RAUCH

OPERATOR'S MANUAL

Please read carefully before using the machine.

Keep for future reference.

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

AXENT

Original manual

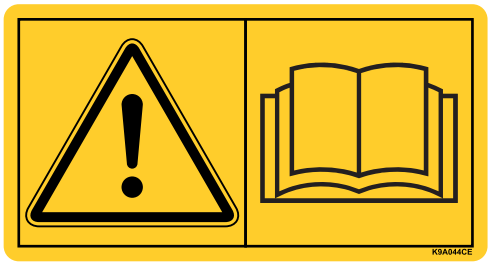
5901645-e-en-0219

Preface

Dear Customer,

By purchasing this **AXENT 100.1** large area spreader, 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 of unexpected problems: Our Customer Service is always ready to help.



Please read this operating manual carefully before starting to use the large area spreader and follow the instructions provided.

This operating manual provides detailed instructions on the operation of the machine, as well as valuable information on assembly, maintenance, and care.

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

Please note that damage caused by incorrect operation or improper use is not covered by warranty claims.

NOTE

Please enter the type and serial number as well as the year of construction of your machine here.

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

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

Type	Serial number	Year of construction

Technical improvements

We are continuously improving our products. Therefore, we reserve the right to make any improvements and changes to our machine that we consider necessary without notice. This constitutes no obligation to make such improvements or changes on machines that have already been sold.

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

Yours sincerely

RAUCH

Landmaschinenfabrik GmbH

1 Intended use

The **AXENT 100.1** large area spreader may be used only in accordance with the information in this operating manual.

The **AXENT 100.1** large area spreader is built according to its intended use and may be used only for the points specified below:

- The **AXENT 100.1** large area spreader is suitable for spreading dry, granular and crystalline fertilisers, seeds and slug pellets due to a RAUCH fertiliser spreading unit.
- The **AXENT 100.1** large area spreader is suitable for spreading granular and powdery lime due to a Streumaster lime spreading unit.

The large area spreader is referred to as the "**machine**" in the following chapters.

Any use beyond this specification is not regarded as intended use. The manufacturer is not liable for any damage resulting from this. The operator bears the entire risk.

Intended use also includes observing the operating, maintenance, and service conditions prescribed by the manufacturer. Only genuine spare parts from the manufacturer may be used as spare parts.

Only persons who are familiar with the features of the machine and aware of the dangers are permitted to use, service and repair the machine.

Instructions on the operation, servicing and safe handling of the machine as described in the operating manual and specified by the manufacturer in the form of warnings and warning signs on the machine must be followed when using the machine.

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

No unauthorised modifications to the machine are permitted. The modifications will exempt the manufacturer from liability for any resulting damage.

Foreseeable misuse

The manufacturer provides warnings and warnings signs relating to foreseeable misuse on the **AXENT 100.1** large area spreader. Be sure to observe these warnings and warning signs. This will help you avoid using the AXENT 100.1 large area spreader in a manner not in accordance with the operating manual.

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

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

If the machine is sold, the operator’s manual must also be passed 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 all persons entrusted with the following work on the machine:

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

In particular, the following is to be observed:

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

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

2.2 Structure of the operator’s manual

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

- User instructions
- Safety instructions
- Machine data
- Instructions on the operation of the machine,
  - Transportation
  - Commissioning
  - Spreading operation
- Instructions on detecting and rectifying faults
- Maintenance and repair instructions

2.3 Notes on text descriptions

2.3.1 Instructions and procedures

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

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

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

A bullet is placed in front of these instructions:

- Handling instruction

2.3.2 Listings

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

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

2.3.3 References

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

- **Example**: See also Chapter 3: Safety, page 5.

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

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

3 Safety

3.1 General Instructions

The **Safety** chapter contains basic warnings as well as work and road safety regulations for the usage of the towed machine.

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

Furthermore, the other chapters of this operating manual contain additional warnings, which you must also precisely observe. The warning instructions are provided before the text for the relevant actions.

You will find further information in the operating manual for the attached fertiliser spreader. Please also observe this operating manual before the start-up.

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

3.2 Significance of warnings

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

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

	Signal word
Symbol	Explanation

Example

⚠ DANGER	
	**Risk to life if warning is not observed** Description of the danger and possible consequences. Ignoring these warnings will result in very serious or even fatal injury. ▶ Measures to prevent the danger.

Warning severity level

The degree of danger is indicated by the signal word. The levels are classified as follows:

⚠ DANGER

Type and source of danger

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

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

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

⚠ WARNING

Type and source of danger

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

Ignoring these warnings will result in very serious injury.

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

⚠ CAUTION

Type and source of danger

This warning warns of a potentially dangerous situation for personal health or of material and environmental damage.

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

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

NOTICE

General information containing application tips and particularly useful information, but which constitutes neither warnings nor hazards.

3.3 General information on the safety of the machine

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

For this reason, the machine may only be operated

- when it is in a proper and roadworthy condition,
- in awareness of safety and dangers.

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

3.4 Instructions for the operator

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

3.4.1 Personnel qualifications

Before starting any work on or with the machine, all persons who are involved in operation, maintenance or 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.
- Only qualified maintenance staff may implement maintenance and service work.

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 governed by law in every country. The operator of the machine shall be responsible for the compliance with these regulations applicable in the country of use.

The following instructions must also be observed:

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

3.5 Operating safety instructions

To avoid dangerous situations, you may use the machine only in an operationally safe condition.

3.5.1 Decoupling and parking the machine

Park the machine on level, solid ground.

Before uncoupling the machine, check that it is secured against tipping over and rolling away.

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

Detailed information can be found in chapter 7.7: Switching off and uncoupling the large area spreader, page 112.

3.5.2 Filling the machine

- Couple the machine to the tractor before filling it.
- Fill the machine only when the tractor is at a standstill. Remove the ignition key to ensure that the motor cannot be started.
- Avoid one-sided loads on the axle due to uneven loading of the machine.
- Use suitable auxiliary equipment for filling the machine (e.g. front-end loader, auger).
- Observe the permissible total weight. Check the level in the container.
- **Only with AXIS-PowerPack fertiliser spreading unit**: Fill the machine only with the feeder mesh fitted in the AXENT container. This will prevent spreading faults and damage caused by lumps in the spreading material or other foreign bodies.

3.5.3 Checks before start-up

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

- Is all safety equipment at the machine installed and functioning?
- Are all fasteners and load-bearing connections tight and in proper condition?
- Are all locks firmly closed?
- Is the hazard zone of the machine clear of persons?
- Is the universal drive shaft guard in good condition?

3.5.4 Hazard zone

NOTICE

For more information on the rear view camera, see 6.11: Camera for rear view monitoring, page 86

Ejected spreading material can cause serious injuries (e. g. to the eyes).

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

The following figure displays the hazard zones of the machine.

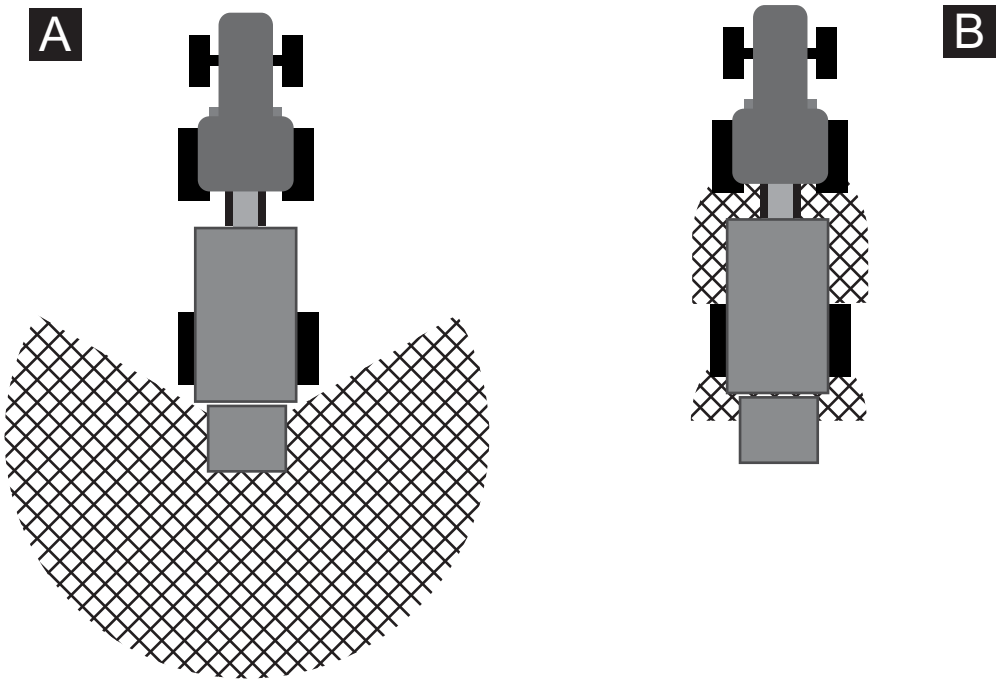


Figure 3.1: Hazard zones around attachment units

[A] Danger zone in spreading mode
[B] Danger zone when coupling/uncoupling the machine and the spreading unit

- For this reason, ensure that nobody is within the spreading area [A] of the machine.
- Immediately stop the machine and the tractor if somebody is within the danger zone of the machine.
- Instruct everyone to leave the danger zones [B] when coupling/uncoupling the machine to or from the tractor or when hitching/unhitching the spreading unit.

3.5.5 Operation

- If the machine malfunctions, stop the machine immediately and secure it. The fault is to be rectified immediately by qualified staff.
- Never climb onto the machine while the spreader unit is running.
- Rotating machine components can cause serious injuries. Never come close to rotating parts with body parts or clothing.
- Do not deposit any external parts (such as screws, nuts) in the container.
- Ejected spreading material can cause severe injuries (e. g. to the eyes). For this reason, ensure that nobody is within the overload area of the machine.
- Never climb onto the machine or the tractor when it is situated beneath high-voltage electrical power lines.
- Never open or close the hopper cover when the machine is under high-voltage electrical power lines.

3.5.6 Wheels and brakes

The chassis of the towed machine is exposed to high loads due to the high total weight and the driving terrain. To ensure operational safety, pay particular attention to the following points:

- Use only wheels and tyres that meet the technical requirements defined by the manufacturer.
- The wheels must not exhibit any lateral run-out or impermissible offset.
- Check the inside and outside of the tyres at the edges. Replace them immediately if they are damaged (bumps, scratches).
- Check the tyre pressure and the function of the brake each time before driving.
- Have the brake pads replaced in good time. Use only brake pads that meet the technical requirements defined by the manufacturer.
- To avoid soiling of the wheel bearings, they must always be covered by the dust caps.
- Observe the permissible load capacity of the wheels (note the entry in the type approval).
- **Never use the joystick of the tractor for braking**. In this case, the compressed air-braked trailers will not brake.

3.6 Using fertiliser and lime

Inappropriate selection or usage of the fertiliser and lime can cause severe personal injury or environmental damage.

- When selecting the fertiliser, inform yourself about its effects on peoples, the environment, and the machine.
- Follow the instructions of the manufacturer of the fertiliser or lime.

3.7 Hydraulic system

The hydraulic system is under high pressure.

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

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

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

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

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

3.8 Maintenance and servicing

Additional hazards that do not occur during operation of the machine are present during maintenance and servicing work.

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

3.8.1 Qualifications of maintenance personnel

- Only specialist workshops or recognized brake service providers are allowed to carry out adjustment and repair work on the brake system.
- Only qualified personnel are allowed to repair tyres and wheels. They must use suitable assembly tools for this purpose.
- Welding and work on the electrical and hydraulic systems is to be carried out by qualified technicians only.

3.8.2 Wear parts

- The maintenance and service intervals described in the present operator's manual are to be strictly adhered to at all times.
- Furthermore, the maintenance and service intervals of the supplier components must also be complied with. See the supplier documentation for the relevant intervals.
- Have the condition of the machine checked after every season by your specialist dealer, paying particular attention to its fastening components, safety-relevant plastic components, hydraulic system and metering parts.
- Spare parts must at least comply with the technical requirements specified by the manufacturer. The technical standards are ensured by using genuine spare parts.
- Self-locking nuts are designed to be used only once. Always use new self-locking nuts to fasten components (e. g. covers).

3.8.3 Maintenance and servicing work

- Switch off the tractor’s engine before any cleaning, maintenance and service work and when troubleshooting. Wait until all rotating parts of the machine have come to a standstill.
- Make sure **no** unauthorised persons can switch on the machine. Remove the ignition key of the tractor.
- Before any maintenance and service work, disconnect the power supply between tractor and machine.
- Check that the tractor with the towed machine is parked correctly. It must be parked with the empty container on level, solid ground and secured against rolling away.
- Depressurise the hydraulic system before carrying out any maintenance and servicing work.
- Disconnect the power supply before working on the electrical system.
- Never remove any clogging from the spreader hopper with your hand or foot. Use suitable tools for this purpose instead.
- Before cleaning the machine with water, steam jets or other cleaning agents, cover all components in which no water must enter (e. g. sliding bearings, electrical plug connections).
- Regularly check nuts and screws for tightness. Re-tighten loose connections.
- After the first 5 km travelled, check the tightening torque of each wheel nut. See also "Changing a wheel" on page 151.

3.9 Road safety

It **is prohibited** to drive on public roads with the towed machine without a spreading unit attached (underride protection).

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

3.9.1 Checks before driving

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

- Is the permissible total weight observed? Observe the permissible towing load and vertical load of the trailer unit as well as the permissible axle load.
- Observe the permissible brake load, the permissible tyre load capacity and the permissible tyre pressure
- Is the machine coupled according to regulations?
- Can spreading material be lost while travelling?
  - Observe the level of the spreading material in the hopper.
  - The pre-metering sliders must be closed.
  - Switch off the electronic control unit.
- Check the tyre pressure and the functionality of the machine’s brake system. Observe the permissible brake load and the permissible tyre load capacity.
- Are the hopper cover and the cover hood closed and secured against unintentional opening?
- Does the lighting and marking of the machine comply with the regulations of your country with respect to driving on public roads? Make sure that warning signs, reflectors, and auxiliary lights are correctly mounted.

3.9.2 Transport with the machine

The driving, steering, and braking performance of the tractor is affected by the towed machine. For example, an excessive vertical load of the machine will reduce the weight on the front axle of your tractor and impair the steering.

- Adapt your manner of driving to the changed driving behaviour.
- When driving, always ensure that there is sufficient visibility. Another person is required for directing the driver if this is not ensured (e. g. when reversing).
- Observe the permissible maximum speed.
- Avoid sudden curves when driving uphill and downhill or traversing a slope. There is a risk of toppling over by shifting the centre of gravity. Take special care is when driving on uneven, soft ground (e.g. when entering fields, kerbs).
- Passengers are prohibited on the machine during transport and operation.
- If necessary, attach a front weight to your tractor. Further information can be found in the operating manual for the tractor.

3.10 Safety equipment at the machine

3.10.1 Position of the safety equipment

NOTICE

Safety equipment is not available in all countries and depends on the regulations at the place of use.

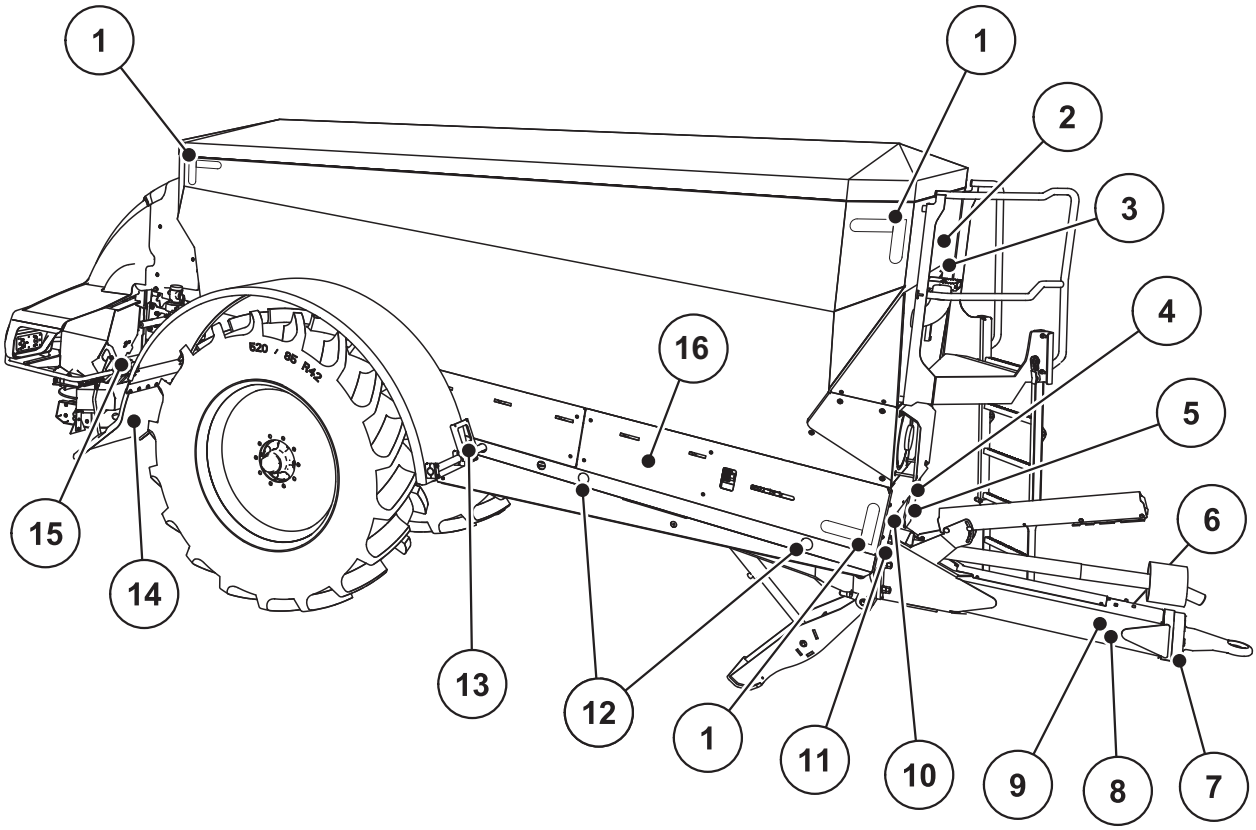


Figure 3.2: Position of the safety equipment, warnings and instructions, side view

[1] White contour marks
[2] Warning not transport passengers
[3] Warning of high-voltage electrical power lines
[4] Read the operating manual warning notice
[5] Warning of material ejection
[6] Instruction for PTO shaft speed
[7] Nameplate, trailer unit
[8] Nameplate, towing bar
[9] Serial number, towing bar
[10] Nameplate AXENT 100.1
[11] Serial number AXENT 100.1
[12] Yellow side reflectors
[13] Wheel chocks warning
[14] Mudguard extension
[15] Nameplate, spreading unit
[16] Protective plate for guide rollers and conveyor belt

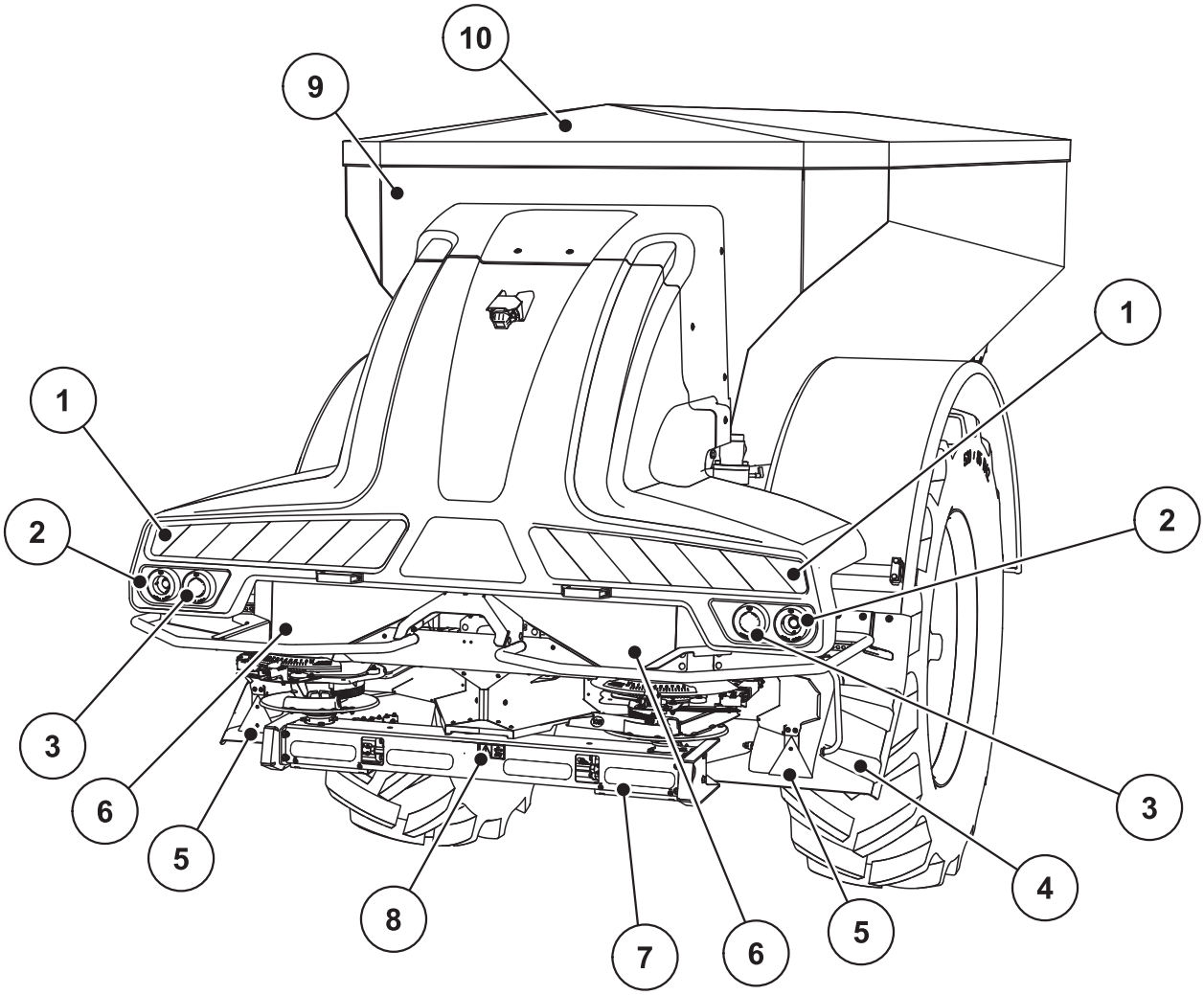


Figure 3.3: Position of the safety equipment, warnings and instructions, rear

[1] Warning sign
[2] Tail light, brake light, turn signals
[3] Tail light, brake light, red reflectors
[4] Mudguard extension
[5] Red reflectors
[6] Moving parts warning notice
[7] Red reflector stripes
[8] Remove ignition key warning notice
[9] Admissible maximum speed
[10] Hopper cover

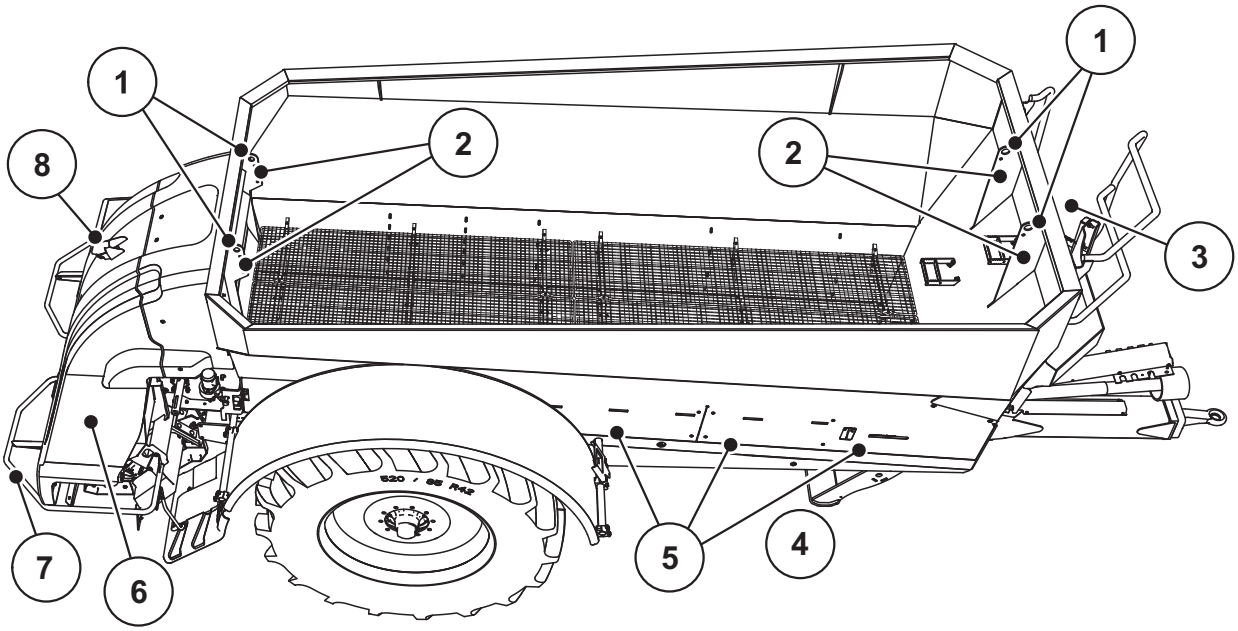
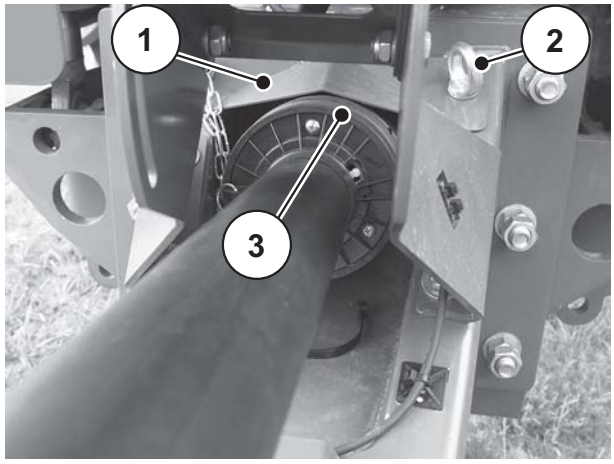


Figure 3.4: Position of the safety equipment, warnings and instructions, top

[1] Ring eyelets
[2] Instructions: ring eyelet in hopper
[3] Cleaning flap instruction
[4] Warnings of danger of explosion under the container (not visible here)
[5] Warnings of moving parts (behind the folding side covers)
[6] Cover
[7] Deflector bracket
[8] Rear view camera



[1] Mudguard
[2] Ring eyelet
[3] Universal drive shaft guard

Figure 3.5: Universal drive shaft guard

3.10.2 Function of safety equipment

The safety equipment protects your health and your life.

- Make sure the safety equipment is functional before working with the machine.
- Only operate the machine when the safety equipment is functional.

Description	Function
Universal drive shaft guard	Prevents body parts and clothing from being drawn into the rotating universal drive shaft.
Wheel chock	Prevents the machine from rolling away
Cover	Prevents body parts from being drawn in and cut off by the comb roller Prevents body parts from being crushed by the pre-metering sliders Prevents body parts from being drawn in by the agitator Contains the lighting system for the rear lighting with warning sign, tail light, brake light, warning lights and turn indicators
Rear view camera	Makes reversing easier and prevents accidents due to insufficient view from the tractor cab
Mudguard extension	Keeps people away from the area between the wheel and the spreading unit. See also “Hazard zone” on page 9.
Hopper cover	Prevents the loss of spreading material through the hopper filling opening during transport and spreading work
Protective cover	Prevents body parts from being cut off by the conveyor belt or from being drawn into the guide rollers
Deflector bracket	Prevents being caught by rotating spreading discs from the rear and the side.

3.11 Warning and instruction stickers

Various warnings and instructions have been applied to the machine (for information on application to the machine, see Figure 3.2 to Figure 3.4)

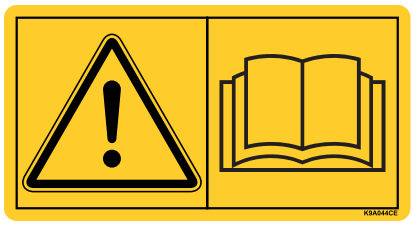
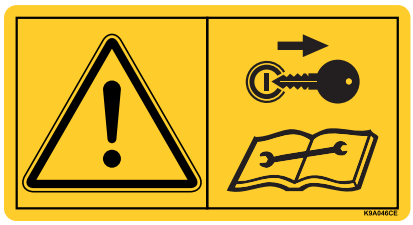
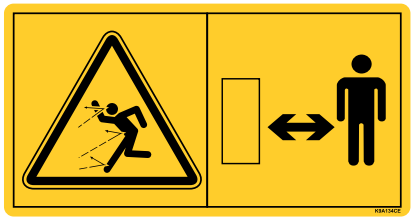
The warnings and instructions are part of the machine. They must not be removed or modified. Missing or illegible warnings or instructions must be replaced immediately.

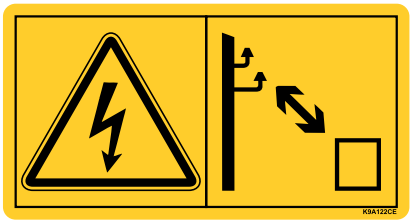
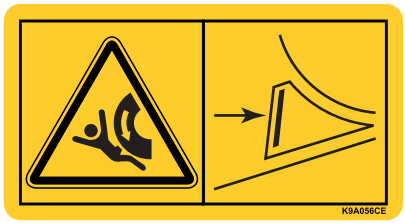
If new components are installed during repair work, the same warnings and instructions that were on the original parts must be applied to the new parts.

NOTICE

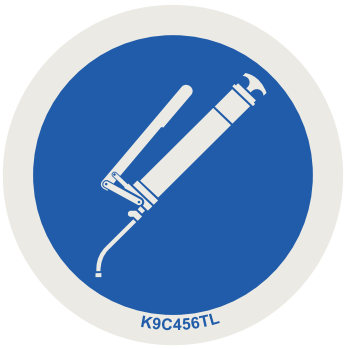
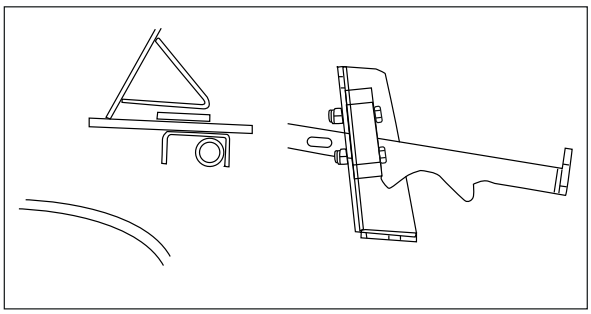
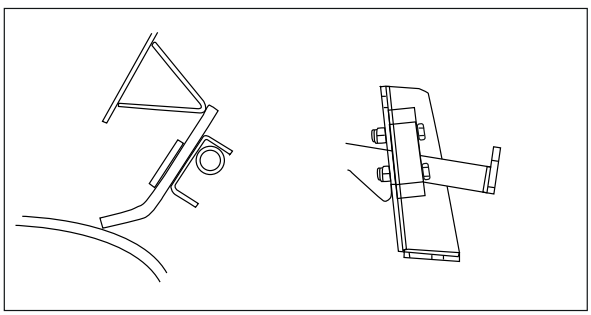
The correct warning and instruction notices can be obtained from the spare parts service.

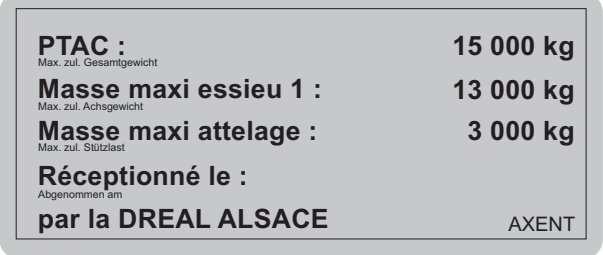
3.11.1 Warning notice stickers

	Read the operating manual and warnings. Read and observe the operating manual and warning notices before starting the machine. The operating manual provides detailed instructions on operating the machine and provides useful information on handling, maintenance and cares.
	Remove the ignition key Before carrying out any repair and maintenance work, shut off the motor and remove the ignition key. Disconnect the power supply.
	Danger of ejection of material Danger of injury to the whole body due to ejected spreading material Direct all persons out of the danger zone (spreading area) of the machine before the start-up.
	Danger due to moving parts Risk of body parts being cut off It is forbidden to enter the danger zone of the rotating spreading discs or guide rollers of the conveyor belt. Switch off the motor and remove the key before carrying out maintenance, repair and adjustment work.

