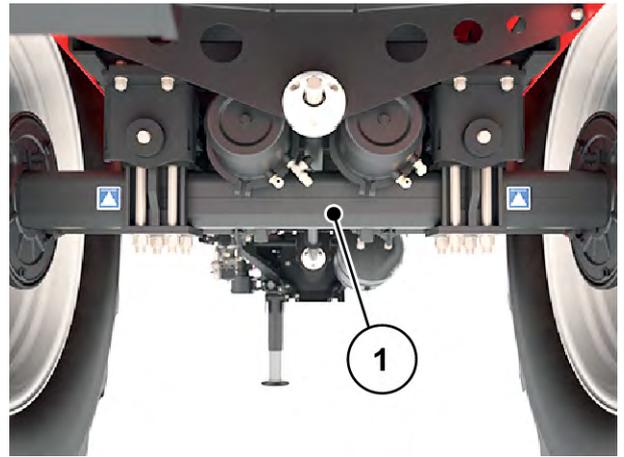


The item number of the brake lever corresponds to the brake calculation number in the appendix  
*Chapter 12.2 - Tire table - Page 155*

## 9.17 Recovery of the machine

If the machine cannot be towed by the tractor, proceed as follows to recover the machine from the field.

- ▶ Attach a rope around the axle body.



*Fig. 138: Recover the machine with the rope*

## 10 Winterization and preservation

### 10.1 Safety

#### NOTICE!

##### Environmental pollution due to unsuitable disposal of hydraulic and transmission oil

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

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

In combination with moisture, fertilizer can form aggressive acids that attack paints, plastics, and especially metal parts. This is why **regular washing and caring after use** is very important.



Prior to winterizing, thoroughly **wash** the machine (refer to 9.2 *Cleaning the machine*) and let it dry well.

Next, **preserve** the machine (refer to 10.3 *Preserving the machine*).

- ▶ Hang up hoses and cables (refer to *Fig. 83 Transport bracket for cables, hydraulic hoses and pneumatic lines*).
- ▶ Park the machine (refer to 7.7 *Parking and unhitching the machine*).
- ▶ Close the hopper cover. Leave a gap open to prevent moisture in the hopper.
- ▶ If present, disconnect the control unit or the ISOBUS terminal from power and dust off.



Do not store the control unit or the ISOBUS terminal outdoors. Store in a suitable warm location.

- ▶ Place dust caps on hoses and cable.
- ▶ Open the fertilizer outlets:
  - ▷ Metering slide, pre-metering slide, drain door, etc (depends on the machine)

### 10.2 Washing the machine

A machine that is placed into storage **must** first be cleaned.



Spreading material and dirt can collect in hidden corners!

- Thoroughly clean hidden corners and nooks (under the machine, between frame and hopper, etc.).

- ▶ Fold up the protective grid in the hopper (if present).
- ▶ When cleaning with high-pressure, never aim the water jet directly at warning signs, electrical equipment, hydraulic components, and sliding bearings.
- ▶ Letting the machine dry after cleaning

### 10.3 Preserving the machine



- Only spray on **approved and environmentally friendly** preserving agents.
- Prevent mineral oil-based agents (diesel, etc.). They are rinsed off when the machine is first washed and can get into the sewage system.
- Only use preservation agents that will not attack the paint, plastics, and rubber seals.

- ▶ Only spray the machine once certain that it is completely **clean** and **dry**.
- ▶ Treat the machine with environmentally friendly anti-corrosion agents.
  - ▷ We recommend using protective wax or preservation wax.



Please contact your specialist dealer or your specialist workshop if you want to obtain preservation agents.

Preserve the following assemblies or parts:

- All hydraulic components that are susceptible to rust, e.g., hydraulic couplers, pipes, press-fit rings, and valves
- Galvanized bolts
- If present on your machine:
  - Parts of the braking system
  - Pneumatic lines
  - Spray galvanized **bolts on the axles and the drawbar** with a special protective wax after washing.

# 11 Disposal

## 11.1 Safety

### **NOTICE!**

#### **Environmental pollution due to unsuitable disposal of hydraulic and transmission oil**

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

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

### **NOTICE!**

#### **Environmental pollution caused by inappropriate disposal of packaging materials**

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

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

### **NOTICE!**

#### **Environmental pollution caused by inappropriate disposal of components**

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

- ▶ Only authorized companies may be commissioned with disposal.