	Climbing prohibited It is prohibited to climb onto the deflector bracket.
	Crushing hazard between the tractor and the machine A potentially fatal crushing hazard exists for persons standing between the tractor and the machine when approaching or when actuating the hydraulic system. The tractor may brake too late or not at all because of inattention or faulty operation. Ensure that nobody is present in the hazard zone between the tractor and the machine.
	No passengers Danger of slipping and injury. Do not climb onto the platform of the machine during spreading work and transport.
	Danger of explosion The nitrogen tanks are located under the container behind the support stand cylinder The nitrogen tanks are under high pressure. Maintenance and repair work only by authorized and qualified personnel.
	Danger to life due to live overhead lines Never park the towed AXENT 100.1 large area spreader under live overhead lines. Keep a safety distance away.
	Wheel chock Secure the machine against rolling away with wheel chocks when parking it.

3.11.2 Instruction stickers and nameplate

	PTO shaft speed The rated speed of the PTO shaft is 750 rpm.
	Ring eyelet on the frame Identification of the holder for attachment of the lifting harness
	Lubrication points
	Cleaning flap is open
	Cleaning flap is closed

	Admissible maximum speed
	**France**: Admissible maximum speed
	Maximum permissible speed (3 m axle)
	Nameplate and serial number of towing bar
	Name plate, trailer hitch
	**France**: DREAL registration plate

3.12 Identification of the machine

Figure 3.6: Nameplate

[1] Manufacturer
[2] Serial number
[3] Machine
[4] Type
[5] Empty weight

Figure 3.7: 2. Nameplate for towed machines

[1] Manufacturer
[2] Serial number
[3] Permitted axle load
[4] Admissible total weight

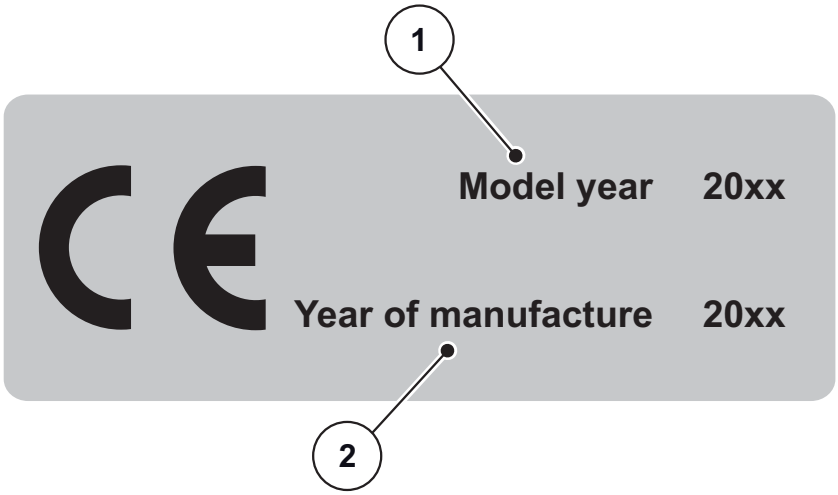


Figure 3.8: CE conformity label

[1] Model year
[2] Year of construction

3.13 Lighting system, front and rear reflectors, side reflectors

The lighting equipment must be installed according to regulations and must be ready to operate at all times. They not be covered or obscured by dirt.

The machine has been equipped with front, rear and side identification according to regulations at the factory.

The machine has been equipped with side reflectors and reflector stripes at the factory (for attachment to the machine, see Figure 3.3).

4 Technical data

4.1 Manufacturer

RAUCH Landmaschinenfabrik GmbH
Landstraße 14
D-76547 Sinzheim
Phone: +49 (0) 7221 / 985-0
Fax: +49 (0) 7221 / 985-200

Service Centre, Technical Customer Service
RAUCH Landmaschinenfabrik GmbH
Postfach 1162
D-76545 Sinzheim
Phone: +49 (0) 7221 / 985-250
Fax: +49 (0) 7221 / 985-203

4.2 Description of the machine

Use the AXENT large area spreader in accordance with the chapter “Intended use" on page 1. The machine consists of several assemblies, each with a specific function.

- Container with frame
- Conveyor belt and outlet elements
- Pin or ball coupling
- Wheels and brake system
- Coupling points for the attachment of the spreading unit
- Fertiliser or lime spreading unit
- Safety equipment; see “Safety equipment at the machine" on page 16

NOTICE

Some models are not available in all countries.

4.2.1 Basic machine

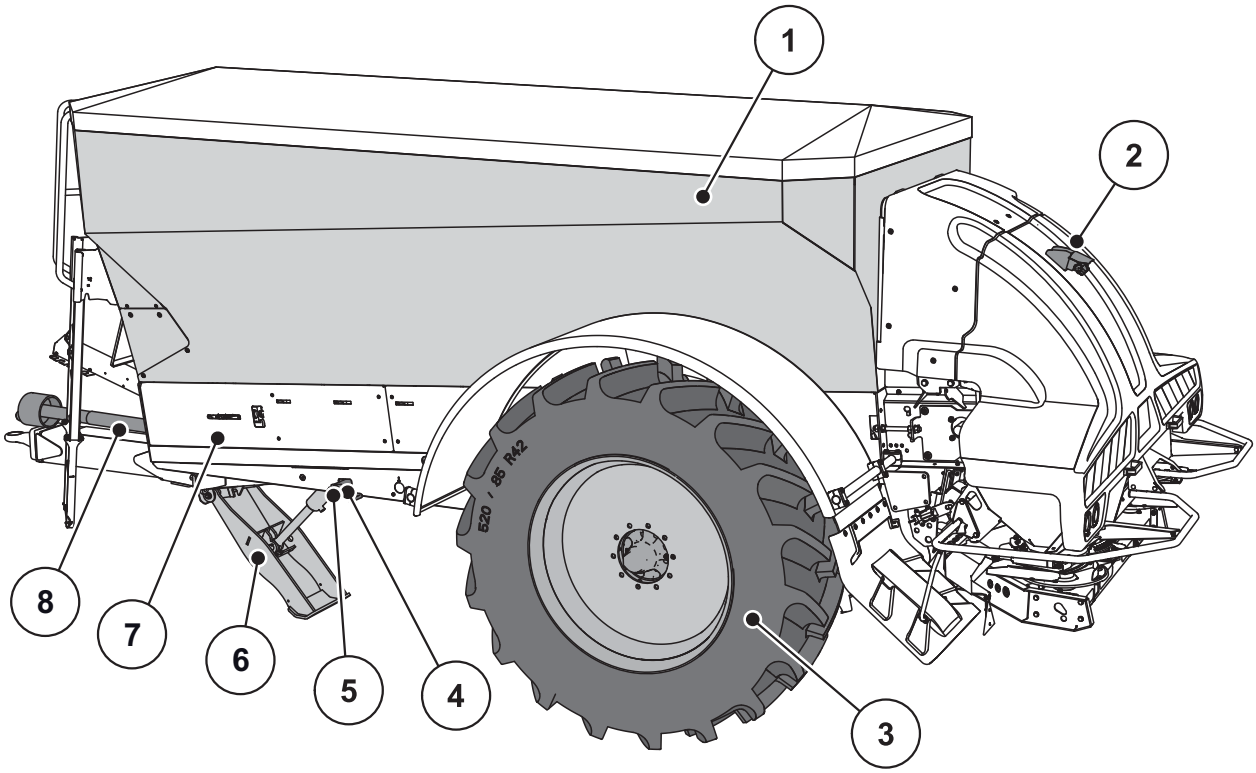


Figure 4.1: Assemblies and function of the machine AXENT, side view

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

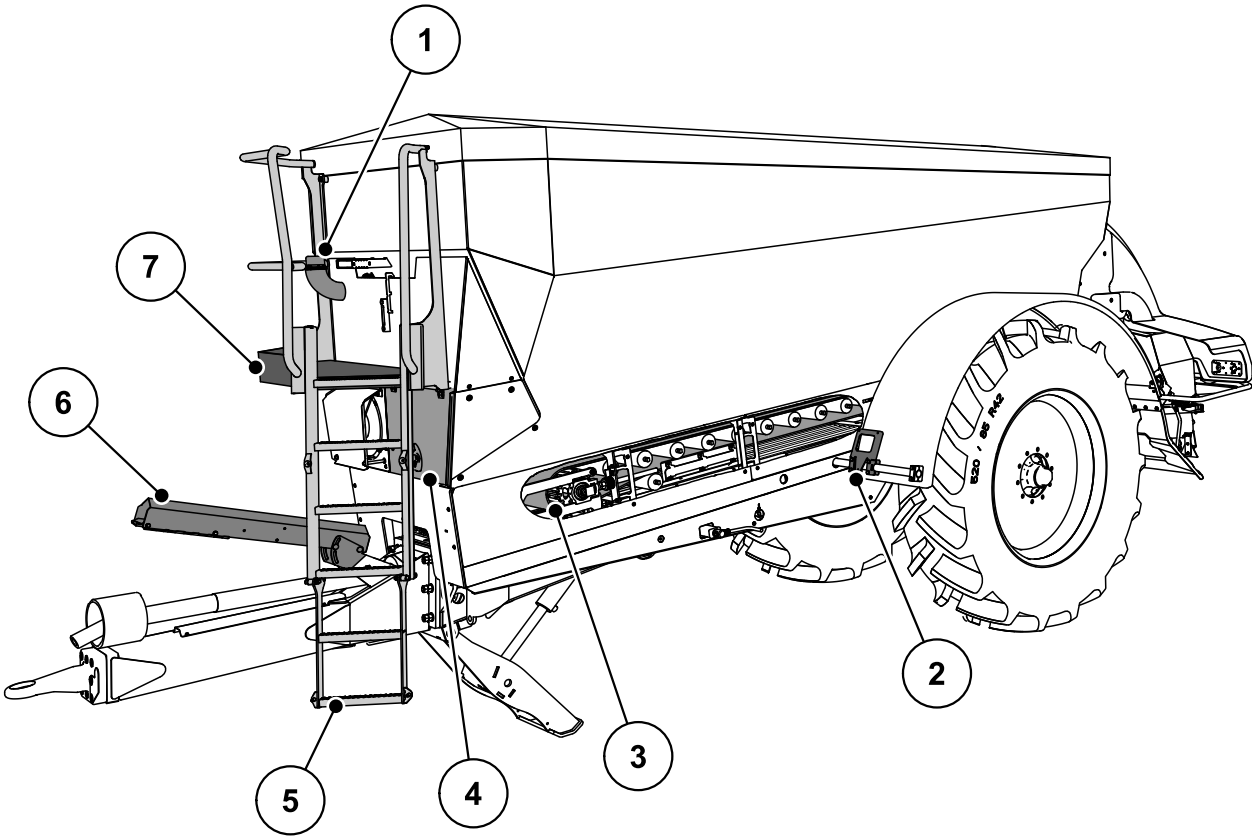


Figure 4.2: Assemblies and function of the machine AXENT, front view

[1] Filler plug, oil tank
[2] Transport storage place for wheel chock
[3] Conveyor belt
[4] Maintenance flap
[5] Ladder
[6] Hose and cable storage place
[7] Platform

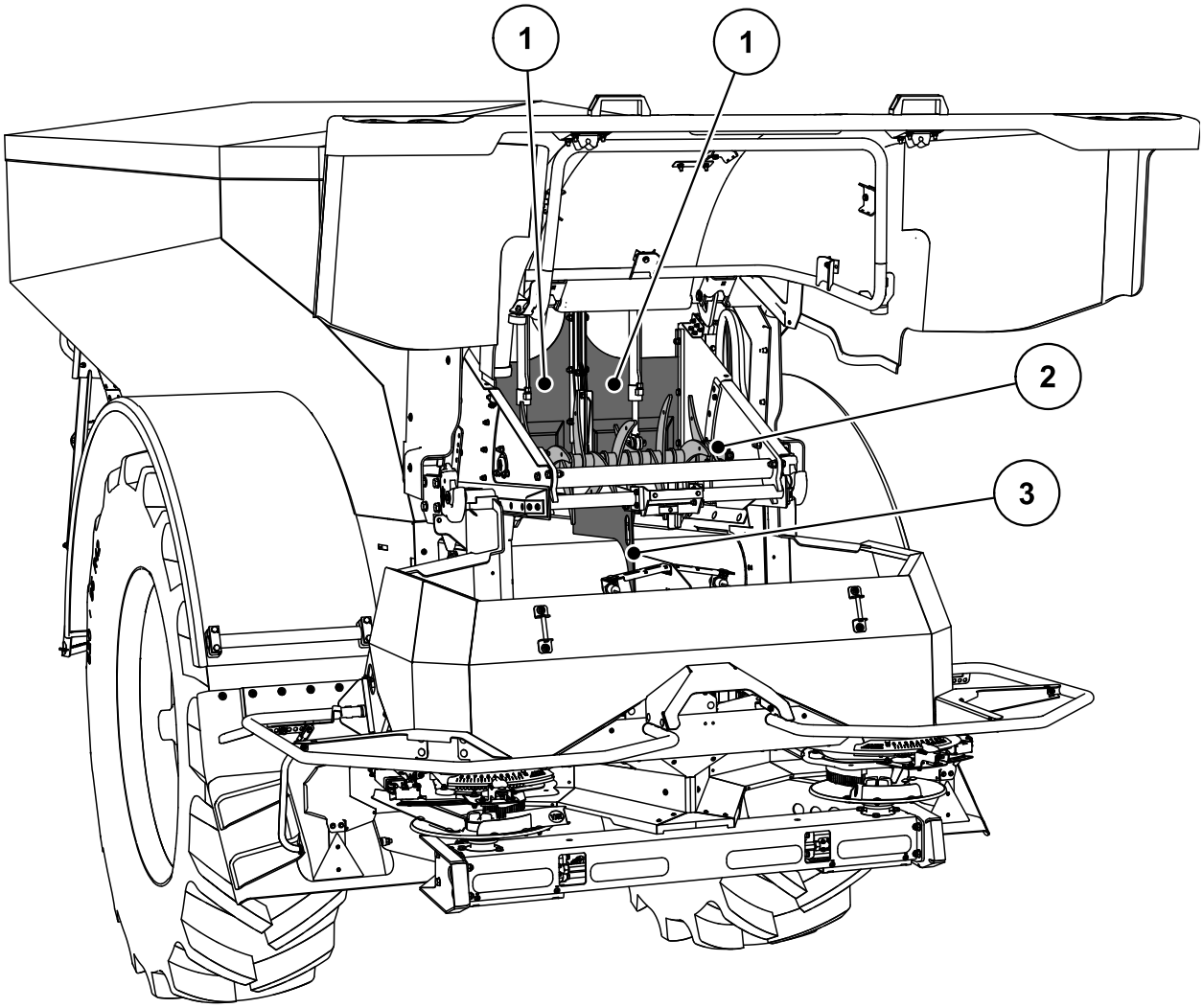


Figure 4.3: Assemblies and function of the machine AXENT, rear view

[1] Pre-metering slider
[2] Comb roller
[3] Removable separating plate

4.2.2 AXIS-PowerPack fertiliser spreading unit

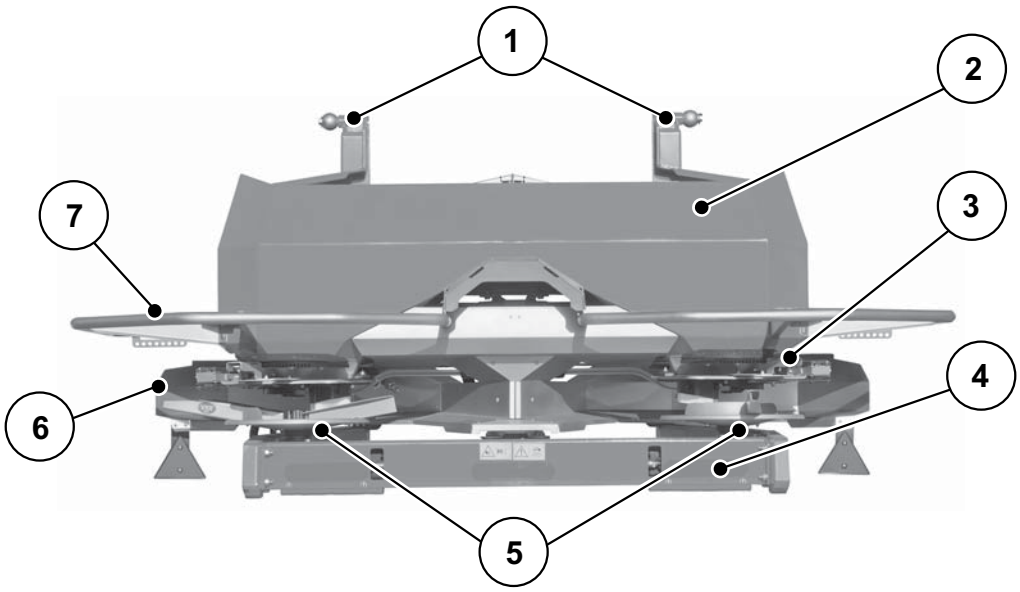


Figure 4.4: Assemblies and function of the AXIS-PowerPack fertiliser spreading unit

[1] Coupling points
[2] Hopper
[3] Adjustment centre, drop point
[4] Spreading disc drive
[5] Spreading disc
[6] Spreading disc protection
[7] Deflector bracket

4.2.3 LIME-PowerPack lime spreading unit

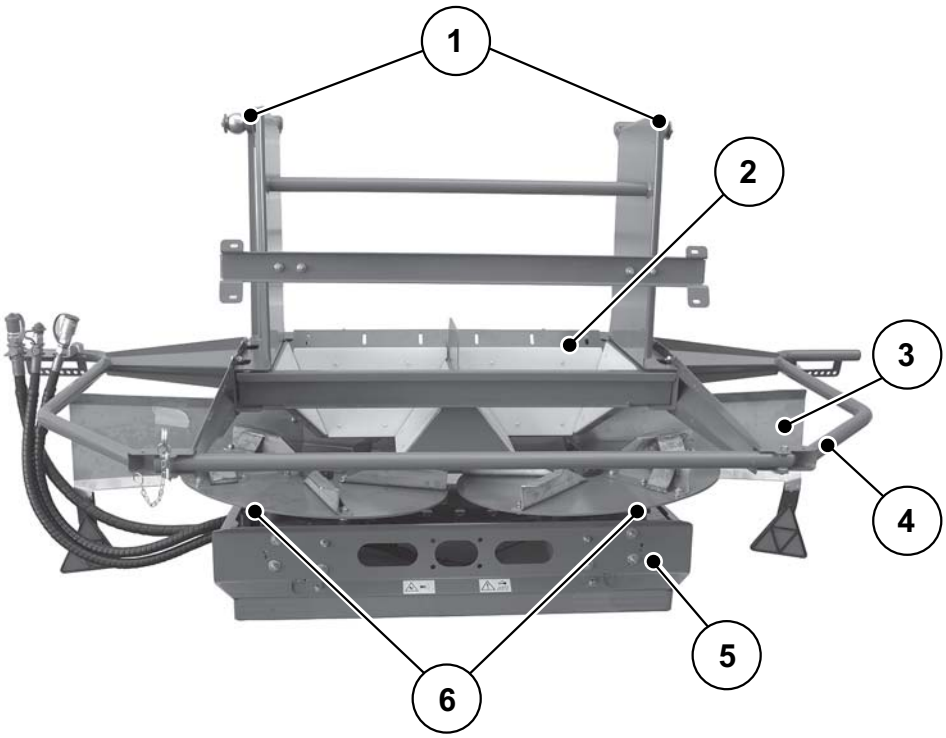


Figure 4.5: Assemblies and function of the LIME-PowerPack lime spreading unit

[1] Coupling points
[2] Funnel
[3] Spreading disc protection
[4] Deflector bracket
[5] Spreading disc drive
[6] Spreading disc

4.3 Machine specifications

4.3.1 Variants

NOTICE

Some models are not available in all countries.

Type	AXENT 100.1 Steering axle		AXENT 100.1 Rigid axle	
	Pneumatic brake system	Hydraulic brake system	Pneumatic brake system	Hydraulic brake system
2 to 2.25 m track width	●	●	●	●
3 m track width			●	●
With towing bar for bottom hitching	●	●	●	●
With towing bar for top hitching	●	●	●	●

4.3.2 Spreading units

You can attach the following spreading units to the large area spreader:

- LIME-PowerPack for spreading lime
- AXIS-PowerPack for spreading fertiliser

4.3.3 Technical data of basic equipment

Data	AXENT
Width	2.55 m Up to 3.0 m at the wheels depending on the tyres
Height	3.15 m
Ground clearance (relative to lower edge of frame)	0.75 m
Capacity	9 400 l
Filling level	2.95 m
Length of trailer unit up to end of vehicle (with attached fertiliser spreader)	Approx. 7.7 m depending on the attached fertiliser spreader
Length from trailer unit to axle	5 m (France 4.60 m)
Conveying capacity max. (conveyor belt) [1]	1 600 kg/min
Hydraulic pressure max.	280 bar
Oil quantity, hydraulic system max.	100 l/min
Track width [2]	2.00 m
Standard tyres [3]	520/85 R42 AC85
Sound pressure level [4] (measured in the closed driver's cab of the tractor)	75 dB(A)

1. Max. delivery rate depending on the type of fertiliser
2. Other track widths on request
3. Other tyres are optionally available; see 4.4: Wheels and tyres, page 44.
4. Since the sound pressure level of the machine can be determined only when the tractor is running, the actually measured value depends considerably on the tractor used.

Weights and loads:

NOTICE

The empty weight (mass) of the machine varies depending on the equipment. The empty weight (mass) stated on the nameplate refers to the standard version.

The technical details of the operating licence are decisive. They may vary from the tables below.

Any modifications to the towed large area spreader must be entered in the operating licence.

Data		AXENT
Admissible total weight [1]		
With towing bar for top hitching (DOH)		12 000 kg
With towing bar for bottom hitching (DUH)		13 000 kg
Weight of AXIS-PowerPack fertiliser spreading unit	approx.	350 kg
Weight of LIME-PowerPack lime spreading unit	approx.	300 kg
Empty weight AXENT	approx.	4 250 kg
Fertiliser payload [2]		
With towing bar for top hitching (DOH)		7 400 kg
With towing bar for bottom hitching (DUH)		8 400 kg
Permitted axle load	max.	10 000 kg
Permitted vertical load of trailer unit, top hitching (DOH)	max.	2 000 kg
Permitted vertical load of trailer unit, bottom hitching (DUH)	max.	3 000 kg

1. Observe the entries in the operating licence for the wheel load.
2. The exact payload depends on the machine equipment (steering wheel, rigid axle, brake system etc.).

Centre of gravity:

NOTICE

The centre of gravity depends on the coupling variant, the axle position and the filling quantity of the container.

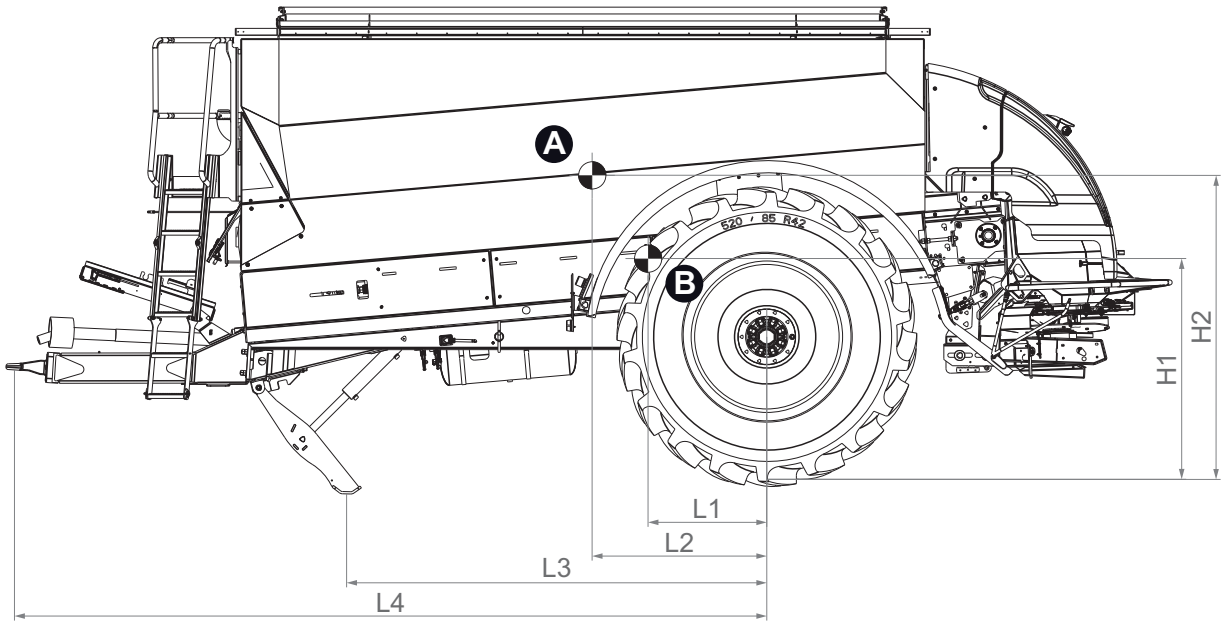


Figure 4.6: Centre of gravity in bottom hitching

[A] Centre of gravity with full container
[B] Centre of gravity with empty container

Length	Bottom hitching (mm)
L1	727
L2	1111
L3	2780
L4	4980
H1	1460
H2	2010

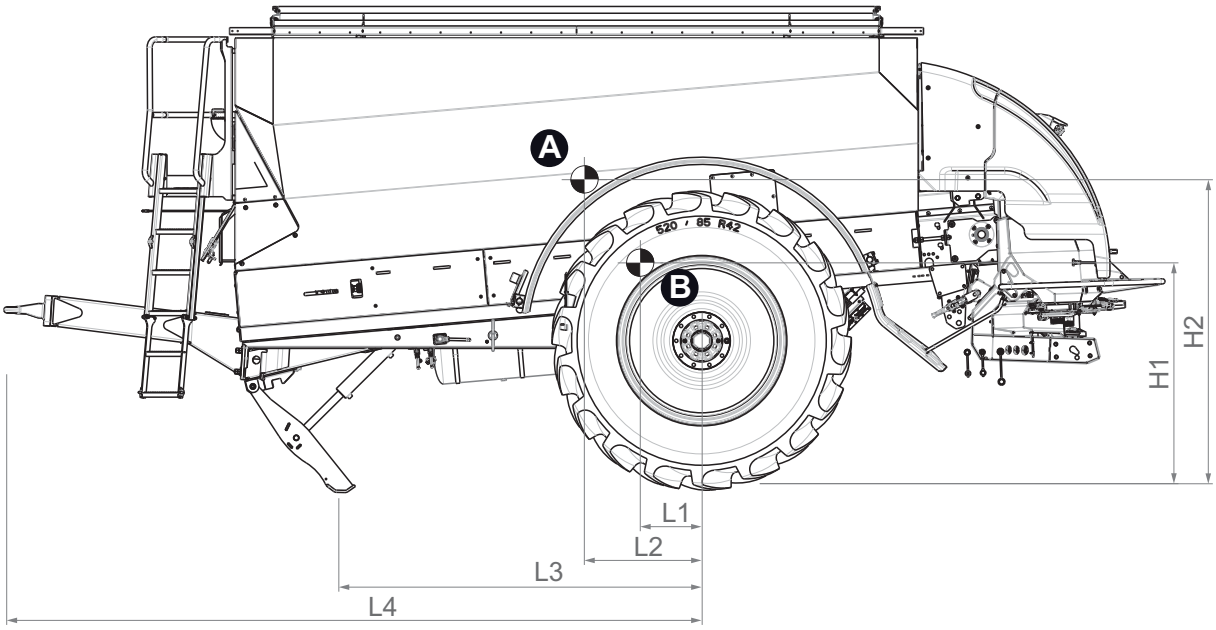


Figure 4.7: Centre of gravity in top hitching

[A] Centre of gravity with full container
[B] Centre of gravity with empty container

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

4.3.4 Technical data, France

- Length from trailer unit to axle: 4.60 m

Weights and loads:

NOTICE

The empty weight (mass) of the machine varies depending on the equipment. The empty weight (mass) stated on the nameplate refers to the standard version.

The technical details of the operating licence are decisive. They may vary from the tables below.

Any modifications to the towed large area spreader must be entered in the operating licence.

Data		AXENT P[1]	AXENT H[2]
Admissible total weight [3]		15 000 kg	13 500 kg
Weight of AXIS-PowerPack fertiliser spreading unit	approx.	350 kg	350 kg
Weight of LIME-PowerPack lime spreading unit	approx.	300 kg	300 kg
Empty weight AXENT	approx.	4 250 kg	4 250 kg
Fertiliser payload		10 400 kg	10 400 kg
Permitted axle load	max.	13 000 kg	12 000 kg
Permitted vertical load of trailer unit	max.	3 000 kg	3 000 kg

1. P: pneumatic brake system
2. H: hydraulic brake system
3. Observe the entries in the operating licence for the wheel load.

Centre of gravity, France:

NOTICE

The centre of gravity depends on the coupling variant, the axle position and the filling quantity of the container.

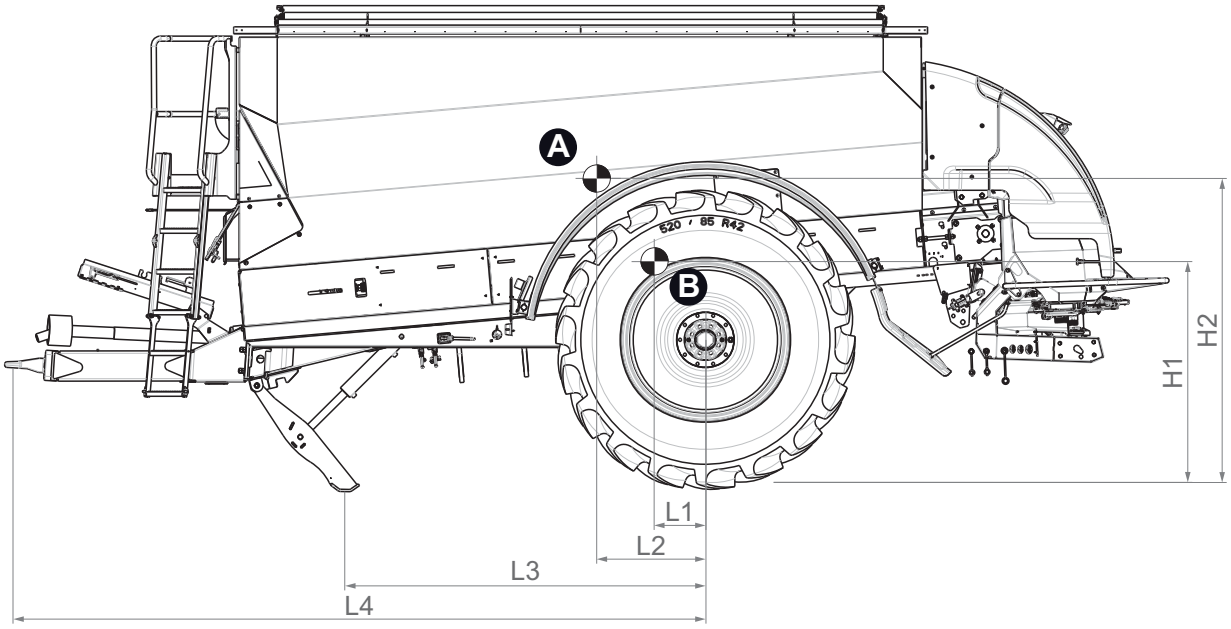


Figure 4.8: Centre of gravity

[A] Centre of gravity with full container
[B] Centre of gravity with empty container

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

4.3.5 Technical data, 3 m axle

NOTICE

Some models are not available in all countries.

Data	AXENT
Width	3.55 m
Height	3.15 m
Ground clearance (relative to lower edge of frame)	0.75 m
Capacity	9 500 l
Filling level	2.90 m
Length of trailer unit up to end of vehicle (with attached fertiliser spreader)	Approx. 7.7 m depending on the attached fertiliser spreader
Length from trailer unit to axle With 10 000 kg axle load With 13 000 kg axle load	 5 m 4.60 m
Conveying capacity (conveyor belt) [1] max.	1 600 kg/min
Hydraulic pressure max.	280 bar
Oil quantity, hydraulic system max.	100 l/min
Track width [2]	3.00 m
Standard tyres [3]	520/85 R42 MITAS
Sound pressure level [4] (measured in the closed driver's cab of the tractor)	75 dB(A)

1. Max. delivery rate depending on the type of fertiliser
2. Other track width (2.25 m) on request
3. Other tyres are optionally available; see 4.5: Special equipment, page 46.
4. Since the sound pressure level of the machine can be determined only when the tractor is running, the actually measured value depends considerably on the tractor used.

Weights and loads:

NOTICE

The empty weight (mass) of the machine varies depending on the equipment. The empty weight (mass) stated on the nameplate refers to the standard version.

The technical details of the operating licence are decisive. They may vary from the tables below.

Any modifications to the towed large area spreader must be entered in the operating licence.

Data		AXENT
Admissible total weight [1]		15 000 kg
Weight of AXIS-PowerPack fertiliser spreading unit	approx.	350 kg
Weight of LIME-PowerPack lime spreading unit	approx.	300 kg
Empty weight AXENT	approx.	4 400 kg
Fertiliser payload		8 400 kg
Permitted axle load	max.	13 000 kg
Permitted vertical load of trailer unit bottom hitching	max.	3 000 kg

1. Observe the entries in the operating licence for the wheel load.

Chassis and brake system:

Data	AXENT
Chassis	BPW rigid axle with 3 m flange dimension
Brake system	BPW hydraulic system
Parking brake	Hand crank
Maximum transport speed	30 km/h

Centre of gravity:

NOTICE

The centre of gravity depends on the coupling variant, the axle position and the filling quantity of the container.

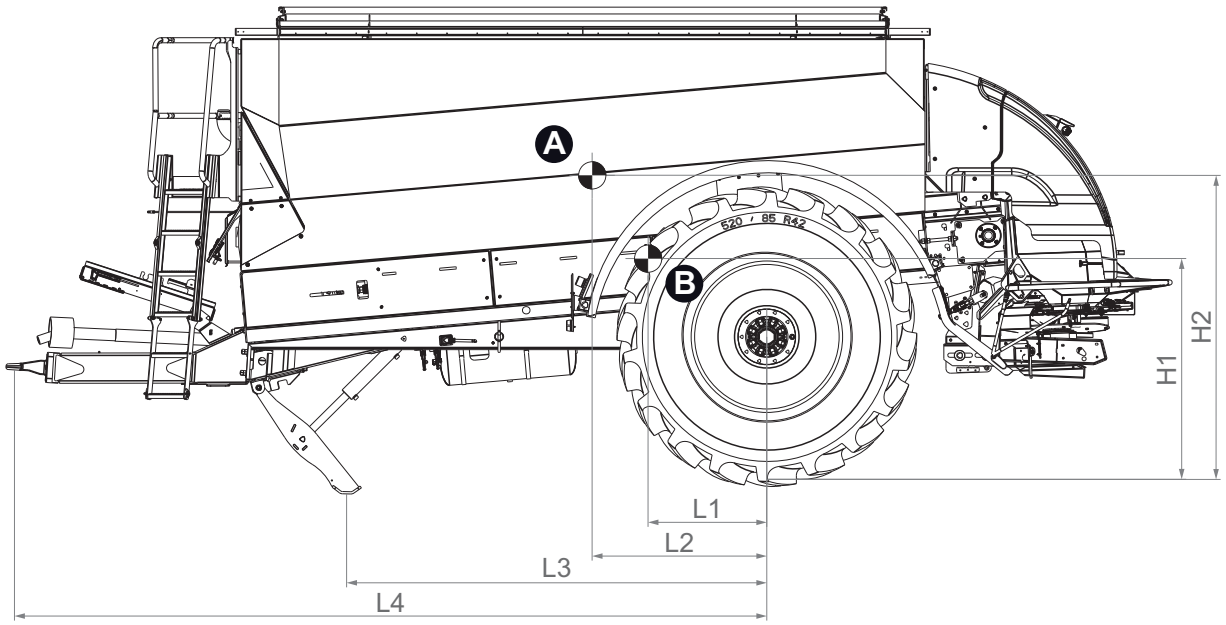


Figure 4.9: Centre of gravity

[A] Centre of gravity with full container
[B] Centre of gravity with empty container

Length	Dimension (mm)
L1	727
L2	1111
L3	2780
L4	4980
H1	1460
H2	2010

4.3.6 Technical data of fertiliser spreading unit

Data	AXIS PowerPack
Total width with deflector bracket	2.55 m
Working width [1]	18 - 50 m
Capacity of the container	Approx. 200 l
Mass flow [2]	500 kg/min
Hydraulic pressure	200 bar
Hydraulic performance	60 l/min

1. Working width depending on the fertiliser type
2. Max. mass flow depending on the fertiliser type

4.3.7 Technical data of lime spreading unit

Data	LIME PowerPack
Total width with deflector bracket	2.50 m
Working width [1]	Up to 18 m
Spreading disc speed	700 rpm
Comb roller speed	50 rpm
Mass flow [2]	1 600 kg/min
Hydraulic pressure	250 bar
Hydraulic performance	60 l/min

1. Working width depending on the type of lime
2. Max. mass flow depending on the type of lime

4.4 Wheels and tyres

NOTICE

Some models are not available in all countries.

Observe the markings on the tyre:

- Speed category
  - **A5** for 25 km/h
  - **A8** for 40 km/h
- Load index (LI)
  - LI = 164 for a load capacity of 5 000 kg
  - LI = 173 for a load capacity of 6 500 kg

Wheel size	Track width in m	Rigid axle 2 m	Steering axle 2 m	Rigid axle 3 m	Tyre pressure in bar Load capacity 5000 kg at 40 km/h
480/80 R46	2.15	●	●	-	2.6
	2.25	●	●	-	
	3.00	-	-	●	
520/85 R42	2.00	●	●	-	2.2
	2.10	●	●	-	
	2.15	●	●	-	
	2.25	●	●	-	
	3.00	-	-	●	
520/85 R46	2.00	●	●	-	1.8
	2.10	●	●	-	
	2.15	●	●	-	
	2.25	●	●	-	
	3.00	-	-	●	
650/65 R42	2.00	●	-	-	1.9
	2.10	●	●	-	
	2.25	●	●	-	
	3.00	-	-	●	

Wheel size	Track width in m	Rigid axle 2 m	Steering axle 2 m	Rigid axle 3 m	Tyre pressure in bar: Load capacity 5 000 kg at 40 km/h	Tyre pressure in bar: Load capacity 6 500 kg at 25 km/h
VF 380/90 R46 HC1000 173D	2.25	●	●	-	3.2	4.4
	3.00	-	-	●		
VF 380/105 R50 HC1000 176D	2.25	●	●	-	2.4	3.4
	3.00	-	-	●		
VF 420/95 R50 SprayBib TL 177D	3.00	-	-	●	1.8	3.0
VF 480/80 R50 HC1000 181D	2.25	●	●	-	2.6	3.6
	3.00	-	-	●		
VF 520/85 R42 HC2000 174D	2.00	●	●	-	1.6	2.3
	2.15	●	●	-		
	3.00	-	-	●		
520/85 R42 Agrimax Teris	2.00	●	●	-	2.4	3.2
	2.25	●	●	-		
	3.00	-	-	●		

4.5 Special equipment

4.5.1 Special equipment for the large area spreader

- Lighting to the front if the transport width exceeds 2.75 m due to the tyres (StVZO)
- Towing bar for top hitching (2000 kg vertical load)
- Universal drive shaft 1 3/8”, 6-piece
- Weighing unit
- Kingpin steering
- **France**: Wheel 520/85 R 46, load capacity: 6 500 kg required
- Hydraulic brake system (not for Germany)

4.5.2 Special equipment for lime spreading unit

- LIME-PowerPack lime spreading unit with comb roller
- Parts set of granulate discs for LIME-PowerPack with S4 spreading disc set
- Shaker motor for better sliding during lime spreading

4.5.3 Special equipment for fertiliser spreading unit

AXMAT

The AXMAT special equipment is used for monitoring the distribution of fertiliser during spreading operation. The cross-distribution on each spreading side is optimised by adjusting the respective drop point based on regulation values.

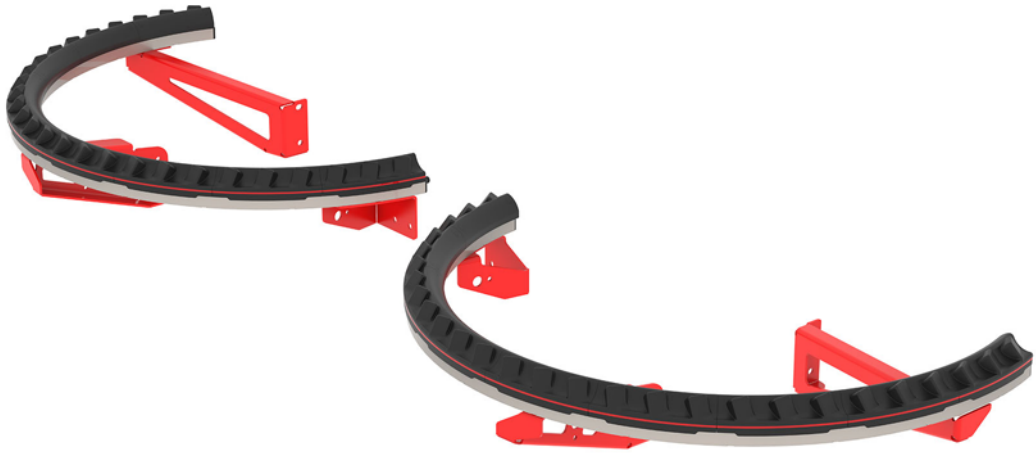


Figure 4.10: Special equipment for AXMAT

SpreadLight worklights

Figure 4.11: SpreadLight special equipment

The SpreadLight special equipment [1] allows the user to visually check the individual spreading functions during spreading operations in the dark.

The SpreadLight special equipment consists of intensive LED light and is specifically aimed at the spreading fans. Possible incorrect settings or clogging at the dispensing gates are recognised immediately.

Moreover, the user can respond more quickly to difficult-to-detect obstacles or danger points in the outer spreading area in the dark, especially when it comes to large spreading widths.

PPS5 practice test kit

For checking the lateral distribution in the field.

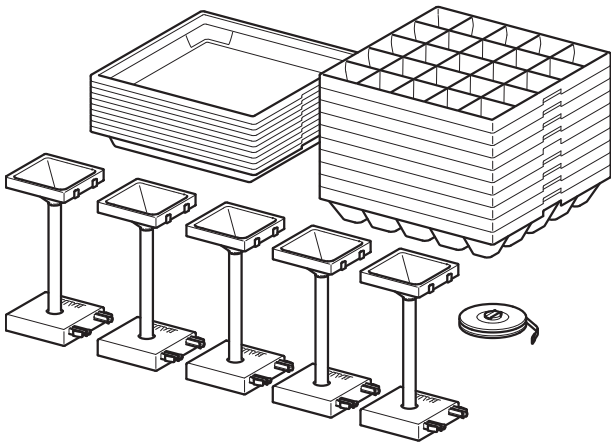


Figure 4.12: PPS5 special equipment

5 Transport without tractor

5.1 General safety instructions

⚠ CAUTION

Material damage due to incorrect transport

The ring eyelets in the container are **not** intended for lifting the entire machine. They only serve to transport the container during production.

Non-observance will result in damage to the machine.

▶ Observe the shipping instructions of the manufacturer.

Read the following instructions before transporting the machine:

- Without a tractor, the machine may be transported only with an empty container.
- Work may be carried out only by suitably instructed and expressly authorized persons.
- Use suitable means of transport and lifting equipment (e. g. low loader with wheel recess, lifting tackle ...).
- Determine the transportation route early, and remove possible obstacles.
- Check that all safety and transportation devices are fully operational.
- Secure all danger areas appropriately, even if they only exist briefly.
- The person responsible for transport must ensure the machine is transported appropriately.
- Unauthorised persons are to be kept away from the transport route. Cordon off the affected areas.
- Cautiously transport the machine and handle it with care.
- Pay attention to the centre of gravity!

5.2 Loading and unloading, parking

1. Determine the weight of the machine.

   Observe the specifications in the chapter Technical data.
2. Carefully drive the machine from or onto the loading platform with a suitable tractor.
3. Carefully set the machine down on the loading platform of the transport vehicle or on solid ground.

6 Commissioning

6.1 Accepting the machine

Check that the delivery is complete when accepting the machine.

The standard equipment includes

- 1 AXENT 100.1 large area spreader
- 1 operating manual for the AXENT 100.1
- 1 ISOBUS cable
- 1 feeder mesh in the container
- 2 wheel chocks
- 1 fertiliser or lime spreading unit
- 1 wide-angle universal drive shaft
- 2 levers for the ball valves of the towing bar suspension
- 1 AXENT H ISOBUS electronic machine control unit with operating manual
- 1 type approval §21 StVZO (Road Traffic Licensing Regulation) Germany
- For France: DREAL “Barré rouge”

Please also check any additionally ordered special equipment.

Check if transportation damage has occurred or if any parts are missing.
Have transport damage confirmed by the transport company.

NOTICE

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

If in doubt, contact your dealer or the factory directly.

6.2 Operating licence

6.2.1 Germany

The towed AXENT 100.1 large area spreader requires an **operating licence**.

On the basis of the supplied type approval, the authority responsible for you will issue an operating licence for individual vehicles (EBE) upon request.

A valid operating licence is the prerequisite for participation in public traffic.

The towed AXENT 100.1 large area spreader has been assessed by an officially recognized expert for motor vehicle traffic in Germany.

According to the approval, the AXENT 100.1 large area spreader is a rigid towing bar trailer (SDAH) with switching spreading unit.

⚠ DANGER

Danger of accident due to missing spreading unit

There is a danger of accident if the AXENT 100.1 large area spreader is driven on public roads without an attached spreading unit. This can cause serious personal injury including even death. The spreading unit is considered as rear underride protection.

▶ Drive the large area spreader with the attached spreading unit on public roads.

The licence is granted upon application and presentation of the assessment to obtain individual approval from your local registration office.

The licence is granted by assigning a separate official number plate, stamping the number plate and issuing part 1 and part 2 of a registration certificate.

NOTICE

Vehicle registration ordinance (FZV)

Driving on public roads is prohibited without a licence.

- It is essential you apply for a licence for your towed AXENT 100.1 large area spreader at the local registration office before driving on public roads!

The towed AXENT 100.1 large area spreader must be subjected to a main technical inspection every two years.

6.2.2 France

The large area spreader has been approved by DREAL. The DREAL approval, also referred to as “Barré rouge”, describes the delivery state ex works.

The DREAL approval is required for the vehicle identification and operating licence for your machine.

- Check that the “Barré rouge” is included in the scope of delivery.

6.2.3 Other countries

The large area spreader is manufactured in Germany and supplied with a type approval. The type approval describes the delivery state ex works.

Observe the applicable traffic safety regulations of your country or of the location where the large area spreader is used. If necessary, the importer will register your machine at the relevant registration office for public road traffic.

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

6.3 Tractor requirements

To ensure the machine is used safely as intended, the tractor must meet the mechanical, hydraulic and electrical requirements.

- Engine power of the tractor: at least 180 hp
- Permissible vertical load:
  - Top hitching: 2 000 kg, K80 pin or ball coupling
  - Bottom hitching: 3 000 kg, ball coupling 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 ”, 6-piece, 1 000 rpm or
  - 1 3/4 ”, 20-piece
- Hydraulic plug-in connections according to ISO 15657
- On-board voltage: 12 V must be ensured even with multiple consumers
- ISOBUS connection according to ISO 11 783
- COBO socket according to ISO 12 369 for the lighting system
- Connections for the compressed-air brake system (control line and supply line)

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

The steering axle of the machine is equipped with a suitable number of spacers ex works. Thus, the stop of the steering angle is pre-set.

NOTICE

If you want to equip your machine with a different track or wheel size, the number of spacers must be adjusted. In this case, contact your specialist workshop.

- Only the specialist workshop may carry out retrofitting work on the steering axle.

6.5 Installing the universal drive shaft on the machine

⚠ CAUTION

Material damages due to unsuitable drive shaft

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

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

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

6.5.1 Installing/removing the universal drive shaft

Installation:

1. Check the installation position.
   ▷ The end of the universal drive shaft indicated by the tractor symbol is facing the tractor.
2. Unscrew the ring eyelet [1] and screw [2] of the protective plate on the universal drive shaft bracket with the adjustment lever.

   For the position of the adjustment lever, see Figure 6.15.
3. Set down the protective plate.

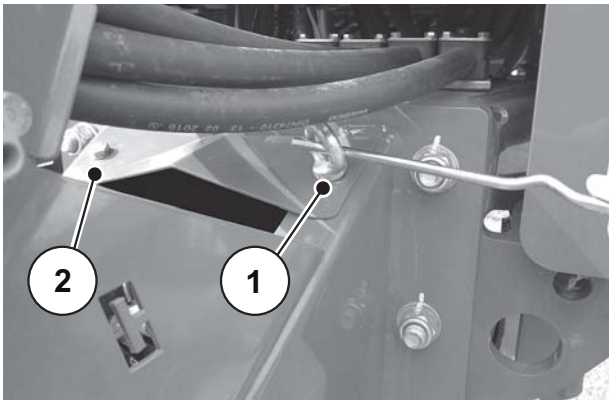


Figure 6.1: Removing the protective plate

4. Pull off the pin guard and grease the gear journal.

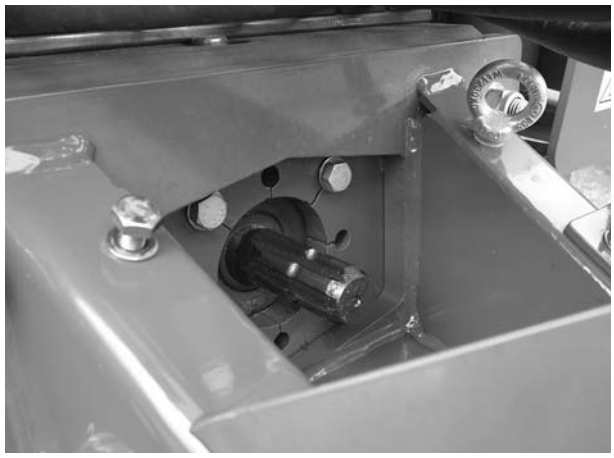


Figure 6.2: Greasing the gear journal

5. Press the sliding pin [1].
6. Push the universal drive shaft onto the gear journal until the sliding pin engages in the annular groove.
7. Release the sliding pin.

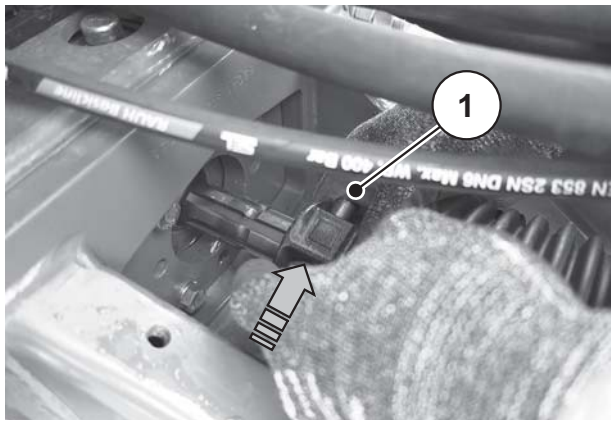


Figure 6.3: Fitting the universal drive shaft on the gear journal

8. Apply the protective plate [1].
9. Apply two washers.
10. Screw the ring eyelet and screw tight with the adjustment lever on the protective plate.

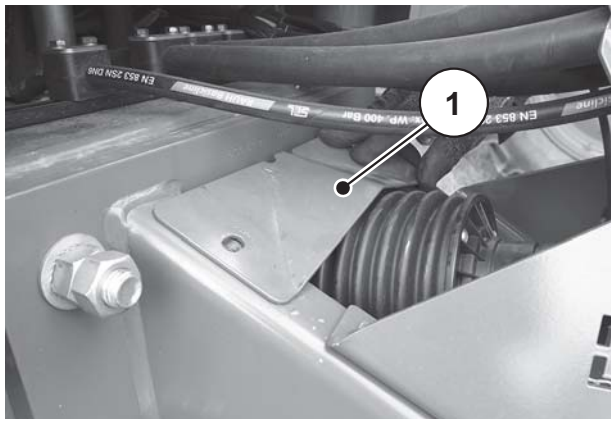


Figure 6.4: Fitting the protective plate

11. Fasten the retaining chain through the hole in the ring eyelet.

Figure 6.5: Fastening the retaining chain

Dismantling instructions:

- Dismantle the universal drive shaft in the opposite order as when installing it.

6.6 Coupling the machine to the tractor

⚠ DANGER

Danger to life due to unsuitable tractor

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

- ▶ Only use tractors that comply with the technical requirements of the machine.
- ▶ Use the vehicle's documentation to check if your tractor is suitable for the machine.

⚠ DANGER

Danger to life due to inattention or faulty operation.

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

The tractor may brake too late or not at all because of inattention or faulty operation.

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

⚠ WARNING

Risk of injury and material damage due to excessive vertical load

Exceeding the maximum permitted vertical load of the towbar has a negative effect on the steering and braking capability of the machine or tractor.

People can be injured. This can cause serious damage to the machine, tractor or environment.

- ▶ Observe the permissible vertical load of the tractor.
- ▶ Observe the permissible vertical load of the trailer unit.

Check the following requirements in particular:

- Are both the tractor and the machine in an operationally safe condition?
- Does the tractor meet the mechanical, hydraulic and electrical requirements (see “Tractor requirements”, page 53)?
- Does the tractor meet the requirements resulting from the technical data of the towed large area spreader (tensile load, vertical load etc.)?
- Is the machine positioned securely on level and solid ground?
- Is the machine secured according to regulations against rolling away?
- Is the ISOBUS terminal installed in the tractor and functional?

- Is the combination of connecting devices (towing eye - pin coupling or coupling bracket – ball coupling) permissible?

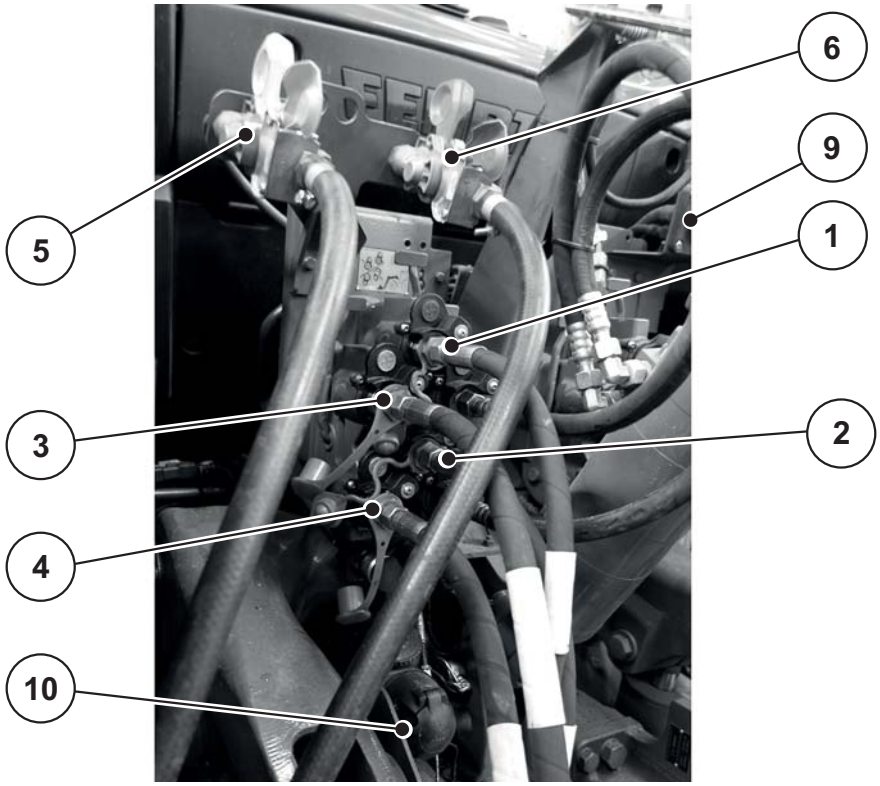


Figure 6.6: Connection order for large area spreader AXENT

[1] Hydraulic line for support stand
[2] Hydraulic line for support stand
[3] Hydraulic line for hopper cover
[4] Hydraulic line for hopper cover
[5] Pneumatic control line (compressed air brake)
[6] Pneumatic line for compressed air tank (compressed air brake)
[7] Hydraulic line (hydraulic brake) - not visible
[8] Pull chain for breakaway coupling (hydraulic brake) - not visible
[9] ISOBUS plug
[10] Lighting connector

1. Drive the tractor up to the machine.
2. Switch the tractor motor off. Remove the ignition key.

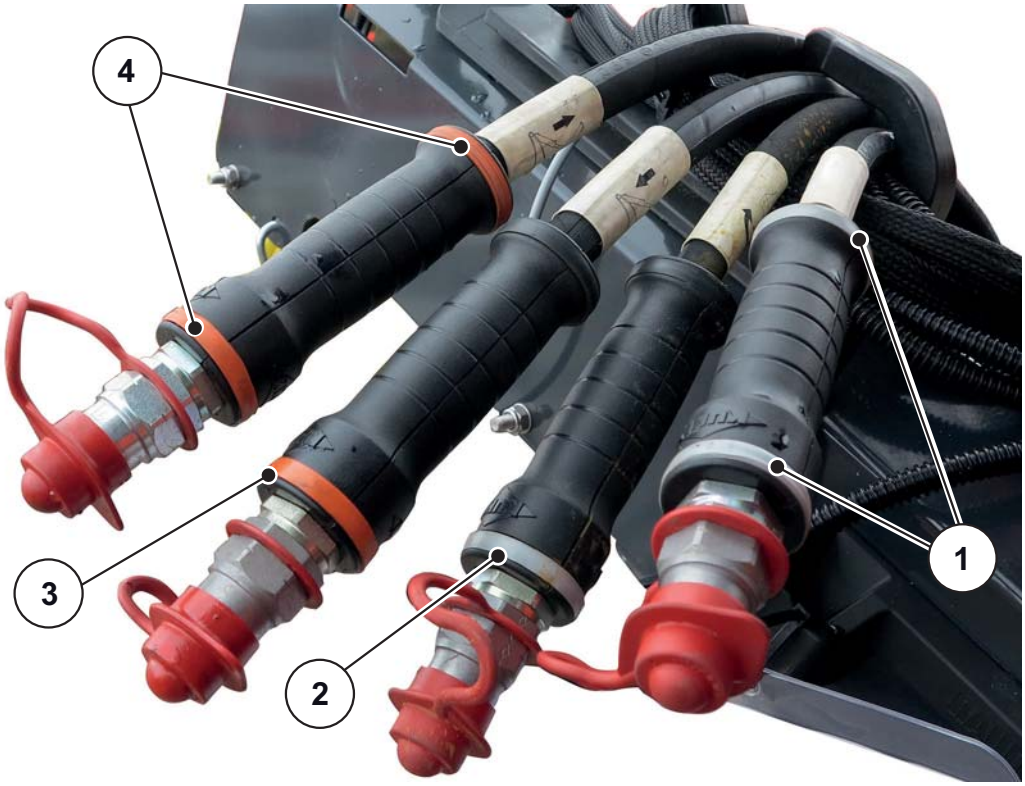


Figure 6.7: Identification of the hydraulic hoses

[1] Hose with 2 grey rubber bands on the handle: open the hopper cover
[2] Hose with 1 grey rubber band on the handle: close the hopper cover
[3] Hose with 2 red rubber bands on the handle: fold in the support stand
[4] Hose with 1 grey rubber band on the handle: unfold the support stand

3. Connect the hydraulic hoses [3] and [4] of the **support stand** to the hydraulic control unit of the tractor.

   See “Connection order for large area spreader AXENT”, page 58.

4. Connect the hydraulic hoses [1] and [2] of the **hopper cover** to the hydraulic control unit of the tractor.

6.6.1 Connecting the ball coupling (variant A)

1. Start the tractor.
   - The PTO shaft is switched off.
   - The hydraulic system is switched off.
   - The hold-down device of the ball coupling is open.
2. Position the tractor's ball coupling exactly under the machine's coupling bracket.
3. Apply the handbrake of the tractor.
4. Actuate the control valve on the tractor until the support stand is completely retracted.

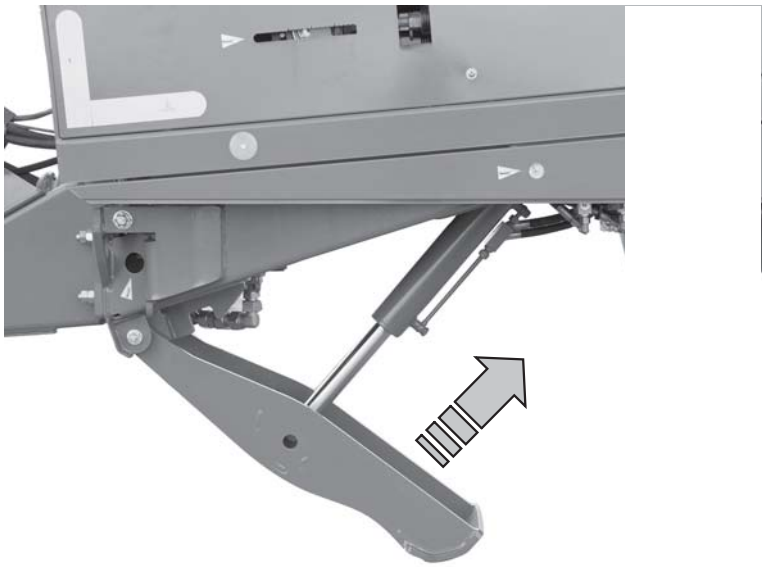


Figure 6.8: Retracting the support stand

5. Switch the tractor motor off. Remove the ignition key.
6. Close the hold-down device.

   Observe the instructions of the tractor manufacturer.

▷ **The connection is secured.**

6.6.2 Connecting the pin coupling (variant B)

1. Start the tractor.
   - The PTO shaft is switched off.
   - The hydraulic system is switched off.
   - The pin coupling is open.
2. Drive the tractor up to the machine.
3. Adjust the height of the hydraulic support stand of the machine so that the towing eye hooks exactly into the tractor's pin coupling.
4. Apply the handbrake of the tractor.
5. Switch the tractor motor off. Remove the ignition key.
6. Close the coupling pin.

   Observe the instructions of the tractor manufacturer.

⚠ CAUTION

Material damage to the universal drive shaft with bottom hitching

When driving, a collision may occur between the universal drive shaft and the lower link catch of the tractor. The universal drive shaft can become bent.

- ▶ Move the lower link catch to the top position and secure it.
- ▶ Make sure there is enough space for the steering angle.

7. Slowly retract the hydraulic support stand of the machine. See Figure 6.8.

▷ **The connection is secured.**

6.6.3 Hitch coupling (variant C)

1. Start the tractor.
   - The PTO shaft is switched off.
   - The hydraulic system is switched off.
2. Drive the tractor up to the machine.
3. Adjust the height of the machine's hydraulic support stand so that the hitch ring hooks exactly into the hitch hook of the tractor.
4. Apply the handbrake of the tractor.
5. Switch the tractor motor off. Remove the ignition key.
6. Close the hold-down device.

   Observe the instructions of the tractor manufacturer.

▷ **The connection is secured.**

6.6.4 Installing the gyroscope of the kingpin steering (special equipment)

Figure 6.9: Gyroscope and holder

NOTICE

Install the gyroscope and its holder on the tractor.