## 11.2 Disposal of the machine

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

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

## 12 Appendix

### 12.1 Table of tightening torque

Tightening torque and assembly pre-load for bolts with metric thread and standard or fine pitch



The values listed apply to dry or slightly lubricated connections.  
 Do not use galvanized (plated) bolts and nuts without grease.  
 When using a stiff grease, reduce the value in the table with 10%.  
 When using (self-)locking bolts and nuts increase the value in the table with 10%.

Tightening torque and assembly pre-load with  $v=0,9$  for shank bolts with metric thread and standard or fine pitch according to ISO 262 and ISO 965-2

Steel class quality fasteners according to ISO 898-1

Head dimensions of hexagonal bolts according to ISO 4014 to ISO 4018

Head dimensions of cylindrical bolts according to ISO 4762

Hole "medium" according to EN 20273

Friction coefficient:  $0,12 \leq \mu \leq 0,18$

Metric thread with standard pitch				
Thread	Class	Tightening torque		Max. assembly pre-load ( $\mu_{\min}=0.12$ ) N
		N.m	(lbf.in) lbf.ft	
M4 (X0.7)	8.8	3	(26.5)	4400
	10.9	4.9	(40.7)	6500
	12.9	5.1	(45.1)	7600
M5 (X0.8)	8.8	5.9	(52.2)	7200
	10.9	8.6	(76.1)	10600
	12.9	10	(88.5)	12400
M6 (X1)	8.8	10.1	7.4	10200
	10.9	14.9	11	14900
	12.9	17.4	12.8	17500

Metric thread with standard pitch				
Thread	Class	Tightening torque		Max. assembly pre-load ( $\mu_{\min}=0.12$ ) N
		N.m	(lbf.in) lbf.ft	
M8 (X1.25)	8.8	24.6	18.1	18600
	10.9	36.1	26.6	27300
	12.9	42.2	31.1	32000
M10 (X1.5)	8.8	48	35.4	29600
	10.9	71	52.4	43400
	12.9	83	61.2	50800
M12 (X1.75)	8.8	84	62	43000
	10.9	123	90.7	63200
	12.9	144	106.2	74000
M14 (X2)	8.8	133	98	59100
	10.9	195	143.8	86700
	12.9	229	168.9	101500
M16 (X2)	8.8	206	151.9	80900
	10.9	302	222.7	118800
	12.9	354	261	139000
M18 (X2.5)	8.8	295	217.6	102000
	10.9	421	310.5	145000
	12.9	492	363	170000
M20 (X2.5)	8.8	415	306	130000
	10.9	592	436.6	186000
	12.9	692	510.4	217000
M22 (X2.5)	8.8	567	418.2	162000
	10.9	807	595	231000
	12.9	945	697	271000
M24 (X3)	8.8	714	526.6	188000
	10.9	1017	750.1	267000
	12.9	1190	877.1	313000

Metric thread with standard pitch				
Thread	Class	Tightening torque		Max. assembly pre-load ( $\mu_{\min}=0.12$ ) N
		N.m	(lbf.in) lbf.ft	
M27 (X3)	8.8	1050	774.4	246000
	10.9	1496	1013.3	351000
	12.9	1750	1290.7	410000
M30 (X3.5)	8.8	1428	1053.2	300000
	10.9	2033	1499.4	427000
	12.9	2380	1755.4	499000
M36 (X4)	8.8	2482	1830.6	438000
	10.9	3535	2607.3	623000
	12.9	4136	3050.5	729000

Metric thread with fine pitch				
Thread	Class	Tightening torque		Max. assembly pre-load ( $\mu_{\min}=0.12$ ) N
		N.m	lbf.ft	
M8X1	8.8	26.1	19.2	20200
	10.9	38.3	28.2	29700
	12.9	44.9	33.1	34700
M10X1.25	8.8	51	37.6	31600
	10.9	75	55.3	46400
	12.9	87	64.2	54300
M12X1.25	8.8	90	66.4	48000
	10.9	133	98	70500
	12.9	155	114.3	82500
M12X1.5	8.8	87	64.2	45500
	10.9	128	94.4	66800
	12.9	150	110.6	78200

Metric thread with fine pitch				
Thread	Class	Tightening torque		Max. assembly pre-load ( $\mu_{\min}=0.12$ ) N
		N.m	lbf.ft	
M14X1.5	8.8	142	104.7	64800
	10.9	209	154.1	95200
	12.9	244	180	111400
M16X1.5	8.8	218	160.8	87600
	10.9	320	236	128700
	12.9	374	275.8	150600
M18X1.5	8.8	327	241.2	117000
	10.9	465	343	167000
	12.9	544	401	196000
M20X1.5	8.8	454	335	148000
	10.9	646	476.5	211000
	12.9	756	557.6	246000
M22X1.5	8.8	613	452	182000
	10.9	873	644	259000
	12.9	1022	754	303000
M24X2	8.8	769	567	209000
	10.9	1095	807.6	297000
	12.9	1282	945.5	348000

Permissible torques for A2-70 and A4-70 screws for lengths up to 8 x thread diameter,		
Thread	Friction coefficient $\mu$	Permissible torques Nm
M5	0.14	4.2
	0.16	4.7
M6	0.14	7.3
	0.16	8.2
M8	0.14	17.5
	0.16	19.6

Permissible torques for A2-70 and A4-70 screws for lengths up to 8 x thread diameter,		
Thread	Friction coefficient $\mu$	Permissible torques Nm
M10	0.14	35
	0.16	39
M12	0.14	60
	0.16	67
M14	0.14	94
	0.16	106
M16	0.14	144
	0.16	162
M18	0.14	199
	0.16	225
M20	0.14	281
	0.16	316
M22	0.14	376
	0.16	423
M24	0.14	485
	0.16	546
M27	0.14	708
	0.16	797
M30	0.14	969
	0.16	1092

# 12.2 Tire table



**RAUTH**  
WIRTSCHAFTS-GRUPPE



**Specification of permitted tyre types and track widths according to EU type approval for AXENT**

Tyre combination No	Axle No	Calculation braking system	Tyre dimension including load capacity index and speed category symbol	Rolling radius [mm]	Tyre Load rating per tyre [kg]	Maximum permissible mass per axle [kg](*)	Maximum permissible mass of the vehicle [kg](*)	Maximum permissible vertical load on the coupling point [kg](**)(***)	Track width [mm]	
									Minimum	Maximum
1	1	2/3	IF 380/90 R46 164 A8	875	5000	10000	10000	-	2250	2400
2	1	2/3	VF 380/90 R 46 164 A8	875	5000	10000	10000	-	2250	2400
3	1	1/3	IF 380/105 R50 164 A8	1025	5000	10000	10000	-	2250	2400
4	1	1/3	VF 380/105 R 50 164 A8	975	5000	10000	10000	-	2250	2400
5	1	1/3	VF 420/95 R 50 164 A8	1000	5000	10000	10000	-	2250	2400
6	1	1/3	480/80 R 46 164 A8	925	5000	10000	10000	-	2250	2400
7	1	2/3	VF 480/80 R 46 164 A8	925	5000	10000	10000	-	2250	2400
8	1	1/3	480/80 R 50 164 A8	975	5000	10000	10000	-	2250	2400
9	1	1/3	IF 480/80 R50 164 A8	975	5000	10000	10000	-	2250	2400
10	1	1/3	VF 480/80 R 50 164 A8	975	5000	10000	10000	-	2250	2400
11	1	1/3	520/85 R 42 164 A8	925	5000	10000	10000	-	2000	2400
12	1	2/3	IF 520/85 R42 164 A8	925	5000	10000	10000	-	2000	2400
13	1	1/3	VF 520/85 R 42 164 A8	925	5000	10000	10000	-	2000	2400
14	1	1/3	520/85 R 46 164 A8	975	5000	10000	10000	-	2000	2400
15	1	1/3	VF 520/85 R 46 164 A8	975	5000	10000	10000	-	2000	2400
16	1	1/3	580/85 R 42 164 A8	975	5000	10000	10000	-	2000	2250
17	1	1/3	IF 580/85 R 42 164 A8	975	5000	10000	10000	-	2000	2250
18	1	1/3	VF 580/85 R 42 164 A8	975	5000	10000	10000	-	2000	2250
19	1	2/3	650/65 R 42 164 A8	925	5000	10000	10000	-	2000	2250
20	1	2/3	VF 650/65 R 42 164 A8	925	5000	10000	10000	-	2000	2250

1. Calculation for the braking system Rstat = 885 to 949 mm. Brake lever position 182 mm steering axle / 180 mm rigid axle
2. Calculation for the braking system Rstat = 835 to 885 mm. Brake lever position 165 mm steering and rigid axle
3. Calculation for the braking system Rstat = 835 to 949 mm. Brake lever position 152 mm rigid axle

## 13 Guarantee and warranty

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

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

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



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



**<https://streutabellen.rauch.de/>**



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