- Observe the installation instructions in the **operating manual for the ISO-BUS TRAIL Control Midi from Müller Elektronik**. The operating manual is supplied together with the electronic control.

6.6.5 Installing the universal drive shaft on the tractor

⚠ CAUTION

Material damages due to excessively long drive shaft

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

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

NOTICE

To check and adjust the universal drive shaft, observe the installation instructions and the shortening instructions in the **operating manual of the universal drive shaft manufacturer**. The operating manual is attached to the universal drive shaft upon delivery.

1. Install the universal drive shaft on the tractor.

   Adjust the universal drive shaft to the tractor during the initial start-up.
2. If necessary, shorten the universal drive shaft.

NOTICE

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

6.6.6 Brake system

The machine is equipped with a **compressed-air brake system**.

In connection with the brake system, also observe the relevant regulations of the country in which you are using the machine.

As standard, the machine is equipped with a manual parking brake.

Figure 6.10: Compressed air brake

[1] Parking brake
[2] Service brake

⚠ WARNING

Risk of injury due to unsecured machine

The machine can roll away up to the complete extent of its coupling, and injure people. When uncoupling the machine, always observe the following procedure for the compressed air lines:

- ▶ Instruct everybody to leave the danger zone.
- ▶ First, connect the yellow coupling head (brake line).
- ▶ Then connect the red coupling head (supply).

Observe the following instructions for the start-up:

- Clean the sealing rings and coupling heads of the pneumatic lines before the coupling process.
- Observe the connection order: See Figure 6.6.
- Check the tightness and function of the brake system after the coupling process and each time before driving. To do so, operate the service brake of the tractor.
- Do not drive with the coupled machine until the pressure gauge in the tractor cabin indicates the operating pressure intended for the tractor.

NOTICE

Further information can be found in the operating manual for the tractor.

Setting the manual brake pressure regulator

⚠ DANGER

Danger to life due to defective brake system

There is a danger to life if the brake system is used improperly or is defective. The machine may unintentionally roll away or tip over and overrun people.

- ▶ Before driving, make sure the pressure gauge in the driver's cab indicates the minimum pressure prescribed by the tractor manufacturer.
- ▶ Check the routing of the hose lines. The hose lines must not rub against external parts.

The brake pressure regulator is located on the frame next to the parking brake, on the left side in the direction of travel.

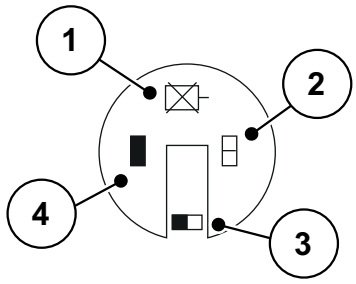


Figure 6.11: Setting the brake pressure regulator

[1] Release position
[2] Empty
[3] Half load
[4] Full load

- Adjust the setting of the brake pressure regulator to the filling quantity of the machine.

Hydraulic brake system (special equipment)

The hydraulic brake system is equipped with a manual parking brake and a pull chain. The pull chain serves as a breakaway coupling in the event of accidental uncoupling of the machine from the tractor.

- Observe the connection order: See Figure 6.6.
- Make sure the pull chain is connected to the tractor.

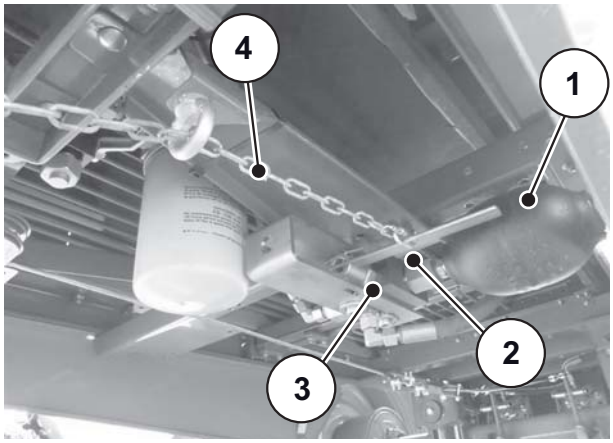


Figure 6.12: Breakaway coupling of the hydraulic brake system

[1] Pressure accumulator
[2] Operating lever
[3] Safety valve
[4] Pull chain

6.6.7 Releasing the parking brake

- Remove the wheel chocks and insert them in the transport storage place at the mudguard.

Pneumatic brake system

1. Press the button [1].

   ▷ The parking brake is released.

   Release the parking brake [1] only when the machine is attached to the tractor and the compressed air lines are connected.

Figure 6.13: Releasing the parking brake

[1] Parking brake
[2] Service brake

Hydraulic brake system

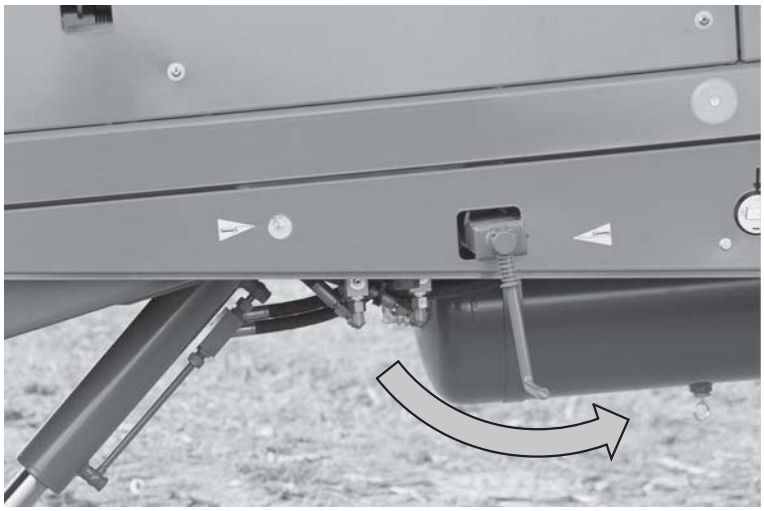


Figure 6.14: Releasing the manual parking brake

1. Turn the hand crank of the parking brake anti-clockwise.

   ▷ The parking brake is released.

   Release the parking brake only when the machine is attached to the tractor and the hydraulic hoses are connected.

6.6.8 Establishing other connections

1. Connect the lighting.
   See Figure 6.6.
2. Check the lighting function each time before driving.
3. Connect the ISOBUS cable to the tractor's ISOBUS connector.

NOTICE

Observe the operating manual for the AXENT ISOBUS electronic control.

6.6.9 Hydraulic system

The machine is equipped with an on-board hydraulic system. An axial reciprocating pump is driven by means of the universal drive shaft. The axial reciprocating pump supplies the following functions:

- Belt drive
- Pre-metering slider
- AXIS PowerPack
- LIME-PowerPack with comb roller (special equipment)
- Steering axle (special equipment)

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

NOTICE

Observe the chapter “Spreading operation”, page 87 and the operating manuals for the AXENT ISOBUS electronic control.

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

Nitrogen tanks are used in the towing bar damping.

⚠ WARNING

Risk of injury due to hot surfaces

The storage body can get hot. There is a risk of burns.

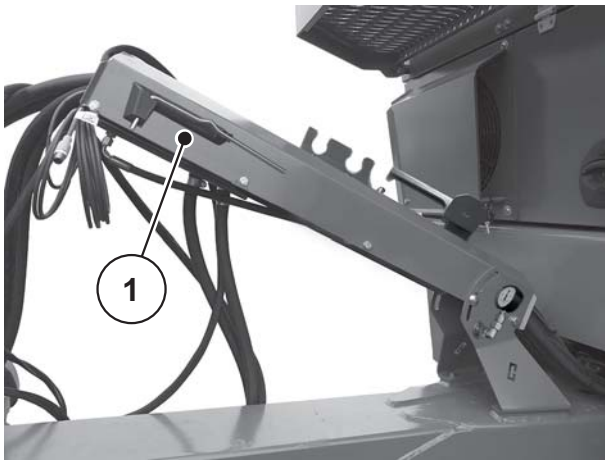
▶ All work on the hydraulic and pneumatic connections of the nitrogen tank may be carried out **only by qualified personnel**.

6.7 Attaching the spreading unit to the machine

6.7.1 Requirements

- **Dismantle the feeder mesh and the separating plate** from the machine outlet before attaching the LIME-PowerPack spreading unit. See “Dismantling the feeder mesh (LIME-PowerPack)”, page 70.
- The large area spreader is empty.
- The large area spreader is coupled to the tractor.
- The large area spreader and the tractor are secured against rolling away.
- The cover is folded up.

The adjustment lever is required as a tool to dismantle and install certain parts from and on the AXENT large area spreader. It can be found at the front of the machine.



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

Figure 6.15: Position of the adjustment lever

6.7.2 Dismantling the feeder mesh (LIME-PowerPack)

Dismantle the feeder mesh if you are using the LIME-PowerPack spreading unit for spreading work. This will avoid bridging due to lime in the container.

Requirements

- Position an empty pallet with forklift at the height of the edge of the container.
- Secure the forklift against rolling away.
- Place all parts of the feeder mesh securely on the pallet.

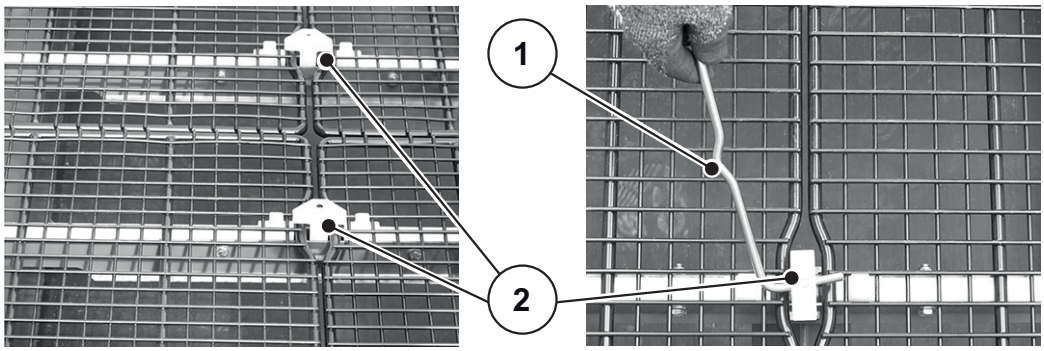


Figure 6.16: Unlocking the holders

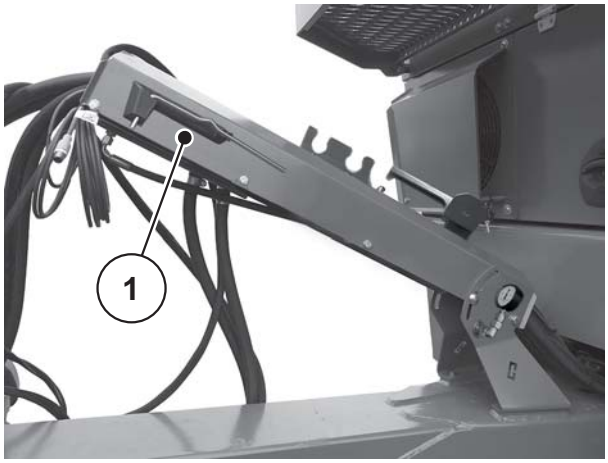
[1] Adjustment lever
[2] Locking the mesh supports

1. Unlock all four mesh supports with a lock.
   ▷ The parts of the feeder mesh are free.
2. Remove the parts of the feeder mesh and place them on the pallet.
3. Remove the mesh supports and place them on the pallet.
4. Remove the pallet and stow it safely away.

▷ **The feeder mesh is now dismantled.**

6.7.3 Dismantling the separating plate (LIME-PowerPack)

The separating plate is not suitable for the distribution of lime and must be dismantled.



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

Figure 6.17: Adjustment lever

1. Remove the adjustment lever from the holder.

2. Turn the plastic lock [1] 90 degrees with the adjustment lever.

▷ The separating plate [3] is unlocked.

3. Pull the separating plate out of the guide by the handle [3].

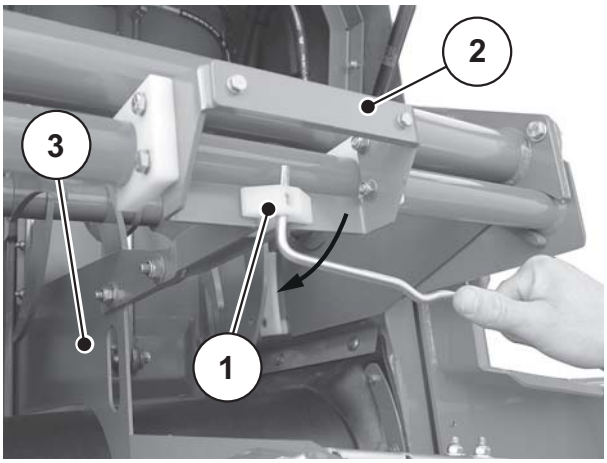


Figure 6.18: Removing the separating plate

4. Swing the separating plate slightly sideways to remove it from between the holder and the spreading unit hopper.

▷ **The separating plate is now dismantled.**

6.7.4 Installing the separating plate (AXIS-PowerPack)

The separating plate is pre-installed at the factory and serves to distribute the fertiliser evenly in both hopper sections of the AXIS-PowerPack spreading unit. If you change the spreading unit regularly, reinstall the separating plate and the feeder mesh (“Installing the feeder mesh (AXIS-PowerPack)”, page 74) at the machine outlet **before attaching the AXIS-PowerPack spreading unit**.

1. Install the separating plate [1] horizontally between the holder and the spreading unit hopper [2].
2. Position the separating plate vertically.

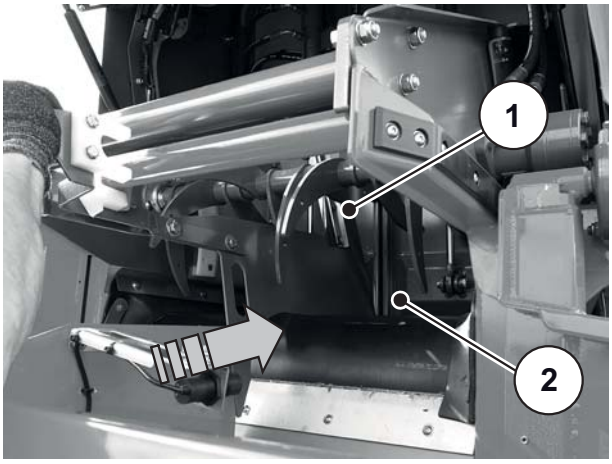


Figure 6.19: Installing the separating plate

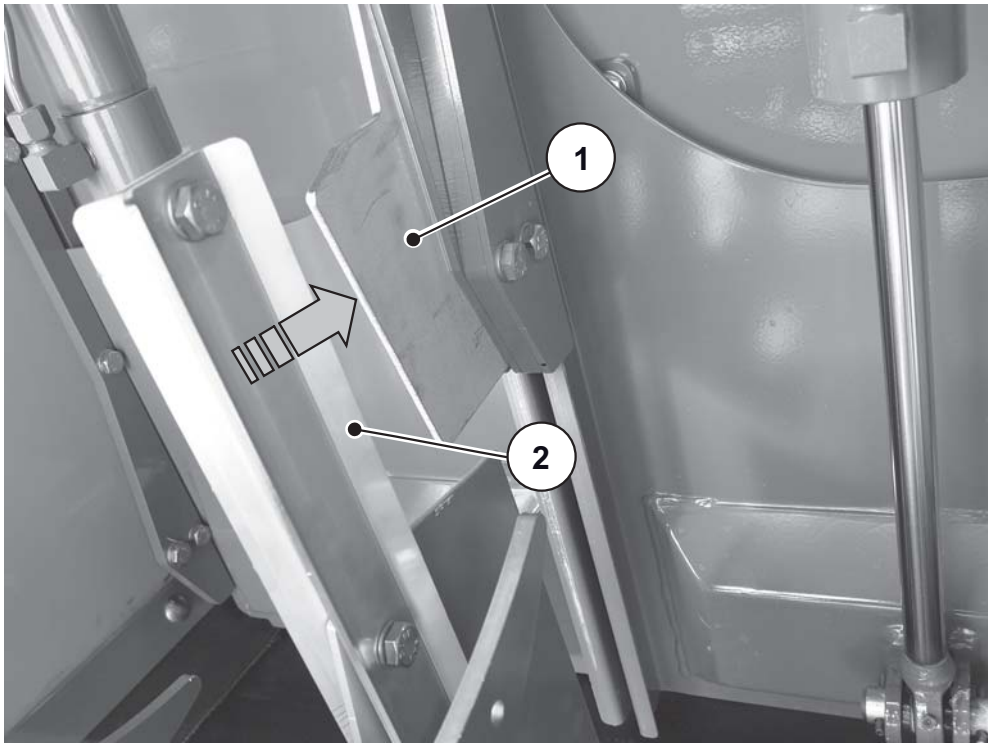


Figure 6.20: Inserting the separating plate in guides

[1] Sheet guide
[2] Guide holder

3. Push the separating plate inwards until the sheet guide is inserted in the guide holder at the separating plate.

4. Push the fork [2] onto the round tube with the handle [1].
5. Turn the lock [3] 90 degrees with the adjustment lever.

▷ **The separating plate is now installed.**

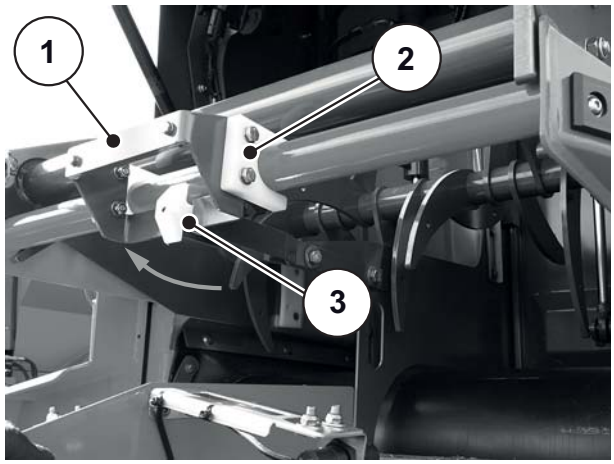


Figure 6.21: Securing the separating plate

6.7.5 Installing the feeder mesh (AXIS-PowerPack)

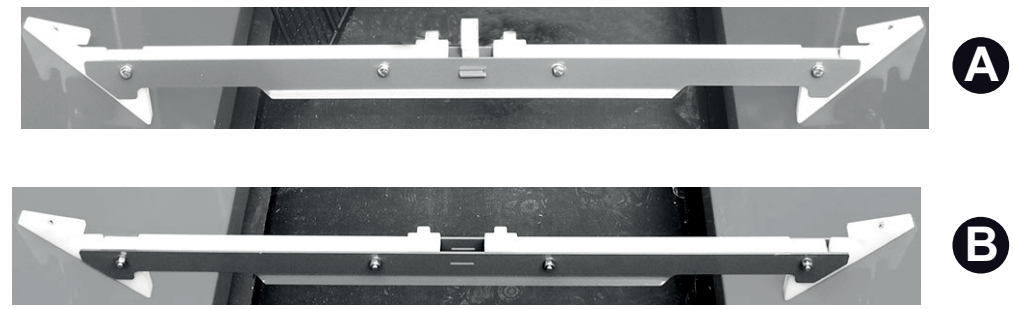


Figure 6.22: Mesh supports

[A] Mesh support with lock
[B] Mesh support with positioning parts

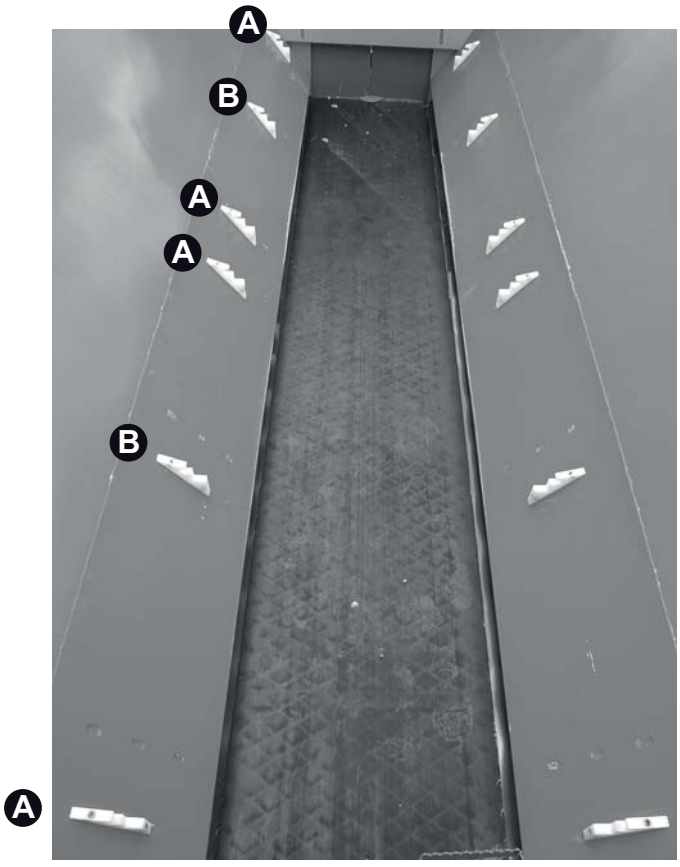


Figure 6.23: Installing the holders of the feeder mesh

[A] Mesh support with lock
[B] Mesh support with positioning parts

1. Install the mesh supports (4x) with a lock at the positions [A].
2. Install the mesh supports (2x) with positioning parts at the positions [B].
   ▷ The six holders lie horizontally without moving in the container.

3. Place part of the feeder mesh onto the mesh supports and push it into the plastic hook [2].

   The positioning parts [1] engage exactly in the feeder mesh.

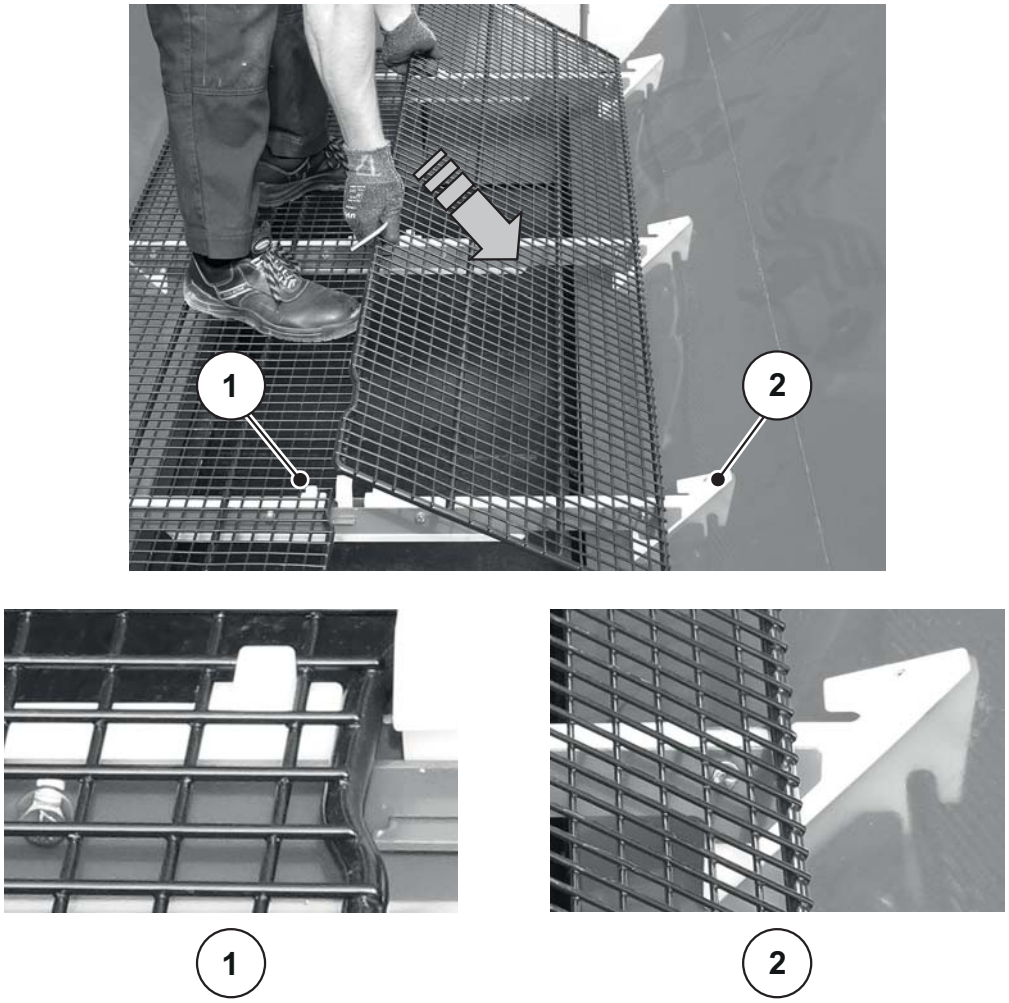


Figure 6.24: Installing the feeder mesh

[1] Positioning part
[2] Plastic hook

4. Install all parts (four in total) evenly.

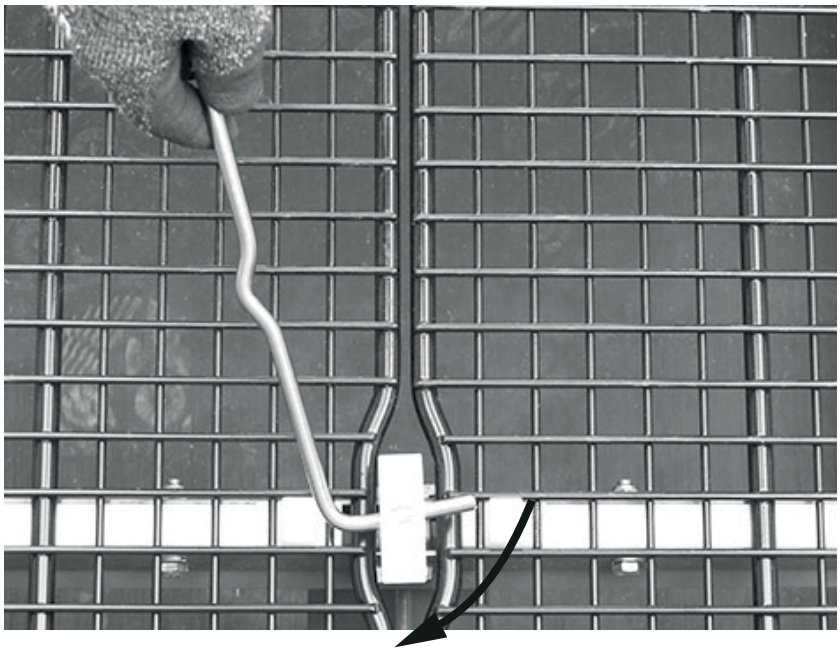


Figure 6.25: Locking the feeder mesh

[1] Adjustment lever
[2] Locks

5. Turn the locks 90° with the adjustment lever.

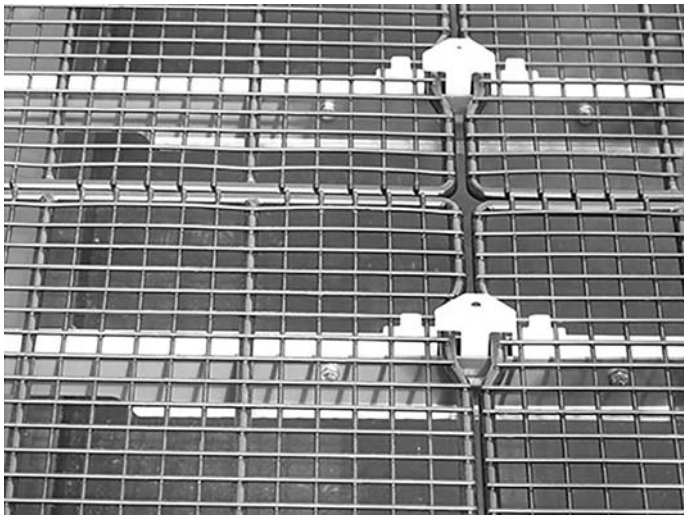


Figure 6.26: Securing the feeder mesh in the hopper

6. Check whether all parts of the feeder mesh are fitted correctly.

▷ **The feeder mesh is now fitted.**

6.7.6 Attachment of the spreading unit

⚠ DANGER

Danger to life due to inattention or faulty operation

There is fatal danger of people becoming crushed between the large area spreader and the spreading unit when the spreader is approached or the hydraulic system actuated.

- ▶ Secure the large area spreader against rolling away.
- ▶ Make sure nobody is between the spreading unit and the large area spreader.
- ▶ Instruct everybody to leave the danger zone.

Prerequisites:

- The cover is open.
- The catch hooks and quick releases are open on each side of the machine.

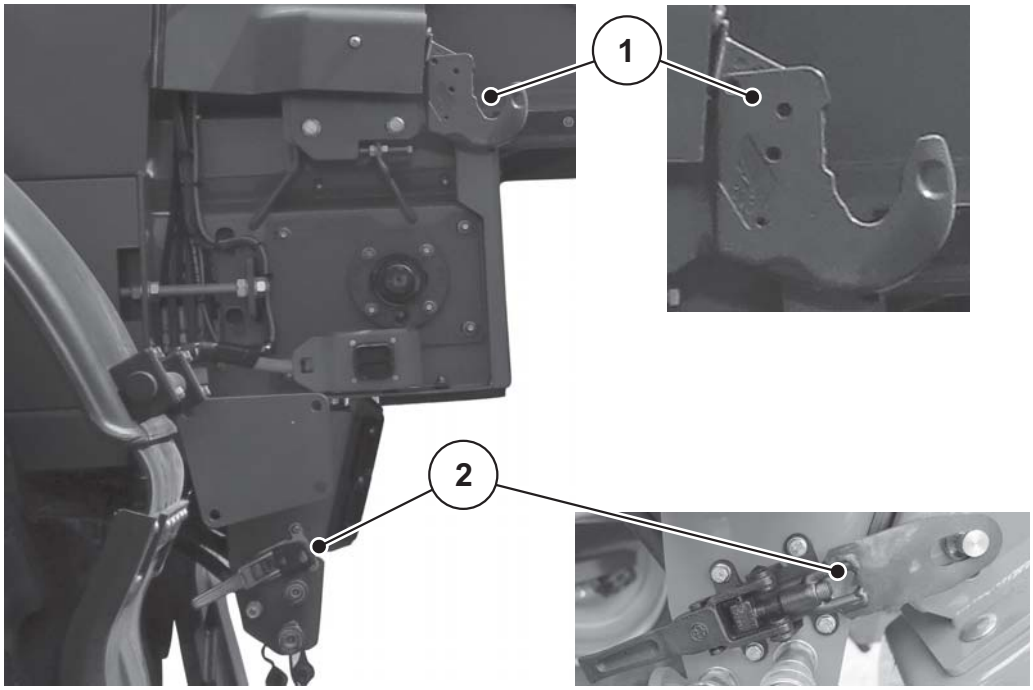


Figure 6.27: Coupling points on the AXENT 100.1

[1] Catch hook
[2] Lower quick release

1. Set down the spreading unit on a pallet.
2. Lift the spreading unit and pallet with a forklift.
3. Drive the forklift up to the large area spreader.

Figure 6.28: Approaching with the forklift

4. Hook the spreading unit into the upper catch hook.
   Check the spreading unit for secure fitting in the hook.
5. Drive away the forklift.
6. Close the catch hook.

7. Insert the bottom pin of the spreading unit into the elongated hole of the quick release [1] on each side.
8. Tighten the quick release with the handle [2].

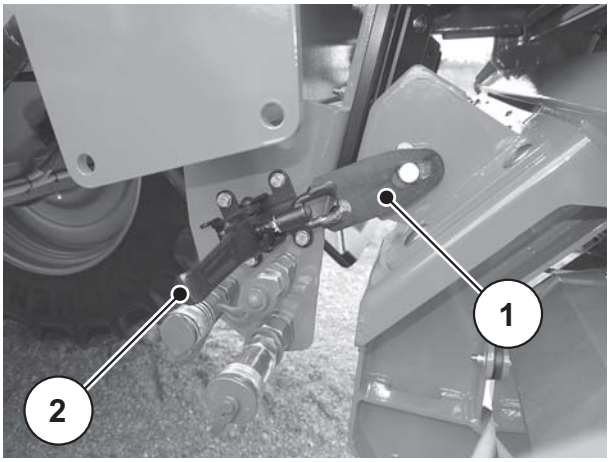


Figure 6.29: Securing the spreading unit at the bottom

9. Check the tight fitting of the machine.

6.7.7 Establishing connections

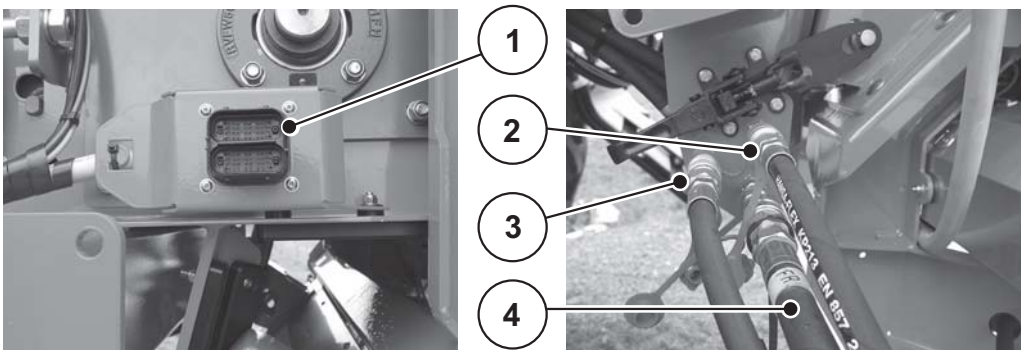


Figure 6.30: Connections

[1] Connection of the electrical cables of the spreading unit
[2] Hydraulic line for spreader disc drive, right
[3] Hydraulic line for spreader disc drive, left
[4] Free return

10. Connect the electrical and hydraulic lines.

11. Attach the mudguard extension to the metal latch on the deflector bracket and fasten it.

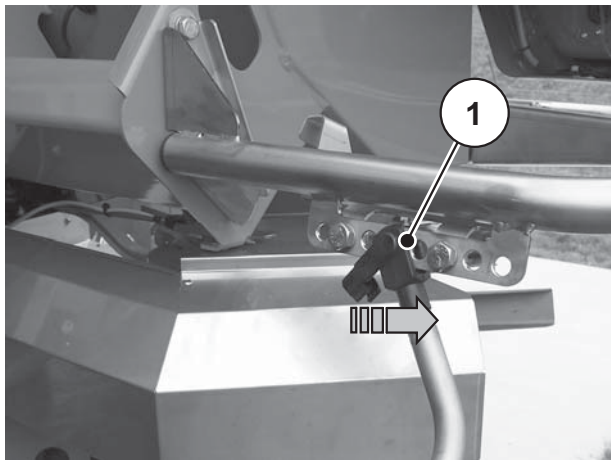


Figure 6.31: Fastening the mudguard extension

6.8 Converting spreading units

The spreading unit is removed in the opposite order as its attachment.

- The cover is open.
- The mudguard extensions have been detached from the deflector bracket.
- The electrical and hydraulic lines are disconnected from the AXENT connections.

1. Release the quick release [1] with the handle [2].
2. Pull the quick release towards yourself.
   ▷ The bottom pin of the spreading unit is free.

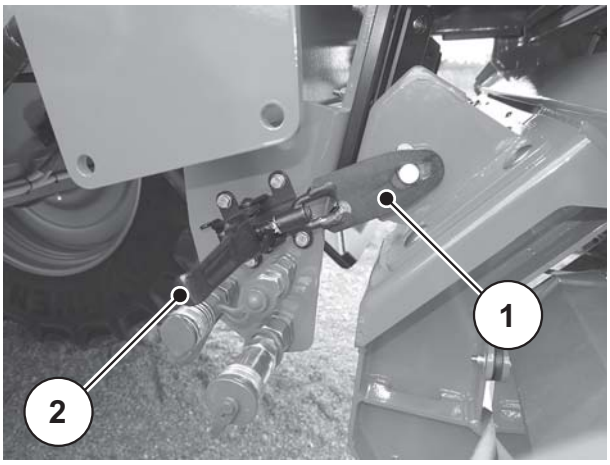


Figure 6.32: Securing the spreading unit at the bottom

3. Open the lock [1] of the upper catch hooks on each side.

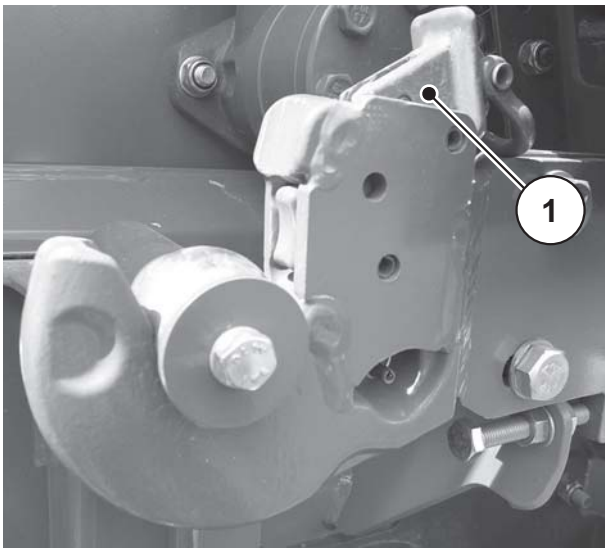


Figure 6.33: Securing the spreading unit at the bottom

4. Drive the forklift with a pallet under the spreading unit.
5. Lift up the spreading unit until the coupling points are free.
6. Drive away the forklift and place the spreading unit on a pallet at a suitable storage location.

Before attaching the other spreading unit, assembly or disassembly steps will be necessary, depending on the type of spreading unit. Note the following sections

- When converting to the AXIS-PowerPack fertiliser spreading unit:
  - 6.7.4: Installing the separating plate (AXIS-PowerPack), page 72
  - 6.7.5: Installing the feeder mesh (AXIS-PowerPack), page 74
- When converting to the LIME-PowerPack lime spreading unit:
  - 6.7.2: Dismantling the feeder mesh (LIME-PowerPack), page 70
  - 6.7.3: Dismantling the separating plate (LIME-PowerPack), page 71

7. Attach the spreading unit as described in chapters 6.7.6: Attachment of the spreading unit, page 77 and 6.7.7: Establishing connections, page 79.

6.9 Filling the machine

⚠ WARNING

Danger due to tipping over or rolling away

The unsecured machine can tip over or roll away during the filling process and cause extremely serious personal injury and material damage.

- ▶ Fill the machine only on level, solid ground.
- ▶ Make sure the machine is coupled to the tractor before the filling process.
- ▶ Make sure the parking brake is applied.

⚠ CAUTION

Inadmissible overall weight

If the permissible total weight is exceeded, this will affect the operational safety and road safety of the vehicle (large area spreader and tractor) and can cause serious damage to the machine and the environment.

- ▶ Make sure you observe the information in the chapter 4.3.3: Technical data of basic equipment, page 34.
- ▶ Before you start filling, calculate the amount you can load.
- ▶ Comply with the permissible overall weight.

NOTICE

Make sure the pre-metering sliders and the cleaning flap are closed before the filling process.

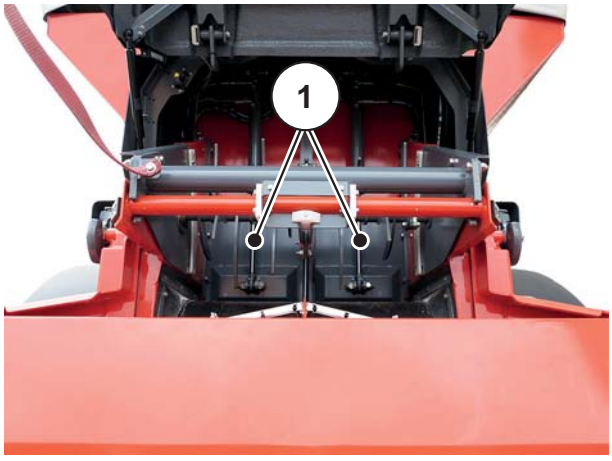


Figure 6.34: Pre-metering sliders in closed position

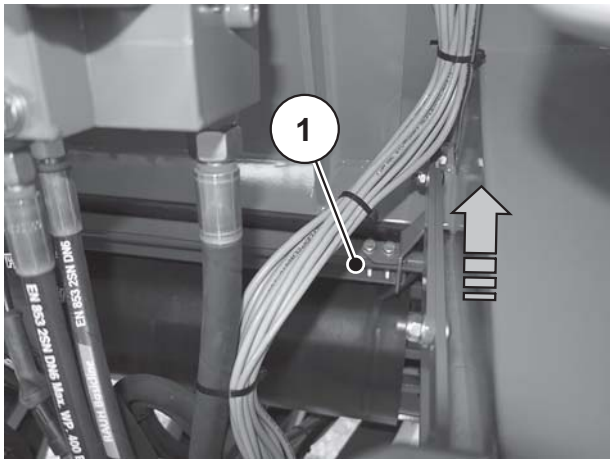


Figure 6.35: Cleaning flap in closed position, at the front in the direction of travel

Prerequisites:

- The hydraulic system is switched on.

1. Open the hopper cover of the machine.

2. Fill the machine evenly. Use a front-end loader or auger for this purpose.

3. Check the level in the hopper for visibility.

4. After finishing the filling process, close the hopper cover again.

▷ **The machine is now full.**

6.10 Checking the level

⚠ WARNING

Risk of injury due to falling from the platform

The platform is more than 1.50 m above the ground. There is a danger of falling onto the side of the ladder. Serious injuries are possible.

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

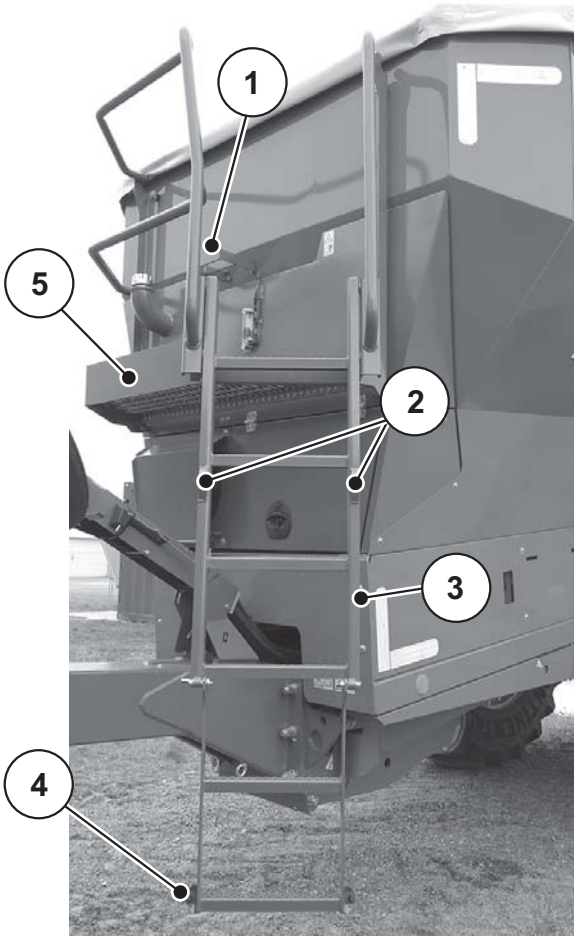


Figure 6.36: Level control

[1] Step (use only for maintenance work in the hopper)
[2] Snap lock
[3] Moveable ladder
[4] Snap-in pin of the folding ladder
[5] Platform

Using the ladder

1. Push up the movable ladder and push the hook [1] forwards by hand until the pin [2] is free.

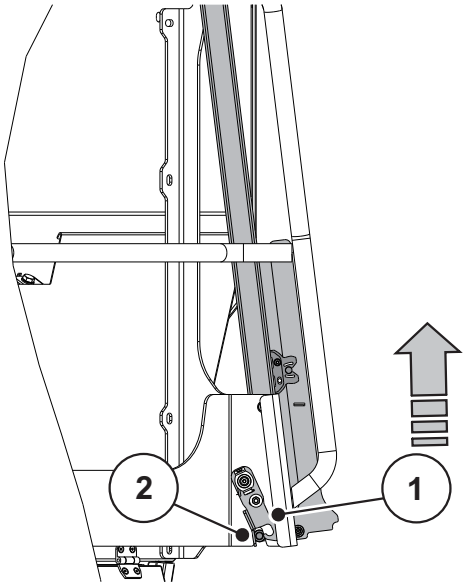
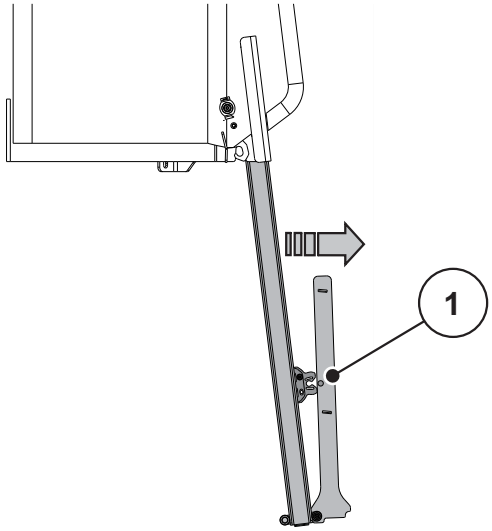


Figure 6.37: Lowering the top part of the ladder

2. Slowly lower the movable ladder.



3. Pull the folding ladder until the snap pins [1] disengage.
4. Fold down the ladder.

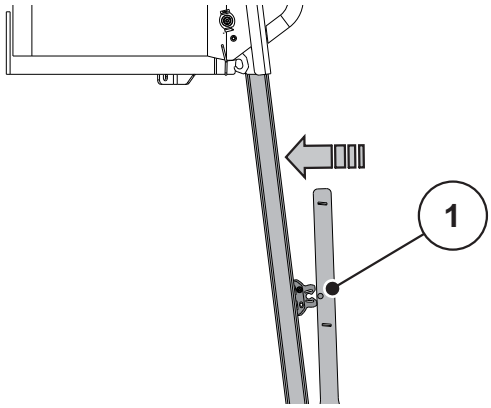
Figure 6.38: Unfolding the bottom part of the ladder

NOTICE

Climb onto the ladder only once the following requirements are met:

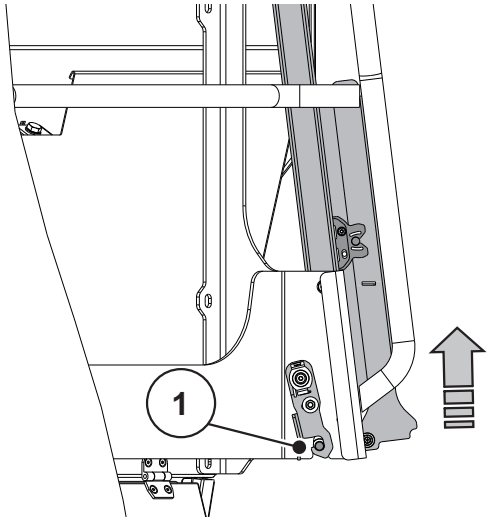
- The ladder has been lowered to the lowest position.
- The folding steps have been folded down.

Folding the ladder into transport position



5. Folding up the bottom ladder.
6. Snap the snap pin [1] into the groove of the snap fasteners.

Figure 6.39: Folding in the ladder



7. Push up the movable ladder through the rail by hand until the pin [1] snaps into the hook.

▷ **The ladder is now secured.**

Figure 6.40: Securing the sliding part

8. **Each time before driving,**, check the operational safety and road safety of the entire train in accordance with the instructions in chapter 3: Safety, page 5.

6.11 Camera for rear view monitoring

The rear view camera gives you a clear view of the area behind the machine.

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

NOTICE

The rear view camera must display the deflector bracket in the bottom third.

If this is not the case, adjust the picture. For this purpose, you need the assistance of a second person to observes the current camera image on the ISOBUS terminal in the tractor cab.

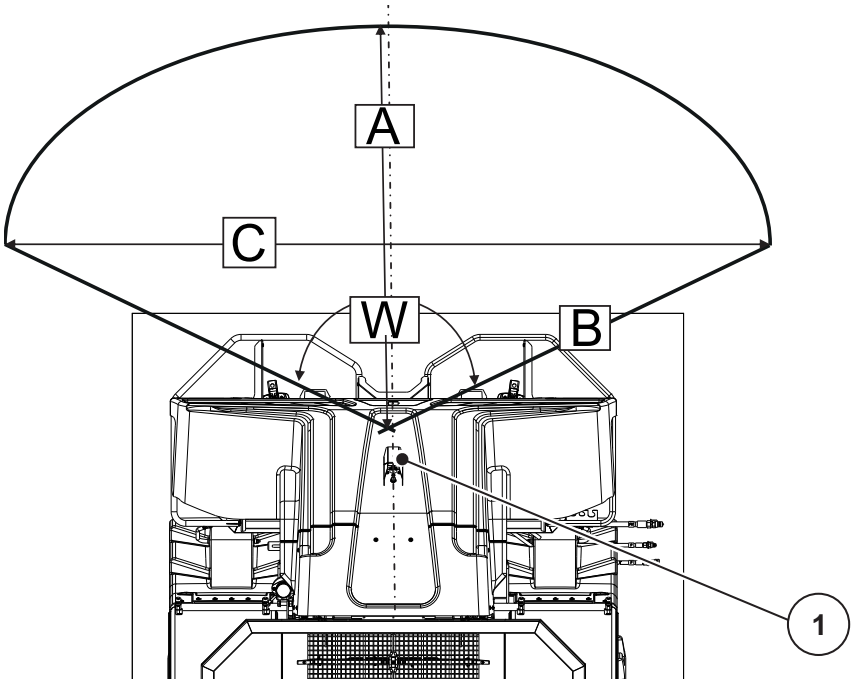


Figure 6.41: Field of vision of rear view camera

[A] Visibility to the rear: approx. 7 m
[B] Radius: 5.80 m
[C] Diameter of the field of vision to the right and left: 10 m
[W] Viewing angle: 120°
[1] Rear view camera

Figure 6.42: Screen shot of rear view camera

7 Spreading operation

7.1 General Instructions

NOTICE

The service life of the machine depends considerably on your driving style.

- Reduce the speed on uneven ground.
- Drive carefully through the headland.
- Avoid sudden curves when driving uphill and downhill or traversing a slope.
  - By repositioning the gravity centre, there is a risk of toppling over.
- Take special care is when driving on uneven, soft ground (e.g. when entering fields, kerbs).

The modern technology and design of our AXENT 100.1 large area spreader and exhaustive, continuous testing on the factory's test facilities ensure that you will have an optimal spreading pattern.

Although our machines are manufactured with care, deviations in the spreading or other faults cannot be ruled out even if they are used as intended.

The reasons for this may be:

- Changes to the physical properties of the fertiliser or lime (e. g. different particle size distribution, different density, grain shape and surface, pickling, sealing, moisture)
- Clumping and moist fertiliser or lime
- Blockages or bridge formation (e. g. due to foreign bodies, moist or unsuitable fertiliser)
- Wind drift: stop spreading work at excessive wind speeds
- Uneven ground
- Wear of wear parts
- Damage caused by external influences
- Inadequate cleaning and care to prevent corrosion
- Wrong drive speeds and travel speeds
- Incorrect machine settings

Pay close attention to the machine settings. Even a slightly incorrect setting may have an adverse effect on the spreading pattern. Therefore, before each operation and during operation, check the correct functioning of your machine and ensure that the application accuracy is sufficient.

In particular hard types of fertiliser (e. g. calcium ammonium nitrate, kieserite) increase the wear.

ALWAYS use the feeder mesh in conjunction with the AXIS-PowerPack fertiliser spreading unit to block clogging, e. g. due to foreign bodies or fertiliser lumps.

ALWAYS dismantle the feeder mesh in conjunction with the LIME-PowerPack lime spreading unit to avoid bridging.

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

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

7.2 Closing the cover

The cover is important safety equipment for the safe operation of the machine; see also “Function of safety equipment” on page 19. You can not overload when the cover is open.

The cover is equipped with a safety switch. The safety switch reports the open or closed position of the cover to the machine control unit. When the cover is open, all consumers controlled by the machine control unit stop (conveyor belt, pre-metering slider, comb roller, hopper cover).

⚠ WARNING

Danger due to rotating parts

The machine control unit switches off the AXENT 100.1 large area spreader functions only. The spreading material is ejected further by means of the rotating spreading discs of the attached spreading unit. This can cause injuries.

- ▶ Instruct everybody to leave the danger zone.
- ▶ Make sure to switch off the spreading unit functions before any checks on the machine.

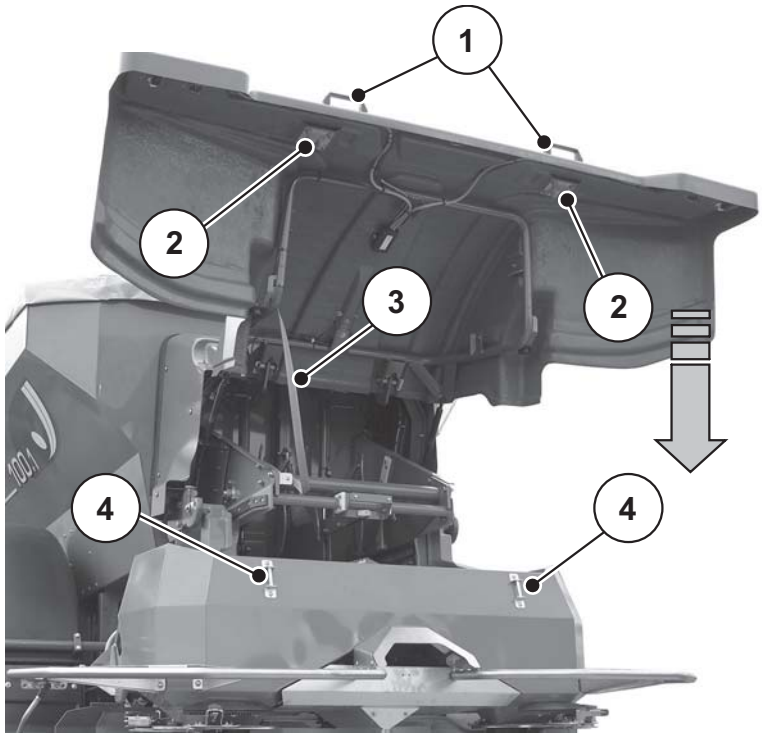


Figure 7.1: Closing the cover

[1] Handles
[2] Plastic clips
[3] Tieback
[4] Bolt

1. Grip and pull the tieback by hand.
   ▷ The cover closes downwards.

Figure 7.2: Pulling the tieback

2. Grip the cover by the handles and lower it slowly.

Figure 7.3: Grip the cover by the handles

3. Push the cover with the handles onto the spreading unit until the plastic clips snap into place.
   ▷ The safety switch has been actuated.

▷ **The machine is ready for operation.**

NOTICE

The operating manual for the AXENT ISOBUS machine control unit contains additional information on controlling the machine and displaying the cover position.

7.3 Setting the speed of the conveyor belt

The conveyor belt automatically switches on and off. The machine control unit allows you to check the status of the conveyor belt on the screen.

NOTICE

The electronic operation of the conveyor belt is described in a separate operating manual for the electronic control. This operating manual is part of the AXENT ISOBUS electronic control.

NOTICE

The spreading unit hopper will not be reported as full if the speed of the conveyor belt is too low compared to the set spreading quantity of the spreading unit. This can cause spreading errors or under-fertilisation in the spread areas, since empty spreading is possible.

- Increase the conveyor belt speed.

7.4 Spreading fertiliser (AXIS-PowerPack)

7.4.1 Spreading operation procedure with AXENT 100.1

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 work according to the sequence described below.

Preparation	
● Attaching the large area spreader to the tractor	Page 57
● Fitting the feeder mesh and separating plate	Page 72 et seq.
● Attaching the fertiliser spreading unit to the large area spreader	Page 69
● Closing the pre-metering sliders	
● Filling the machine	Page 81
● Machine settings (working width, application rate etc.)	See the operating manual for the AXENT ISOBUS device control
● Travel to the spreading location	
Spreading operation	
● Switching on the PTO shaft	
● Opening the pre-metering sliders and starting the spreading operation	See operating manual for AXENT ISOBUS device controls
● Starting the spreading work	
● Finishing the spreading operation and closing the pre-metering sliders	
● Switching off the PTO shaft	
Cleaning/maintenance	
● Discharging residual material	
● Cleaning and maintenance	Chapter 9
● Switching off the large area spreader	Page 112

7.4.2 Information on the fertiliser chart

The values in the fertiliser chart were determined on RAUCH's test facilities.

The fertiliser used for this purpose was obtained from the fertiliser manufacturer or the retail market. Experience has shown that, due to storage, transport and other reasons, your fertiliser might exhibit different spreading characteristics – even with the same brand.

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

Therefore, observe the following instructions:

- Make sure you check the actual spreading quantity with a calibration test.
- Check the fertiliser distribution for the working width with a practice test kit (special equipment).
- Use only those fertilisers listed in the fertiliser chart.
- Let us know if you are missing a type of fertiliser in the fertiliser chart.
- Observe the setting values exactly. Even a slightly incorrect setting may adversely affect the spreading pattern.

Observe the following in particular when using urea:

- Urea exists in different qualities and grain sizes, due to fertiliser imports. This may require other spreading settings.
- Urea has higher wind sensitivity and higher moisture absorption than other fertilisers.

NOTICE

The operating personnel are responsible for making the correct spreader settings depending on the fertiliser actually used.

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

7.4.3 Setting the machine on the ISOBUS terminal

You make the settings required for spreading fertiliser on the ISOBUS terminal.

Example of field spreading with normal fertilisation:

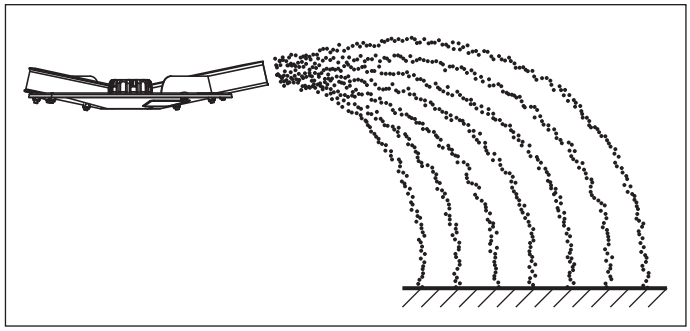


Figure 7.4: Field spreading with normal fertilisation

A symmetrical spreading pattern is created by field spreading with normal fertilisation. The fertiliser is distributed evenly if the spreading setting is correct (see information in fertiliser chart).

1. Take the values from the fertiliser chart and enter them in the **Fertiliser settings** menu:
   - Application rate
   - Working width
   - Drop point
   - Normal disc speed
2. Follow the instructions in the AXENT ISOBUS operating manual.

Example of limited border spreading with normal fertilisation:

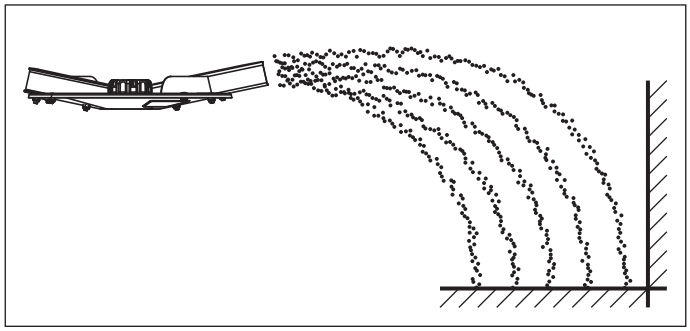


Figure 7.5: Limited border spreading with normal fertilisation

Almost no fertiliser goes beyond the field border during limited border spreading with normal fertilisation. In this case, under-fertilisation at the field border must be accepted.

1. Take the values from the fertiliser chart and enter them in the **Fertiliser settings** menu:
   - Application rate
   - Working width
   - Drop point
   - Limited border spreading mode: select **Limited bd**
   - Quantity reduction

NOTICE

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

- Observe the operating manual for the AXENT ISOBUS electronic machine control unit.

2. Activate the limited border spreading function in the **main menu**.
   ▷ The settings from the **Fertiliser settings** menu are applied.
   ▷ The currently selected mode appears at the top of the operation screen.
3. Follow the instructions in the AXENT ISOBUS operating manual.

Example of full border spreading with normal fertilisation:

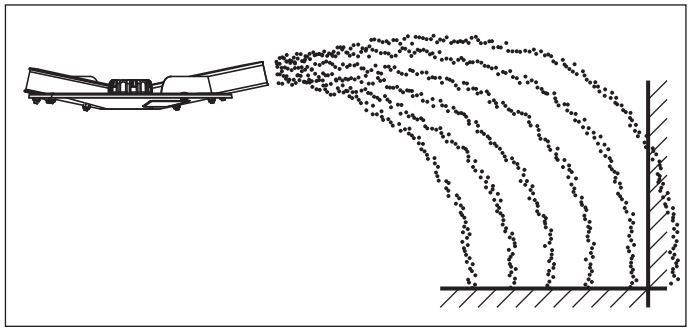


Figure 7.6: Full border spreading with normal fertilisation

Full border spreading with normal fertilisation is a type of fertiliser distribution with which some fertiliser goes beyond the field border. This results in only slight under-fertilization at the field border.

1. Take the values from the fertiliser chart and enter them in the **Fertiliser settings** menu:
   - Application rate
   - Working width
   - Drop point
   - Limited border spreading mode: select **Full bord.**

NOTICE

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

- Observe the operating manual for the AXENT ISOBUS electronic machine control unit.

2. Activate the full border spreading function in the **main menu**.
   ▷ The settings from the **Fertiliser settings** menu are applied.
   ▷ The currently selected mode appears at the top of the operation screen.
3. Follow the instructions in the AXENT ISOBUS operating manual.

7.4.4 Set the working width

Selecting the correct spreading disc

Various spreading discs are available to achieve the desired working width depending on the fertiliser type.

NOTICE

With five different spreading discs, a working width of 12 - 50 m can be achieved.

	Spreading disc type				
	S4	**S6**	**S8**	**S10**	**S12**
Working width	18 - 28 m	24 - 36 m	30 - 42 m	36 - 48 m	42 - 50 m

There are two different, permanently installed spreader vanes on each spreading disc. The spreader vanes are marked according to their model.

⚠ WARNING

Risk of injury from rotating spreading discs

Body parts can be sheared off, crushed or amputated due to contact with the spreading equipment (spreading discs, spreader vanes). Body parts or objects may be caught and pulled in.

▶ Do not remove the deflector bracket fitted on the spreader hopper.

Spreading disc type	Spreading disc left	Spreading disc, right
S4 uncoated	S4-L-200 S4-L-270	S4-R-200 S4-R-270
S4 coated (option)	S4-L-200 VxR S4-L-270 VxR	S4-R-200 VxR S4-R-270 VxR
S6 coated	S6-L-255 VxR S6-L-360 VxR	S6-R-255 VxR S6-R-360 VxR
S8 coated	S8-L-390 VxR S8-L-380 VxR	S8-R-390 VxR S8-R-380 VxR
S10 coated	S10-L-340 VxR S10/S12-L-480 VxR	S10-R-340 VxR S10/S12-R-480 VxR
S12 coated	S12-L-360 VxR S10/S12-L-480 VxR	S12-R-360 VxR S10/S12-R-480 VxR

NOTICE

The service life of the spreader vanes can be extended with the VxR coating.

Dismantling the spreading discs

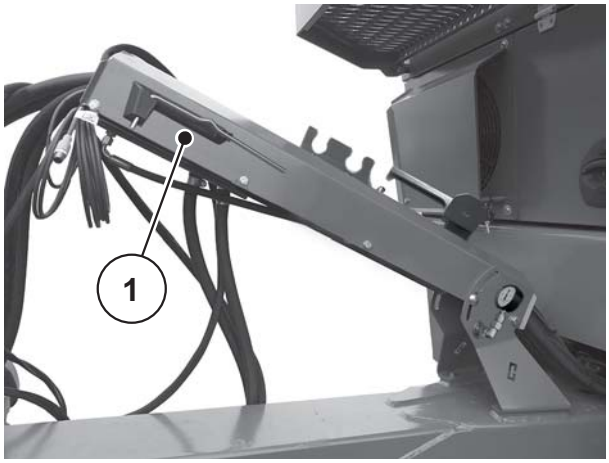
⚠ DANGER

Danger from running motor

Working on the large area spreader while the motor is running can result in serious injuries caused by mechanical components and escaping fertiliser.

Never dismantle or install the spreading discs while the tractor engine is running.

▶ Turn the tractor motor off. Remove the ignition key.



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

Figure 7.7: Adjustment lever

Proceed as follows for both sides (left and right).

1. Remove the adjustment lever from the holder.
2. Undo the cap nut of the spreading disc with the adjustment lever.

Figure 7.8: Undoing the cap nut

3. Unscrew the cap nut.
4. Remove the spreading disc from the hub.
5. Put the adjustment lever back into the holder provided for this purpose.

Figure 7.9: Unscrewing the cap nut

Installing spreading discs

Prerequisites:

- The engine of the tractor and the AXENT ISOBUS machine control unit have been switched off and secured against being switched on by unauthorised persons.

Install the left spreading disc on the left and the right spreading disc on the right in the direction of travel. Make sure the spreading discs on the left and right are not confused.
The following assembly procedure is described with the left spreading disc. Install the right spreading disc also according to these instructions.

1. Place the left spreading disc on the left spreading disc hub.

   The spreading disc must lie flat on the hub (remove any dirt if necessary).

NOTICE

The pins of the spreading disc holders are positioned differently on the left and right side. You are installing the correct spreading disc only if it fits exactly in the spreading disc holder.

2. Carefully position the cap nut (do not tilt it).
3. Tighten the cap nut with approx. 38 Nm.

NOTICE

The cap nuts have a locking mechanism on the inside, which prevents them from becoming loose of their own accord. This locking mechanism must be felt when tightening. Otherwise this means the cap nut is worn and must be replaced.

4. Check the free passage between the spreader vane and the outlet.

   To do so, turn the spreading discs by hand.

7.4.5 Setting the drop point

NOTICE

The AXENT 100.1 large area spreader has an electronic setting of the drop point.

The electronic drop point setting is described in a separate operating manual for the electronic control. This operating manual is part of the electronic control.

You can determine a certain range for the working width by selecting the type of spreading disc. The exact setting of the working width and the adjustment to various fertiliser types is achieved by changing the drop point.

You can set the drop point by means of the upper scale sheet.

- **Adjusting in the direction of small numbers**: The fertiliser is ejected earlier. This results in spreading patterns for smaller working widths.
- **Adjusting in the direction of large numbers**: The fertiliser is ejected later and spread further to the outside in the overlap zones. This results in spreading patterns for larger working widths.

Figure 7.10: Display for drop point

7.4.6 Adjusting the application rate

NOTICE

The AXENT 100.1 large area spreader is equipped with an electronic slide actuator for setting the spreading quantity on the fertiliser spreading unit.

The electronic metering slide actuator is described in a separate operating manual for the electronic machine control unit. This operating manual is part of the AXENT ISOBUS electronic machine control unit.

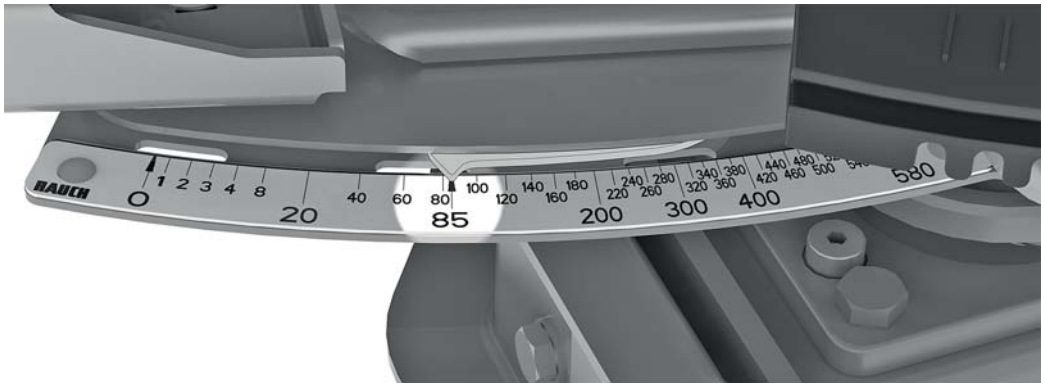


Figure 7.11: Scale for displaying the spreading quantity

7.4.7 Spreading in the headland

In order to ensure good fertiliser distribution in the headland, it is essential to set up the tracks precisely.

Limited border spreading

When spreading in the headland in limited border spreading mode (speed reduction, drop point adjustment and quantity reduction).

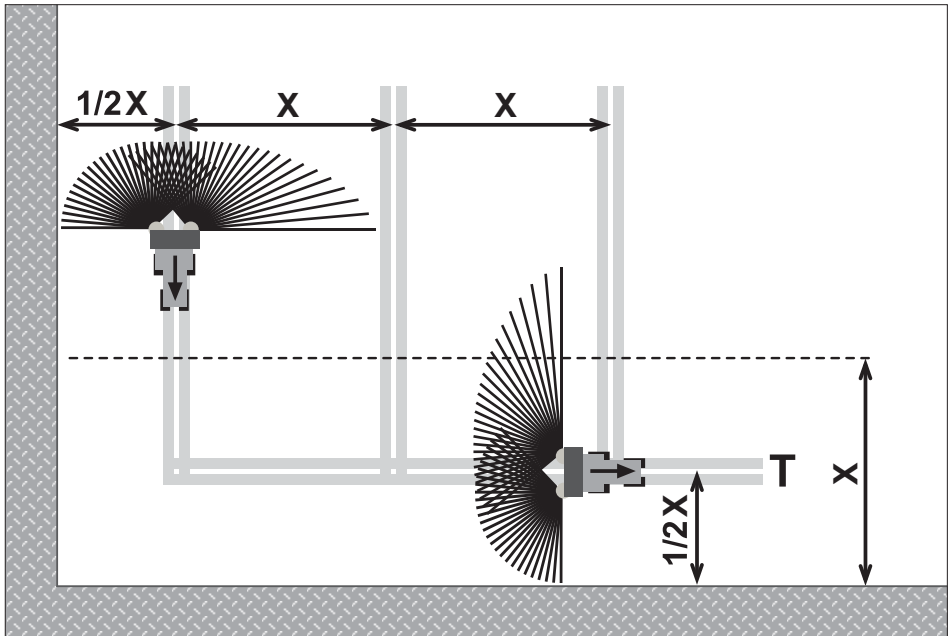


Figure 7.12: Limited border spreading

[T] Headland track
[X] Working width

- Create the headland track [T] at a distance of half the working width [X] from the edge of the field.

Normal spreading in or out of the headland track

Observe the following when continuing spreading in the field after spreading in the headland track:

- Switch off limited border spreading mode.

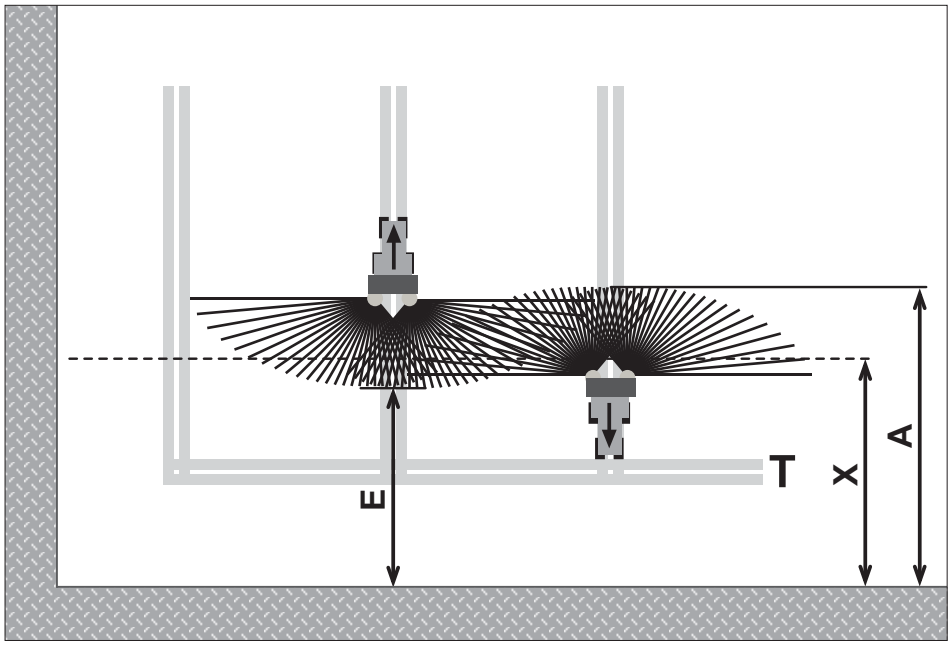


Figure 7.13: Normal spreading

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

The metering slides are to be closed or opened at different distances to the field border of the headland when going back and forth.

Driving out of the headland track

- **Open** the metering slide when the following condition is met:
  - The end of the spreading fan on the field [E] is about half the working width + 4 to 8 m away from the field border of the headland.

The distance of the tractor in the field varies, depending on the fertiliser spreading distance.

Driving into the headland track

- Close the metering slide **as late as possible**.
  - Ideally, the end of the spreading fan on the field [A] should be approx. 4 to 8 m further than the working width [X] of the headland.
  - This can not always be achieved, depending on the spreading distance and working width.
- Alternatively you can drive beyond the headland track or create a second headland track.

By observing these instructions, you will ensure an environmentally friendly and economic way of working.

7.4.8 Spreading sideways on the slope

The large area spreader can drift away while driving sideways on the slope. You can counter-act this drifting movement with the kingpin steering (special equipment). Use the offset function on your steering computer for this purpose.

NOTICE

Observe the operating manual for the kingpin steering when operating the steering computer.

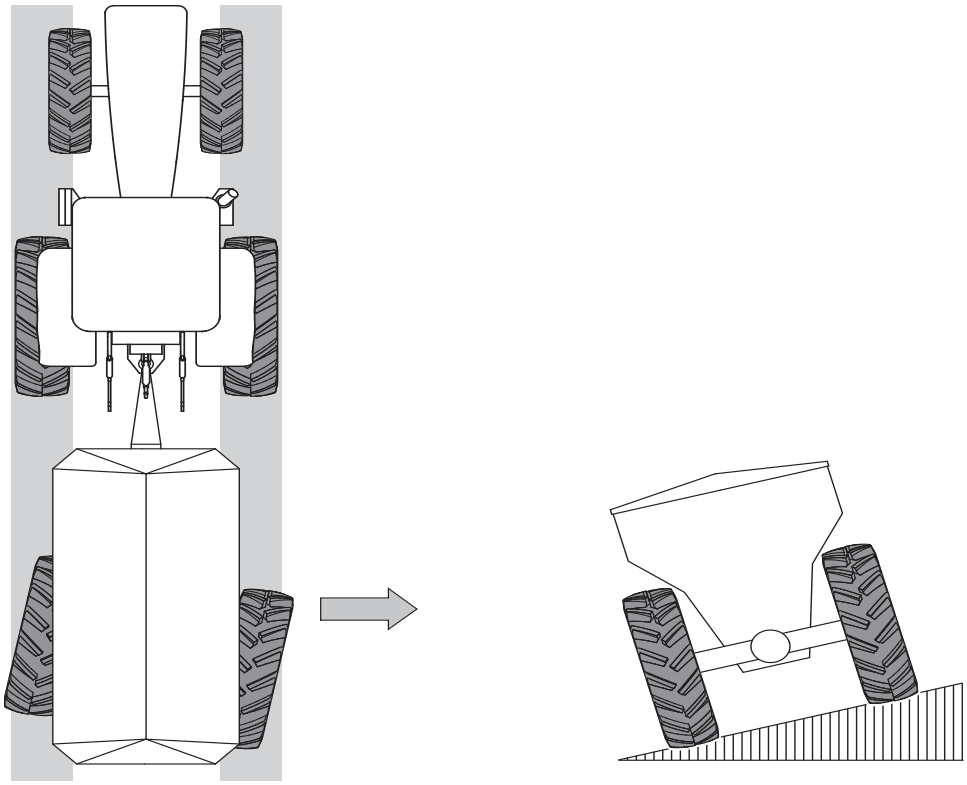


Figure 7.14: Kingpin steering (special equipment)

7.5 Spreading lime (LIME-PowerPack)

7.5.1 Spreading operation procedure with AXENT 100.1

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 work according to the sequence described below.

Preparation	
● Attaching the large area spreader to the tractor	Page 57
● Removing the feeder mesh and separating plate	
● Attaching the lime spreading unit to the large area spreader	Page 57
● Closing the pre-metering sliders	
● Filling the machine	Page 81
● Making machine settings (density, travel speed, application rate etc.)	See the operating manual for the AXENT ISOBUS device control
● Travel to the spreading location	
Spreading operation	
● Switching on the PTO shaft	
● Opening the pre-metering sliders and starting the spreading operation	
● Starting the spreading work	
● Finishing the spreading operation and closing the pre-metering sliders	
● Switching off the PTO shaft	
Cleaning/maintenance	
● Discharging residual material	
● Cleaning and maintenance	Chapter 9
● Switching off the large area spreader	Page 112

7.5.2 Setting the drop point

The lime spreading unit is set to neutral for even distribution of the lime ex works.

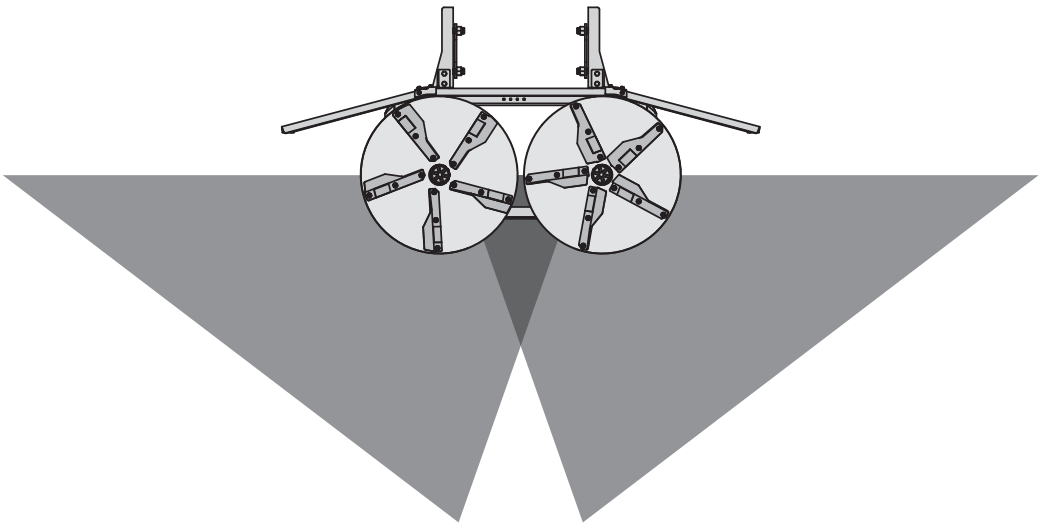


Figure 7.15: Normal spreading pattern, drop point in neutral position

- Both marks for the neutral position are centred.

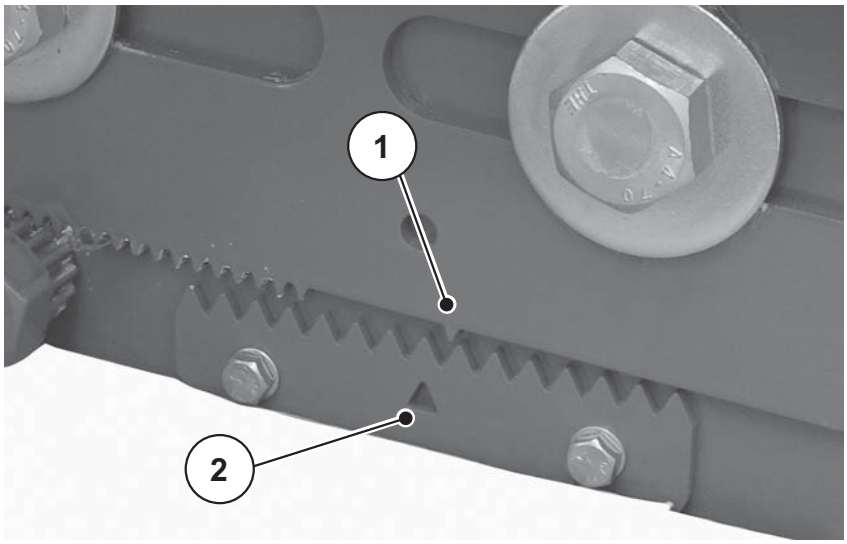


Figure 7.16: Drop point in neutral position

[1] Marking tooth
[2] Neutral position mark

NOTICE

- Tightening torque of the fixing screws: 300 Nm

Optimizing the spreading pattern according to the properties of the type of lime

You can adjust the drop point manually by moving the sliding part of the lime spreading unit forwards or back.

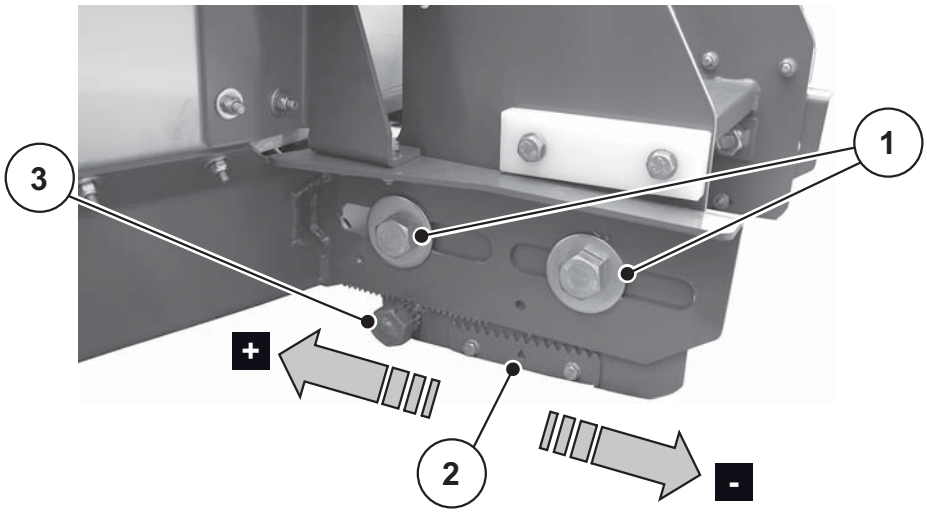


Figure 7.17: Setting the drop point

[1] Fixing screws
[2] Neutral position mark
[3] Adjusting screw

- Undo the fixing screws [1] with a size-36 spanner on each side.

Insufficient lime in the middle:

1. Turn the adjusting screw [3] with a size-36 spanner to reset the sliding part to the rear [+] in the direction of travel.

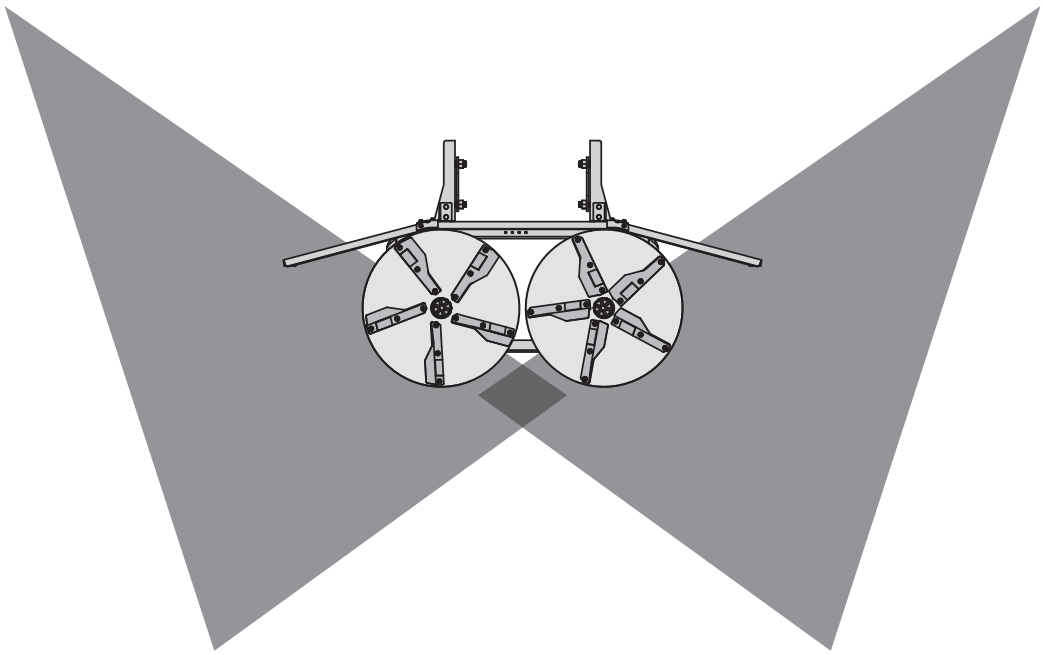


Figure 7.18: Insufficient lime in the middle

▷ **The drop point is shifted to the front.**

Excessive lime in the middle:

1. Turn the adjusting screw [3] with a size-36 spanner to move the sliding part to the front [-] in the direction of travel.

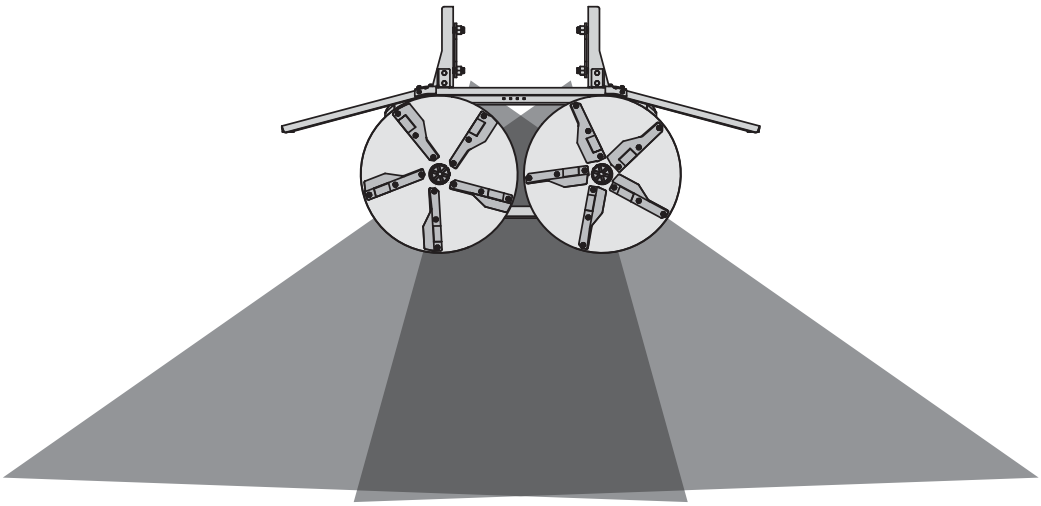


Figure 7.19: Excessive lime in the middle

▷ **The drop point is shifted to the rear.**

7.5.3 Setting the machine for lime spreading

The pre-metering sliders and the speed of the conveyor belt as a function of the driving speed determine the spreading quantity for the spreading of lime.

1. Activate the lime AUTO km/h operating mode in the AXENT ISOBUS electronic machine control unit.

NOTICE

The overload function of the machine in connection with the lime spreading unit is described in a separate operating manual for the electronic control. This operating manual is part of the AXENT ISOBUS electronic control.

2. Make the settings:
   - Working width
   - Application rate
   - Spreading disc type
   - Flow factor

You can take the settings from the table below.

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

Type of lime	Density (kg/m³)	Grinding stage	Dry substance (%)	Working width (m)	Max. quantity (kg/ha)
Quicklime, ground	1100	1	100	10	9700
Quicklime, grained	1100	-	100	18	5380
Converter lime	1300	2	90	15	7640
Carbonation lime	1000	-	72	12	7340
Mixed lime	1100	2	88	12	8080
Carbonated lime	1200	2	92	12	8810
Magnesium line	1200	1	94	10	10580
Black lime	900	1	83	12	6610

3. Start lime operation by means of the AXENT ISOBUS machine control unit.
   ▷ The conveyor belt starts.
   ▷ The comb roller starts.

7.6 Discharging residual material

Empty the machine on a daily basis after use. In this way, you will prevent corrosion and blockages and maintain the properties of the fertiliser and lime.

7.6.1 Notes on safety

⚠ DANGER

Danger due to rotating spreading discs

Working on the large area spreader with the engine running and rotating spreading discs can cause serious injury due to the mechanics and leaking fertiliser.

- ▶ Dismantle the spreading discs before emptying the residual material.
- ▶ Instruct everybody to leave the danger zone.

Also make sure you fulfil the following prerequisites:

- The AXENT 100.1 large area spreader is secured against tipping over and rolling away on level, solid ground.
- The AXENT 100.1 large area spreader is attached to the tractor while the residual material is emptied.
- There are no people in the danger zone.
- AXIS-PowerPack:
  - The spreading discs have been dismantled. See “Dismantling the spreading discs” on page 98
- LIME-PowerPack: The lime spreading unit has been dismantled.

NOTICE

The AXIS-PowerPack fertiliser spreading unit is connected to an electronic control. A message appears stating that the drop point is temporarily moved to drop point position 0 while emptying the residual material.

Observe the AXENT ISOBUS operating manual.

7.6.2 Emptying the large area spreader

The residual quantity is emptied by opening the pre-metering sliders and switching on the conveyor belt.

AXIS PowerPack

1. Place a collecting vessel under the AXIS-PowerPack fertiliser spreading unit.
2. Start emptying the residual material by means of the AXENT ISOBUS machine control unit.
3. At the same time, start emptying the residual material at the spreading unit by means of the AXENT ISOBUS machine control unit.
4. Follow the instructions on the screen.
5. Clean the machine after completely emptying the spreader hopper.
   See chapter 9.3: Cleaning, page 125

LIME PowerPack

1. Drain the lime at the end of the field or drive back to the lime store.
2. Start emptying the residual material by means of the AXENT ISOBUS machine control unit.
3. Drive the tractor forwards so that the lime store does not come into contact with the conveyor belt.
4. Clean the machine after completely emptying the spreader hopper.
   See chapter 9.3: Cleaning, page 125

7.7 Switching off and uncoupling the large area spreader

⚠ WARNING

Danger due to tipping

The AXENT 100.1 large area spreader is a single-axle vehicle. The large area spreader can tip over in the event of one-sided rear-heavy loading. This may result in personal injury and material damage.

- ▶ Park the large area spreader on level, solid ground.
- ▶ **Never** uncouple the large area spreader from the tractor in the event of one-sided rear-heavy loading.

- Park the empty machine on level ground.

1. Drive the entire train to a level, solid storage area.
2. Switch off the engine of the tractor and remove the ignition key.

Pneumatic brake system

1. Pull the button [1] of the parking brake.
   - ▷ The parking brake is applied.

Figure 7.20: Releasing the manual parking brake

[1] Parking brake
[2] Service brake

Hydraulic brake system

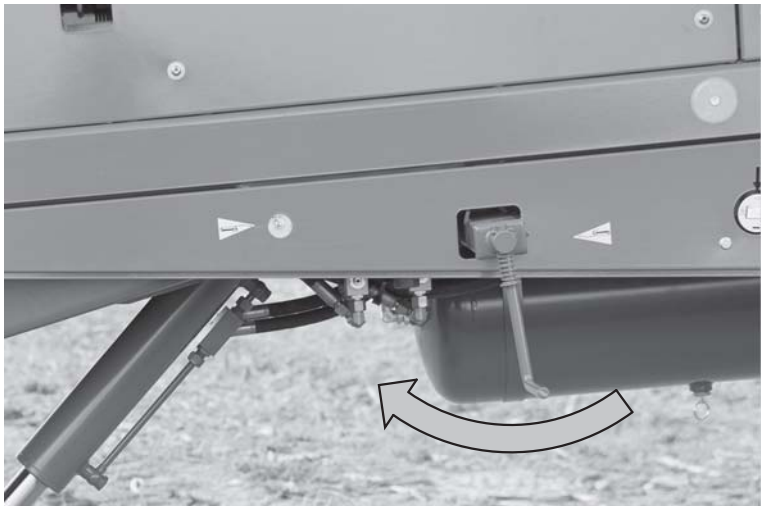


Figure 7.21: Applying the manual parking brake

1. Turn the hand crank of the parking brake clockwise.
   ▷ The parking brake is applied.

2. Remove the wheel chocks from the transport storage place at the mudguard.
3. Push the sliding pin [1] and open the wheel chocks.

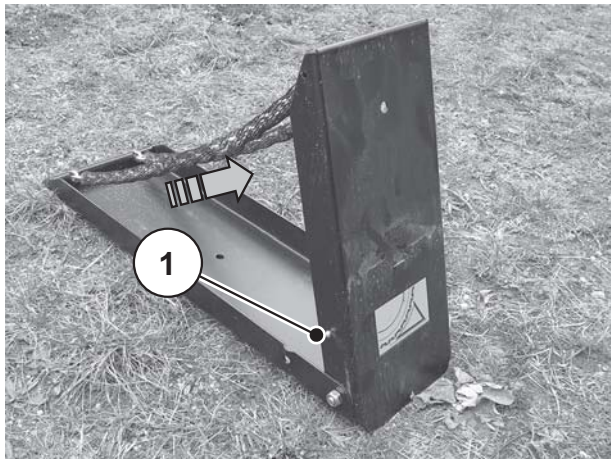


Figure 7.22: Opening a wheel chock

4. Apply wheel chocks to both wheels.

Figure 7.23: Positioning a wheel chock

5. Extend the hydraulic support stand.
6. When decoupling the large area spreader**, always first** uncouple **the red coupling head** (supply) and then the **yellow** coupling head of the compressed-air brake system.
7. Disconnect the electrical connections from the tractor.
8. Protect all plug connections with the dust caps.
9. Uncouple the universal drive shaft from the tractor.
10. De-pressurise the hydraulic system of the tractor (**floating position**).
11. Disconnect the hydraulic connections from the tractor.
12. Disconnect the hydraulic brake system (special equipment) as follows:

    a) Uncouple the hydraulic couplings.

    b) Detach the pull chain of the safety valve from the tractor

13. Uncouple the large area spreader from the tractor.

14. Dismantle the gyroscope for the steering axle (special equipment) and hook it into the holder provided.

15. Place all cables and hoses on the console above the towing bar in the holders provided for this purpose.

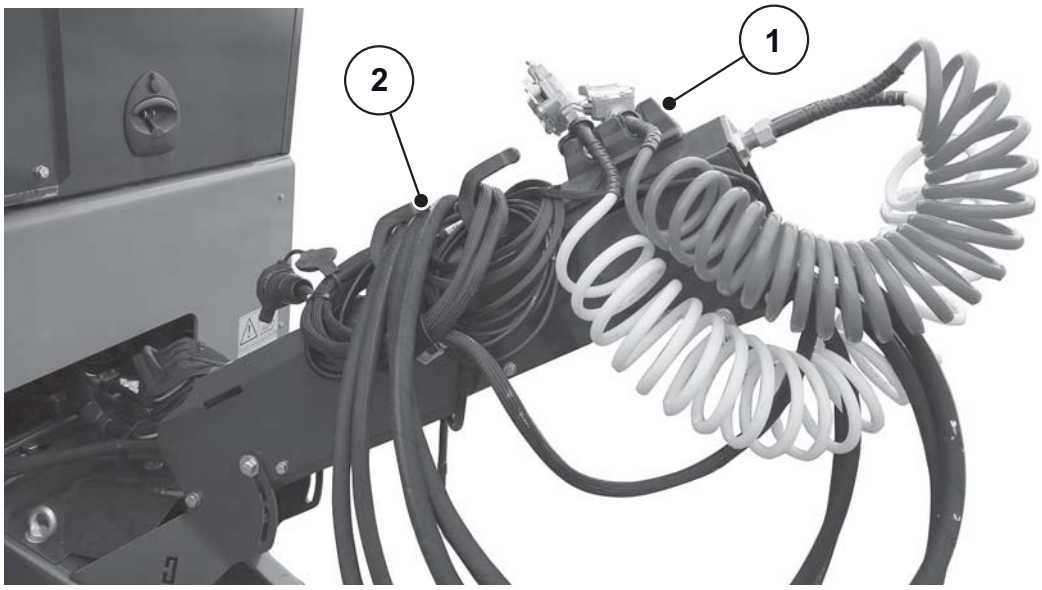


Figure 7.24: Storage console for cables, hydraulic hoses and pneumatic lines

[1] Storage place for the hydraulic hoses and electrical cables
[2] Storage place for the pneumatic lines of the brake system

▷ **The AXENT 100.1 large area spreader has been uncoupled and parked.**

8 Faults and possible causes

⚠ WARNING

Risk of injury when rectifying faults inappropriately

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**.
- ▶ Only carry out repairs yourself if you have the appropriate **qualifications.**

Fault	Possible cause	Measure
The conveyor belt does not convey any fertiliser into the fertiliser spreader hopper	● The universal drive shaft is not connected or switched on. ● The machine control unit is not switched on. ● The AXENT container is empty. ● The fertiliser spreader is full. ● The level sensors in the AXIS-Power-Pack are dirty or defective. ● The pre-metering sliders do not open.	● Check the connections. ● Check or clean the sensors.
The conveyor belt does not convey enough fertiliser.	● The universal drive shaft speed is too slow. ● The pre-metering sliders do not open completely. ● The consistency of the spreading material is not suitable for spreading with the AXENT large area spreader.	
The conveyor belt exhibits slippage.	● The tension of the conveyor belt is not set correctly.	● Re-tighten the conveyor belt

9 General maintenance and servicing

9.1 Safety

NOTICE

Observe the warning notices in chapter 3: Safety, page 5.
Take **particular note of the instructions** in section 3.8: Maintenance and servicing, page 12.

Additional hazards that do not occur during operation of the machine are present during maintenance and servicing work.

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

Observe the following instructions in particular:

- Welding and work on the electrical and hydraulic systems is to be carried out by qualified technicians only.
- Spare parts must at least comply with the technical requirements specified by the manufacturer. This is ensured, for example, only by genuine spare parts.
- Only qualified personnel are allowed to repair tyres and wheels with suitable assembly tools.
- Before starting any cleaning, maintenance, or servicing work, and when correcting faults, switch off the tractor engine and wait until all moving parts of the machine come to a stop.
- Only an instructed and authorised specialist workshop is permitted to perform repair work.
- The hydraulic circuit contains two nitrogen tanks. They are under residual pressure even after the system has been shut down. Slowly and carefully open the screw connections of the hydraulic circuit.

9.2 Maintenance schedule

This maintenance schedule applies to vehicles subject to normal use. For particularly high loads, reduce the maintenance intervals accordingly. This prevents damage to the tractor, large area spreader and fertiliser spreader.

NOTICE

Further information can be found in the operating manual for the tractor and fertiliser spreader.

9.2.1 General maintenance schedule

Components	Maintenance work Maintenance schedule	Comment
Wear parts and screw connections	Check regularly	Page 127
Cleaning	Perform after each use	Page 125
Towing eye / ball coupling	Check for wear	
Lubrication plan		Page 153

9.2.2 Maintenance schedule for axles and brake system

Components	Maintenance work Maintenance schedule	Comment
Brakes	Check function before driving	
	Check condition and function annually.	By specialist workshop
Brake lining	Every 1 000 operating hours, at least quarterly: check for wear. Replace brake lining if necessary	
Air tank, brake system	Drain daily	
Wheels	Re-tighten the wheel nuts after the first 50 km	
	After the first 50 operating hours and every 100 hours: check the bearing clearance of the wheel hubs	
	Check the tyre pressure regularly	

9.2.3 Maintenance schedule for hydraulic system

The hydraulic circuit contains two maintenance-free nitrogen tanks for the towing bar damping.

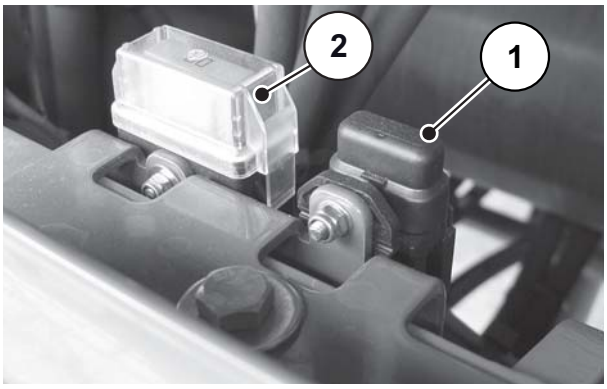
Components	Maintenance work Maintenance schedule	Comment
Nitrogen tank	● External inspection at the latest every 2 years ● Check nitrogen tank and connections for damage before driving	
Hydraulic hoses	Check condition	
	Replace after 6 years	Page 144
Control block	Check for damage/leaks before driving	Page 148
Hydraulic hoses	Check condition	
	Replace after 6 years	Page 144

9.2.4 Electric and electronic equipment

Electrical fuses

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

The ISOBUS cable is protected against overload with a **60-ampere** and **30-ampere** fuse. The fuses are behind the maintenance flap.



[1] 30 A fuse
[2] 60 A fuse

Figure 9.1: Fuses at the ISOBUS cable

Checking the electrical cables

- Visually inspect all electrical cables for wear. Pay particular attention to external damage or breakages.

Checking the lighting system function

The machine is equipped with a front and rear lighting system at the factory.

- Check the function of the tail lights, brake lights, turn signals and position lights.

Electronic control

⚠ WARNING

Risk of injury

The electronic control is checked in real time. This means that the machine components immediately execute the selected function.

▶ Make sure everybody leaves the danger zone.

Check the following functions of the electronic control:

- Conveyor belt start-up
- Pre-metering slider opening
- Check the vehicle speed sensor
- Check the level sensors

NOTICE

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

- Observe the operating manual for the AXENT ISOBUS electronic machine control unit.

9.2.5 Oil change interval

NOTICE

Use the same type of oil and do not use any bio-oil.

Component	Oil change interval	Oil quantity	Oil brand name
Gear unit	● After the first 50 operating hours ● Then every 500 operating hours	1.5 l	DIVINOL MCL ISO 320 Alternative oil SAE 90
On-board hydraulic Vario drive	After the first 100 operating hours or at least once a year: oil and oil filter	Approx. 65 l	Shell Telus S2 V68 Alternative types of oil according to DIN 51524/3 ISO VG-68

NOTICE

Use the same type of oil.

- **Never** mix the oil.

9.3 Cleaning

Spreading material and dirt increase corrosion.

To preserve the value of your machine, clean it **with a soft water jet** immediately each time after using it.

Observe especially the following instructions when cleaning:

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

9.3.1 Cleaning the bearings of the guide rollers

Dust and dirt accumulate at the guide rollers of the conveyor belt during spreading operation.

- Clean the guide rollers. You must open the side covers to do so.

The procedure below describes how to open a side cover. Follow the same procedure for all side covers. The guide rollers are covered by three side covers on each side of the machine.

1. Insert an adjustment lever through the side cover into the sheet guide.
2. Raise the adjustment lever.
   - ▷ The lock is released.
   - ▷ The side cover is unlocked.

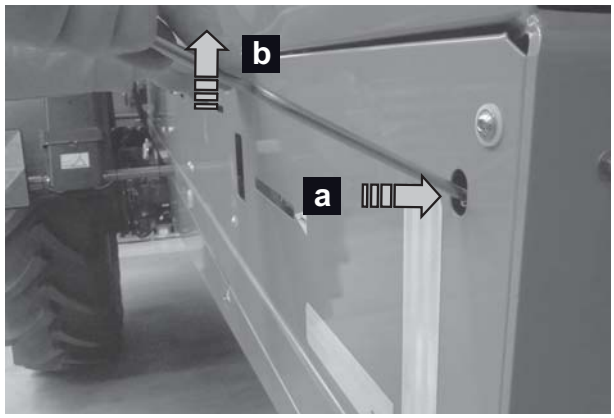


Figure 9.2: Using the adjustment lever

3. Open and remove the side cover.

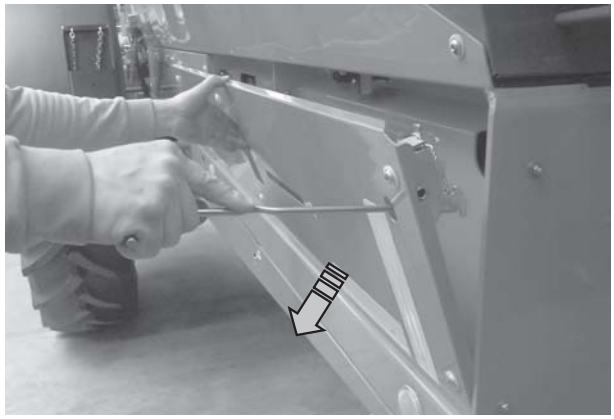


Figure 9.3: Opening the side cover

4. Clean the guide rollers with a soft water jet.
5. Take the side cover and place the lower sheet metal hooks [1] in the holders [2] of the frame.
6. Close the side cover upwards by hand.
   ▷ The lock engages.

▷ **The side cover is secured in closed position.**

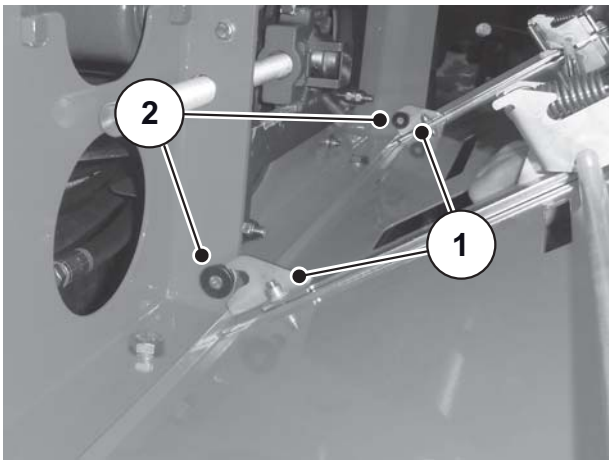


Figure 9.4: Fitting the side cover

9.3.2 Draining the cleaning water

After cleaning, there may still be some water in the container of the AXENT 100.1 large area spreader.

- Cleaning flap position and lever setting: See 3.11.2: Instruction stickers and nameplate, page 22.

7. Open the maintenance flap at the front in the direction of travel.
8. Pull the lever [1] of the cleaning flap.
   ▷ The cleaning flap opens.
   ▷ The water is drained.

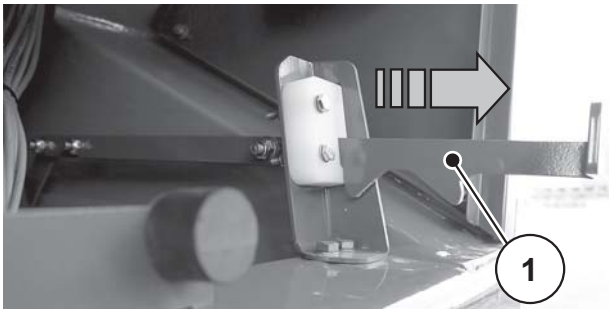


Figure 9.5: Lever of the cleaning flap

9. Push in the lever of the cleaning flap.

▷ **The cleaning flap is closed.**

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

A suitable polishing kit can be ordered from authorised dealers to treat the rust spots.

9.4 Wear parts and screw connections

9.4.1 Checking wear parts

Wear parts are the scraper at the AXENT outlet, the belt seal in the AXENT container, the sealing profile at the maintenance flap and all plastic parts.

- Check the wear parts.

Replace these parts if they show any signs of wear, deformation or holes.

The service life of the wear parts depends, among other things, on the spreading material used.

- All connection elements from the towed large area spreader to the tractor are also subject to wear. This applies in particular to the coupling bracket of the ball coupling or the towing eye of the pin coupling.
- We recommend that you have the condition of the towed large area spreader checked after each season by your specialist dealer, paying particular attention to its fastening components, hydraulic system and hoses.
- Spare parts must at least comply with the technical requirements specified by the manufacturer. This is ensured, for example, only by genuine spare parts.

9.4.2 Checking screw connections

The screw connections are tightened and secured with the necessary torque at the factory. Vibrations, especially in the first hours of operation, can loosen screw connections.

- Check all screw connections of new machines for tight fitting after about 30 hours of operation.
- Check all screw connections for tight fitting regularly, at least before the beginning of the spreading season.

Some components are fitted with self-locking nuts. **Always** use **new self-locking** nuts when fitting these components.

9.5 Recovery of the machine

If the tractor can no longer pull the machine, proceed as follows to recover the machine from the field.

- Attach a rope around the axle body.

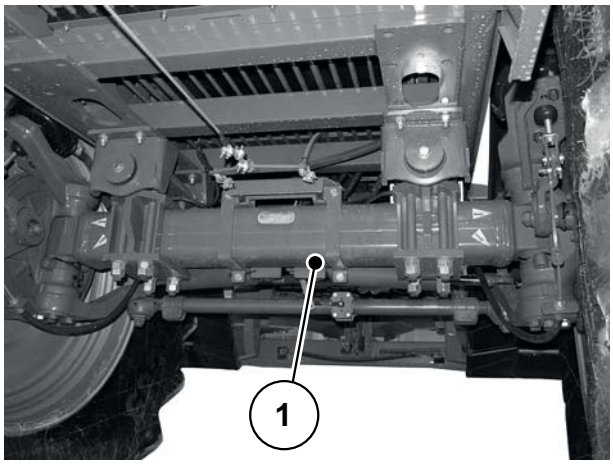


Figure 9.6: Recovering the machine with a rope

9.6 Replacing the spreading discs of the lime spreading unit

The LIME PowerPack lime spreading unit is fitted with **U2** spreading discs ex works. With these spreading discs, you can spread lime with a working width of up to 15 m.

⚠ WARNING

Risk of injury from rotating spreading discs

Body parts can be sheared off, crushed or amputated due to contact with the spreading equipment (spreading discs, spreader vanes). Body parts or objects may be caught and pulled in.

▶ Do not remove the deflector bracket fitted on the spreader hopper.

9.6.1 Dismantling the spreading discs

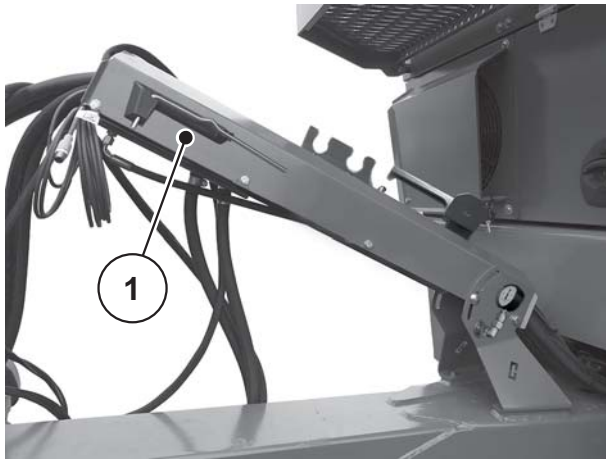
⚠ DANGER

Danger from running motor

Working on the large area spreader while the motor is running can result in serious injuries caused by mechanical components and escaping fertiliser.

Never dismantle or install the spreading discs while the tractor engine is running.

▶ Turn the tractor motor off. Remove the ignition key.



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

Figure 9.7: Adjustment lever

Proceed as follows for both sides (left and right).

⚠ CAUTION

Risk of injury from heavy spreading discs

The spreading discs of the LIME-PowerPack lime spreading unit weigh 25 kg. Strains, cuts on the limbs and back aches can be caused by handling the spreading discs.

- ▶ Handle spreading discs carefully.
- ▶ Always wear gloves.

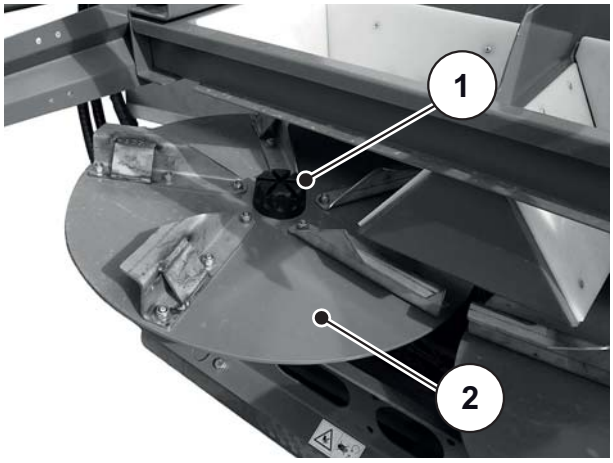


Figure 9.8: Undoing the cap nut

1. Remove the adjustment lever from the holder.
2. Undo the cap nut [1] of the spreading disc [2] with the adjustment lever.
3. Unscrew the cap nut.
4. Remove the spreading disc from the hub.
5. Put the adjustment lever back into the holder provided for this purpose.

9.6.2 Installing spreading discs

Prerequisites:

- The engine of the tractor and the AXENT ISOBUS machine control unit have been switched off and secured against being switched on by unauthorised persons.

Install the left spreading disc on the left and the right spreading disc on the right in the direction of travel. The pin for the left spreading disc is located at the top left of the vertical axis of the locating pin.

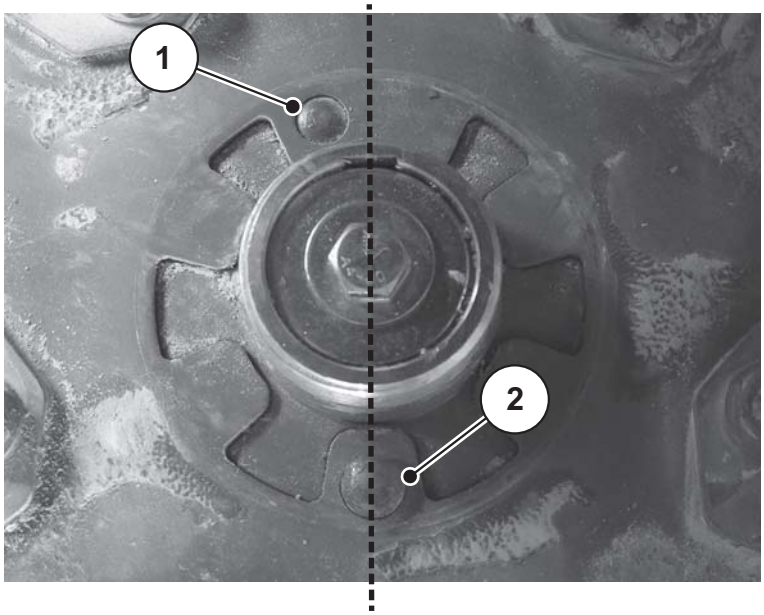


Figure 9.9: Distinguishing the side of the spreading discs

[1] Pin used to determine the mounting side of the spreading disc
[2] Locating pin

The following assembly procedure is described with the left spreading disc. Install the right spreading disc also according to these instructions.

1. Place the left spreading disc on the left spreading disc hub. Make sure the spreading disc rests flat on the hub (remove any dirt if necessary).
2. Carefully position the cap nut (do not tilt it).
3. Tighten the cap nut well, **not** with the adjustment lever.

NOTICE

The cap nuts have a locking mechanism on the inside, which prevents them from becoming loose of their own accord. This locking mechanism must be felt when tightening. Otherwise this means the cap nut is worn and must be replaced.

4. Check the free passage between the spreader vane and the outlet by turning the spreading discs by hand.

9.7 Setting of the towing bar suspension

For the correct function of the attached spreading unit, the AXENT container must be level regardless of the working conditions.

The towing bar suspension has been pre-set at the factory and is suitable for most operating conditions. To avoid accidental adjustment errors, both levers of the stopcocks have been dismantled and supplied together with the machine.

The height of the coupling points may vary due to the characteristics of your tractor (e.g. small wheels, low coupling points, ...). You may therefore adjust the position and the spring characteristic of the towing bar.

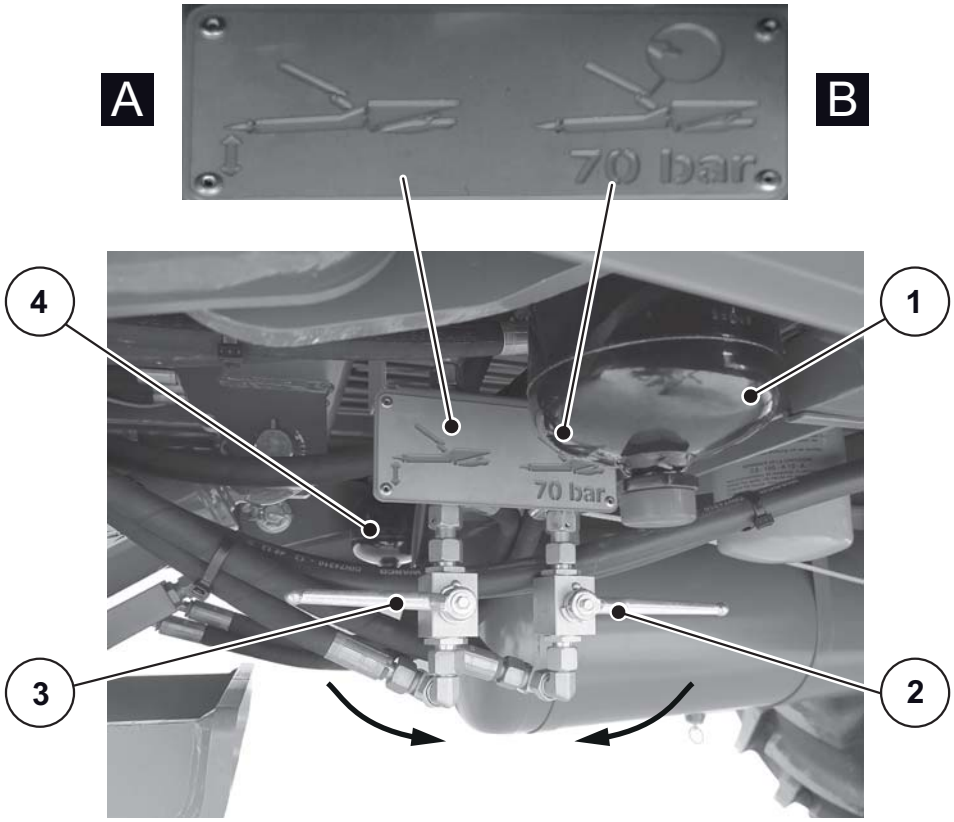


Figure 9.10: Setting the towing bar suspension

[A] Setting the towing bar height
[B] Setting of the compression suspension
[1] Nitrogen tank, left towing bar suspension
[2] Stopcock for towing bar damping, closed
[3] Stopcock for towing bar height, closed
[4] Nitrogen tank, right towing bar suspension

Checking the machine inclination

1. Measure the distance to the floor at the front [V] and rear [H] bottom edge of the container frame.

   Adjust the towing bar height if you notice a **deviation greater than 40 mm** between the two dimensions.

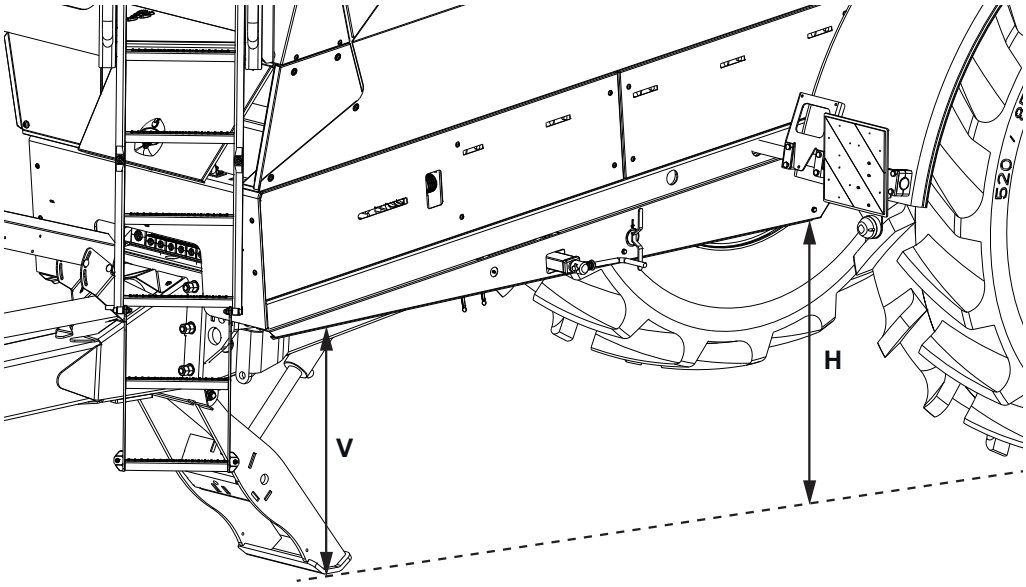


Figure 9.11: Checking the machine inclination

[H] Distance between bottom edge of container frame and floor, rear
[H] Distance between bottom edge of container frame and floor, front

Setting the towing bar height

2. Fit the levers on the stopcocks.
3. Open both stopcocks.
   - ▷ The hydraulic circuit for the 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.
4. Retract the support stand with the hydraulic control unit of the tractor until the towing bar cylinders are completely retracted.
5. Extend the support stand with the hydraulic control unit of the tractor until the machine is positioned horizontally ([V] = [H]).

6. Close the left stopcock.

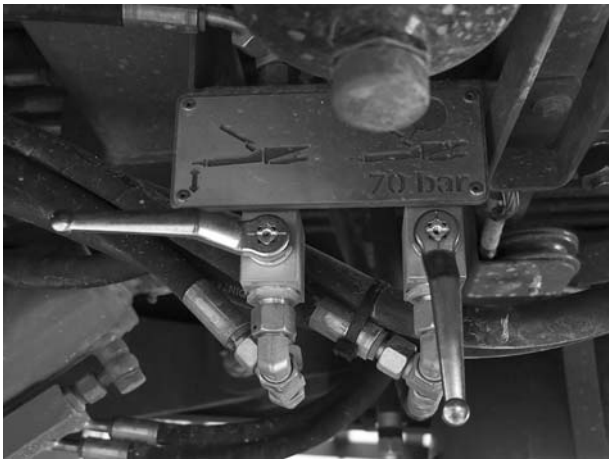


Figure 9.12: Closing the left stopcock

7. Check the towing bar suspension cylinder.

   The piston rod must be extended min. 50 mm and max. 140 mm.

   ▷ 50 mm < x < 140 mm.

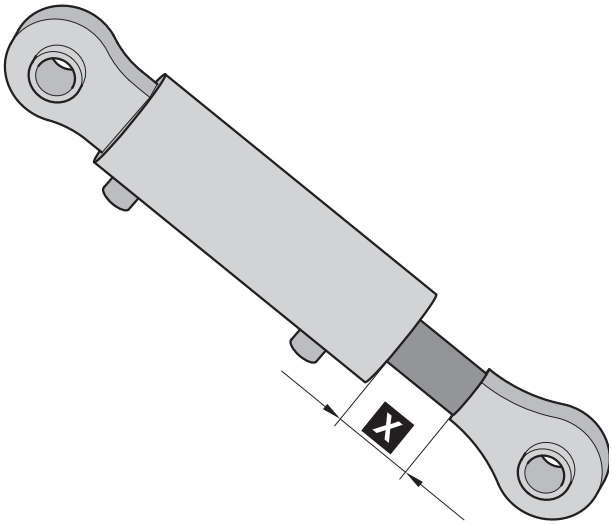


Figure 9.13: Extending the piston rod

▷ **The towing bar height has been set.**

NOTICE

Contact your dealer if you do not reach the desired towing bar height with these settings nonetheless.

Setting the towing bar damping

8. Retract the support stand with the hydraulic control unit of the tractor.
9. Set the pressure to 70 bar.
   ▷ The support stand is retracted.
   ▷ The machine dips slightly forwards.

Figure 9.14: Pressure gauge at cable guide above towing bar

10. Close the right ball valve.
11. Dismantle both handles of the ball valves and stow them safely away.

9.8 Setting the conveyor belt

9.8.1 Adjusting the position of the conveyor belt

For the correct distribution of the spreading material in the spreading unit hopper, the conveyor belt must be centred on the drive rollers.

1. Measure the distance between the conveyor belt and the hopper wall on both sides.

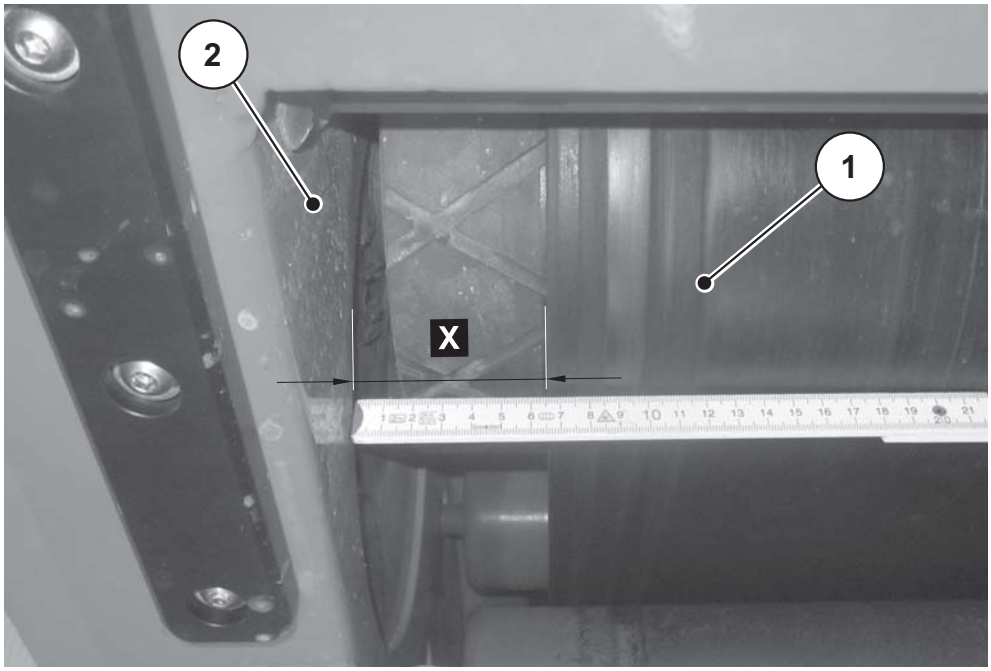


Figure 9.15: Inspection of the conveyor belt position

[1] Conveyor belt
[2] Hopper wall
[X] Measure the distance between conveyor belt and hopper wall on left/right

Adjust the drive roller if the deviation between the two sides is **greater than 20 mm**.

The bearings of the drive roller are located at the rear on each side of the spreader coupling points in the direction of travel

2. On the side with the larger distance, undo the nuts [1] of the drive roller by about two turns.
3. Loosen the adjustment screw with nuts [3] until the distance on each side is the same.
4. Re-tighten the nuts [1] and [3].

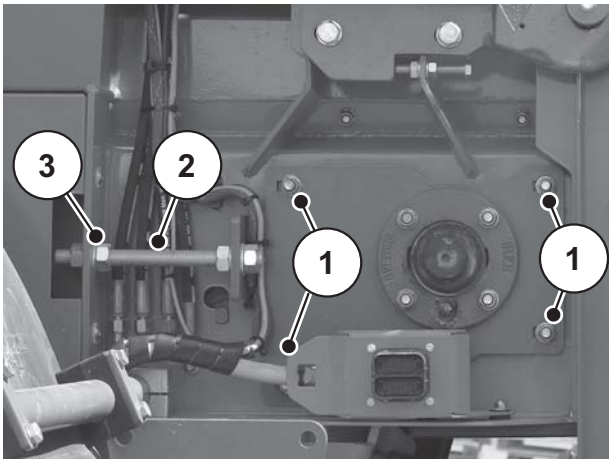


Figure 9.16: Position of the drive roller

5. Adjust the position of the belt scraper on the conveyor belt.

   See 9.9: Adjusting the belt scraper, page 139.

6. Start running the belt by means of the AXENT ISOBUS machine control unit.
7. Stop the belt after one minute.
8. Check the position of the conveyor belt on the tension pulley and readjust it if necessary.

9.8.2 Setting the tension of the conveyor belt

Check the tension of the conveyor belt after the first few hours of operation or if you notice any slippage at the conveyor belt.

The tension pulleys of the conveyor belt are located at the front between the container and the frame in the direction of travel.

1. Check the position of the disc spring packages [2].

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

   Half of the disc spring packages are flush with the position plate on both sides [1]: 28 mm +/- 1 mm, 10 disc springs
2. Re-tighten the disc springs if necessary.

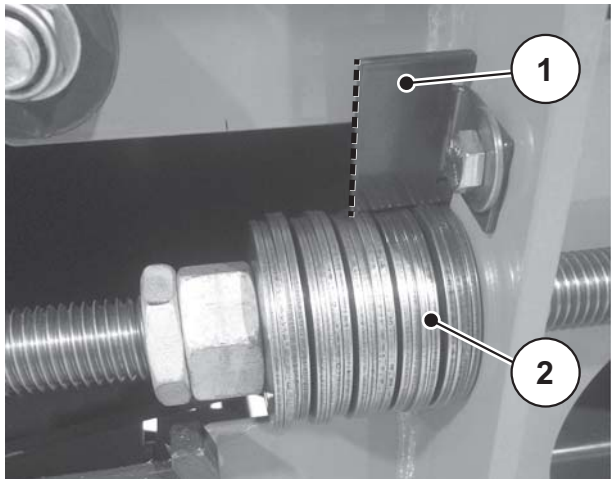


Figure 9.17: Re-tightening the disc spring packages

Checking the position of the deflection roller

The deflection roller must have a right angle over the entire length.

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

The marking plate should be in the area of the same marking tooth [A] on both sides.

The scale [1] of the deflection roller should also coincide on each side.

▷ **If the position of the markings deviates, adjust the disc spring packages accordingly.**

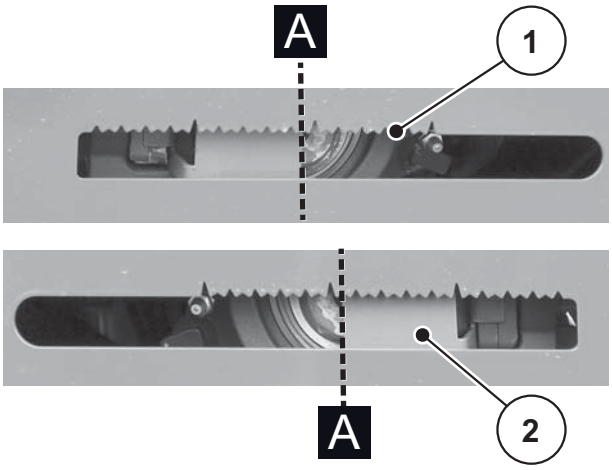


Figure 9.18: Setting the disc spring packages

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

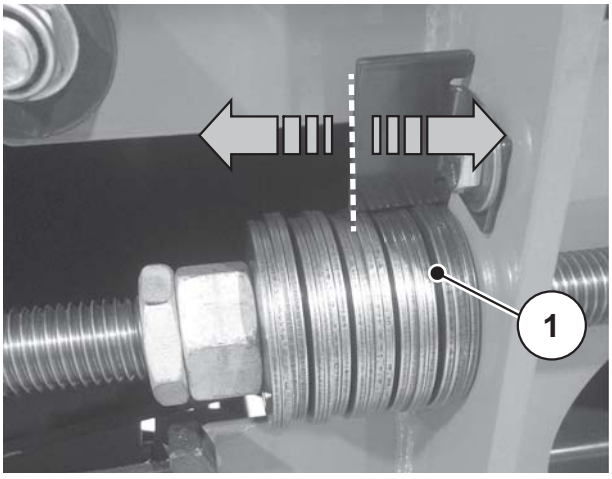


Figure 9.19: Adjusting the disc spring packages

9.9 Adjusting the belt scraper

9.9.1 Removing the belt scraper

1. Undo the five screws [3] of the clamping plate [1].
2. Remove the belt scraper [2].

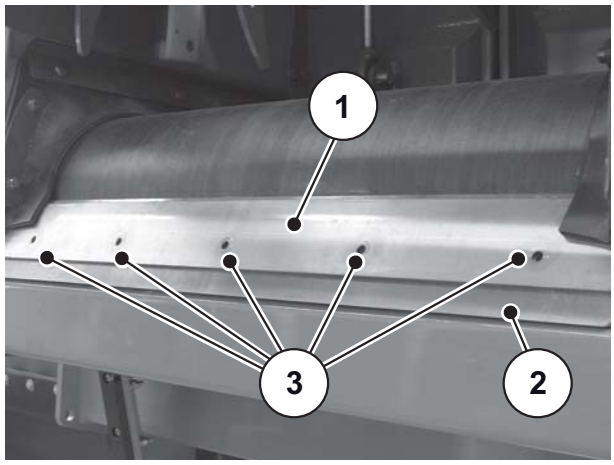


Figure 9.20: Dismantling the clamping plate

9.9.2 Adjusting the holder for the belt scraper

1. Take a 4-mm gauge.
2. Check at the same distance to the conveyor belt.

Figure 9.21: Checking the distance

3. Undo the four screws [1] underneath the conveyor belt.
4. Adjust the position of the holder above the elongated holes.
5. Re-tighten the screws [1].

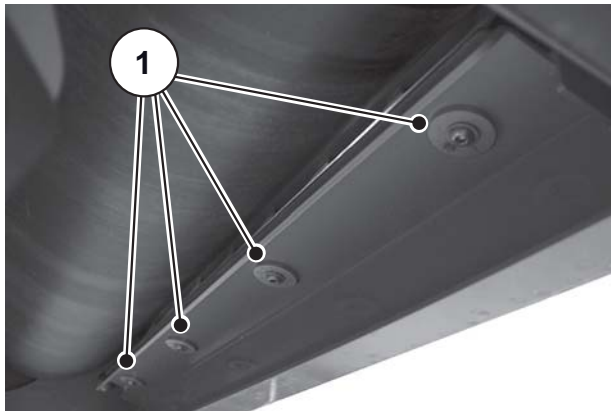


Figure 9.22: Adjusting the position of the holder

9.9.3 Screwing the belt scraper tight

1. Re-apply the belt scraper [1].

   Pay attention to the position of the scraper.
2. Screw the clamping plate tight onto the scraper with the screws.

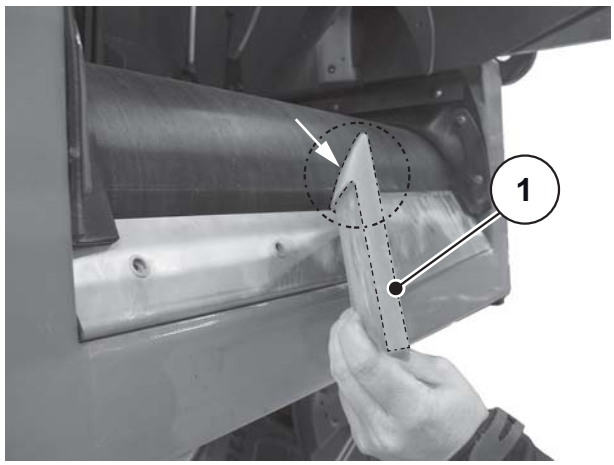


Figure 9.23: Applying the clamping plate

9.10 Maintenance of chassis and brakes

The machine is braked by a dual-circuit compressed-air brake system.

The chassis and brakes are crucial for the operational safety of the large area spreader.

⚠ WARNING

Danger of accident due to improperly executed work

Improperly executed work on the chassis and brake system will impair the operational safety of the large area spreader and can cause serious accidents involving personal injury and material damage.

▶ Have setting and repair work on the brake system carried out **only** by specialist workshops or recognized brake service providers.

9.10.1 Checking the condition and function of the brake system

NOTICE

Since your large area spreader is a transport trailer with spreading unit, there is duty to subject it to a cyclic main technical inspection at a safety-related monitoring service provider.

You are responsible yourself for the perfect condition of your system.

Perfect functioning of the brake system is of great significance to the safety of your large area spreader.

Have the brake system checked **regularly** by a specialist workshop at least once a year.

Check the brake system for damage and leaks at regular intervals, at least each time before driving.

Observe the following instructions when checking the brake system:

- Check the brake system when dry, not when the vehicle is wet or when it is raining.
- Check the brake system for leaks and damage.
- Check the brake lever and linkage for ease of movement.
- Have the brake pads replaced in good time. Use only the brake pads specified for the axles.

9.10.2 Draining the air tank

Condensed water can form in the compressed-air brake system of the brake circuit and accumulate in the air tank.

To prevent corrosion-related damage to the compressed-air brake system, drain the air tank daily.

1. Pull the actuating pin [1] with a finger.
   ▷ The tilt valve opens.
2. Drain the condensation water completely.
3. Release the actuating pin [1].

▷ **The air tank has been drained.**

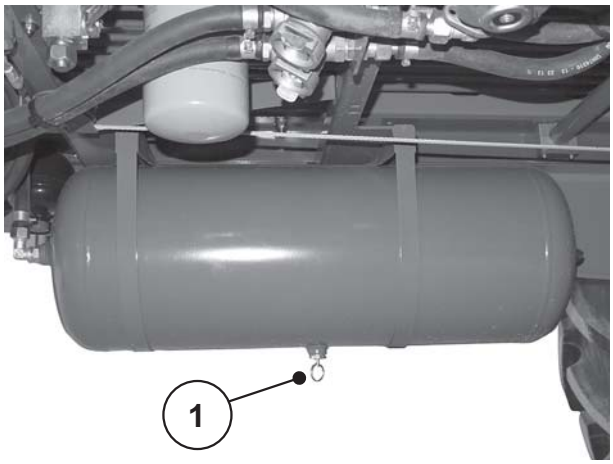


Figure 9.24: Draining the air tank

9.11 Maintenance of hydraulic system

The hydraulic system of the towed large area spreader consists of a hydraulic circuit.

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

During operation, the hydraulic system of the large area spreader is under high pressure. The temperature of the oil in the system is approx. 90 °C during operation.

⚠ WARNING

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

Hot fluids and fluids escaping under high pressure may cause severe injury.

- ▶ De-pressurise the hydraulic system before carrying out any work.
- ▶ Stop the tractor engine and secure it against being switched on again.
- ▶ Allow the hydraulic system to cool down.
- ▶ Always wear protective goggles and protective gloves when searching for leaks.

⚠ WARNING

Risk of infection due to hydraulic oil

Hydraulic oil escaping under high pressure can penetrate the skin and cause infections.

- ▶ Immediately seek medical attention in the event of injury due to hydraulic oil.

⚠ CAUTION

Environmental hazard due to hydraulic or gear oil

Hydraulic or gear oil entering the sewage system or soil can contaminate large quantities of groundwater and drinking water.

- ▶ Always dispose of used oil at the designated collection points in accordance with the manufacturer's instructions.

9.11.1 Checking the hydraulic hoses

Hydraulic hoses are exposed to high strain. They must be checked regularly and immediately replaced if damaged.

Hydraulic hoses are subject to ageing. They may be used for a maximum of six years, including a maximum storage period of two years.

NOTICE

The date of manufacture of a hose line is specified on one of the hose fittings with the year/month (e. g. 2012/04).

- Check the hydraulic hoses regularly, but at least before the start of the spreading season, by visual inspection for damage.
- Replace hydraulic hoses if they exhibit one or more of the following types of damage:
  - Damage to the outer layer up to the inlet
  - Embrittlement of the outer layer (cracking)
  - Deformation of the hose
  - Detachment of the hose from the hose fitting
  - Damage to the hose fitting
  - Strength and function of the hose fitting reduced by corrosion
- Check the age of the hydraulic hoses before the start of the spreading season. Replace the hydraulic hoses if the storage and usage time is exceeded.

9.11.2 Replacing hydraulic hoses

Preparation:

- Make sure the hydraulic system is **de-pressurised** and has **cooled down**.
- Provide collecting vessels for leaking hydraulic oil under the separation points.
- Provide suitable plugs to prevent hydraulic oil from leaking out of the non-replacement lines.
- Provide suitable tools.
- Wear protective gloves and safety goggles.
- Make sure the new hydraulic hose matches the type of hydraulic hose to be replaced. Pay special attention to the correct pressure range and hose length.
- The hydraulic circuit contains two nitrogen tanks. They are under residual pressure even after the system has been shut down. Slowly and carefully open the screw connections of the hydraulic circuit.

NOTICE

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

Implementation:

1. Undo the hose fitting at the end of the hydraulic hose to be replaced.
2. Drain the oil from the hydraulic hose.
3. Undo the other end of the hydraulic hose.
4. Immediately drain the detached hose end into the oil collecting vessel and close the connection.
5. Undo the hose fasteners and remove the hydraulic hose.
6. Connect the new hydraulic hose. Tighten the hose fittings.
7. Secure the hydraulic hose in place with the hose fittings.
8. Check the position of the new hydraulic hose.
   - The hose routing must be identical to that of the old hydraulic hose.
   - There must be no chafing.
   - Do not twist the hose or subject it to tension.

▷ **The hydraulic hoses have been successfully replaced.**

9.11.3 Checking the oil level

Check the oil level in the storage tank daily.

- Read the level on the level indicator [1].

  The oil level is all right if the oil is between the green and red mark on the level gauge.

Figure 9.25: Oil level indicator position

9.11.4 Replacing the oil and oil filter

1. Before draining the oil, place a collecting container of sufficient volume (at least 60 litres) under the container.

   The oil drain cock is located under the container between the filter cartridge and the adjustment unit for the towing bar suspension.

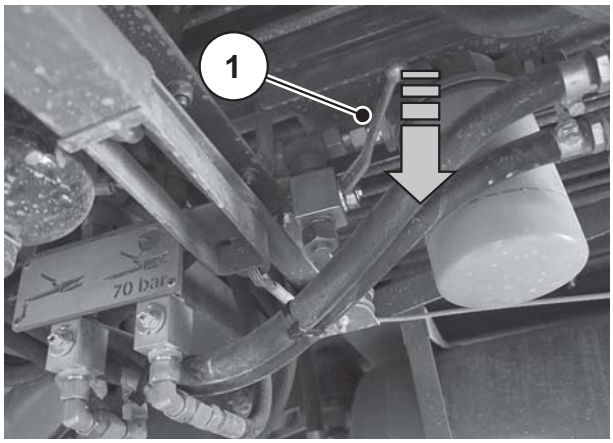


Figure 9.26: Draining the oil

2. Open the hydraulic tap [1].
3. Allow the residual oil to flow into the collection container.

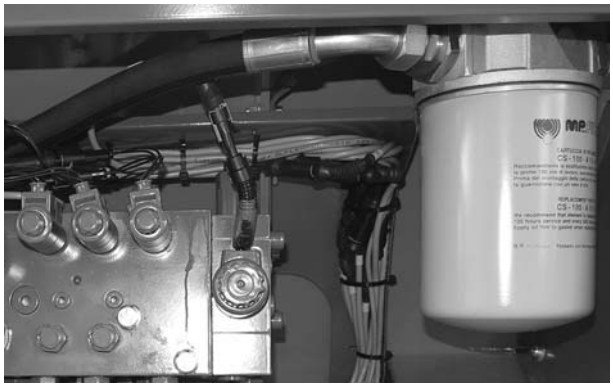


Figure 9.27: Oil filter, control block

4. Close the hydraulic tap.
5. Dismantling the oil filter at the control block

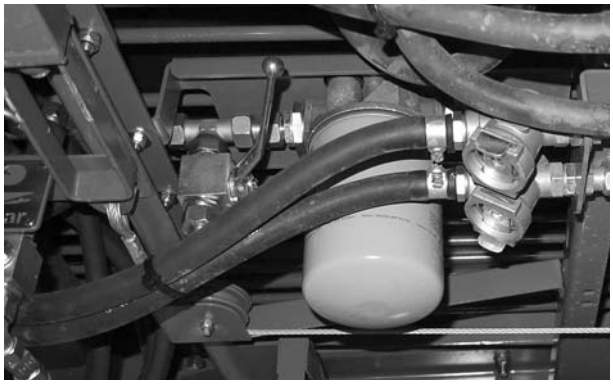


Figure 9.28: Oil filter, towing bar suspension

6. Dismantle the oil filter under the container.
7. Screw on the new oil filters.

8. Unfold the ladder and climb onto the platform.

   See “Using the ladder” on page 84.

⚠ CAUTION

Material damage due to wrong type of oil

Material damage to the machine hydraulics and the machine parts moved by the hydraulic system can be caused by a wrong type of oil or by mixing different types of oil.

- ▶ Use only the permitted oil types described in this operating manual.
- ▶ **Never** mix different types of oil. Always carry out a complete oil change.

The hydraulic system has been filled at the factory with approx. 60 litres of **Shell Tellus S2 V 68** (HV 68 DIN 51524/3 ISO 11158 HV) hydraulic oil.

9. Unscrew the filler plug [1].
10. Fill in oil.

    The oil level is all right when the level gauge is between the maximum and minimum values.

▷ **Oil and oil filters have been successfully replaced.**

Figure 9.29: Filling in the oil

9.11.5 Maintenance of hydraulic system / control block

The control block is used to supply all drive and actuating functions that are actuated from the electronic control.

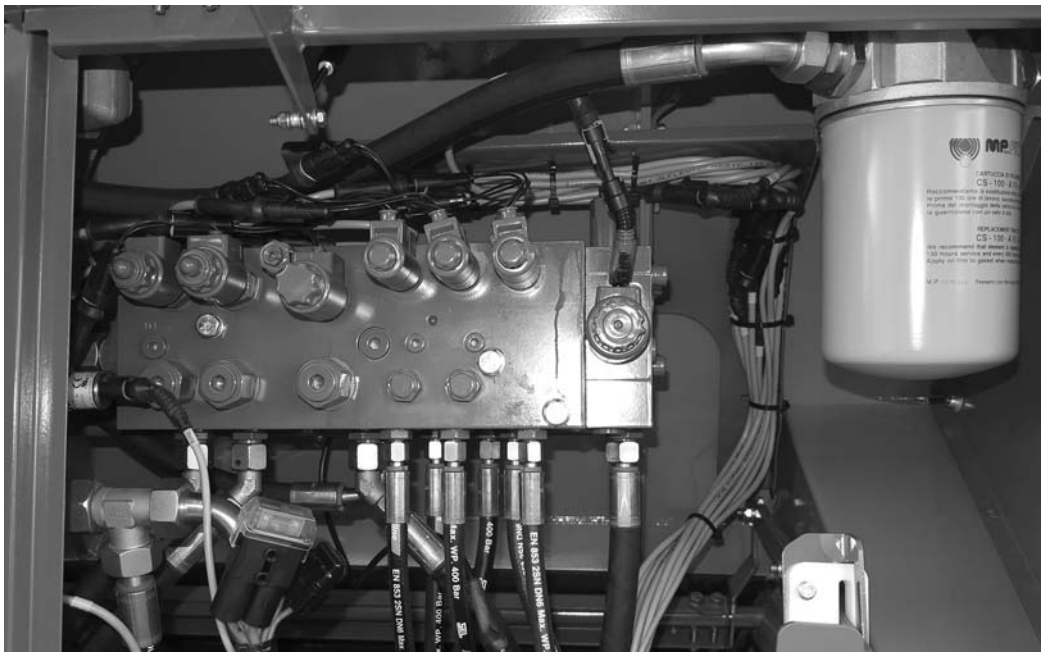


Figure 9.30: Control block

The serviceable components of the hydraulic system are:

- The hydraulic cylinders of the pre-metering sliders
- The hydraulic motor of the conveyor belt drive
- The hydraulic cylinders used to drive the hopper cover

Checking the hydraulic cylinders for actuating functions

Check all hydraulic cylinders regularly, but at least before any spreading work.

Actuating functions: hydraulic cylinders [1] of the pre-metering sliders.

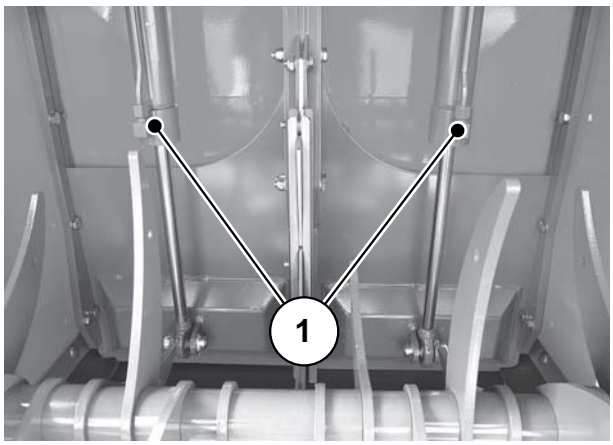


Figure 9.31: Hydraulic cylinders of pre-metering sliders

Actuating functions: hydraulic cylinder [1] for the hopper cover (front and rear).

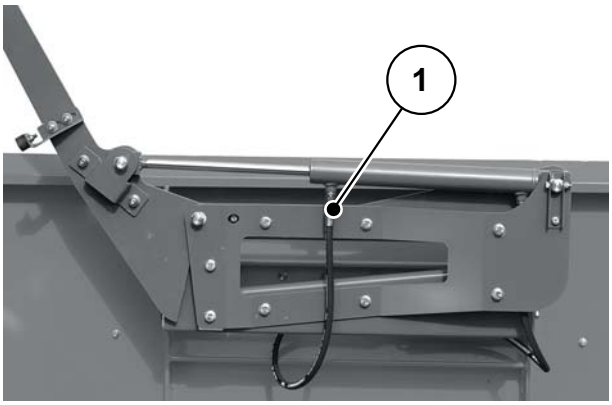


Figure 9.32: Hydraulic cylinder, hopper cover

- Check the components for external damage and leaks.

9.11.6 Checking the conveyor belt drive

- Regularly check the conveyor belt **motor**, but at least before any spreading work.
- Check the components for external damage and leaks.

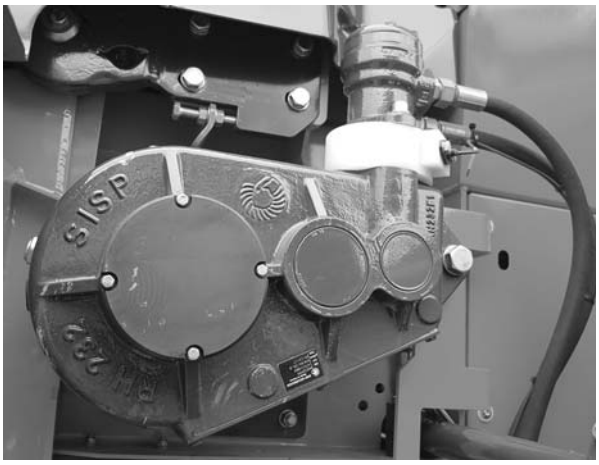


Figure 9.33: Checking the conveyor belt motor

9.12 Wheel and tyres

The condition of the wheels and tyres is of great importance for the operational safety of the AXENT 100.1 large area spreader.

⚠ WARNING

Danger of accident due to improperly executed work

Improperly executed work on wheels and tyres will affect the operational safety of the large area spreader and may lead to serious accidents involving personal injury and material damage.

- ▶ **Only qualified personnel** are allowed to repair tyres and wheels with suitable assembly tools.
- ▶ **Never** weld torn rims or wheel discs. The welds would break in no time due to the dynamic load during driving.

9.12.1 Checking the tyres

Check the tyres regularly for wear, damage and foreign objects.

Check the tyre pressure on the **cold** tyre every two weeks. Observe the manufacturer's specifications

9.12.2 Checking the condition of the wheels

Regularly check the wheels for deformation, rust, cracks and breaks.

- Rust can cause stress cracks on wheels and tyre damage. Keep the contact surfaces to the tyre and to the wheel hub rust-free.
- Replace torn or deformed wheels or wheels damaged in any other way.
- Replace wheels with cracked or deformed bolt holes.

9.12.3 Changing a wheel

⚠ WARNING

Danger of accident due to incorrect changing of wheels

Improper changing of a wheel of the large area spreader can result in serious accidents involving personal injury.

- ▶ Change the wheel only on the empty large area spreader attached to the tractor.
- ▶ To change the wheel, the large area spreader must stand on level and firm ground.

Prerequisites:

- Use a jack that can lift a load of at least **5 tons**.
- Use a torque wrench to tighten the wheel nuts.

Positioning the jack:

- Position the jack so that the support surface cannot slip under any circumstances (e.g. with a suitable piece of wood or rubber block).
- Additionally secure the jack against slipping.
- When changing a wheel on the right side in the direction of travel, place the jack on the right [1] under the axle mounting.
- When changing a wheel on the left side in the direction of travel, place the jack on the left [2] under the axle at the height of the spring link.

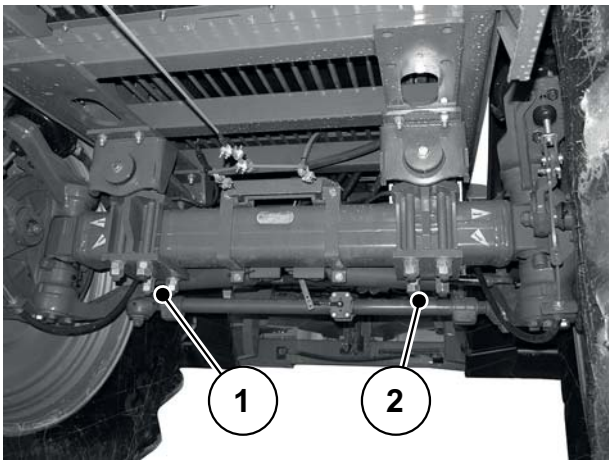


Figure 9.34: Application points of the jack

Wheel mounting:

- Before mounting the wheel, clean the contact surface of the wheel at the hub.
- Before mounting the wheel, check the wheel nuts and wheel bolts. Replace any damaged, stiff or rusty wheel nuts or wheel bolts.
- Tighten all wheel nuts **stepwise** and **crosswise** with a torque wrench.
  - Tighten the wheel nuts with a tightening torque of **560 Nm**.
  - Screw and tighten all **10** wheel nuts per wheel.

The wheel nuts loosen due to setting procedures during the first few kilometres with the brand new large area spreader or after changing a wheel.

- Re-tighten all wheel nuts with the prescribed tightening torque after driving **50 km**.

NOTICE

Observe the instructions and prescribed operations of the wheel manufacturer for the wheel mounting.

9.13 Lubrication plan

Lubrication interval: every 50 hours of operation or, under extreme conditions, earlier.

9.13.1 Lubrication points of AXENT basic machine

The lubrication points are distributed and marked over the entire machine.

You can recognize the lubrication points by this sign:

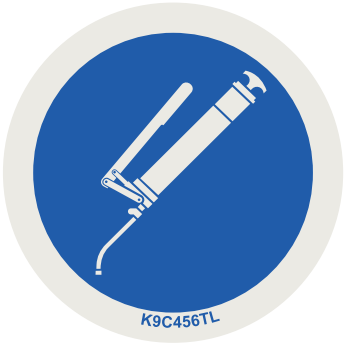
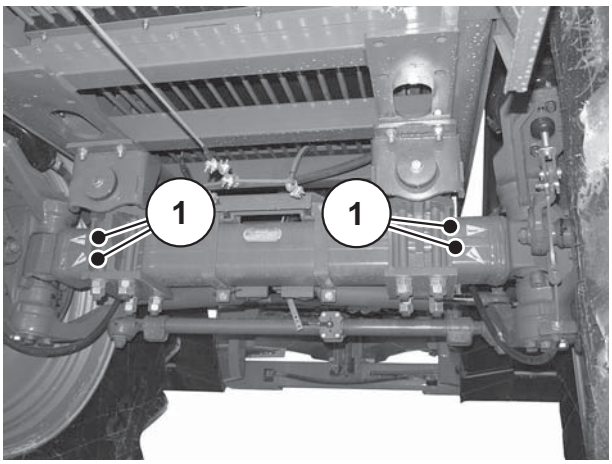


Figure 9.35: Sign for lubrication point

- Always keep the signs **clean** and **legible**.

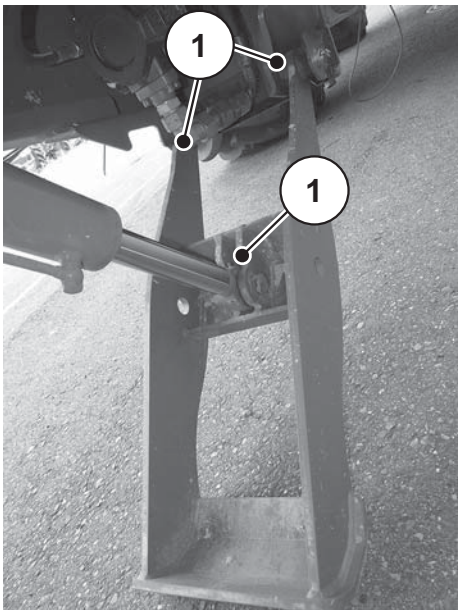
[1] Lubrication point: ball coupling

Figure 9.36: Ball coupling



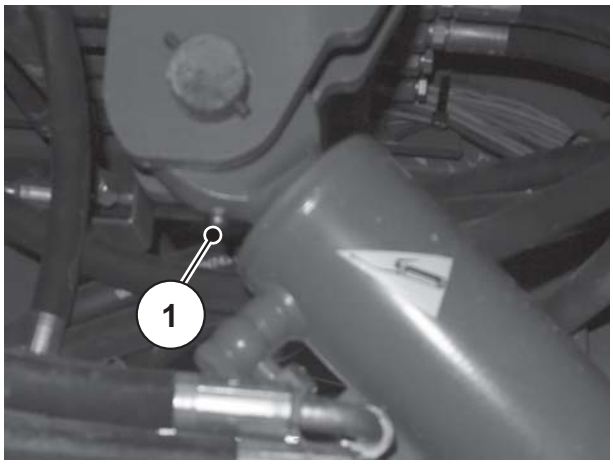
[1] Lubrication point: brake linkage

Figure 9.37: Brake linkage



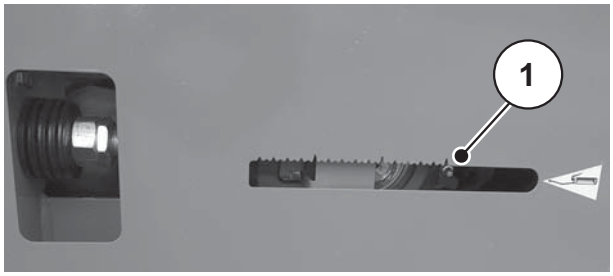
[1] Lubrication point: support stand

Figure 9.38: Support stand



[1] Lubrication point

Figure 9.39: Hydraulic cylinder, support stand



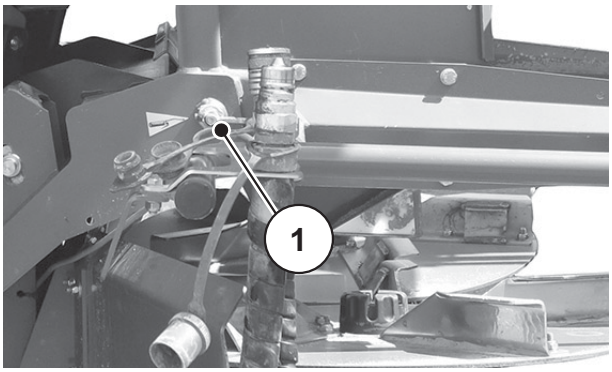
[1] Lubrication point: deflection roller

Figure 9.40: Belt drive

[1] Lubrication points: towing bar

Figure 9.41: Towing bar

9.13.2 Lubrication points of the LIME-PowerPack lime spreading unit



[1] Lubrication point: container

Figure 9.42: Lubrication point: lime spreader

10 Disposal

10.1 Safety

⚠ WARNING

Environmental pollution due to unsuitable disposal of hydraulic and gear oil

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

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

⚠ WARNING

Environmental pollution caused by inappropriate disposal of packaging materials

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

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

⚠ WARNING

Environmental pollution caused by inappropriate disposal of components

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

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

10.2 Disposal

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

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

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

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

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Terms/conditions of warranty

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

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

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

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

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http://www.rauch-community.de/streutabelle/

RAUCH

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